Computer Programming

FOR

SECOND YEAR

FROM

Preparation

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Unit One

The Network

General aim: The overall objective of the lecture is to give information to the student Internet .

Sub-goals: student will be at the end of the lecture able to respond to the following questions:

1 – known Internet

2 - known how connecting the internet

3 – Known main explain toolbar

4. known web page and engine search .

5 – learning how can create the email – electronic

Internet.(INTERnational Network) is a system of connected computers that allows your desktop computer to exchange data , managers and files with any of the millions of other computers, which have connections to the Internet.

A world-wide network of computers linked by telephone lines, allowing for the global dissemination of information The Internet, sometimes called simply "the Net," is a worldwide system of computer networks - a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers). It was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the Arpanet. The original aim was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities. A side benefit of Arpanet's design was that, because messages could be routed or rerouted in more than one direction, the network could continue to function even if parts of it were destroyed in the event of a military attack or other disaster.

Today, the Internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people worldwide. Physically, the Internet uses a portion of the total resources of the

currently existing public telecommunication networks. Technically, what distinguishes the Internet is its use of a set of protocols called TCP/IP

Connecting to the Internet:

To connect a home computer to the internet you will need following :
1-A-Computer
You need a computer with a large amount of memory and processing power.
2-A Modem
To change computer signals into telephone signals and vice versa .So you can use the telephone lines for transformation.
3-Telephone Line Or ISDN line to connect to the internet . the ISDN line is a high-speed digital line. There fore a modem is not used.
4-An Account with An Internet
Service Provider(ISP) It may be a subscription account (paying for services).or a free account . In both cases, you have to pay for the cost of using the telephone line.
5-Software A Web Browser
Computer programs . which allow people to access information , view images ,hear sounds and watch video on the www.Microsoft internet Explorers and Netscape Navigator are Browsers .

Starting Internet Explorer :

The internet Explorer is the application that displays the web pages from the Internet .Like all windows programs , the Internet Explorer can be started in many ways:
Click The Internet Explorer icon on the Desktop window
Or
Start > Programs> Internet Explorer

Beginning Basic Browsing

The important thing to remember when you first begin browsing the web is the Web address of a site you wish to visit. Go up to the "Address Bar" near the top of the page, and click on it. Now you can type in the Web address of the site you want, and then press enter. Internet Explorer will go to this site directly from whatever document you were currently viewing. This is much faster than going to a search engine and trying to locate the site you want in their directories, or searching for it with a query. (Address Bar shown below)
Your first time that you browse the web, you may have some difficulty. Efficiently browsing the Web is just like any other complex

task in life, it takes practice to be good at it. Internet Explorer has some built-in features which will help to make it easier for you to browse the web. The fastest way to get to a place that you don't know its address and you want to search for, is to click on the "Search" button on the Internet Explorer main toolbar. This button will take you to a document within Microsoft's home site. On this document you will find a choice of categories to look through and a list Search Engines to use. A Search Engine is an application that will attempt to find any documents that contain the subject or phrase that you enter into the search parameters. You can also browse through the categories of Web sites that the search engines have already organized for you.

The Main Explorer Toolbar

The main toolbar is composed of eleven different buttons. Each of these buttons has a different function and purpose in Internet Explorer. The individual buttons will each be discussed in the following sections.

1-. The Back Button :
Displays the page you were viewing before the current page.

2-. The Forward Button :
Displays the page you were viewing before you went back to the current page .

3-. The Stop Button :
Cancels the down loading of the content for the current page.

4-. The Refresh Button :
Updates the content of the current page by downloading it again .

5-. The Home Button : 
Opens your start page , the one you see when you first start Internet Explorers.

6- The Search Button : 

This button will take you to the page you have selected as the default Web search page for Internet Explorer. If you have not selected a page it will take you to Microsoft's default search page.

7- The Favorites Button : 

This button will open up the Favorites menu. You can choose a favorite that you wish to go to from the list, add a favorite to the list, or organize your favorites from this menu.

8-The Print Button : 
The print button will bring up a Print dialog box. In the box you can decide if you would like to print the contents of the page you are viewing, how many pages you will print, and also how many copies you will print. Keep in mind that if you try to print a page that is graphics intensive, you will need a printer that is capable of printing graphics. Also, the more graphics and pages a Web site has, the longer it will take to print.

9- The Font Button : Pressing this button causes Internet Explorer to cycle through the available font sizes. This button is useful if the text is too small to read, or too large to fit comfortably in the window.

10-. The Mail Button : 
This button will open into a drop down menu from which you can select to read or send E-Mail. You can also open up your newsgroups from this menu.

11- The Edit Button : This button will ONLY be on your toolbar if you have a
Windows system Web editor (such as Microsoft Frontpage or Microsoft Word)
installed on your computer. If you press this button, it will launch that editor and open the document you are currently viewing in it.

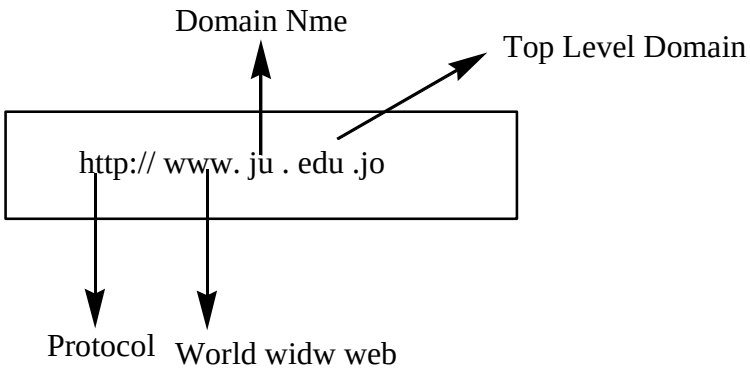
12-The History Button : 
And displays the sites you've previously visited

Internet Explorer window

1-Title bar: Appears at the top of the screen contains the name of the current Web page or file which is on display in Internet Explorer .
2-Menu Bar : Contains a series of menus that you can use to control the way Internet Explorer works.
3-Toolbar : It is a group of buttons you can click to run frequently used commands.
4-Address BAR : Display address current .

Web Addresses :

Every page has its own unique address , known as URL Uniform Resource Location as shown in figure follow:



1. **http : hyper text transfer protocol ,is used to access the internet and the other text document.**
2. **WWW: world wide web.**
3. **Domain Name: Location or area where the pages are stored .**
4. **Top Level Domain : The three letter code of URL that indicates whether the address is a business (.com) , a university (.edu) and so on.**

Setting Your Default Start-Up Page

The "Start-Up" page is the Web Site or document that Internet Explorer will open automatically every time that you start the program. These steps will show you how you can change this page to whatever location you prefer.
1-From the Tools dialog box, click on the "Internet Options" folder tab at the
bottom of the box. You can change the start-up page from here. (The customize
section is outlined in red for your convenience).
2- Click on "General" and then click in the Address box.

3-. Type the address of the page you would like Internet Explorer to open each time you start the program. If you are satisfied with your choice and are done setting options, click on "Apply" then "OK" at the bottom of the Internet Options box.

Searching

1-open any search engine site by typing its address in address box.

2-type the keyword in the search box.

3-click on the search button.

4-a list of results will appear.

Enter words that you think will appear on the Web page you want.

Browser Toolbars

· There are many ways you can search the web without going directly to a search engine. These free browser toolbars provide direct access to search engines from within your browser. Most include pop-up ad blockers. Some provide free Spyware detection.

Closing and disconnecting :

1-Click the close button in the top right –hand corner of the browser window.

2-Click Disconnect in the connected window.

To Add A Page To Your Favorites Menu:

1-Make sure that the address of the page you want to save is displayed .

2-Click on the Favorite button on the tool bar , The Favorite panel appears at the left of the Browser window.

3-Click on the Add button at the top Favorite panel.

Using Favorites :

To open a site that you have previously saved as a shortcut on the Favorite menu do the following :

1-Click on the Favorite button on the tool bar , the Favorite panel appears at the left of the window .

2-Click on the name of the page you want as.

3-If the address of the page was saved in specific folder ,select that folder. Click on it to open.

4-The Browser will display the site.

Search Engine Tips

Here are some tips to help you use Search Engines effectively .
1-Use + and – symbols to include – or exclude – words
2-when you use the Upper case letters , the search Engine will find only the capital .Use of the lower case will find both.
3-To search for an exact word put it in a double quotation ""
4- Use wildcard * to expand your search .
5-You can use select among different options for searching.

E-mail Addresses:

When you sign up with an ISP ,a unique E-mail address is allocated to you.

E-Mail Address Characteristics :

1- It is usually written in small letters.
2-Does not contain any spaces.
3-The @ symbol connect a use's name with a Domain Name .
4-The part of an address before @ cannot be the same for two people .
Example :sara-ali@hotmail .com

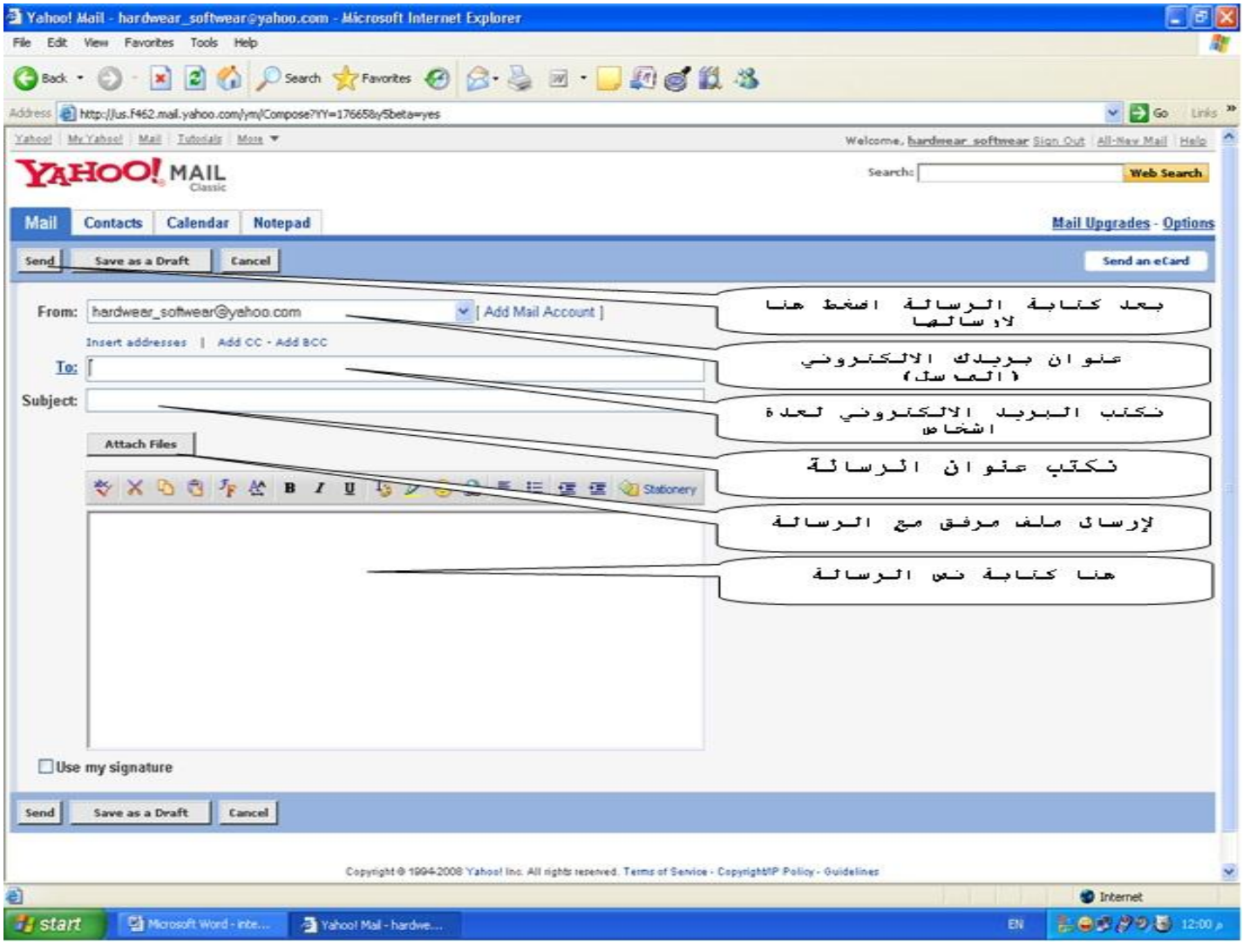
Create steps Email – Electronic in the Yahoo:

1. Write the first name you For example, if your name is Hassan Mohamed you write (Muhammad) in this box
2. Write the rest of the name he (Hassan)
3. Select Are you male or female
4. Write your date of birth select the month and then type the day and year
5. Select your country of residence
6. Write your local postcode example: 2222
7. Type the e-mail address you intend to register at the Yahoo site Example: mmmmm97
8. Write password your new e-mail, and then re-write password
9. Write your own email Other and that in the event of loss of email password will be sent your e-mail to this email
10. Select a secret question and usefulness of this question in the case of the theft of email address you him back if you know the secret question and answer
11. Write answer the secret question
12. Select another secret question to increase the safety for your email address
13. Write answer the secret question

14. Write the text that appears below this rectangle
15. Select this option to consent to the terms of service email address will not be accepted until after the approval of these conditions
16. Click on Create My Account to start creating your email
If you see this message it means that this email is not available because there is a person who is registered to this email so you change the email on behalf of another.

Search Engines :

Google ,Yahoo , msn , AltaVista , dmoz , 4shared ,Wikipedia ,



Post Test

1-Explain the term WWW (world Wide Web).

2-What is the meaning of electronic email .

3-What is the term HTTP refers to ?

4-Give an example of a web browser application.

5-What are the effects of viruses when using the Internet.

6-Compare between web addresses and e-mail addresses.

Unit Two

The Network

General aim: The overall objective of the lecture is to give information to the student networks and kinds of materials used as well as the importance of.

Sub-goals: student will be at the end of the lecture able to respond to the following questions:

1 - known networks

2 - Recognize the importance of networks

3 - recognize the most important resources used.

4 - recognize the kinds of roads linking the networks.

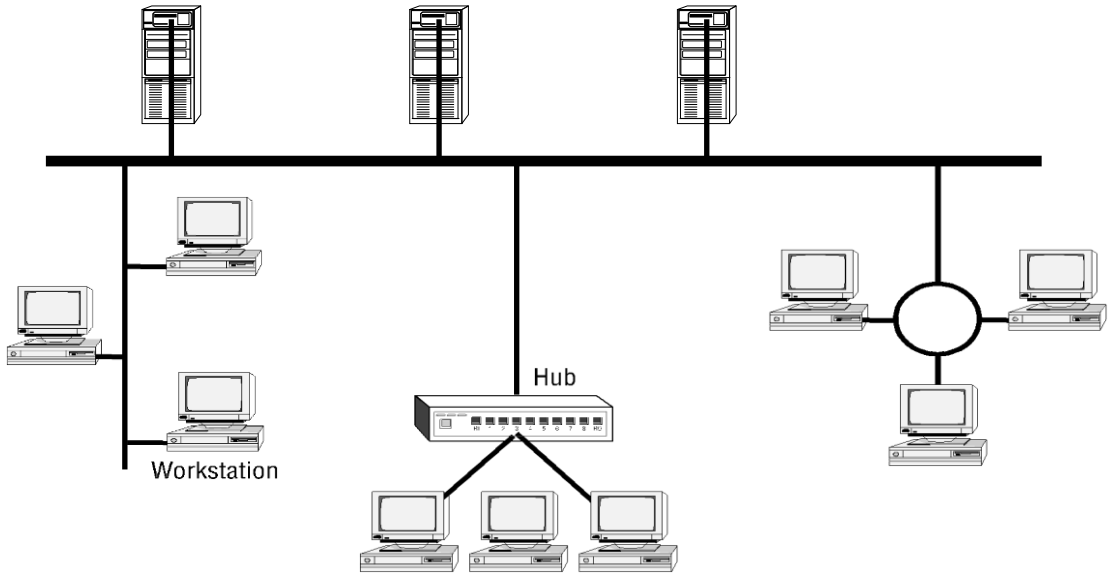
5 - be able to distinguish between types of cables used in the ways of linking

Networks : Network is a group of computers connected to each other. Allows the transfer of information among them.

Type or elements of network

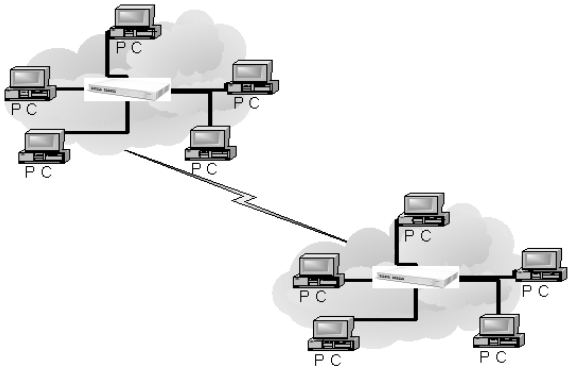
1- LAN - Local Area Network LAN connects networking devices with in short spam of area, i.e. small offices, home, internet cafes etc. LAN uses TCP/IP network protocol for communication between computers. It is often but not always implemented as a single IP subnet. Since LAN is operated in short area so It can be control and administrate by

single person or organization.



2-WAN - Wide Area Networks "word" Wide implies, WAN, wide area network cover large distance for communication between computers. The Internet it self is the biggest example of Wide area network, WAN, which is covering the entire earth. WAN is distributed collection of geographically LANs. A network connecting device router

connects LANs to WANs. WAN used network protocols like ATM, X.25, and Frame Relay for long distance connectivity.

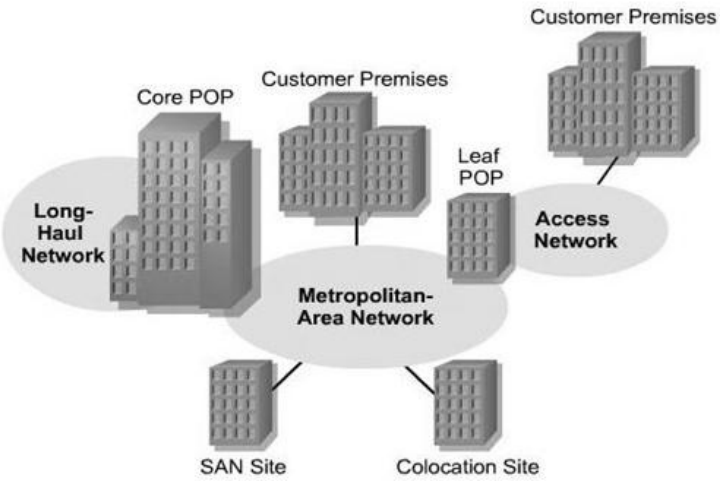


Wireless - Local Area Network

A LAN, local area network based on wireless network technology mostly referred as Wi-Fi. Unlike LAN, in WLAN no wires are used, but radio signals are the medium for communication. Wireless network cards are required to be installed in the systems for accessing any wireless network around. Mostly wireless cards connect to wireless routers for communication among computers or accessing WAN, internet.

3-MAN - Metropolitan Area Network

This kind of network is not mostly used but it has its own importance for some government bodies and organizations on larger scale. MAN, metropolitan area network falls in middle of LAN and WAN, It covers large span of physical area than LAN but smaller than WAN, such as a city.

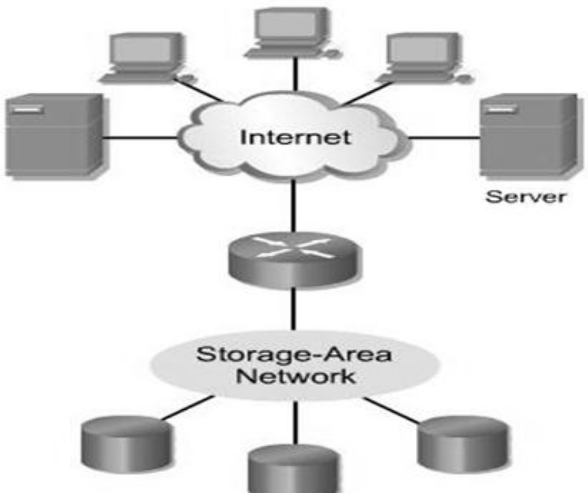


CAN - Campus Area Network

Networking spanning with multiple LANs but smaller than a Metropolitan area network,

MAN. This kind of network mostly used in relatively large universities or local business offices and buildings.

4-SAN - Storage Area Network



SAM technology is used for data storage and it has no use for most of the organization but data oriented organizations. Storage area network connects servers to data storage devices by using Fiber channel technology.

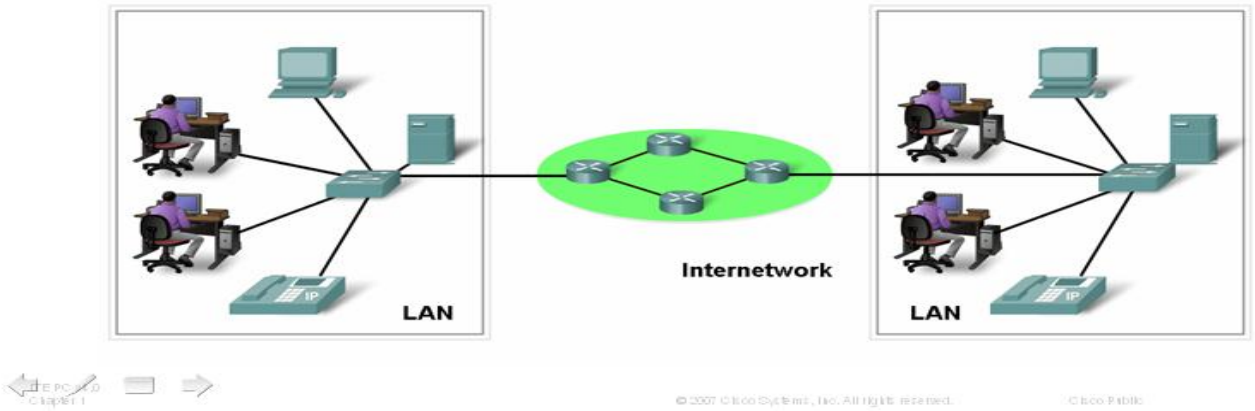
5-. Personal Area Networks (PAN)

PC (Personal Computer)

NIC (Network Interface Card)

Importance Networks.

1-Data Transferee and Remote File Access



2-**Data Sharing. << Availability>>**

3. Distributed Data Base

(Management, Security) Like, banks, governmental institutes)

4-Distributed Computation (Civil and Military)

5-Advertising

6-Trade

7-Scientific research

8-Conferencing and MUCH MORE

Resource Sharing:

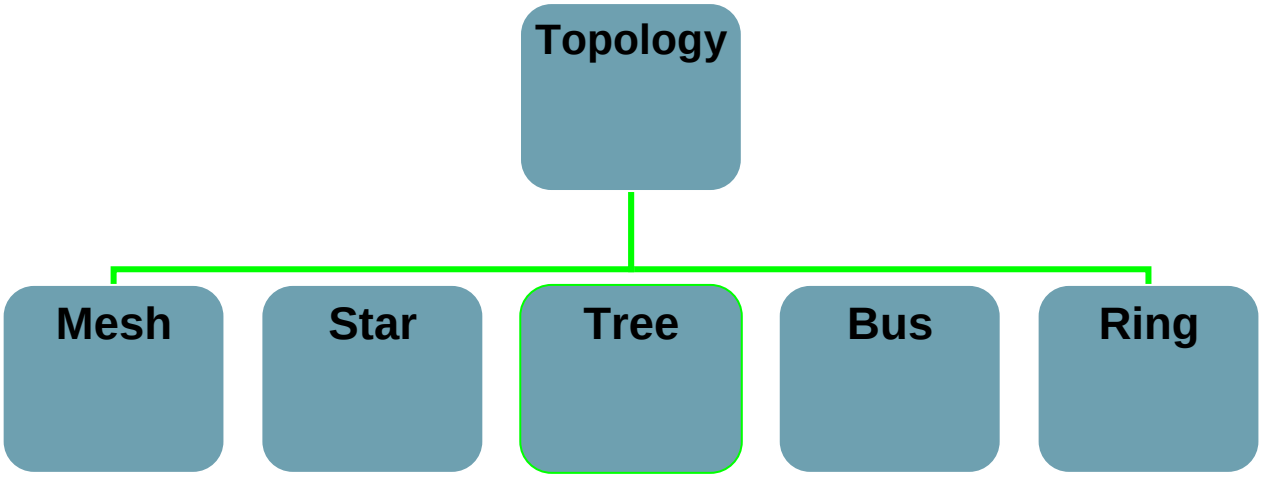
Hardware:

- **printers,**
- **scanners,**
- **plotters,**
- **wireless transceivers,**
- **Sensors,**
- **Cameras,**
- **… etc.**

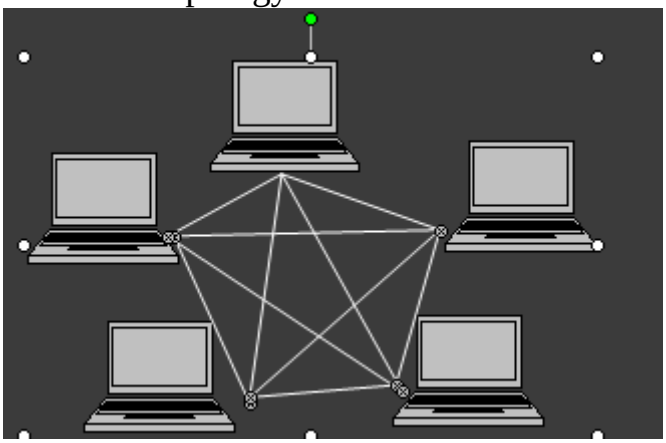
Software

- **Programs,**
- **Operating Systems,**
- **… etc.**

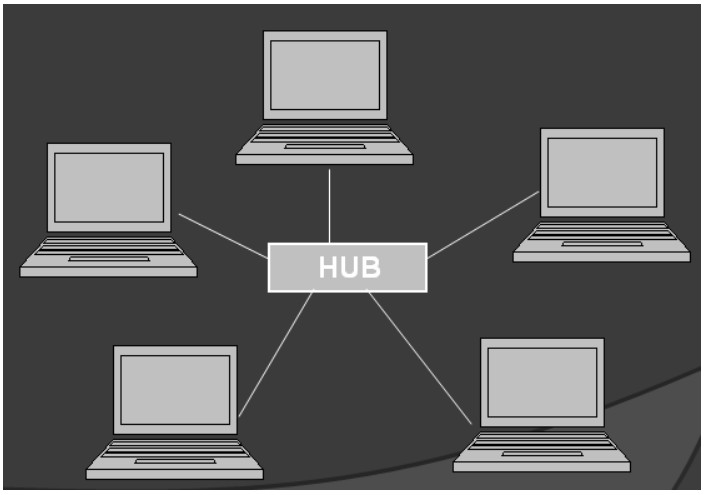
Computer Network Topology



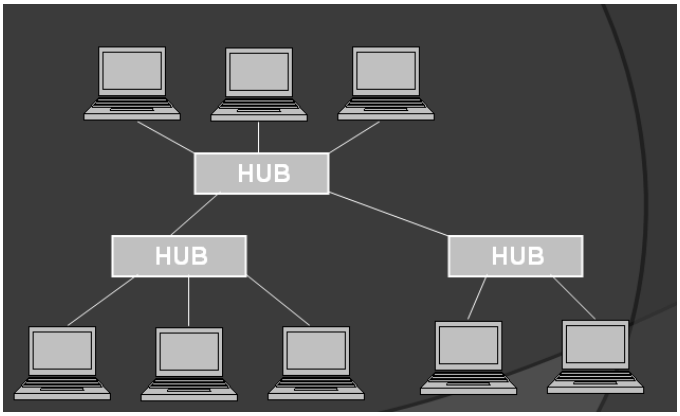
1. Mesh Topology



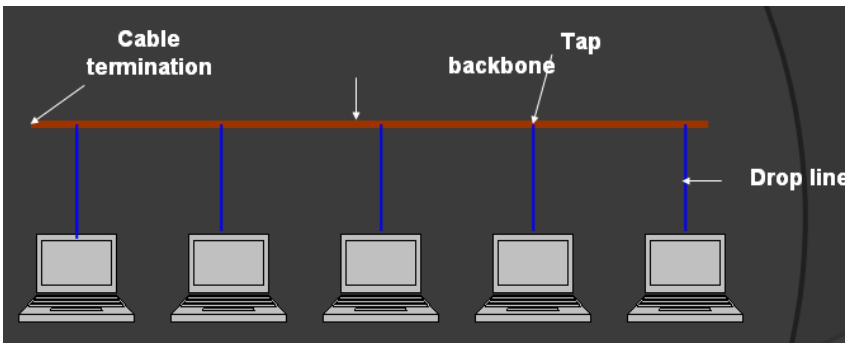
2-Star Topology



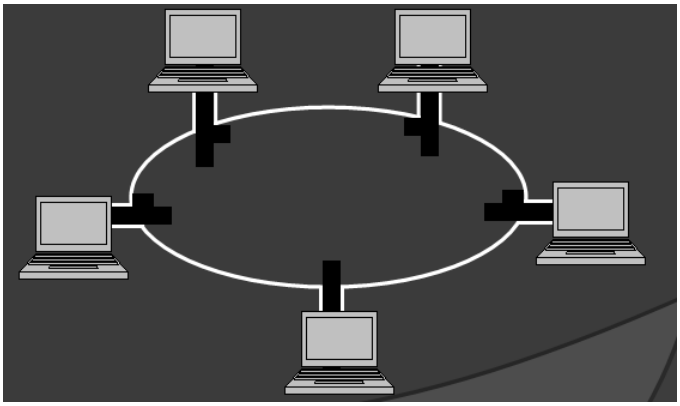
3-Tree Topology



4-Bus Topology



5-Ring Topology



Advantages and Disadvantages:

	Mesh	Star	Tree	Bus	Ring
Instal. & Reconf.	diff.	easy	easy	easy	easy
Cables	n(n-1)/2	n	n+	1 BB n DL	n
IO Ports	n-1	1	1	1	2
Robust-ness	robust	robust	robust	Not robust	Not robust

Computer Network Classes

Peer-to-peer Like: Mesh Ring Bus

Primary-Secondary (Client-Server) Like: Star Tree Bus

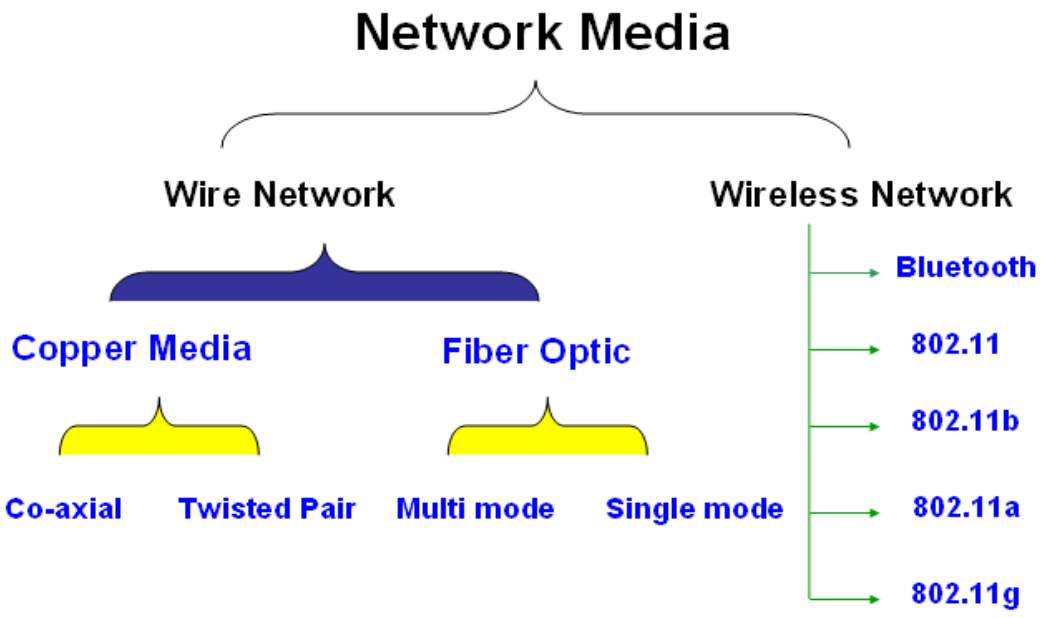
Network Components

A. **Computers (Host or Server)**
B. **Transmission media (network devices – connectivity) HUB – Switch – Router – Bridge – modem – NIC (Network interface Card)– Cables – Patch panel**
C. **Operating Systems : (Microsoft – Unix – Novell)**
D. **Protocols (I P address ((Internet Protocols Address)**

Examples of protocols:

Protocol	Full Name	Use
HTTP	Hyper Text Transfer Protocol	Used for browsing
FTP	File Transfer Protocol	Used for file transfer (download)
SMTP	Send Mail Transfer Protocol	Used for sending an e-mail
POP3	Post Office Protocol	Used for receiving an e-mail
DHCP	Dynamic Host Control Protocol	Used for assign IP address automatic
TCP/IP	Transmission Control Protocol/Internet Protocol	Used for allow cooperating computers to share resources across a network
Telnet	Used for remote login to make setup and configuration for a far computer.	

Network Media



Lines Network

1. Coaxial Cable: the range (50m)

2. Twisted Pair:

3. Optical Fiber: Optical fibers, optical and a range of 2 km which is

faster than its predecessors, and after each 2 km requires REPETITION to strengthen

4-UTP ,STP : The first type a range of 100 meters and then drop its reference and size almost biggest telephone cable.

The second type where more properties, it is not affected by magnetic fields and called the RJ45 8 types of wire

Q1: Choose the best answer for the following :

1- Severs are network's central component to:
a-connect between client's machines.

b-perform various jobs such as data management ,communication and printing.

c-permit shearing in resources , connect between clients and perform many other jobs.

2-FTP severs working field is for :

a-file transferring

b-hypertext transferring .

c-E-mail transforming .

3-LANs, MANs & WANs are networks classified according to the :

a-physical Topologies of subnets.

b-components involved

c-area covered.

4-Intilligent Hub is a component of computer networks to:

a-foreword the signals.

b-repeat and control signal's flow.

c-all of the above.

5-The protocol that is used for browsing

a-HTTP

b-SSL

c-POP

Answers

1- c
2- a
3- c
4- c
5- a

Unit Three

Algorithms

The term **algorithm** originally referred to any computation performed via a set of rules applied to numbers written in decimal form. The word is derived from the phonetic pronunciation of the last name of *Abu Ja'far Mohammed ibn Musa al-Khowarizmi*, who was an Arabic mathematician who invented a set of rules for performing the four basic arithmetic operations (addition, subtraction, multiplication and division) on decimal numbers.

An algorithm is a representation of a solution to a problem. If a problem can be defined as a difference between a desired situation and the current situation in which one is, then a problem solution is a procedure, or method, for transforming the current situation to the desired one. We solve many such trivial problems every day without even thinking about it, for example making breakfast, travelling to the workplace etc. But the solution to such problems requires little intellectual effort and is relatively unimportant. However, the solution of a more interesting problem of more importance usually involves stating the problem in an understandable form and communicating the solution to others. In the case where a computer is part of the means of solving the problem, a procedure, explicitly stating the steps leading to the solution, must be transmitted to the computer. This concept of problem solution and communication makes the study of algorithms important to computer science.

Definition:

*An **algorithm** is procedure consisting of a finite set of unambiguous rules (instructions) which specify a finite sequence of operations that provides the solution to a problem, or to a specific class of problems for any allowable set of input quantities (if there are inputs). In other word, an **algorithm** is a step-by-step procedure to solve a given problem.*

FLOWCHARTS

Flowcharting is a tool developed in the computer industry, for showing the steps involved in a process. A flowchart is a diagram made up of *boxes*, *diamonds* and other shapes, *connected by arrows* - each shape represents a step in the process, and the arrows show the order in which they occur. Flowcharting combines symbols and flow lines, to show figuratively the operation of an algorithm.

Flowcharting Symbols

There are 6 basic symbols commonly used in flowcharting of assembly language programs: Terminal, Process, input/output, Decision, Connector and Predefined Process.

This is not a complete list of all the possible flowcharting symbols, it is the ones used most often in the structure of Assembly language programming. Generally, there are many standard flowcharting symbols.

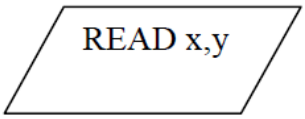
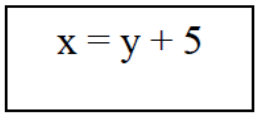
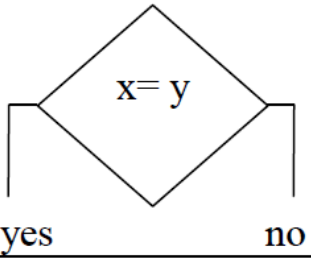
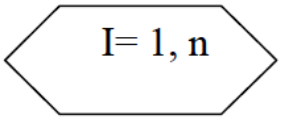
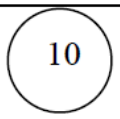
General Rules for flowcharting

1. All boxes of the flowchart are connected with Arrows. (Not lines)
2. Flowchart symbols have an entry point on the top of the symbol with no other entry points. The exit point for all flowchart symbols is on the bottom except forbthe Decision symbol.
3. The Decision symbol has two exit points; these can be on the sides or the bottom and one side.
4. Generally a flowchart will flow from top to bottom. However, an upward flow can be shown as long as it does not exceed 3 symbols.
5. Connectors are used to connect breaks in the flowchart. Examples are:

- From one page to another page.
- From the bottom of the page to the top of the same page.
- An upward flow of more then 3 symbols

6. Subroutines and Interrupt programs have their own and independent flowcharts.
7. All flow charts start with a Terminal or Predefined Process (for interrupt programs or subroutines) symbol.
8. All flowcharts end with a terminal or a contentious loop.

Flowcharting uses symbols that have been in use for a number of years to represent the type of operations and/or processes being performed. The standardised format provides a common method for people to visualise problems together in the same manner. The use of standardised symbols makes the flow charts easier to interpret, however, standardizing symbols is not as important as the sequence of activities that make up the process.

جدول يبين أشكال الرموز المستخدمة في المخططات التدفقية	
اسم الرمز	**شكل الرمز**
الإطار المستطيل المنتهي بنصفي دائرة	
الإطار المتوازي الأضلاع	
الإطار المستطيل	
الإطار المعين	
الإطار المستطيل المنتهي بنصفي معين	
الدائرة	

Example:
Write an algorithm that prints the rectangle size given width and length.
Solution:
Output: Area of rectangle
Input: Width (W) and Length (L)
Process: Area = W * L
Algorithm:
Start
Read (L, W)
Area = L* W
Print (Area)
End

Example:
Write an algorithm that prints the area of a square given width and length.
Solution:
Output: Area of square
Input: M
Process: Area = M * M
Algorithm:
Start
Read (M)
Area = M*M
Print (Area)
End

Examples:
2.1: Write an Algorithm to determine if a number is positive or negative.
If positive
print "POSITIVE", else print "NEGATIVE".
Solution:
Start
Read (X)
IF (X >= 0) Then Print ("POSITIVE")
Else Print ("NEGATIVE")
End
2.2: Same as algorithm 2.1 but if the number is zero then print "ZERO"
Solution:
Start
Read (X)
IF (X > 0) Then Print ("POSITIVE")
Else IF (X = 0) Then Print ("ZERO")

Else Print (“NEGATIVE”)
End

Example: Write an algorithm that reads 3 numbers and prints their average.
Solution:
Start
Read (A, B, C)
Avg = (A+B+C) / 3
Print (Avg)
End

Example: Write an algorithm that reads and prints the sum of 2 numbers.
Solution1:
Start
Read (A, B)
Sum = A+B
Print (Sum)
End

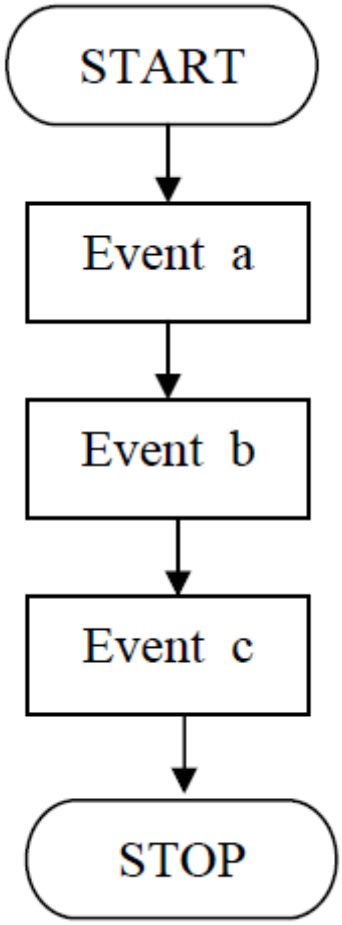
Example: Write an Algorithm that reads a number N and computes and prints the value of
S:

$$S = \sum_{i=1}^{n} i^2$$

Solution:
Start
Read (N)
S = 0
For (i=1;i<=N; i=i+1)
S = S + (i*i)
Print (S)
End

Types Flowcharts:

1-Simple Sequential Flow chart: is not found any branch or repetition



Example: write program for calculate circumference and area circle half diameter R Then draw flowchart.

1-Start

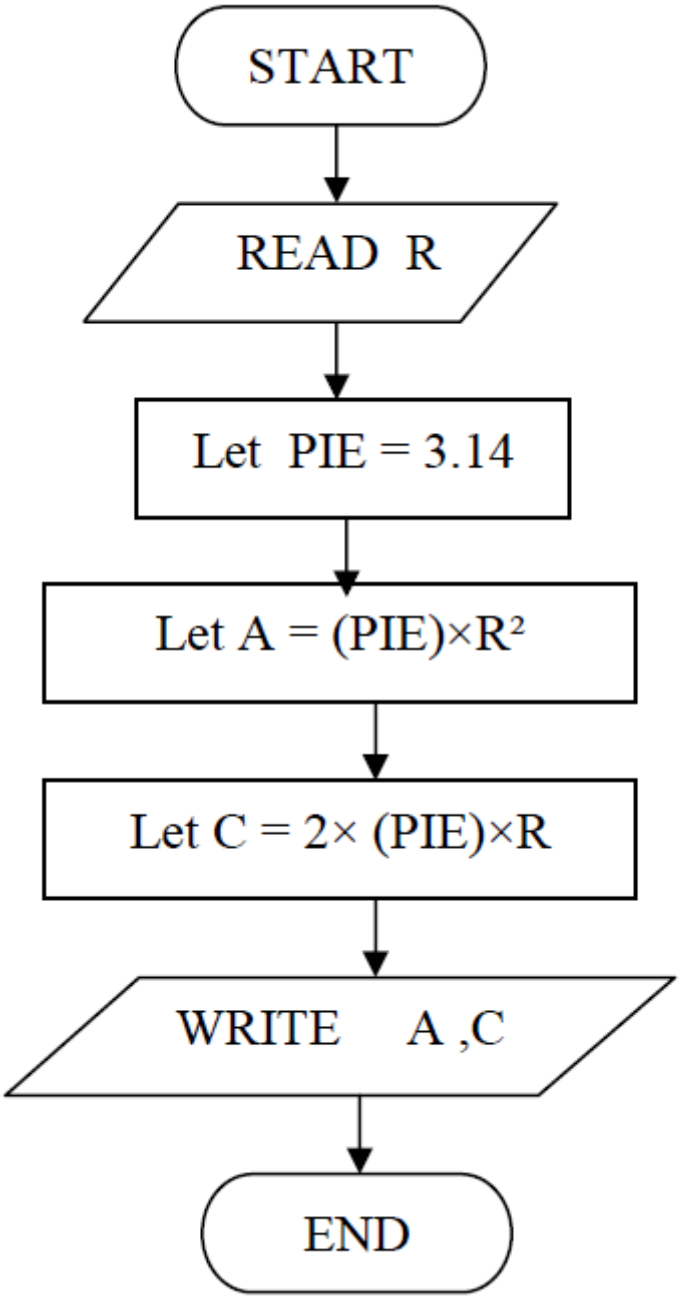
2-PIE =3.14

3-A = PIE *R^2

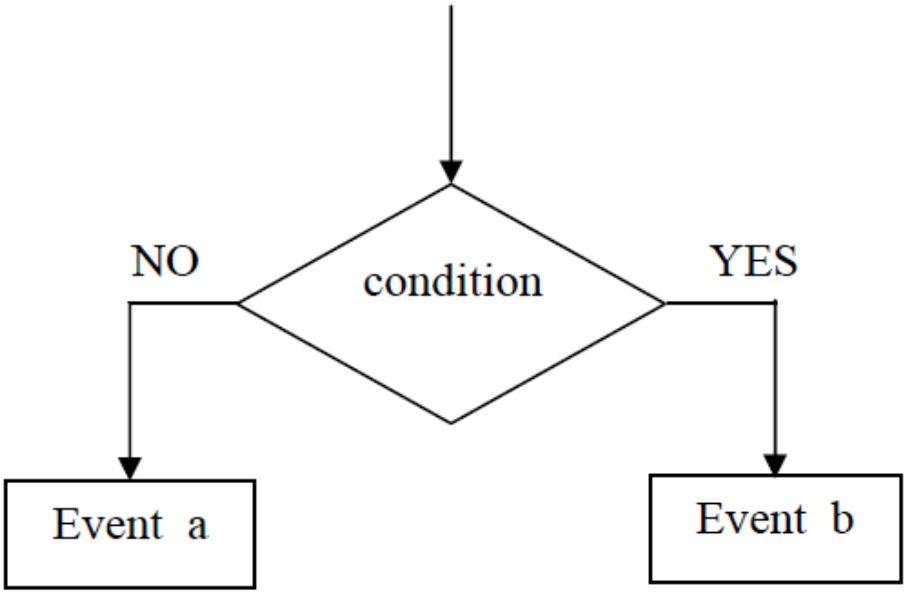
4-C=2PIE*R

5-Print A , C

6-End



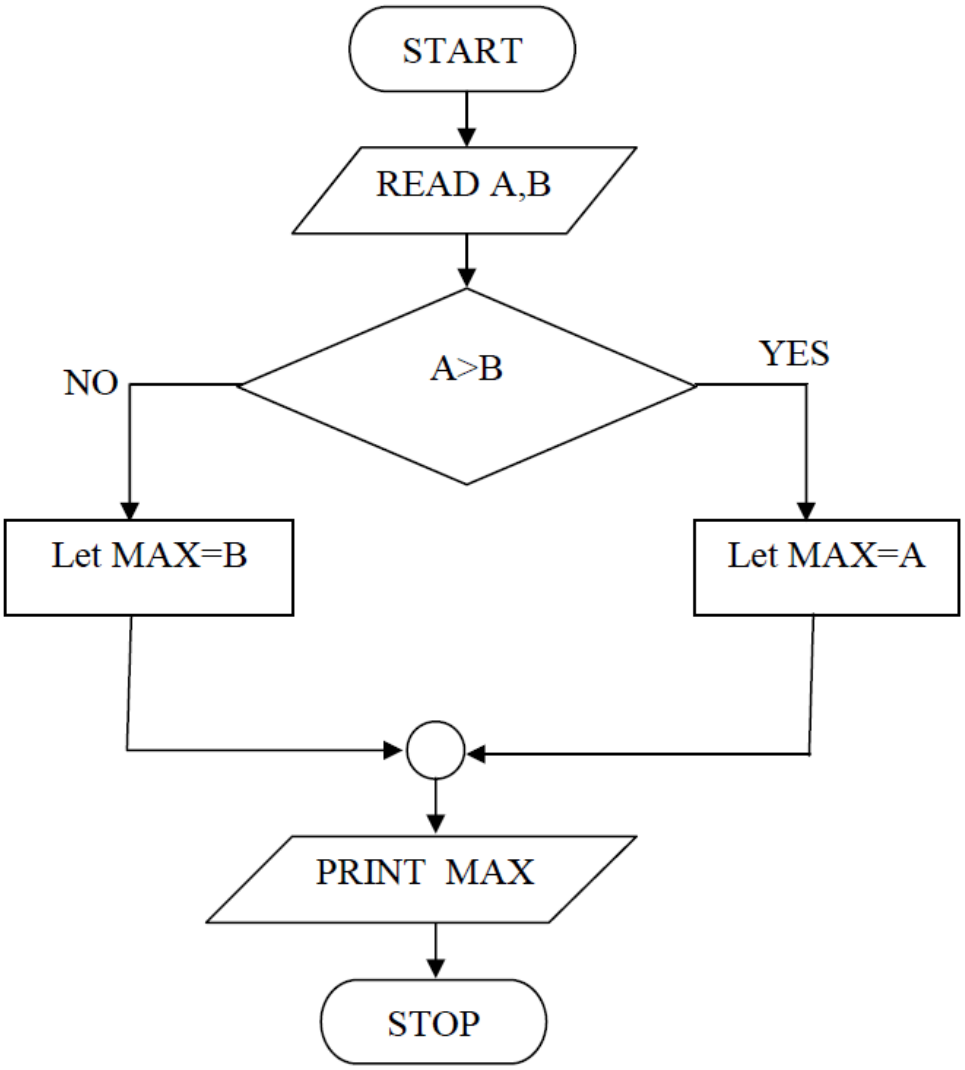
2-Branched Flowcharts:
Including two decision for execute :
A-decision two branches
B-decision three branches.



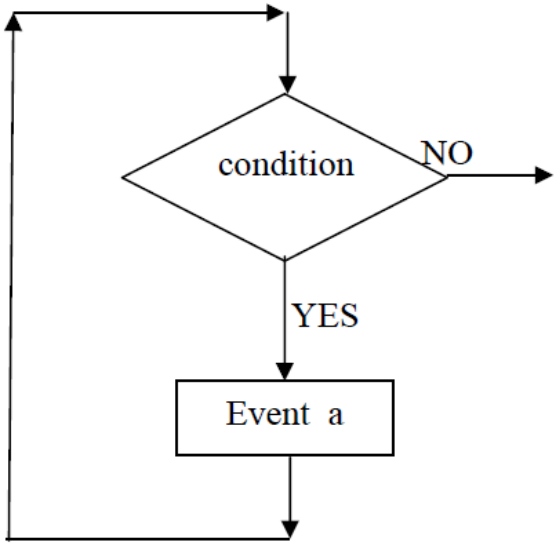
Example: write algorithm for find max value from the two numbers concerning the functions:
Then draw flowchart.

MAX = max (A , B)

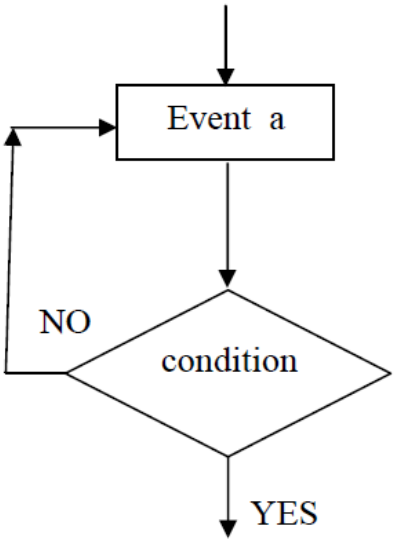
1- START
2- READ (A , B)
3- IF A>B GOTO 4 ELSE GOTO 5
4- LET MAX = A AND GOTO 6
5- LET MAX = B
6- PRINT MAX
7- STOP



3-Loop Flowchart:



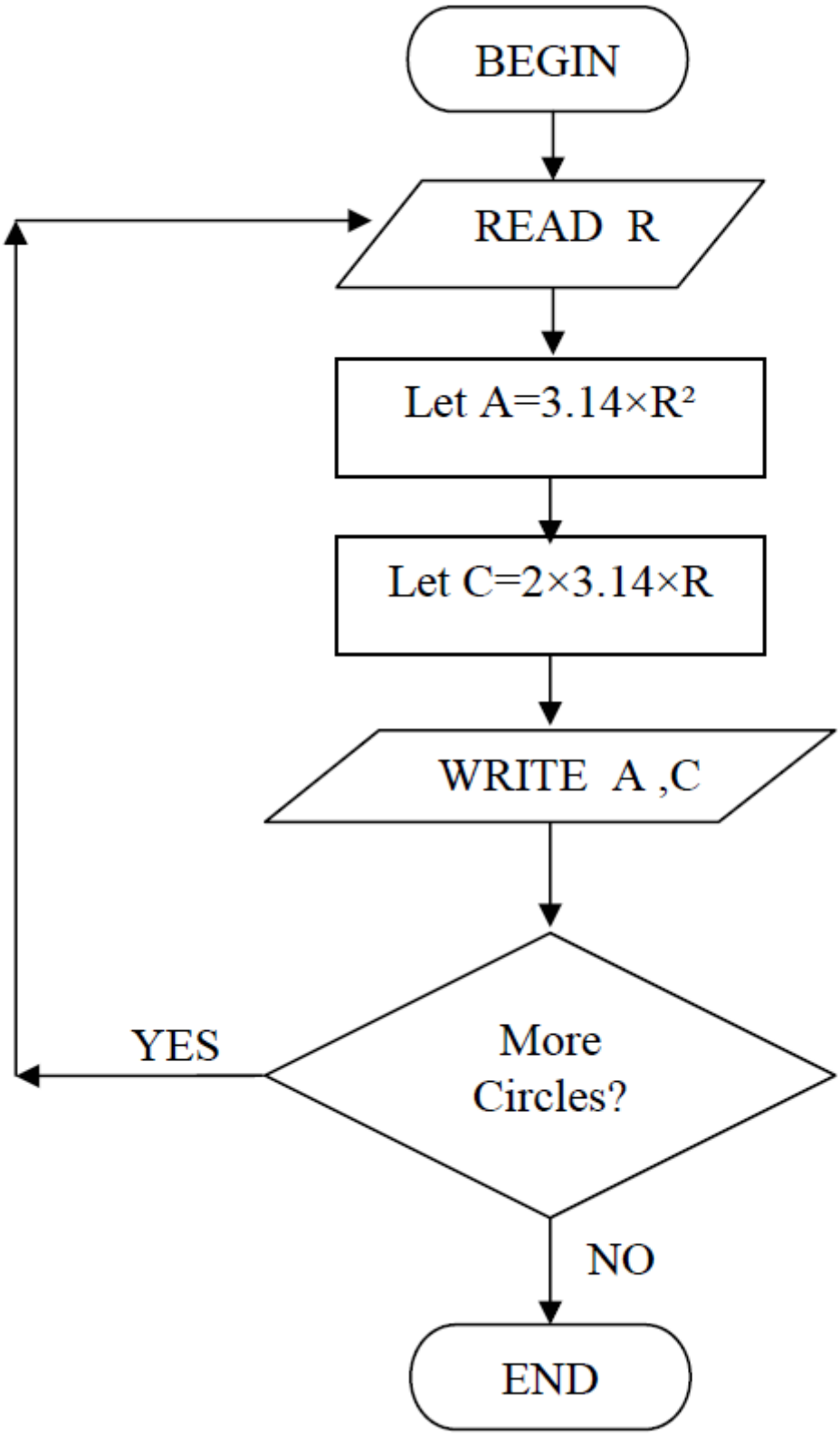
يتكرر تنفيذ الحدث a عدداً من المرات طالما كان جواب الشرط نعم



يتكرر تنفيذ الحدث a إلى أن يصبح جواب الشرط نعم

Example: Write algorithm for group from circles with know the R.

1- Begin
2- Read (R)
3- Let A= 3.14*R²
4- Let C= 2*3.14*R
5- Write (A ,C)
6- More Circles ? If Yes Goto (2) Else Goto (7)
7- End


BEGIN
READ R
Let A=3.14×R²
Let C=2×3.14×R
WRITE A ,C
More Circles?
YES
NO
END

-Counter :

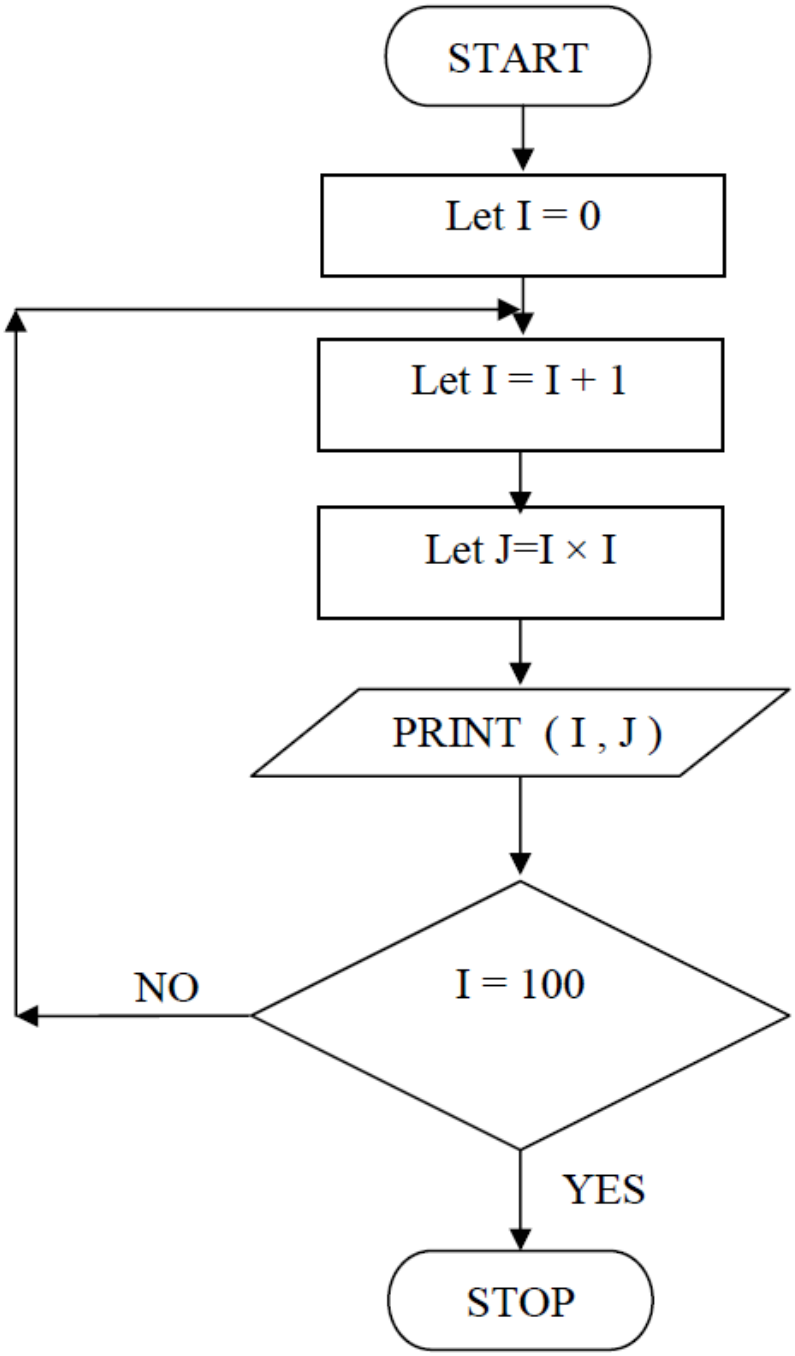
1-let I = 0

2-let I = I+1

3- repetition step 2

Example : write algorithm for print sum numbers (1-100) with squares then draw flow chart

1- START
2- Let I = 0
3- Let I = I + 1
4- Let J = I×I
5- PRINT (I , J)
6- If I = 100 Goto (7) Else Goto (3)
7- STOP



Example : write algorithm for calculate sum numbers (1-20) then draw flowchart

1-Start

2-let I= 0 sum=0

3- If I <=20 then step 4 else step 6

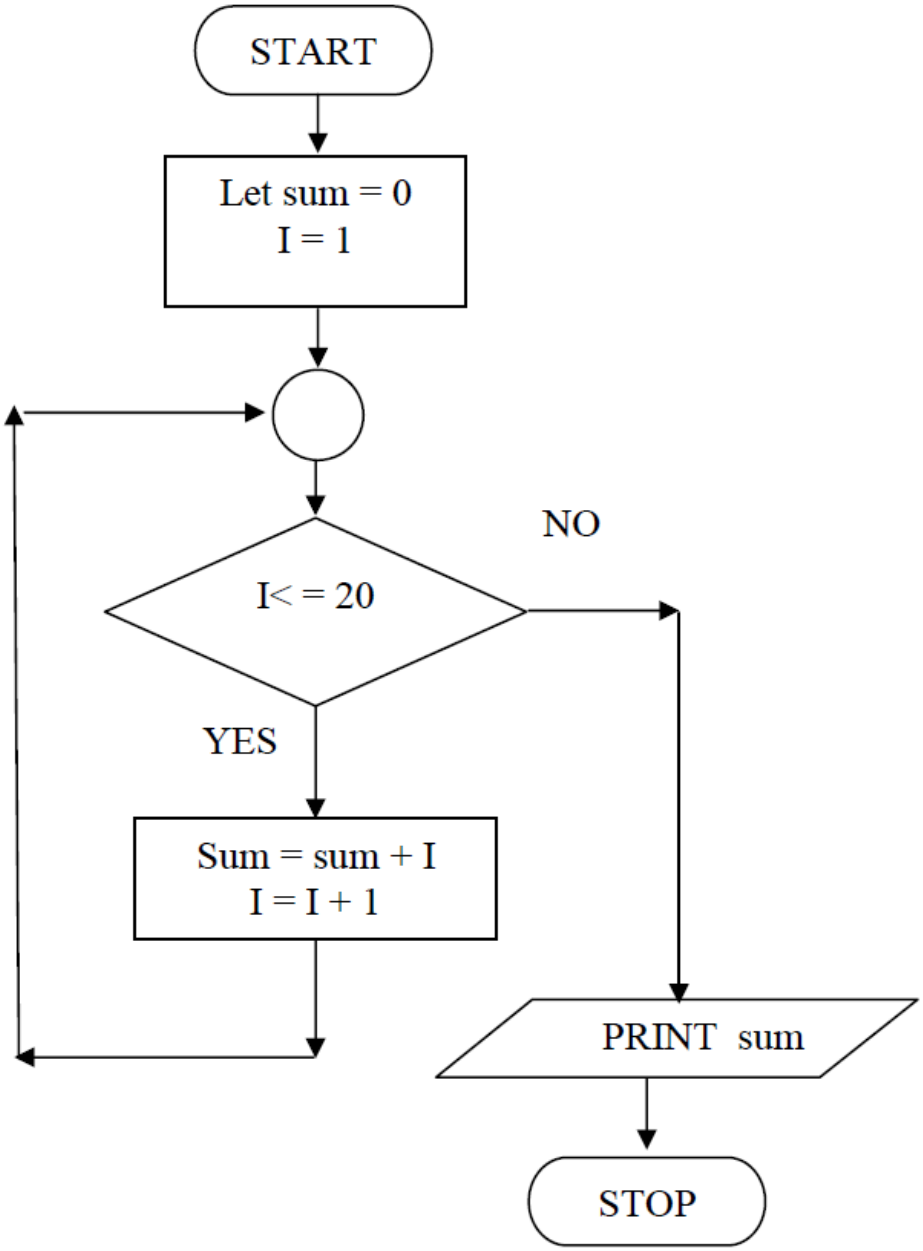
4- sum = sum+1

I = I +1

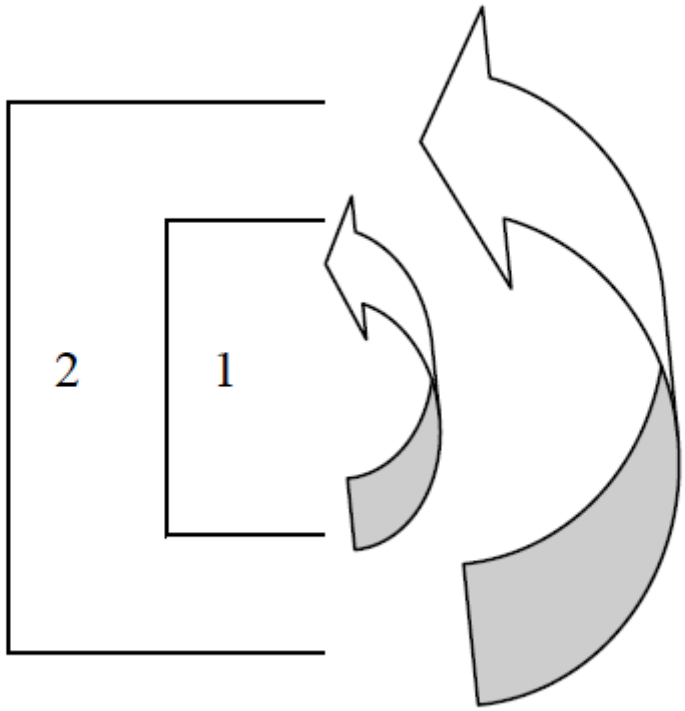
5-Go to step 3

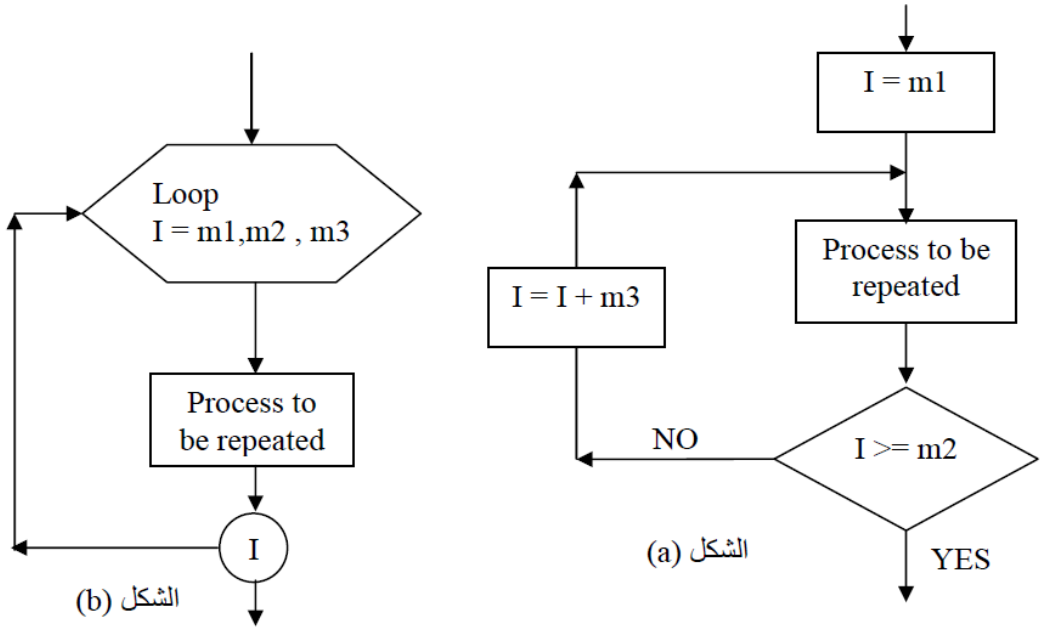
6-Print sum

7-Stop



4-Nested –loop –Flowcharts





نلاحظ في الشكل (a) أنه لتحقيق التكرار نحتاج لما يلي :

1- العداد (I) / متغير التكرار /.

2- القيمة الأولية للعداد وتساوي m1.

3- القيمة النهائية للعداد وتساوي m2.

4- الزيادة الدورية (الزيادة عند نهاية كل تكرار) وتساوي m3.

وتكون آلية عمل هذه العناصر كما يحددها المبرمج بما يلي :

1- اجعل العداد I يبدأ بقيمة أولية مقدارها m1 .

2- أتم الإجراءات المطلوب إعادتها .

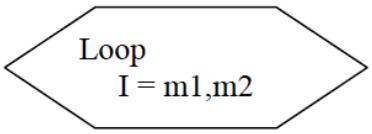
3- إذا كانت قيمة العداد I وصلت إلى القيمة النهائية m2 اذهب إلى الخطوة التالية في البرنامج وإلا فاذهب إلى الخطوة (4)

4- زد العداد I بمقدار الزيادة الدورية m3

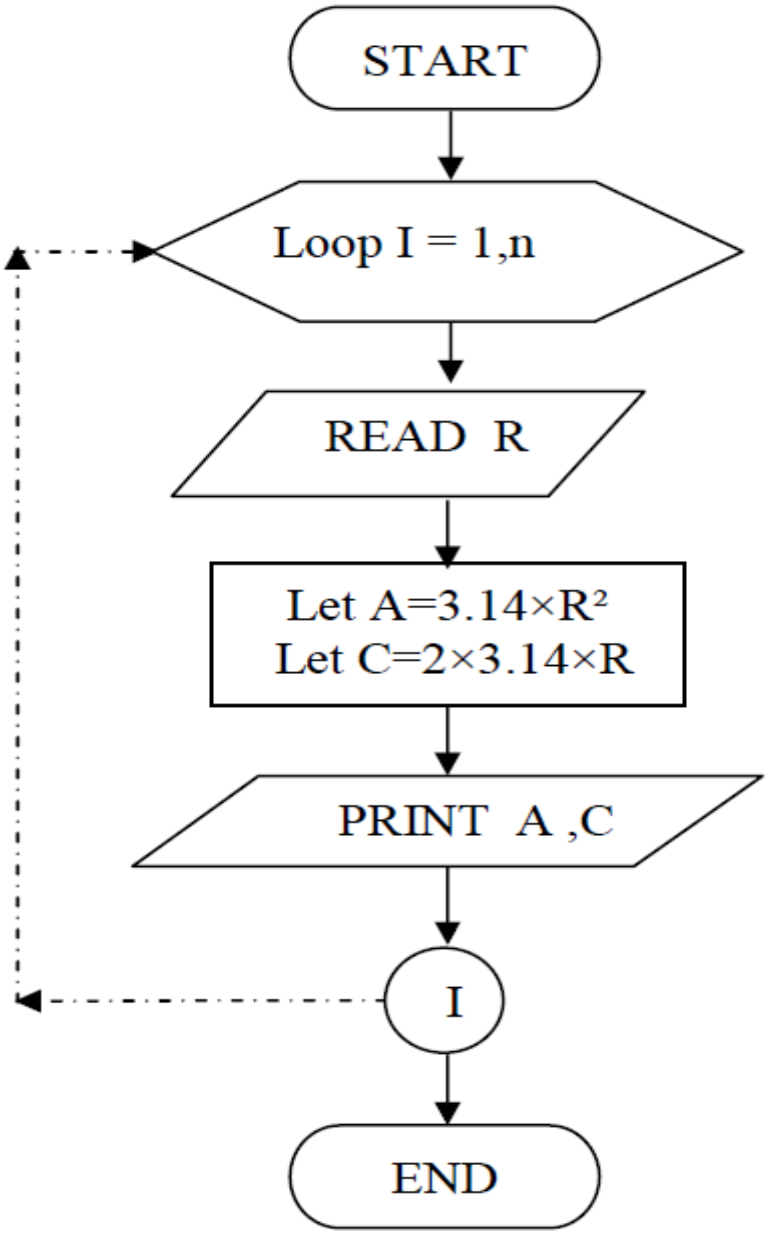
5- عد إلى الخطوة (2)

يمكننا استبدال الخطوات (1-3-4-5)في الشكل (a) بخطوة واحدة مبينة في الشكل (b) حيث ينفذها الحاسب بشكل آلي مما يؤدي إلى تسهيل عملية البرمجة واختصار عدد التعليمات وتجنب الأخطاء .

نشير إلى أن قيمة m3 تساوي /1/ دائما ما لم تعط قيمة أخرى غير ذلك ،وفي حال عدم ذكر m3 تكون قيمتها مساوية /1/ ضمناً وتمثل كما يلي :



Example: : write algorism for calculate circumference and area circle half diameter R for N CIRCLES Then draw flowchart.



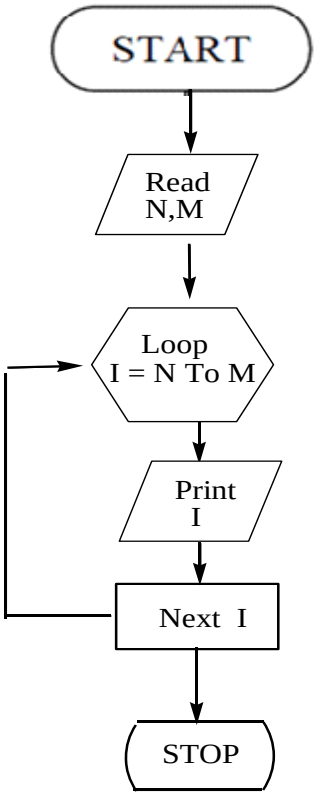
Example: Draw a flowchart to read two numbers and print numbers in between, respectively.

Solution:

Primary value = the value of the first edition

Final value = the value of the second issue

Periodic increase = 1



Example : Draw a flowchart to find the value of pairing.

$F(x) = ax^2 + bx + 5$

For all values of x from 1 to 15 and an increase of 0.5 patrol.

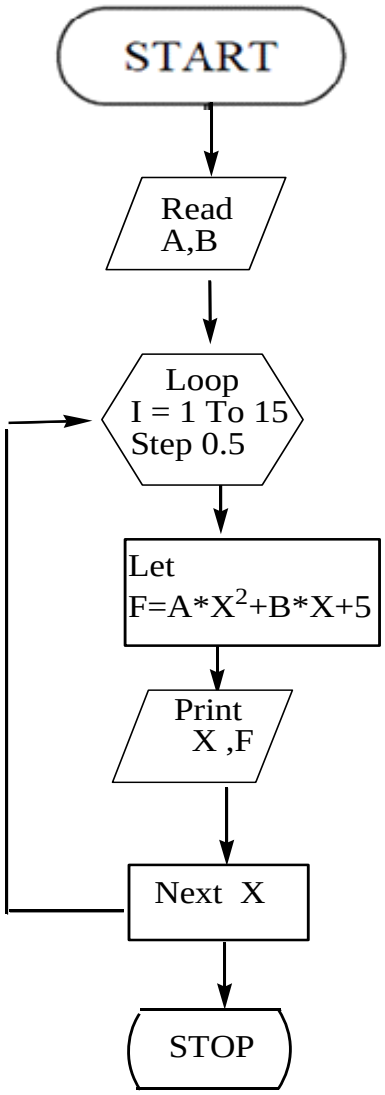
Solution:

Variable inter-repetition is x

Initial value equal to 1

Final value equal to 15

Periodic increase equal to 0.5


START
Read
A,B
Loop
I = 1 To 15
Step 0.5
Let
F=A*X2+B*X+5
Print
X ,F
Next X
STOP

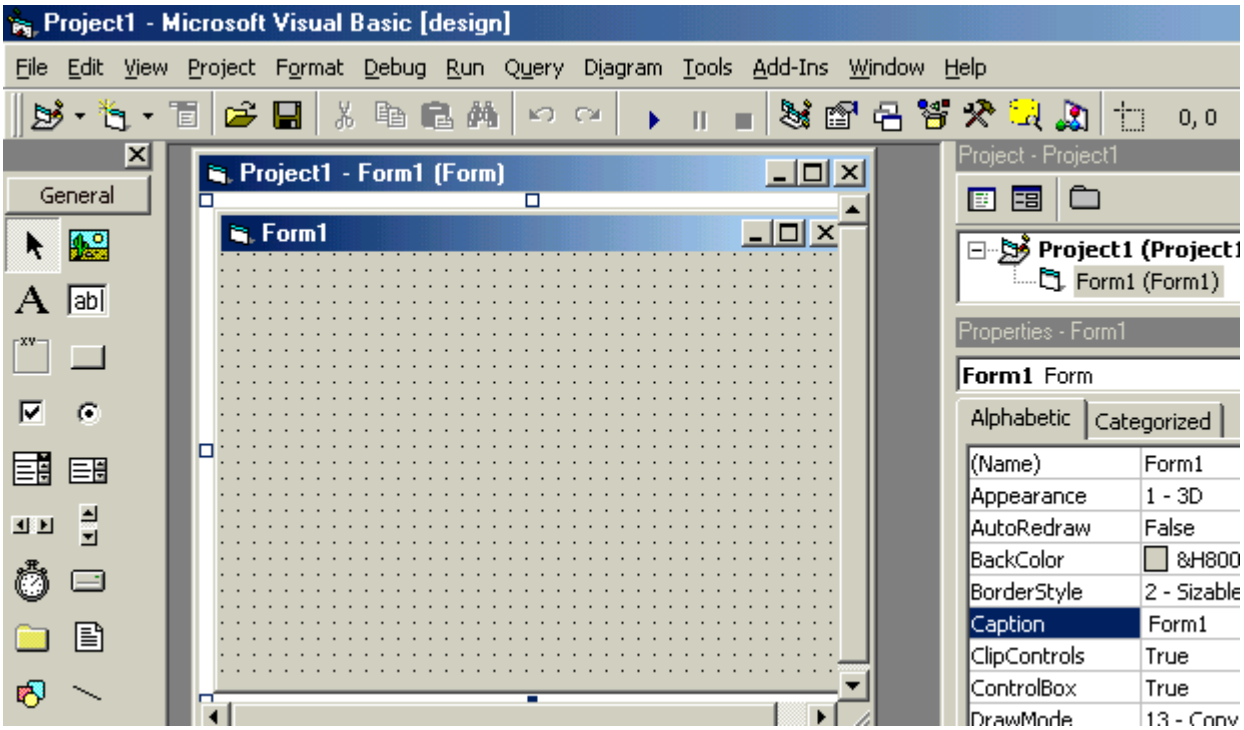
UNIT FOUR

Visual Basic

Visual basic implements graphical user interface that allows the use of graphical for different applications.

To run this program on user computer :

Start> programs> Microsoft visual Studio6.0> Microsoft Visual Basic



6.0

To exit from visual basic there are three ways to close :

1- click on close button icon that appears in the upper-left corner of the screen (like window –Application)

2-press Alt + F4

3-Select File >Exit

The importance of Visual Basic Program.

Languages like Basic and Pascal depend on variables and procedures to build the application.

This is way it is called procedural language. The new approach is called " object programming approach every thing(form, command buttons, active x controls) is an object "

Elements of the Integrated Development Enviroment(IDE)

1-Form Designer: is a window of each form to customize the designed interface of the application.

2-ToolBox: contains a collection of tool that are needed for project design.

3-Project Explorer Window: is a list of the forms and modules for the current projects it is a hierarchical tree- branch structure.

4-Toolbar: contains the most commonly used commands (buttons).

5-Menubar: contains a standard command like: File, Edit, View, Window ,Help menus, and specific command such as :Project , Format ,or Debug menus.

6-Properties Windows: is a list of properties settings for a selected form or a control. These properties are characteristics(such ac color or visible or size) of the selected object.

Elements are displayed if user requires them.

1-context Mouse (right mouse list)

Context menus contain a list of short cuts command of frequently required actions.

2-Code Editor Window.

3-Form Layout Window

The form layout window is a small screen .Which is used to reposition the from of the application so that it appears place when project is run, it is displayed when use click on tool in toolbar. It can be dragged away by mouse.

4-Object Browser.

To display these window : view> select object browser.

5-Immediate ,Locals , And Watch Windows.

These window are to be used for debugging the code of the project .they are only available when users are running their application within the IDE.

To display these window : view> select form list.

<u>Working with Standard Projects:</u>

The following working steps (create , save , rename , and , delete) could be done :

a)-To create project :

when program starts project box appears-select standard EXE> Project window appears.

Or : File > New project >Box(select Standard EXE)> Project window appeare.

b)To add project: any number can be added.

Project icon>Selected EXE> Project window appears.

c)-To open an existing project:

it is previously designed and saved on dise in a folder .

File>Open project> Box (selected existing and look for the project)> Project window appears.

d)-To save PROJECT:

1-file >save project (group) as >box(project name)> forms saved then projects (group)saved.

To resave project : to save previously saved project in same place.

File > save project(group)

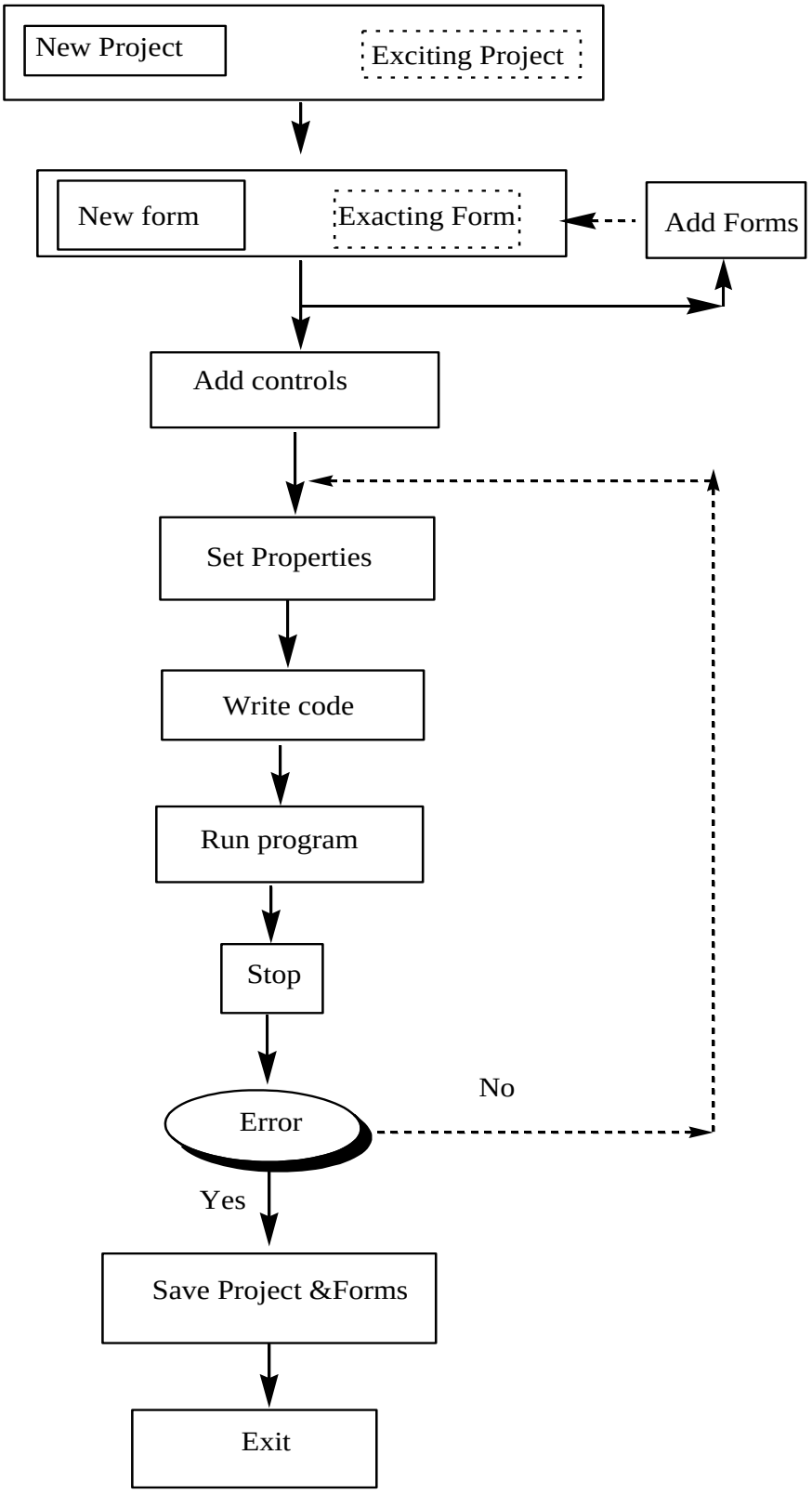
Project for execution: this is the final stage so that it could be opened and run by windows and no need for visual basic program. File > make project. Exe

To delete a project:

Select project in project window > mouse list > remove project.

To rename project :

Select project in project window > mouse list > properties > box(change project name).



Methods And Properties :

Methods are ready routines connected with object form or control through its name the most important methods are as follows "

Show - hide - drag - move

Forms: a screen that is used to make the design process and add objects such as text boxes, images and title

(Object): a set of commands and data that can reach them, treatment and re-use and contains the tool on two first measures (Procedure) called mechanics (Methods) and second properties (Properties), which are used to receive and return values

(Properties): object Data Assimilation any data that describe the specific case of the object, such as color, speed, height.

(Methods): represent the behavior of the object which is the things that can be ordered from the object to the implementation is represent acts storage, copying, or delete an object and there are two types of mechanisms are (Function) which allow reception of values through Parameters and return value. And (Procedures) allow reception of values through Parameters and implement some operations do not repeat value.

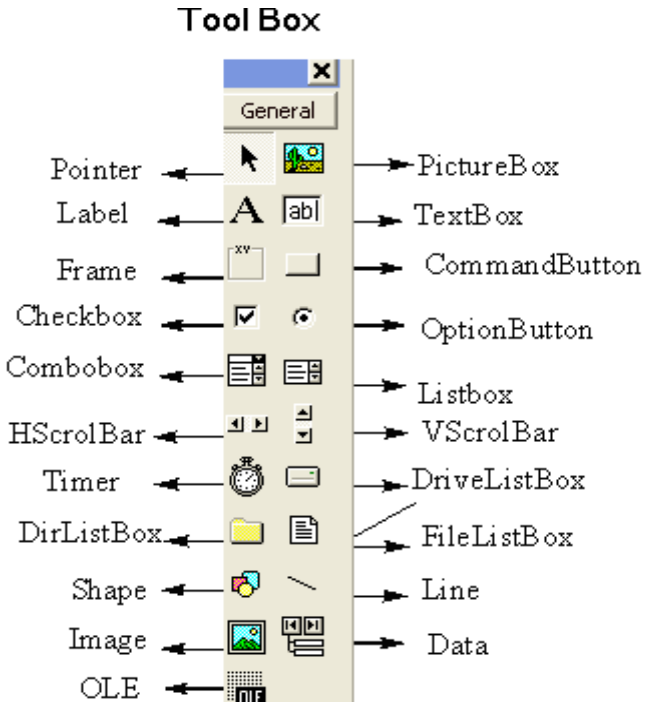
Parameters: represents the new value for the property

(Events): It acts performed by the user during the Implementation of the program and there events associated with mouse named Mouse Events and events associated with the tool called Object.

E1: Display form in load form event . A : Form1.show

E2: print value must be with show A : PRINT 10

E3: Print time directly . A : Print time



Type of tools	Tool name
For control	Commandbutton,Opionbutton,checkbox
Deal with text	Textbox, listbox , combobox, label , data
For image and graphics	Picturebox, image , line , shape
For file search	Dirlist , drivelist , filelist
For time and bars	Timer , viscroll , hsroll
To group tools to gather (container)	Frame
To operate other programs	Ole

Form :

User can also add code to change property of object (in this case the form) using

Object. Properties = condition

For form properties	
Form1.caption ="hussein"	Name top of form
Form1.visible=true or false	Appear or disappear
Form1.appearance=0 or 1	1-is 3dimension or 0- is flat
Form1.hight=1000	Form size 10cm-3000
Form1.width=3000	Form1.scalewidth=100
Form1.left =1000 Form1.top=1100	Form position left and top form corner Screen

PROGRAM: design standard project with one form and write code.

1-in event double click so when project runs and you double click on form , the form back color property is changed .

2-in key press event to when run project and a key is pressed the form appearance property is changed to flat instead of 3 dimensional.

A:1-

```
Private Sub Form_DblClick()
Form1.BackColor = vbYellow
End Sub
```

2-

```
 Private Sub Form_KeyPress(KeyAscii As Integer)
Form1.Appearance = 0
```

يصبح لون الشاشة ابيض'

End Sub

PROGRAM: design standard project with two forms and write code

1-in event load so when project runs the two forms are shown.

2-in event load so when project runs form1 is hidden and form2 is displayed.

3-in event click so when project runs and user clicks by mouse on form1 then form1 is hidden and form2 displayed.

4- in event click on both forms so when project runs and user click by mouse on form1 then form1 is hidden and form2 is displayed , and when user clicks by mouse on from2 then form2 is hidden and form1 is displayed.

5- in load so when project runs the first form is shown and when the user clicks on it or deletes it then form2 is displayed.

A:

1- Private Sub Form_Load()

Form2.Show

End Sub

2- Private Sub Form_Load()

Form1.Hide

Form2.Show

End Sub

3- Private Sub Form_Click()

```
Form1.Hide
Form2.Show
End Sub
```

4-
```
Private Sub Form_Click()
'write code in the form1
Form1.Hide
Form2.Show
End Sub

Private Sub Form_Click()
'write code in the form2
Form2.Hide
Form1.Show
End Sub
```

5-
```
Private Sub Form_Click()
'write code from1
Unload Form1
End Sub
Private Sub Form_Unload(Cancel As Integer)
'write code from1
Form2.Show
End Sub
```

NOTES:

1-To add tool > double click on tool

2-To select tool> click on tool

3-To resize tool>select tool-mouse changes to resizing pointer at point of selection >move pointer to resize tool.

4-To move tool> select tool –press on arrow pointers (on key borad)

5-To delete > click on element in page >press delete key of the key borad.

6-To displayed code> double click on tool code form for that element

7-To lock object > format >lock control

"Note: lock mean user can't move tool or resize it .

to remove lock click on lock control again

8-To cut copy past > click on object for mouse list > choose cut , copy or past

9-To Align : select tool > format > Align > Choose type of alignment (left , center ,

right)

.10- make same size :select tools > format >make same size >choose type sizing with

respect to (width , height , both)

```
Private Sub Command1_Click()
Form1.BackColor = vbRed
Command1.Font = timesnewroman
Command1.FontSize = 24
'range :8-24
Command1.FontBold = False
Command1.FontItalic = True
Command1.FontUnderline = True
Command1.Name = IRAQ
Command1.Caption = "IRAQ"
'CAN BE UESING Alt +e
'enabled mean works or not does work
'visible apperas or disapperas
Command1.Caption = "iraq"
```

The control Tools:

There are three different tools that are used for control (as switches). The following table summarize the purpose of these tools.

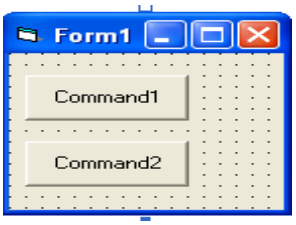
Type of tool	The purpose of the tool
Command button	Used as a switch (such as OK and Cancel buttons. Click is written in the click event procedure of this control
Option button	For selection as a group .

Ckeckbox	For yes/no (true/false) selection . used as individuals (not grouped)

1-Working command button:

The following table lists the important working steps .

Manual	By code
By mouse :click By keyboard ALT+G	Command1.value = true Note: Used in other commands to operate this command. Used to check if tool is clicked otherwise set variable say x=1



PROGRAM : To operate command1 from command2 on from at run time , design form with two commands .

If the user click on command2 button it operates command1 button,

If the user click on command1 button the user change from back color.

A:

Private Sub Command1_Click()

Form1.BackColor = vbRed

End Sub

Private Sub Command2_Click()

Command1.Value = True

End Sub

PROGRAM : when the user runs project the focus is on first object in form. Then focus moves to other commands. design from with two commands and write code so when the user click on first focus moves to second ,and vice versa .

Sol:

Private Sub Command1_Click()

Command2.SetFocus

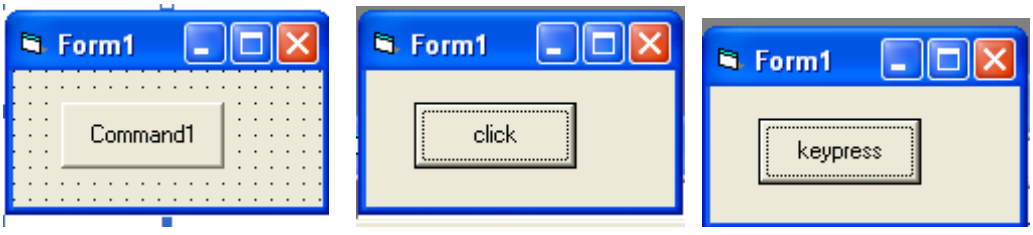
End Sub

Private Sub Command2_Click()

Command1.SetFocus

End Sub

PROGRAM: events can be used with the same object . design from with one command button . then write code to change caption in click and press key events.



Design click on button press any key

A:

Private Sub Command1_Click()

```
Command1.Caption = "click"

End Sub

Private Sub Command1_KeyPress(KeyAscii As Integer)

Command1.Caption = "keypress"

End Sub
```

PROGRAM: events can be used with the same object . design from with one command button . then write code to change caption in click and press key events and add move event

Sol:

```
Private Sub Command1_Click()

Command1.Caption = "click"

End Sub

Private Sub Command1_KeyPress(KeyAscii As Integer)

Command1.Caption = "keypress"

End Sub

Private Sub Command1_MouseMove(Button As Integer, Shift As
Integer, X As Single, Y As Single)

Command1.Caption = "mouse move"

End Sub
```

PROGRAM : design form and write one command button . Write code so at run time the size of the button enlarged to from size using (move method).

Sol:

```
Private Sub Command1_Click()

'Command1.Move 0, 0, ScaleWidth, ScaleHeight or

Command1.Top = 0

Command1.Left = 0

Command1.Height = Form1.Height - 400

Command1.Width = Form1.Width - 100

End Sub
```

2-Working with Option button:

Used only as a group of buttons , and it must be placed in a Frame . when the users selects one of them the others are deselected automatically.

PROGRAM: design form with three options in a frame .set property value to false in properties window . then write code so that when project runs and :

1- select first option box , it changes caption to red and back color of form change red.
2- select second option box , it changes caption to blue and back color of form change blue.
3- select third option box , it changes caption to yellow and back color of form change yellow.

Sol:

```
Private Sub Option1_Click()
```

```
Option1.Caption = "red"
Form1.BackColor = vbRed
End Sub
Private Sub Option2_Click()
Option2.Caption = "blue"
Form1.BackColor = vbBlue
End Sub
Private Sub Option3_Click()
Option3.Caption = "yellow"
Form1.BackColor = vbYellow
End Sub
```

3-Working with Checkbox :

A check box provides true/false or yes /no options . any number of check boxes can be used on a form.

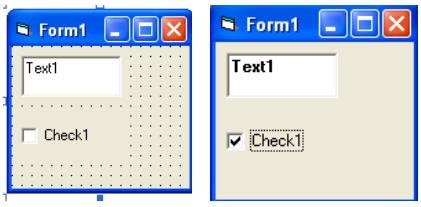
They work independently and they should not be grouped together as the option button . its property value could be changed in design stage manually , or in running stage by code . the possibilities of the property value are select (value = checked) or deselect (value= unchecked) (value=grayed)

PROGRAM:use a code to test if a check box is unchecked the show message, try again and if checked show message okay


```
Private Sub Form_Load()
If Check1.Value = Unchecked Then MsgBox "try again"
If Check1.Value = Checked Then MsgBox "okey"
End Sub
```

PROGRAM: use the checkbox to change the text font in textbox.

```
Private Sub Check1_Click()
If Check1.Value = vbChecked Then  'if checked
Text1.Font.Bold = True
Else  ' if not checked.
Text1.Font.Bold = False
End If
End Sub
```



Design Run

Tools that deal with text:

Type of tool	The purpose of the tool
Textbox	For text edit, like note pad , it can be single-line or multi-line.Box take any size

Listbox	For a list ,user adds to and deletes from this list . it takes any size.
Combox	Consists of (list + and arrow when clicked a small a list appears),if user selects item from the list , it will be displayed in textbox. Vritical size is fixed.
Label	Fixed text appears on from for remark.
Data	Used for data base.

1-Textbox

The textbox is a box foe entering and displaying text (characters or values) in user project. The tool is used frequently in most of the applications.

Working with textbox

Change property manually	Change property by code
Change the text format property Alignment	Text1.alignment=0 2 1 To left center to

Font	right Text1.fontname = "times new Roman" Text1.fontsize =12 Text1.fontbold= true Text1.fontunderline=true Text1.forecolor = vbred
Multiline	Text1.multiline=true Text1.multiline =false True: multi line text False: single –line (aligned to the left)

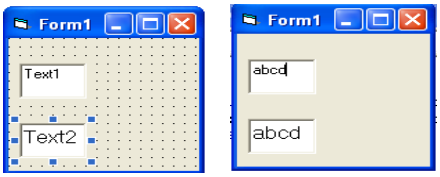
PROGRAM: design form and set font property of text to be MS sans serif , old , 12 , then write the following code so when text is entered in text1 it appears also in text2.

A:

Private Sub Text1_Change()

Text2.Text = Text1.Text

End Sub



PROGRAM: design a from with three Textboxes and one command .write code in the following events:

1-in form event . to enter "Engineering Science" & " and science engineering "in first box enter " Science " in second box ,and enter "Department " in third text box.

2-in click even in command button replace department instead department instead of science in the first textbox.

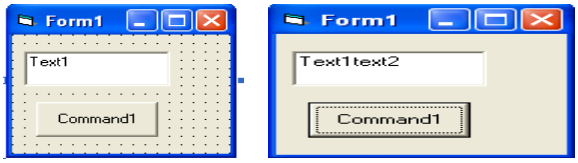
A:

```
Private Sub Command1_Click()

Text1.Text = Replace(Text1.Text, Text2.Text, Text3.Text)

End Sub

Private Sub Form Load ()

Text1.Text = "Engineering Science & And Science Engineering"

Text2.Text = "Science"

Text3.Text = "Department"

End Sub
```

PROGRAM : design for with one textbox , and command button , Add text "text2" on the content of the present text to the present text in the Textbox.

A:

```
Private Sub Command1_Click()

Text1.SelStart = Len(Text1.Text)

Text1.SelText = "text2"

End Sub
```



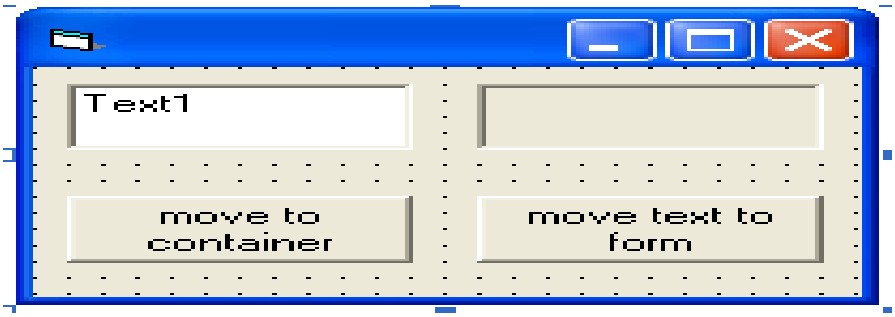
PROGRAM: design a form with two command tool , one text and one picture . Write code so in run time .

1-when the user click on first command the Textbox move in PictureBox .

2-When the user click on second command button textbox move on form.

A:

```
Private Sub Command1_Click()

Set Text1.Container = Picture1 'move text1 box into the picture1 container

End Sub

Private Sub Command2_Click()

Set Text1.Container = Form1  ' move text1 box back on the form's surface

End Sub
```



PROGRAM: design a form with one text box and two buttons. write a code so when run project and click on 1 button , the size of text box change to specified size , and when click on second the text box size change a corroding to form size.

A:

```
Private Sub Command1_Click()

Text1.Width = 1000

End Sub

Private Sub Command2_Click()

Text1.Width = Form1.Width - 100
```

End Sub

2-ListBox:

The user can't write directly in listbox .He can add item to the listbox by property **or by code i**n the form . it has list count : which is a number of item in the list control . also it has list index : control the current item in the list (start with zero)

A

Private Sub Form_Load()

List1.AddItem ("samir")

List1.AddItem (Text1.Text)

End Sub

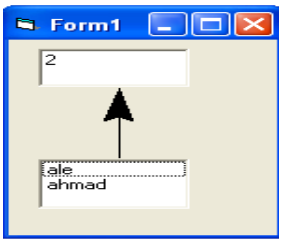
Operation moving content

List count :

Private Sub Form_Load()

Text1.Text = List1.ListCount

End Sub



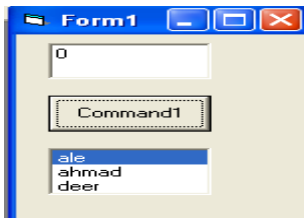
List index :

Note : listindex =-1 if no selection

Private Sub Command1_Click()

Text1.Text = List1.ListIndex

End Sub

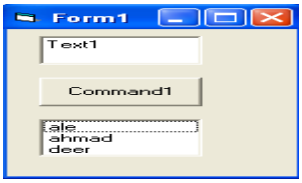


Remove item from list :

Private Sub Command1_Click()

List1.RemoveItem (List1.ListIndex)

End Sub

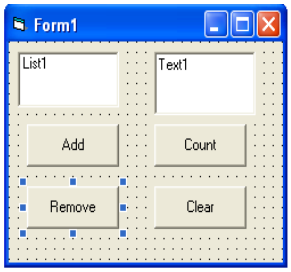


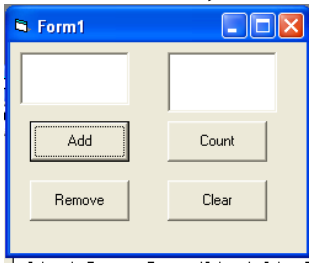
Clear list Click on the command

Remove item deer

PROGRAM: design form with one list box , textbox and three command buttons, write code for the following –events:

1- Form –load event , to clear textbox
2- In click event of command1 , to add item to list box , then clear textbox
3- In click event of command2 , to remove item from list box if item is selected .
4- In click event of command3 , to count the list .
5- In click event of command4 , to clear list box.

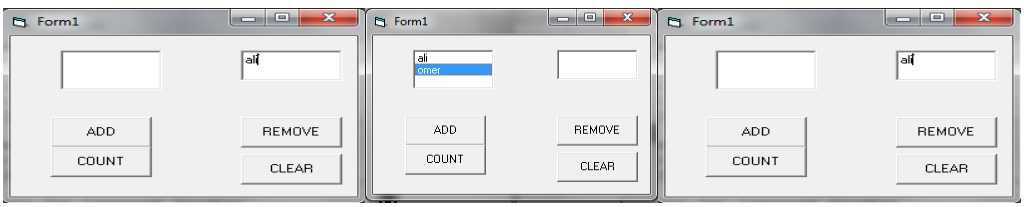




Design From Run Project Enter text in text box

```
Private Sub Command1_Click()
List1.AddItem (Text1.Text)
Text1.Text = ""
End Sub

Private Sub Command2_Click()
List1.RemoveItem List1.ListIndex
End Sub

Private Sub Command3_Click()
Text1.Text = List1.ListCount
End Sub

Private Sub Command4_Click()
List1.Clear
End Sub
Private Sub Form_Load()
Text1.Text = ""
End Sub
```

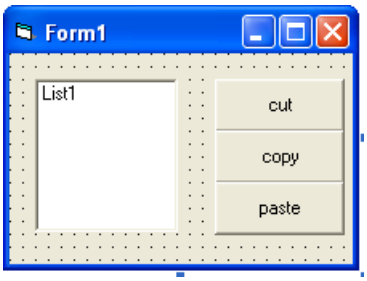
select item from listbox click Remove

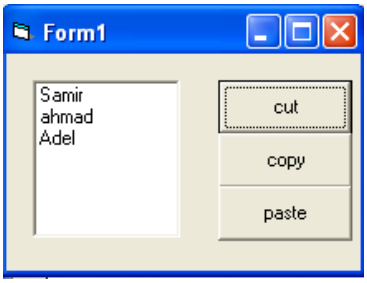


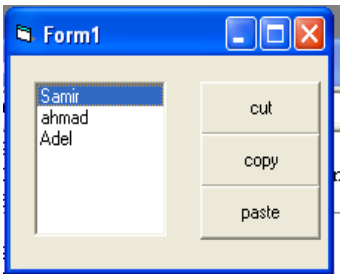
PROGRAM:

Design a form with one textbox and three buttons for cut, copy and paste. Write code so at run time when select item and press first button the item is removed, press on second button item is copied and when press third button item is pasted.

```
Private Sub Command1_Click()

List1.RemoveItem List1.ListIndex

End Sub

Private Sub Command2_Click()

Clipboard.Clear

Clipboard.SetText List1.Text

End Sub

Private Sub Command3_Click()

List1.AddItem (Clipboard.GetText())

End Sub


Private Sub Form_Load()

List1.AddItem ("Samir")

List1.AddItem ("ahmad")

List1.AddItem ("Adel")

End Sub
```







Design project then button cut

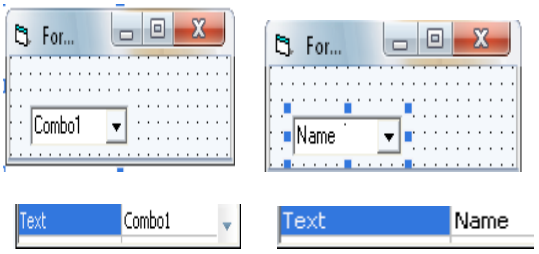
Run Project

select item

***3-ComboBox* :**it consists of a small text box and a list (list appears when the users click on arrow on the side), at design stage text can be set from property while list is filled with code. In running stage press on arrow>list appear>select item > item in text.this is described in following table.

Design stage

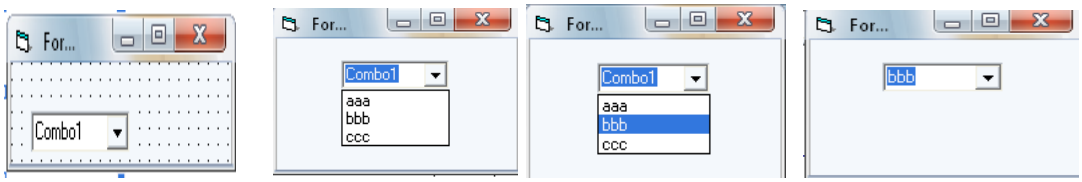
Text property can be changed



List should be filled with code

```
Private Sub Form_Load()
Combo1.AddItem ("aaa")
Combo1.AddItem ("bbb")
Combo1.AddItem ("ccc")
End Sub
```

Running stage



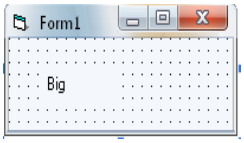
The user then can take the name in combox to textbox

Text1.text =combo1.text

4-Label:

Label is only caption type of box . it is used to display fixed text on form. It is not used for input text.

PROGRAM : Design form with table. Set the label caption properties to "Big" and font property to bold. Write code so at run time and when click on command button the label caption changes to "Small" with font not bold .

Design form and write code	Run project.
	Private Sub Label1_Click() Label1.Caption = "small" Label1.FontBold = True End Sub 

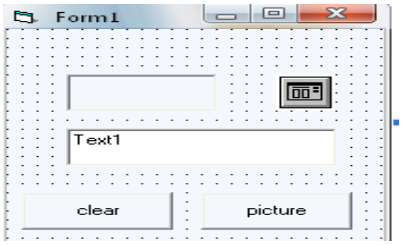
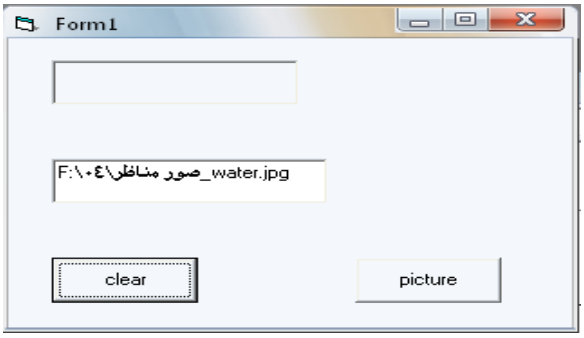
Tools deal with image and graphics:

Type of tool	The purpose of the tool
Picturebox	Used to display images in any type :BMP,WMF, DIB,EMF,GIF,JPEG
Image	Used instead of picturebox because it consumes fewer system resources.
Line	Used only to display lines on the forms. It never raise any events.
Shape	Used only to display rectangles, circles, and ovals on the forms, never raise any events.

1-PictureBox tool:

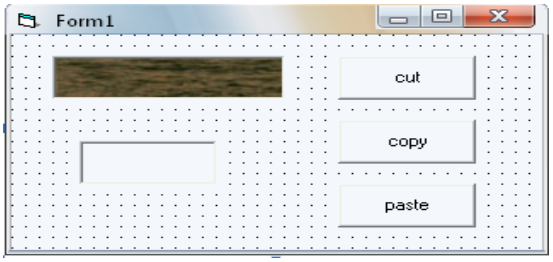
PROGRAM: a standard project of one form with picturebox , two controls ,one to load picture and other to delete the picture , use dialogbox and text box for file name.

To use dialog box. Project>component>Microsoft common dialog 6>select>apply>ok

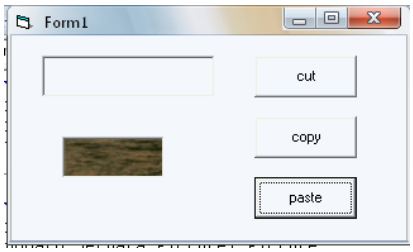
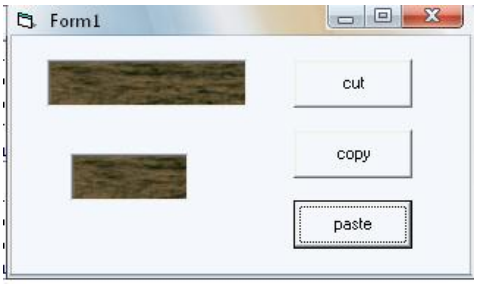
Design Form	Run & Press pictures
	
Private Sub Command1_Click() Picture1.Picture = LoadPicture("") End Sub Private Sub Command2_Click() CommonDialog1.ShowOpen Text1.Text = CommonDialog1.FileName Picture1.Picture = LoadPicture(Text1.Text) End Sub	Press clear 

PROGRAM: Design a form with two picture boxes and three buttons. Write code so these buttons perform cut, copy and paste when the user click on cut then paste and copy then paste.

Design form and write the following code.



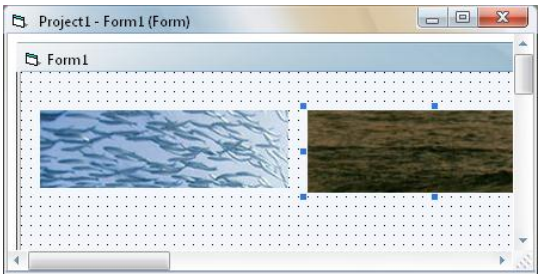
```
Private Sub Command1_Click()
Clipboard.Clear
Clipboard.SetData Picture1.Picture
Picture1.Picture = LoadPicture()
End Sub
Private Sub Command2_Click()
Clipboard.Clear
Clipboard.SetData Picture1.Picture
End Sub

Private Sub Command3_Click()
Picture2.Picture = Clipboard.GetData()
End Sub
```

Run project Click on cut then click on paste	Click on copy then click on paste
	

2-Image tool :

Image tool is similar to the picture box , but displays the picture directly on form ,so it take smaller memory and faster.

PROGRAM: use Image tool to make button design form.

In design stage place the second image over the first image .and write code. 	At run time the second image appears and when the user click on it the first appears. 
Image has stretch property .this property can be set manually or by code as described in the following table.	

Set property manually	Set property manually
Stretch True	image1.stretch=True

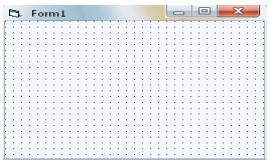
PROGRAM: design a form with image and set the picture and stretch

3-Line:

Tool used to draw a line (at any angle , length , and style) on form . it is used for decoration only. This control doesn't support any event. Drag tool from tool bar to form > a line appears. The properties Border Color are used to change the color, while the properties Border Style , Border Width , and draw mode are used for the line shape**.**

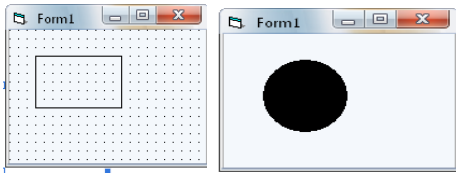
Change property on property window	**Change property by code this will appear at run time.**
Line position :defaulted values taken when users draw the line on form. X1 1800 X2 3600 Y1 1320 Y2 840	**Line1.x1=120** **Line1.x2=1080** **Line1.y1=120** **Line1.y2=600**

PROGRAM: Draw triangle on from.

Design a form and write the following code.	Run project
 Private Sub Form_Load() Form1.Show Line (100, 200)-Step(1000, 0) ' Horizontal line Line -Step(0, 1000) ' Vertical line Line -(100, 200) ' Close the triangle End Sub	

4-Shapes : shapes is a tool used to draw geometric shape(circle, rectangle, square, ect). It has property window. It has no events like other tools (such as : click ,mouse move, ect)

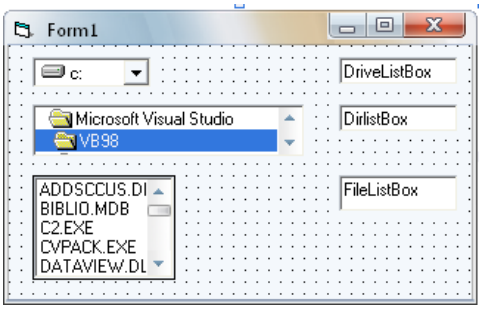
PROGRAM: Standard project of one form , at design stage shape object is used and code is written so when executed draws solid circle. Then add image underneath the shape (solid rectangle) so when click on image the shape disappear.

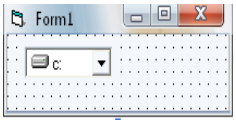
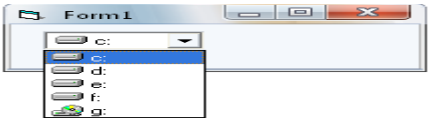
Design form with shape . Run project	Design a form with shape and image
	
Private Sub Form_Load() Shape1.Shape = 3 Shape1.FillStyle = 0 Shape1.Height = 1000 End Sub	Private Sub Image1_Click() Shape1.Width = 0 End Sub

The tools for file search :

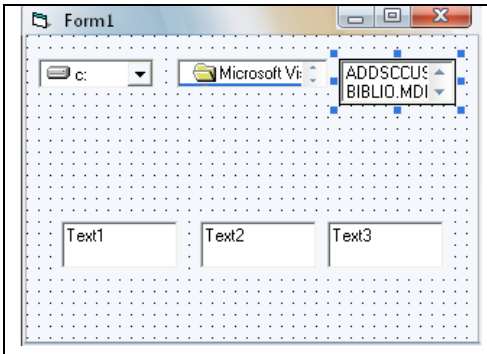
Type of tool	The purpose of the tool
Drivelistbox	It is special listbox filled automatically with names of the files in a specified directory . it is invariant
Dirlist	It is special listbox filled with drives with drives (hard disc , floppy ,cd)in the system . it is invariant.
FileListbox	It is special listbox filled automatically with names of all Dirlistbox .it is invariant

Drive list box , Dir list box and File list box: These tools are placed together on form to provide file path and name . the file path which is the address where to find the file on hard disc. These tools are on tool bar and when the user draws them on form they will look as in the following figure

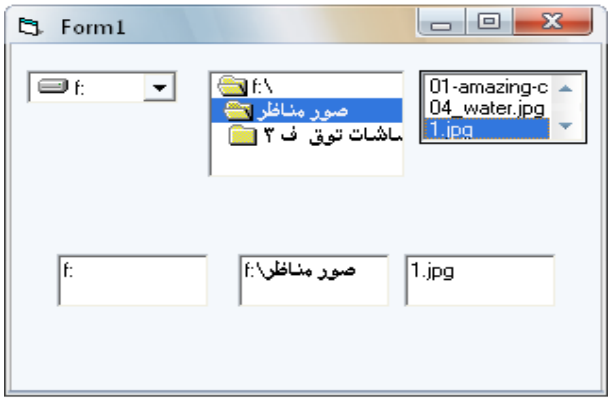


Design stage	Run stage
Without code	Click on arrow
Defaulted on Drive c	List appear select Drive
	

PROGRAM: Standard project of one form with drive ListBox , DirllistBox ,FilelistBox ,and three TextBoxes , write code display the DrivellistBox ,FilelistBox.

	Run project then: Press arrow of drive>list appears >select drive>output displayed on text1. Select folder in directory >folder in directory>folder name appears on text2. Select file from filelist >file name appears on text3.

```
Private Sub Dir1_Change()
Text2.Text = Dir1.Path
File1.Path = Dir1.Path
End Sub
Private Sub Drive1_Change()
Text1.Text = Drive1.Drive
Dir1.Path = Drive1.Drive
End Sub
Private Sub File1_Click()
Text3.Text= File1.FileName
End Sub
```



Tools deal with time and bars:

Type of tool	The purpose of the tool
Timer	Used to control object movement .
HScrollBar	Create stand-alone horizontals scroll bars. Not frequently used timer control
VScrollBar	Create stand-alone vertical scroll bars. Not frequently used timer control

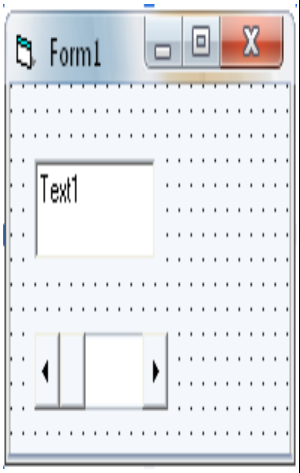
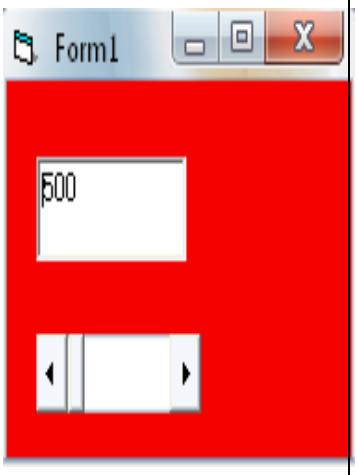
ScrollBar *horizontal or vertical*

scrollbar provides a variable quantity when mouse moves the button.
Thiscan be used in program to modify parameter by the user in run time.

There five properties parameters are involved. These properties have a default value as indicated in the figure. They must be fixed manually or by code when using this bar.

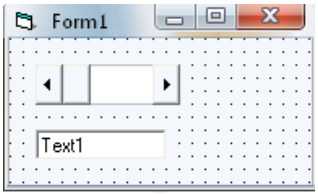
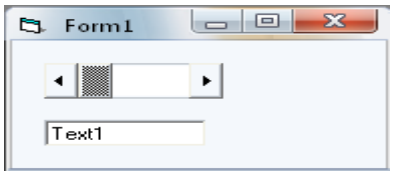
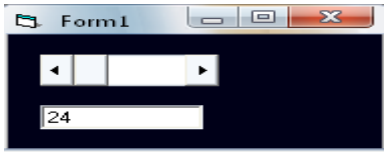
Change the properties manually	Change the properties by code
Min =0 Max =32767 SmallChange=1 larageChange=1 value =0	Hscroll1.min =2 Hscroll1.max =10 Hscroll1.value=2 Hscroll1.smallChange =1 Hscroll1.LargeChange=2

PROGRAM: Design a form with HscrolllBar and textbox, write code so when run project and adjust the scroll bar , the back color of form is changed according to scroll bar value.

DESIGN	CODE	RUN
One form One HscrollBar One TextBox 	Private Sub Form_Load() HScroll1.Min = 0 HScroll1.Max = 32675 HScroll1.Value = 500 HScroll1.SmallChange = 100 HScroll1.LargeChange = 1000 End Sub Private Sub HScroll1_Change() Text1.Text =	Move scroll the backcolor is changed and the value appears in textbox 

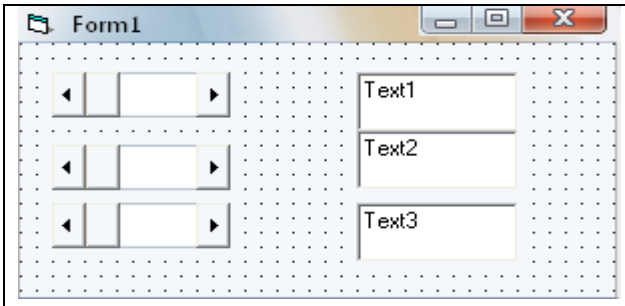
	HScroll1.Value Form1.BackColor = HScroll1.Value End Sub	

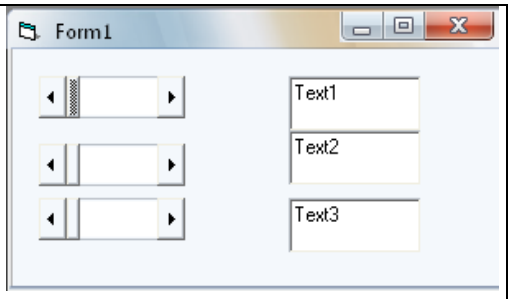
PROGRAM: Design form with hscrollbar and write code so when form and adjust the scroll bar . then the back color form is changed according to scrollbar value.

Design the form with hscrollbar  	Run project the form appears as 
Private Sub HScroll1_Change() Text1.Text = HScroll1.Value Form1.BackColor = RGB(0, 0, HScroll1.Value) End Sub Form1.BackColor = RGB(0, 0, HScroll1.Value) End Sub	Adjust the scroll back color of form changed 

PROGRAM: project with one form contains three horizontal scroll bars and three text boxes , when project runs scroll value moves to text, and the form color changes with the values of scrolls.

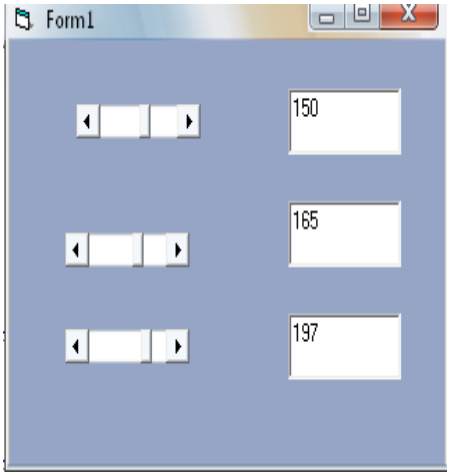
Design the form with proper	Run project






```
Private Sub Form_Load()
HScroll1.Max = 250
HScroll1.Min = 0
HScroll1.LargeChange = 10
HScroll1.SmallChange = 1
HScroll2.Max = 250
HScroll2.Min = 0
HScroll2.LargeChange = 10
HScroll2.SmallChange = 1
HScroll3.Max = 250
HScroll3.Min = 0
HScroll3.LargeChange = 10
HScroll3.SmallChange = 1
End Sub
Private Sub HScroll1_Change()
Text1.Text = HScroll1.Value
Form1.BackColor =
RGB(HScroll1.Value, HScroll2.Value,
HScroll3.Value)
End Sub
```

Change scrolls see change form color mixed of three scroll



Private Sub HScroll2_Change() Text2.Text = HScroll2.Value Form1.BackColor = RGB(HScroll1.Value, HScroll2.Value, HScroll3.Value) End Sub Private Sub HScroll3_Change() Text3.Text = HScroll3.Value Form1.BackColor = RGB(HScroll1.Value, HScroll2.Value, HScroll3.Value) End Sub	

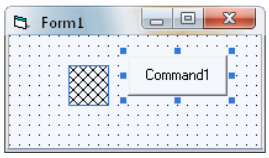
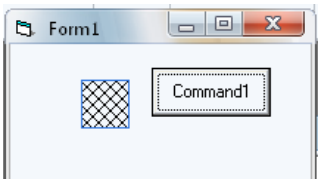
Timer:

Timer returns the time in millisecond . it may be used to measure execution time code (program efficiency). It is a tool also used to control the object movement object can be moved without or with timer .

Code	**Event**
Timer1.enable=false	**In form –event**
Timer1.enable= true **Timer1.interval=100**	**In command –event** **Higher interval slow motion.**
Object1.move object1.left-100, **Object .top + 100**	**In timer-event**

PROGRAM: Standard project is with one form ,one shape tool ,one command button. When the user runs the project and process command, shape moves a distance 100 in directions .

Note : object moves in one direction if the change is zero instead of 100

Design the form as	**Run project notice the picture moved.**
	
Private Sub Command1_Click() Shape1.Move Shape1.Left - 100, Shape1.Top + 100 End Sub	

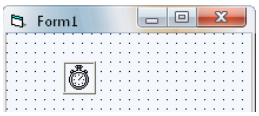
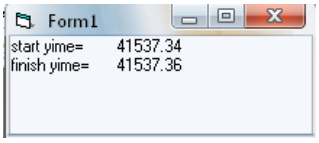
PROGRAM: Standard project is with one form , one shape tool , timer tool , command1 button for moving shape , while command2 to exit . when the user runs project and press command1 , shape moves in one direction . try move the shape that cover a picture**.**

Design form as below . Run> press move

Private Sub Command1_Click() Timer1.Interval = 100 Timer1.Enabled = True End Sub Private Sub Command2_Click()

```
End

End Sub

Private Sub Form_Load()

Timer1.Enabled = False

End Sub

Private Sub Timer1_Timer()

Shape1.Move Shape1.Left - 35,
Shape1.Top + 10

End Sub
```

PROGRAM: to measure the time required for a program the use timer. Design a form with timer. Then write a code before and after program.

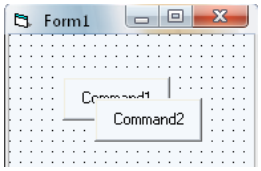
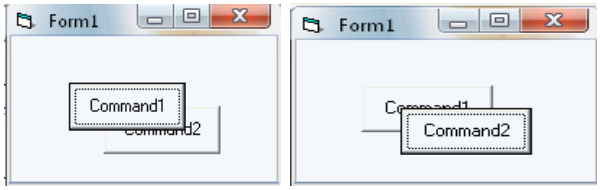
Design form with timer and write code	**Run project**
	
Private Sub Form_Load() Form1.Show X1 = Timer For i = 1 To 500000 i = i + 1 Next X2 = Timer	

Print "start time=", X1 Print "finish time=", X2 End Sub	

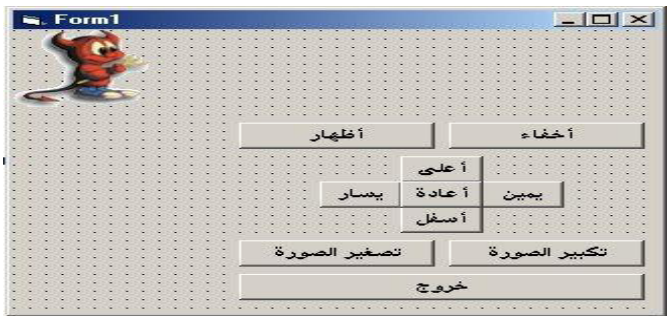
OLE Tool:

It is a tool that opens and operates other programs (like Word ,Excel ,Paint..) or their files (e.g.doc, xls , Bmp...) .

PROGRAM: Deign a form with two command button overlaps each other. Write code the first command in click event so it moves to front when the use clicks on it. Also if the user click on command2 first it will move to back.

Design project  	Run project and click on command1 the command move in front. 
Private Sub Command1_Click() Command1.ZOrder 'move to front End Sub Private Sub Command2_Click() Command2.ZOrder 'move behind another control on the form End Sub	

EXAMPLE: Write the code for the form :



Object	Property	Value
Image1	Left	0
	Picture	Select any picture
	Stretch	True
	Top	0
Command1	Caption	اخفاء
Command2	Caption	أظهار
Command3	Caption	أعلى
Command4	Caption	يمين
Command5	Caption	أعادة
Command6	Caption	يسار
Command7	Caption	أسفل
Command8	Caption	تكبير الصورة
Command9	Caption	تصغير الصورة
Command10	Caption	خروج

```
Private Sub Command1_Click()

Image1.Visible = False

End Sub
```

```
Private Sub Command2_Click()
Image1.Visible = True
End Sub
Private Sub Command3_Click()
Image1.Top = Image1.Top - 50
End Sub
Private Sub Command4_Click()
Image1.Left = Image1.Left + 50
End Sub
Private Sub Command5_Click()
Image1.Top = 0
Image1.Left = 0
End Sub
Private Sub Command6_Click()
Image1.Left = Image1.Left - 50
End Sub
Private Sub Command7_Click()
Image1.Top = Image1.Top + 50
End Sub
Private Sub Command8_Click()
Image1.Width = Image1.Width + 100
Image1.Height = Image1.Height + 100
End Sub
Private Sub Command9_Click()
```

```
Image1.Width = Image1.Width - 100
Image1.Height = Image1.Height - 100
End Sub
Private Sub Command10_Click()
End
End Sub
```

PROGRAM: Design the program with one text object ,with command button then add form with property backcolor red ,form3 with backcolor green , enter 123 for text1 then form2 show with change bakcolor red ,if enter any number else 123 show form3 with change back color green

Design

Form1

```
Private Sub
Command1_Click()
If Text1.Text = "123" Then
Form2.Show
Else
```

Form3.Show End If End Sub
Form2 Private Sub Command1_Click() Form1.show
Form3 Private Sub Command1_Click() Form1.show

Q: Which of the following statement correct (tick a mark on the true statement).

a)-to make button works:

command1.enable=true

command1.visible=true

command1.disable=true

b)-to initialize text box with empty space:

text1.caption=blank

text1.text=""

text1.value=non

c)to load picture in picture box

picture1.picture=load("filepath\filename.extinsion")

picture1.picture=loadpicture("filepath\filename.extinsion")

picture1. load picture= "filepath\filename.extinsion"

d)-to change the title on top of form to "abc"

form1.title ="abc"

form1.caption="abc"

form1.name="abc"

Q: Describe the difference when the users execute these statements.

a)-A form consist of these text boxes with one of the following code.

Private Sub Text1.change () Text3.Text =Text1.Text End Sub	Private Sub Text1.Click () Text2.Text =Text1.Text End Sub

b)-to print X value.

Private Sub Form1.Click () X = 100 Y= MsgBox("x=", x) End Sub	Private Sub Form_Load() Form1.show X=10 PRINT "X=,X" End Sub

Q: What meaning of the following terms :

1-Event

2-Method

3-Properties

4-Parameters

UNIT FIVE

Mouse Events

1-Click

Example: Design the program which is done by (Smelling) the line size at clicking to the (label) with writing down the properties to the object.

Solution:

Object	Properties
Label	Name: lblclick Caption :Smeller Fontsize:24

```
Private Sub Label1_Click()
label1.FontSize = label1.FontSize - 2
```

2-Dbclick

Example: Design the program which is done by (learning) the line size at (Dbclicking) to the (Label) with writing down the properties to the object .

Solution:

Object	Properties
Label	Name:label1 Caption :learning Fontsize:5

```
Private Sub label1_DblClick()
label1.FontSize = label1.FontSize + 5
End Sub
```

3-(Key down)(Key up)

Example :Use the events (key down)(key up) where the by pressing to one of the keys (key board) with will appear this key and by canceling this key it will appear its value the system (ASCII)

Solution:

Object	Properties
Label	Alignment: 2-center
	Back color: Tool Tip
	Caption: Press any Key

```
Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)
Form1.BackColor = vbRed
Print Chr$(KeyCode);
Print Space(7);
End Sub

Private Sub Form_KeyUp(KeyCode As Integer, Shift As Integer)
Form1.ForeColor = vbBlue
Print KeyCode
End Sub
```

4-Mouse Move Event

Design the program which done change the object color to yellow during crossing indicator mouse up the object (used object label)

Solution:

Object	Properties
Label	caption : yellow color

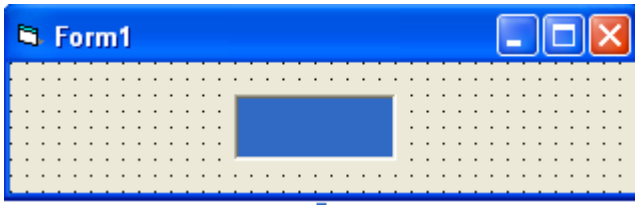
```
Private Sub Label1_MouseMove(Button As Integer, Shift As Integer, X As Single, Y As Single)

Label1.ForeColor = vbYellow

End Sub
```

5-Drag and Drop

Used mouse event (drag& drop) in design the program by object (picture box) and write the properties for this project.

Solution:

Object	Properties
Picture box	Drag mode = (1-automate)
	Back color = Highlight



```
Private Sub Form_DragDrop(Source As Control, X As Single, Y As
Single)

Source.Move X, Y

End Sub

Private Sub Picture1_MouseDown(Button As Integer, Shift As Integer, X
As Single, Y As Single)

Picture1.Drag

End Sub
```

UNIT SIX

Constant & Variables

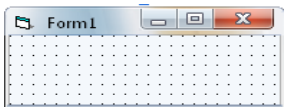
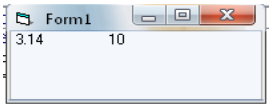
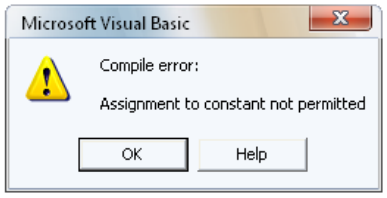
Constant

It is a space in memory filled with fixed value that will not be changed , example Pi. Constant may be declared (defined as).

Const x =3.14	**Constant for procedure**
Private const x =3.14	**Constant for form and all procedures**
Public const x =3.14	**Constant for all form**

Example:

Declare x as a local constant (for sub-procedure) and y as private constant for form. Then print them on form.

Design a form and write a code 	**Run project** 
Private Const y = 10 **Private Sub Form_Load()** **Form1.Show** **Const x = 3.14** **Print x, y** **End Sub**	**Note : if the user tries to change those constants say by x =x+1 then error message appears.** 

Variables

A variable is a space in memory filled with data (value or character or date).variable name must start with character and maximum

length 256 character, and does not contain point. It is usually written to mean its type like strName mean string.

Types of Variables:

Variable type is a defined by its content. The content be date as numeric or character or string or Boolean or date, or any type of data (called variant) the types of variables that are allowed in visual basic are stated in the table below:

Type	Size(byte)	Declaration
Integer	2	Dim x as integer
Long	4	Dim x as long
Byte	1	Dim x as byte
Single	4	Dim x as single
Double	8	Dim x double
Currency		Dim x as currency
String	1 per character	Dim x as string
Variant	16	Dim x
Boolean	2	Dim x as Boolean
Date	8	Dim x as date
object	8 byte	Dim x as object

Prefix	Variable/Control	Example
B	Boolean	Bcheck
C	Currency	Camount
D	Double	Dbalance
DB	Date Base	DBAccontRec
DT	Date +Time	DTDateDue
I	Integer	Inumber
L	Long	Lsalary
STR	String	Snet
A	Array	AclassList
G	Global	GITotal
ANI	Animation Button	ANIMain
CHK	Check Box	CHKVAL
CMD	Command	CMDName1
CLIP	Picture Clip	CLIPname
CTR	Control	CTR First
DAT	Data	DATGrad
DIR	Directory	DIRProject
DLG	Dialog	DLGSet1
FR	From	FEMMain

M		
LBL	**Lable**	**LBLFName**

Dim Iggrade As Integer Dim Sprice As Single

There are suffix

Variable Type	Suffix
Integer	**%**
Long	**&**
Single	**!**
Double	**#**
Currency	**@**
String	**$**

Dim Input Val$ Dim Total# Dim Message$

Declaring of variables:

Variable	Description	Declaration example
Local	**1-variable for sub procedure only.** **2-declared inside sub procedure**	**Dim x as integer**
Private	**1-variable for a form and for all sun procedure belong to that form.** **2-wrriten in general part of the form or in any place in form or sub procedure.**	**Private x as integer**
Global	**1-variable for all forms.** **2-written in module form or in any place form.**	**Global x as integer**

Static	**No dim statement** **Without type e.g:global.private** **Only changed from form code** **Used to store a value not to be changed**	**Static x as integer**

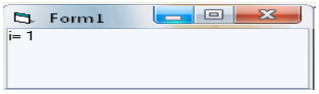
Example:

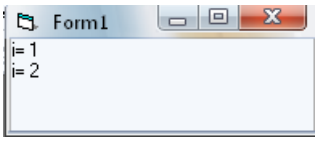
Design a form with one command button and write a code for a variable i . with out and with static declaration.

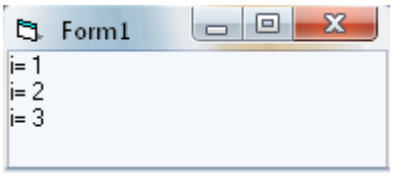
Design a form with one command button and write a code. 	
Code for a variable i	**Code for a static variable i**
Private Sub Command1_Click() **i = i + 1** **Print i** **End Sub**	**Private Sub Command1_Click()** **Static i As Integer** **i = i + 1** **Print i** **End Sub**
Run project : every time he user enter the click sub procedure , the variable start with i=0(defaulted) then add **i=i+1 , so the value stay 1.** 	**Run project : every time he user enter the click sub procedure , the static variable keep its value.** 

Example:

Use a simple form and write i=1,i=2,i-3 each in different events (like load ,click , keydown)of the form . Discuss if user tries to use a variable that is defined in other procedure.

<table>
<tr>
<td>Design a form and write a code in different events.
 
</td>
<td>Run project i=1 value appear
 

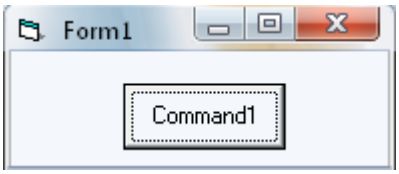
Note : form1 .show is needed in load form event. Otherwise no print or image is shown.</td>
</tr>
<tr>
<td>Private Sub Form_Load()
Form1.Show
Dim i As Integer
i = 1
Print "i="; i
End Sub
Private Sub Form_Click()
Dim i As Integer
i = 2
Print "i="; i
End Sub
Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)
Dim i As Integer
i = 3</td>
<td>If the user click on form
 

If the user press key
 
</td>
</tr>
</table>

Print "i="; i **End Sub**	

Example:

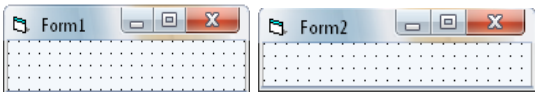
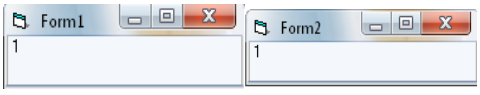
Print a variable i that is common to all sub procedures . when you click on button I increased by one.

Design a form and write a code in form code. 	**Run project:** 
Private i As Integer **Private Sub Command1_Click()** **Print i** **i = i + 1** **End Su**	**Click on button .every click number appears on form.** 

Variable and Form :

If a variable x is defined in a form as a public variable , then to use this variable in another form , apply this statement y=Form1.x

Example:

Design a project with two forms and write code for each form. 	**Run project ,x value appears on both forms.** 

Public x As Integer **Private Sub Form_Load()** **x = 0** **Form1.Show** **x = x + 1** **Print x** **Form2.Show** **End Sub**	**, write code in form2** **Private Sub Form_Load()** **Form2.Show** **y = Form1.x** **Print y** **End Sub**

Operators for Variables:

The operators that are used for variable are descried in the following table.

Arithmetic operators	+	**Addition**
	-	**Subtraction**
	*	**Multiplication**
	/	**Division**
	\	**Integer division**
	Mod	**Modulus-rest of division**
	^	**Exponent**
Relational operators	=	**Equal**
	<	**Less than**
	<=	**Less or equal**
	>	**Greater than**
	>=	**Greater or equal**

	<>	**Not equal**
Logical operators	**X1 And x2**	**True if x1 and x2 are true otherwise false.**
	X1 Or x2	**True if either x1 or x2 or both true otherwise false**
	X1 Xor x2	**True if either x1 or x2 or is true otherwise false**
	Not x	**True if x false, false if x true.**

Examples of some mathematical operations using the arithmetic operators are shown in the next table shows.

operation	Result	operation	Result
9+5	14	10/3	3.33333
12-6	6	10\3	3
2*6	12	2^4	16
		10mod3	1

The order of operations when executing arithmetic operation is exponentiation first, then next multiplication, division , and Mod ;finally , addition and subtraction .

These are examples of arithmetic operators that could be used with a variable say x.

Mathematical representation	Visual Basic representation
$Y = x + 2x^2$	Y=x+2*x^2
$Y = x+4x^2/(2(1+x)^3)$	Y=x+4*x^2/(2*(1+x)^3)
$Y = e^{-2x}$	Y=exp(-2*x)
$Y=(e^{2x}+e^{-x})/(Cos(2x)+Sin^2(x))$	Y=(exp(2*x)+exp(-x))/cos(2*x)+sin(x)^2

Expression is a collection of variables and operators without equal sign , used in conditional statements . there are three types of expressions as explained in the following table.

Type	Variables	Example of Expression
Numeric	**X=10, y = 20**	**X+y**
String	**X="abc", y="jki"**	**X&y**
Logical	**X=True,y= False**	**X And y**

The Priority Operation

1- Exponentiation(^) 2-Negation (-) 3-Multiplication , Division (*,/)
4-integer Division(\) 5- modulus (Mod) 6-Addition, Subtraction(+,-)

7-Concatenation (&) 8-Comparision =,>,<,>=,<=,<> 9-Logical (And ,Or,Not)

Example: - What is the result of the implementation of the calculations in the following mathematical expression:

X = 3 * (8 - 6) + 4 ^ 2

SOL:

X = 3 * 2 + 4 ^ 2

X = 3 * 2 + 16

X = 6 + 16

X = 22

Example: What is the result of the implementation of the calculations in the following mathematical expression: **X = 8 – 3 * 2 + 4 / 2 ^ 2**

Sol:

X = 8 – 3 * 2 + 4 / 4

X = 8 – 6 + 4 / 4

X = 8 – 6 + 1

X = 2 + 1

X = 3

Example: What is the result of the implementation of the calculations in the following mathematical expression:

Sol:

4 + 3 * 2 = 10

(4 + 3)*2 = 14

4+8/2*3^2 = 40

100 \ 30 = 3

100 Mod 30 = 10

(8 < > 3) Or (5 + 3 >= 8) = True

Not((8 Mod 2) = 0) = False

(8 < > 3) And (5 + 3 > = 8) = True

2 * 5 ^ 2 + 3 * 7 Mod 5 = 5

Not (3 < > 13 Mod 10) Or (4 >= 32 \ 8) = True

Assignment Statement:

Variable-Name = Expression

Variable-Name is the name of the variable that was previously announced in the inter announcement Dim

= sign means the transfer of information Move to the specified address in memory.

Expression right end of the sentence and can be fixed or variable another defined in clause precedent or series letters or an expression mathematically or logically according to the type of variable in the left end of the sentence, and the most important thing should be noted when

writing inter customization is that there is complete agreement between the Party right and left that is, the result of the right side of the same data type of the variable on the left side also is not permitted to be the party's left a sport or constant, but only variables must be lonely as in the examples .

Value 1=6

Operation x=a/b

String "CURRENT"

Logical P=True

Expression "text1.text"="program"

While the following sentences is uncorrect

5+10=15(Right end of the term wrong and there is no consensus among the parties to the sentence)

A + 1 =15 (Left a party to of a mathematical expression, not variable)

Value % = 5 *3 "My Name" The right party to of the term wrong and there is no consensus among the parties to the sentence)

Referring inter observations Comment

The most important characteristic of any program for another is having lines for notes and commentary during which a description of the variables, procedures and supports language Visual Basic this property and is done by side (,) top one in the beginning of the line or note to be written This reference tells Visual Basic that this sentence are inter Notes, nor does this language interpreter translated into machine language, this sentence is executed which only contain notes to the reader and user, for example ' this is test program

UNIT SEVEN

Messages Boxes

Expression : MsgBox "Message", Symbol, "Title"
Message:(string) represents the message that we want to show in the message box
Title: is a literal string representing Fund address that appears in the title bar of the Fund
Symbol: represents true value (integer) or fixed literally (constant) and represent the correct value or fixed literal

The following table shows the icons and literal values and constants represented by

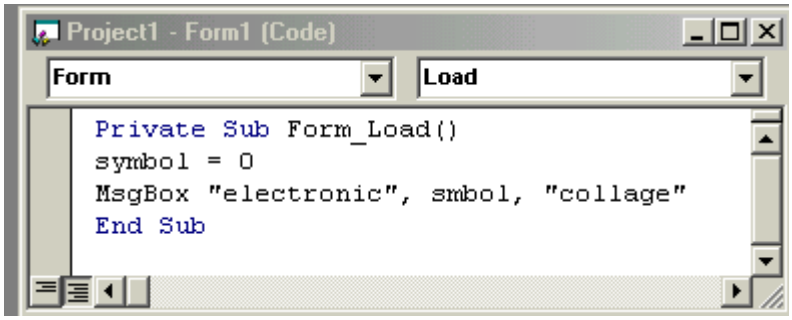
Using	constant	value	icon
Used when an error occurs in the application	**vbCritical**	**16**	**x**
Used when requesting additional information from the system user	**vbQuestion**	**32**	**؟**
Used when an error occurs and requires the user to intervene to corrective	**vbExclanmation**	**48**	**!**
Used for user news by information indicating that things went well	**vbInformation**	**64**	**i**

The following table shows the command buttons and literal values and constants represented

constant	value	Button
vbOKOnly	0	OK
vbOKCancel	1	Ok and Cancel
vbAbortRetryIgnore	2	Abort, Retry and Ignore
vbYesNoCancel	3	Yes, NO and Cancel
vbYesNo	4	Yes, and NO
vbRetyCancel	5	Retry and Cancel

Example:

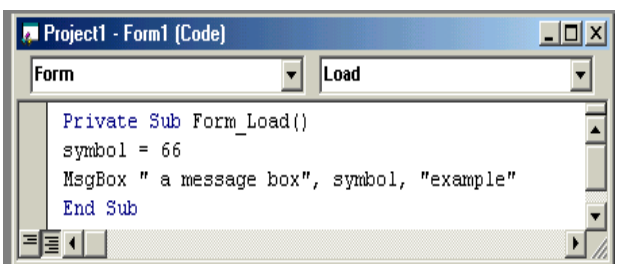
Create the project show the message electronic in the inside box by



title collage with show button ok

Example :

Design MsgBox Function contain commands (Abort Retry Ignore) and icon (i)



UNIT EIGHT

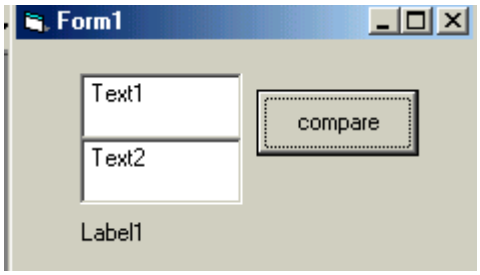
اساسيات التعامل مع السلسلة الحرفية :

1- دالة المقارنة string compare

الشكل العام لهذه الدالة هي : **Str Comp(String 1 , String 2):**

Example : compare from " Hussen " and " Smair " .

```
Private Sub Command1_Click()

Dim res As Integer
res = StrComp(Text1.Text, Text2.Text)

If res = -1 Then

Label1.Caption = " first < second "

ElseIf res = 1 Then

Label1.Caption = "first > second "

Else

Label1.Caption = "first = second "

End If

End Sub
```



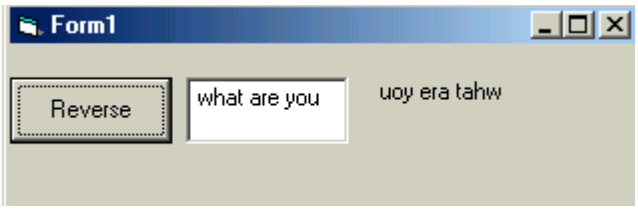
2-الدالة العكسية Reverse:

الشكل العام لهذه الدالة هي : **Str Reverse (String)**

Example: Find the reverse the statement "what are you" .

```
Private Sub Command1_Click()
```

Label1.Caption = StrReverse(Text1.Text)



End Sub

2- دالة الاستبدال Replace:

الشكل العام لهذه الدالة هي: Replace (String ,S1,S2)

Example: Replace " hussen" to "Ali" .

Private Sub Command1_Click()

Label1.Caption = Replace(Text1.Text, "hussen", "Ali")

End Sub

الدالة الاحرف الكبيرة والاحرف الصغيرةUcase, Lcase :

الشكل العام لهذه الدالة: Ucase $(Str.Text) Lcase $(Str.Text)

Example: Display the Upper character and Larch character for this statement Electronic is Good Department .

Private Sub Command1_Click()

Text2.Text = UCase$(Text1.Text)

Text3.Text = LCase$(Text1.Text)

End Sub

دالة التحويل من نظام لاخر Convert:

الشكل العام لهذه الدالة هي : Hex$(text1.text)

Oct$(text2.text)

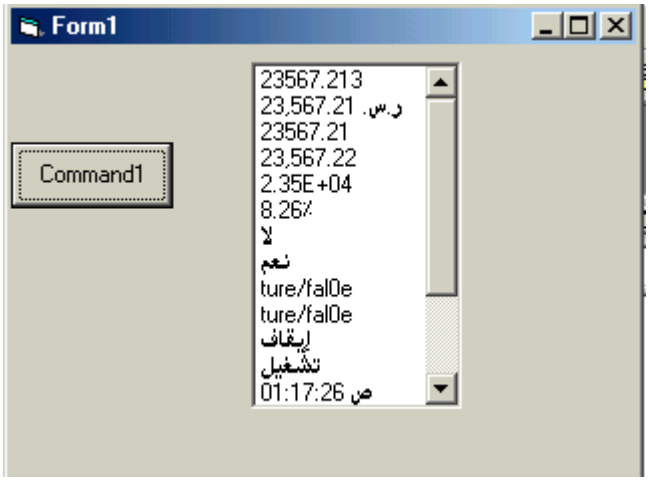
Example: Convert the number (90) from decimal system into hexa system , and Octal system .

```
Private Sub Command1_Click()
Text2.Text = Hex$(Text1.Text)
Text3.Text = Oct$(Text1.Text)
End Sub
```

```
Private Sub Command1_Click()
Call List1.AddItem(Format$(23567.213, "general number"))
Call List1.AddItem(Format$(23567.213, "currency"))
Call List1.AddItem(Format$(23567.213, "fixed"))
Call List1.AddItem(Format$(23567.218, "standard"))
Call List1.AddItem(Format$(23517.213, "scientific"))
Call List1.AddItem(Format$(0.08257, "percent"))
Call List1.AddItem(Format$(0, "yes/no"))
Call List1.AddItem(Format$(1, "yes/no"))
Call List1.AddItem(Format$(0, "true/false"))
Call List1.AddItem(Format$(1, "true/false"))
Call List1.AddItem(Format$(0, "on/off"))
Call List1.AddItem(Format$(1, "on/off"))
Call List1.AddItem(Time)
Call List1.AddItem(Hour(Time))
Call List1.AddItem(Minute(Time))
Call List1.AddItem(Second(Time))
Call List1.AddItem(TimeSerial(0, 0, 2008))
```

Call List1.AddItem(TimeValue("16: 22"))

End Sub



نلاحظ مايلي : ان (الصفر) في نوع الصيغة yes/no تعني no و(1) تعني yes

ان (الصفر) في نوع الصيغة yes/no تعني no و(1) تعني yes

ان (الصفر) في نوع الصيغة on/off تعني off و(1) تعني on

في نوع الصيغة currency تتم إضافة الدولار $ اليسار القيمة مباشرة وتظهر فقط منزلتان عشريتان اليمين النقطة العشرية

في نوع الصيغة fixedفيتم التعبير عن القيمة العشرية بمنزلتين عشريتين فقط

في نوع الصيغة standard يتم وضع الفواصل للالاف ومنزلتين عشريتين فقط آليى يمين النقطة العشرية

في نوع الصيغة scientific يتم عرض القيمة بالاسلوب العلمي أي ان القيمة تظهر بصورة منزلتين عشريتين فقط على يمين النقطة النقطة ا لعشرية (*.E***)**

في نوع الصيغة percent يؤدي آلي عرض القيمة مضروبا في 100%

تعيد الزمن في النظام (ساعة ، دقيقة ، ثانية) Time

تعيد الساعة الحالية للوقت المحدد في النظام Hour

تعيد الدقيقة الحالية للوقت المحدد في النظام Minute

تعيد الثانية الحالية للوقت المحدد في النظام Second

تعيد عدد الثواني منذ منتصف الليل وحتى الوقت الحالي Timer

تعيد القيمة الحقيقية للوقت (ساعة ، دقيقة ، ثانية) Timer serial

تعيد الساعة والدقيقة بالصيغة التالية Time Value

(from 0:00:00(12AM) To (12:59:59PM)

Communicating with MS-Access DataBases

الربط مع قواعد بيانات ميكروسوفت اكسس

UNIT NINE

Creating A New Database

سنقوم بانشاء قاعدة بيانات بسيطة تتكون من جدول واحد يحتوي على حقلين كماياتي:

اسم الحقل	نوعه	حجمه
StName	Text	30
Age	Integer	

سنستخدم برنامج VisData لانشاء قاعدة بيانات والتي سنسميها StudentDB اما الجدول فنسميAgeTabelولانشاء القاعدة نتبع الخطوات التالية:

1-open new project

2-from Add-In menu select Visual Data Manager

3-show the VisData

4-from (File) menu select(New)select (Microsoft Access)and select (Version 7.0 MDB)

5-From the screen show enter name database (StudentDB) in file name and click the (save)

6-For create the Age Tabel click on object (Properties) is found in the (Database Window)

7-Select (New Tabel) enter (Age Tabel) in the Tabel Name

8-Click up (Add Filed) enter StName in Name

9-In the size enter value 30 for the length filed and click press ok

10-enter StAge on Add Filed and select Byte for type filed (Type) by arrow and press ok

11-click on the (close) and click bulid the tabel and the show database window

12-press click on the right mouse on the (Age tabel) select open

13- click on the ADD and enter Name ali in the square (STName) and age 23 in the square (STAge)

14- click on the (update)

15-return the steps 13 ,14,15 for input names and age others example (ahmad 33) (muna 20) and click the close

16- from the menu file select exit

17- Dclilk on (Data) from tool boxes for show on the form and from properties windows for (data) Dclick on the data base name select (student DB) and select open

18-from properties windows select Record source and select age tabel

19- add the properties for this project

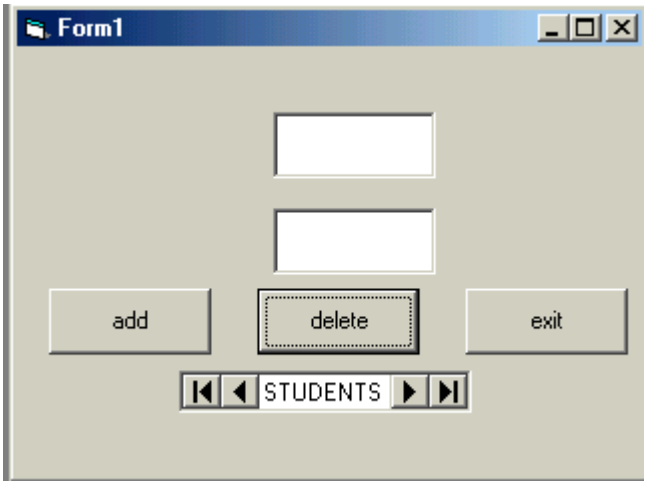
Object	Property	Setting
Data	Name Caption	Stinfo students
textbox	Name Data source Data field text	Txtname Stinfo stname
textbox	Name Data source Data field text	Txtage Stinfo stage

20- execute the F5 and save the project

إضافة وحذف السجلات :لاضافة ثلاث ادوات تحكم command button

الاولى Add والثانية Delete والثالثة Exit

Object	Property	setting
Command button	Name Caption	Cmd add Add
Command button	Name Caption	Cmd del Delete
Command button	Name Caption	Cmdexit exit




```
Private Sub cmdadd_Click()

STINF.Recordset.AddNew

End Sub

Private Sub cmddel_Click()

STINF.Recordset.Delete

STINF.Recordset.MovePrevious

End Sub
Private Sub cmdexit_Click()
End
End Sub
```

UNIT TEN

Drawing Shapes

يمثل النموذج التالي الاشكال التي يمكن رسمها بالاضافة آلي عدة انماط تعبئة لكل شكل :

Square(1), oval(2) , circle(3) ,r.square(5), r rect(4) ,rectangle(0) -1

Example: draw the (rounded rectangle) by the object shape

Properties:

Name: shprr

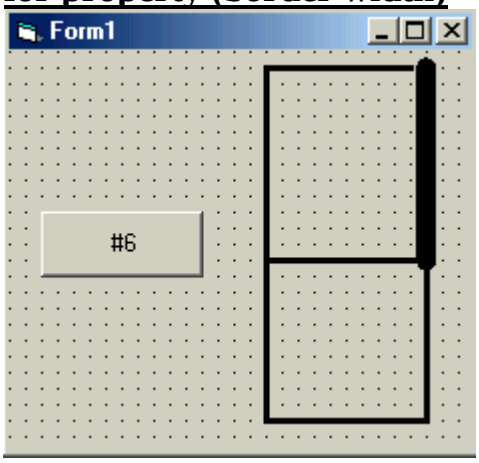
Border width:4

Fillstyle:6-cross

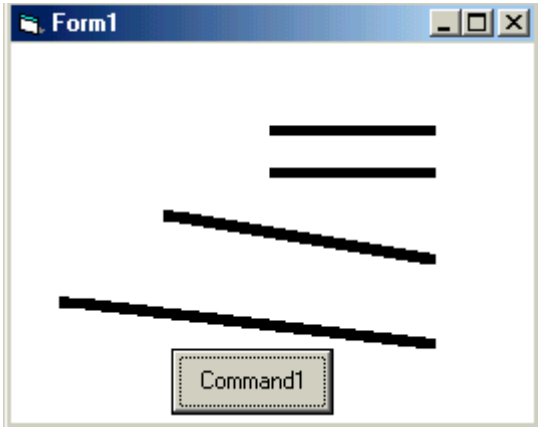
Fillcolor: cyan

Shape: 4-rounded rectangle

Example: change the shape into N(6) by object line used the value (3) for property (border width)




```
Private Sub Command1_Click()
Line7.Visible = False
End Sub
```



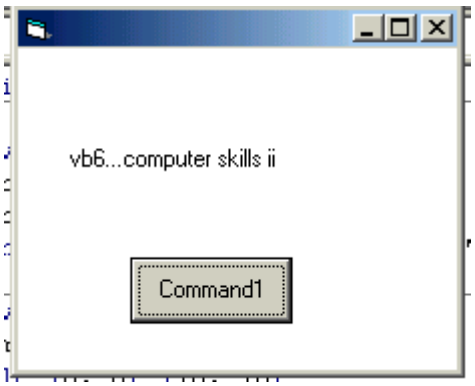
Example: how the gotten for the project :

```
Option Explicit

Private Sub Command1_Click()

Line (5, 2)-(8, 2) 'draw a line

Line (5, 3)-(8, 3) 'vbred 'a red line

Line (3, 4)-(8, 5) 'vbblue 'a rectangle

Line (1, 6)-(8, 7) 'vbcyan 'bf' filled

End Sub

Private Sub Form_Load()

Form1.BackColor = vbWhite

Scale (0, 0)-(10, 10)

DrawWidth = 5

End Sub
```

Scale: تمثل معامل قياس

رسم النصوص : لاظهار النصوص على النماذج هي طباعتها باستخدام جملة , print وقي حالة رسم نص معين ابتداء من نقطة معينة على النموذج نستخدم خاصية currentx لتديد الاحداثي السيني للنقطة التي يبدأ منها وخاصية currenty لتحديد الاحداثي الصادي للنقطة التي يبدا بها وفي حالة عدم تحديد هاتين الخاصيتين فان قيمة الاحداثي السيني تكون صفرا والصادي يبدا من السطر التالي

Example : draw the form



Private Sub Command1_Click()

CurrentX = 1

CurrentY = 3

Print " vb6...computer skills ii"

End Sub

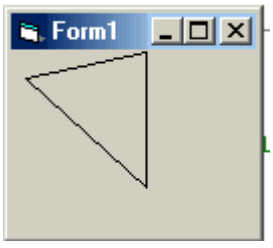
Private Sub Form_Load()

Form1.BackColor = vbWhite

Scale (0, 0)-(10, 10)

End Sub

<u>اظهار الصور :</u> اظهار الصور يتم عن طريق image ومن اهم الخصائص المجودة هي خاصية picture التي ستحدد الصورة التي ستظهر في اظهار الصورة وعند النقر فوق هذه الخاصية يظهر زر ثلاث نقاط (...) وعندها تحدد الصورة ومكانها ، وكذلك خاصية border style للاداة حيث عند جعلها تساوي 1-fixed single يقوم باظهار حواف الاداة وكذلك خاصية التمدد Stretchالىالقيمة tureلتمديد الصورة على مساحة الاداء .



Example: draw triangle on form

Private Sub Form_Load()

Form1.Show

Line (100, 200)-(1000, 0) 'horizontal line

Line -Step(0, 1000) 'vertictal line

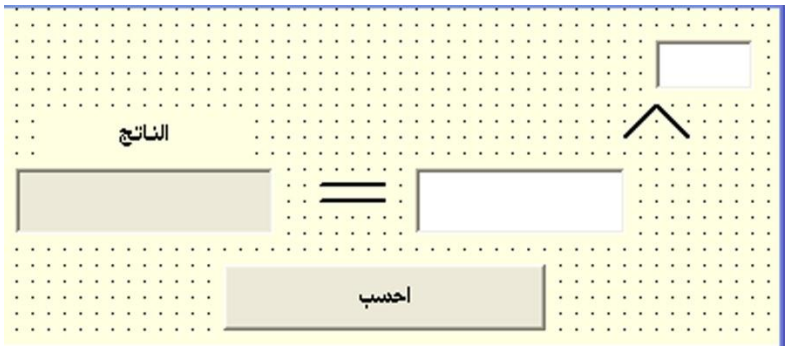
Line -(100, 200) 'close the triangle

End Sub

UNIT EIGHT

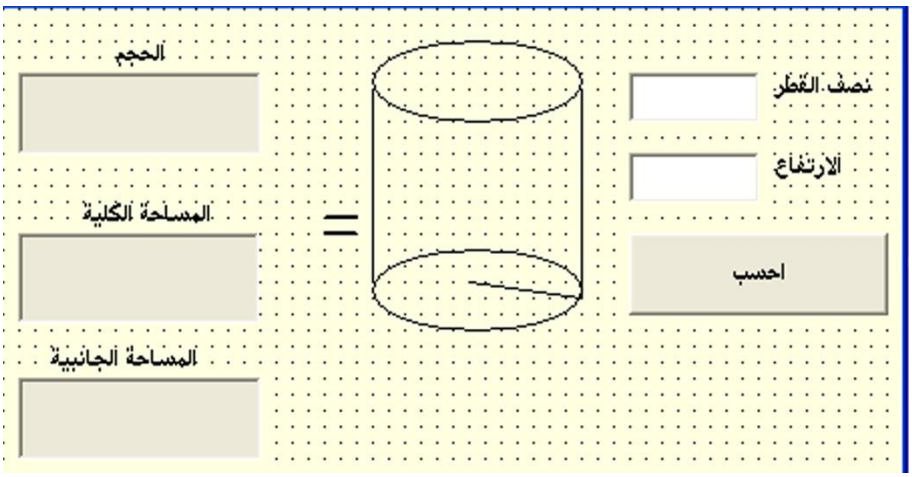
Example on Equation

1- X ^ Y




```
Private Sub Command1_Click()
Dim x, y As Double
x = Val(Text1.Text)
y = Val(Text2.Text)
Label1.Caption = x ^ y
End Sub
```

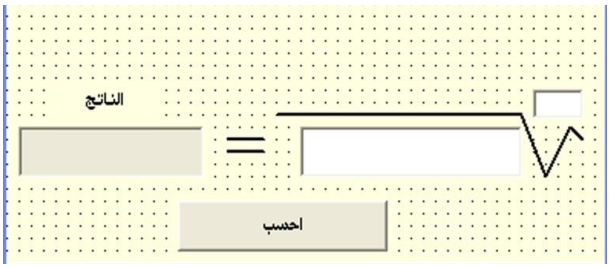
2- Size Pillar



Dim x As Double

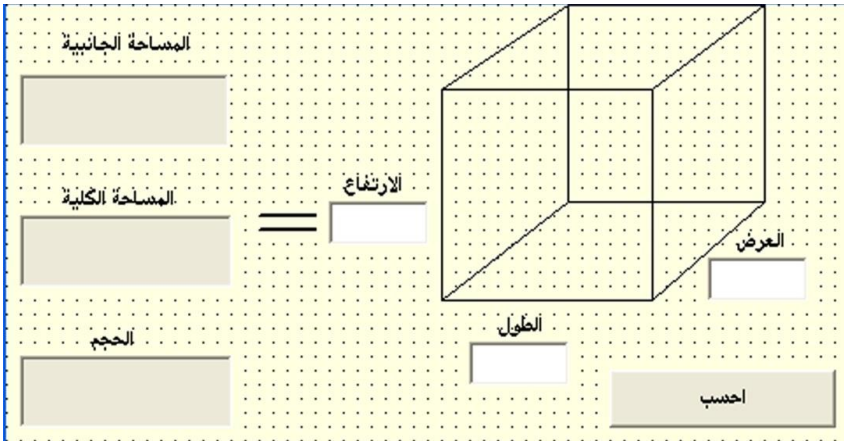
```
Dim y As Double
x = Val(Text1.Text)
' نصف القطر
y = Val(Text2.Text)
' الارتفاع
Label3.Caption = (x ^ 2) * (3.14) * y
' الحجم
Label5.Caption = (2 * x * 3.14 * y)
' المساحة الكلية
Label7.Caption = ((2 * x * 3.14 * y) + (2 * ((x ^ 2) * (3.14) * y))
' المساحة الجانبية
```

3- Root




```
Dim x As Double
Dim y As Double
x = Val(Text1.Text)
' تحت الجذر
y = Val(Text2.Text)
' القوى
Label1.Caption = y ^ (1 / x)
' الناتج
```

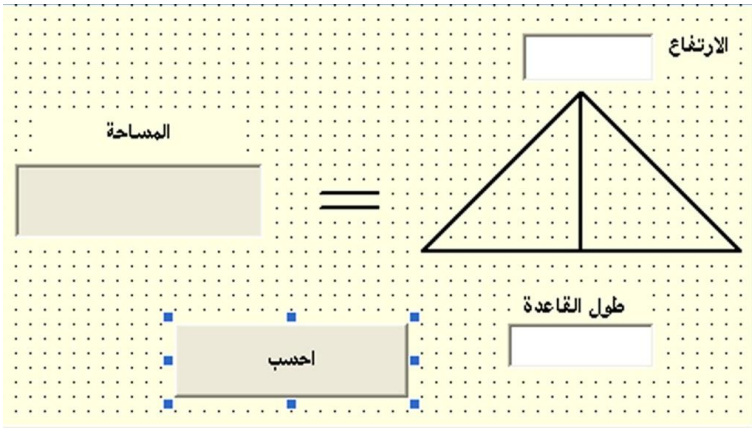
4-Designed as follows to find (the size and area of the cuboid and square




```
Dim x As Double
Dim c As Double
```

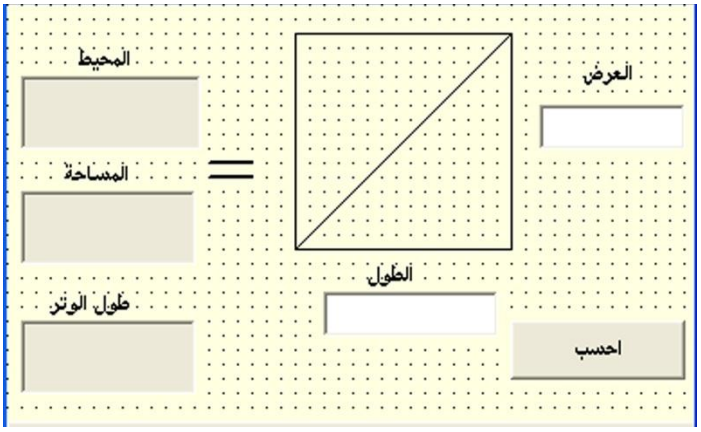
```
Dim v As Double
x = Val(Text1.Text)
' العرض
c = Val(Text2.Text)
' الطول
v = Val(Text3.Text)
' الارتفاع
Label4.Caption = (2 * x * v) + (2 * x * c) + (2 * c * v)
' المساحة الجانبية
Label5.Caption = (x * v * c)
' المساحة الكلية
Label8.Caption = (2 * x * c) + (2 * c * v)
' الحجم
```

5-designed as follows to find (an area of the triangle)



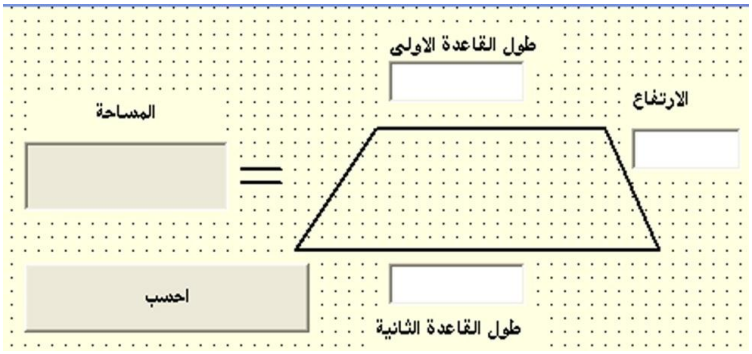

```
Dim x As Double
Dim y As Double
x = Val(Text1.Text)
' الارتفاع
y = Val(Text2.Text)
' طول القاعدة
Label3.Caption = (1 / 2 * x * y)
' المساحة
```

6 –Designed as follows to find (a rectangle or square area**)**




```
Dim x As Double
Dim y As Double


x = Val(Text1.Text)
' الطول
y = Val(Text2.Text)
' العرض
Label3.Caption = (x * y)
' المحيط
Label5.Caption = Sqr((x ^ 2) + (y ^ 2))
' المساحة
Label7.Caption = ((x + y) * 2))
' طول الوتر
```

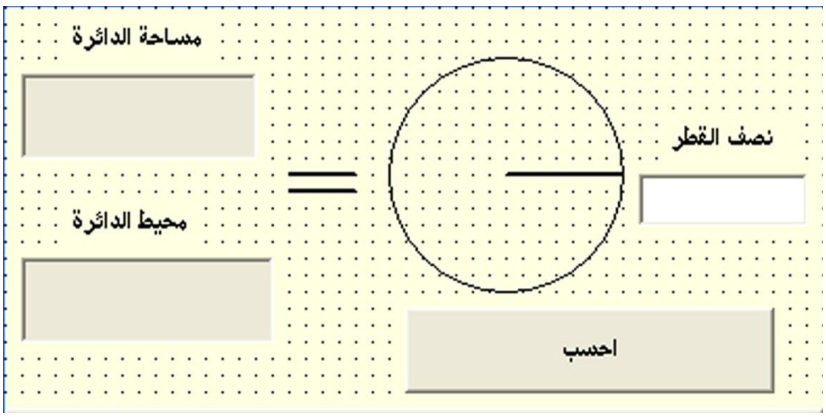
8 Designed as follows to find (calculate the area of a trapezoid)**.**




```
Dim x As Double
Dim d As Double
Dim z As Double
x = Val(Text1.Text)
' طول القاعدة الاولى
d = Val(Text2.Text)
' طول القاعدة الثانية
```

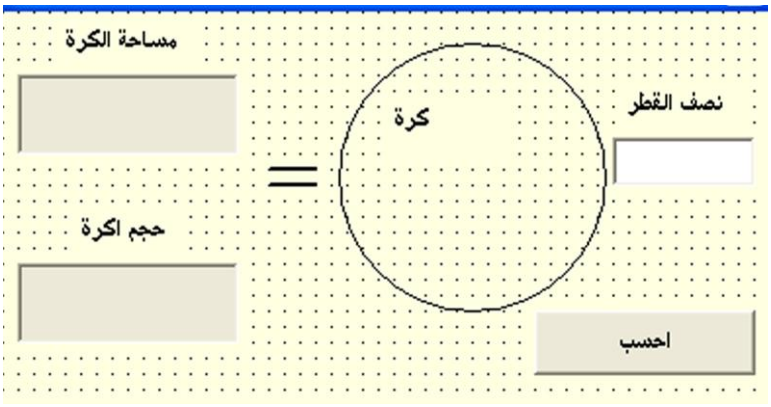
```
z = Val(Text3.Text)
' الارتفاع
Label4.Caption = (1 / 2 * (x + d) * z)
' الناتج
```

9- Designed as follows to find (area and circumference)**.**




```
Dim x As Double
x = Val(Text1.Text)
' نصف القطر
Label2.Caption = (x ^ 2) * (3.14)
' مساحة الدائرة
Label3.Caption = 2 * x * 3.14
' محيط الدائرة
```

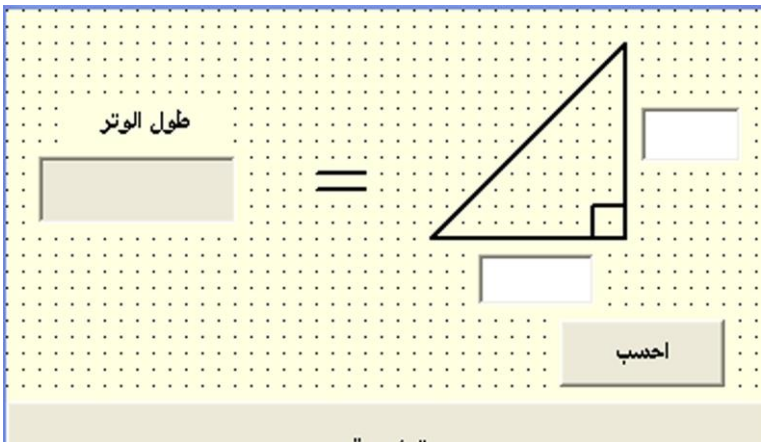
10- Designed as follows to find (an area the size of the ball)**.**




```
Dim x As Double
x = Val(Text1.Text)
' نصف القطر
Label3.Caption = (4 * 3.14 * (x ^ 2))
' مساحة الكرة
```

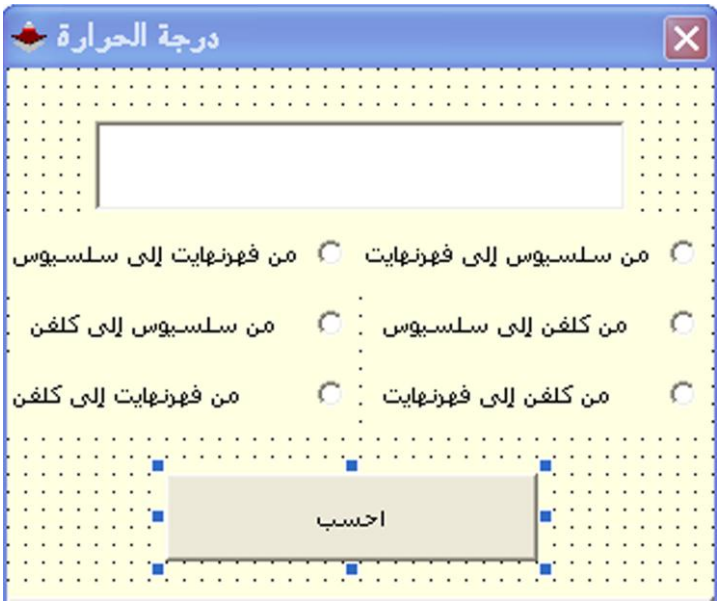
```
Label4.Caption = ((4 / 3) * (3.14) * (x ^ 3))
' حجم الكرة
```

11- ☒Designed as follows for the application (the Pythagorean theorem).




```
Dim x As Double
Dim y As Double
Dim z As Double
x = Val(Text1.Text)
' الطول
y = Val(Text2.Text)
' الارتفاع
Label1.Caption = Sqr((x ^ 2) + (y ^ 2))
' الناتج
```

12. صمم الشكل الاتي (لتحويل درجات الحرارة) –

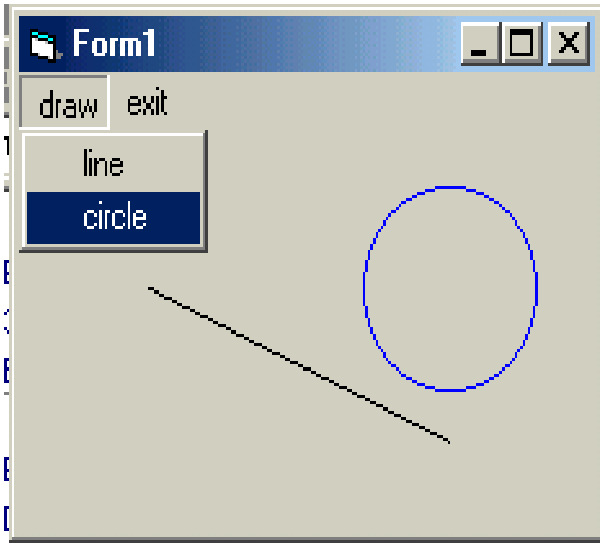



```
Dim x As Double
Dim z As Double
x = Val(Text1.Text)
' الدرجة
If Option1.Value = True Then
Text1.Text = ((9 * x) / 5) + 32
End If
' من سلسيوس الى فهرنهايت
If Option2.Value = True Then
Text1.Text = ((x - 32) * 5) / 9
End If
' من فهرنهايت الى سلسيوس
If Option3.Value = True Then
Text1.Text = (x + 273)
End If
' من سلسيوس الى كلفن
If Option4.Value = True Then
Text1.Text = (x – 273)
End If
' من كلفن الى سلسيوس
If Option5.Value = True Then
Text1.Text = ((9 * (x - 273)) / 5) + 32

' من كلفن الى فهرنهايت
```

```
If Option6.Value = True Then
Text1.Text = (((x - 32) * 5) / 9) + 273
End If
' من فهرنهايت الى كلفن
```

UNIT ELEVEN
Creating menus

Example: create the menu the following :



Solution steps:

1-open the new project

2-select form menu box (tools) menu editor

3-enter the word (menu draw) in the name and the word (draw) in the caption

4-click up command (next) and

5-enter word (draw line) in name and word (line) in the caption

6-click up command (next) and

7-enter word (draw circle)in the name and(circle) in the caption

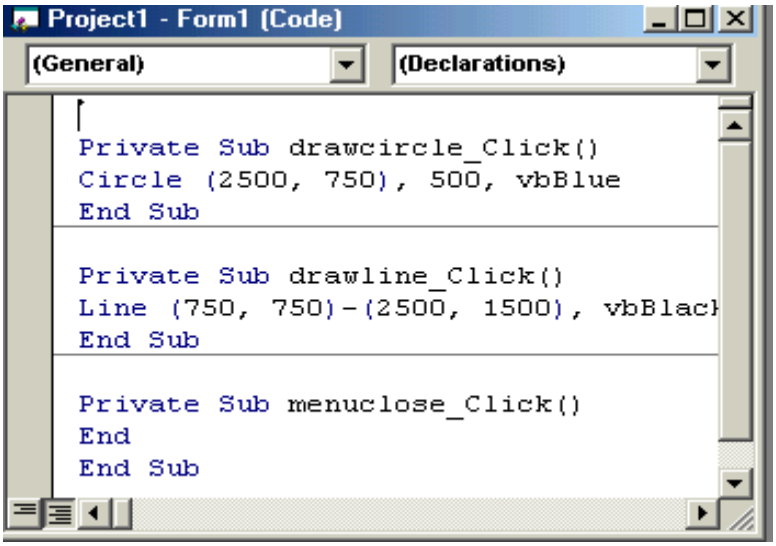
8-click up command (ok)

9- select menu editor form tools menu and the click up (next)and add menu exit in the name and exit in the caption

(used return the word (exit) to start line)

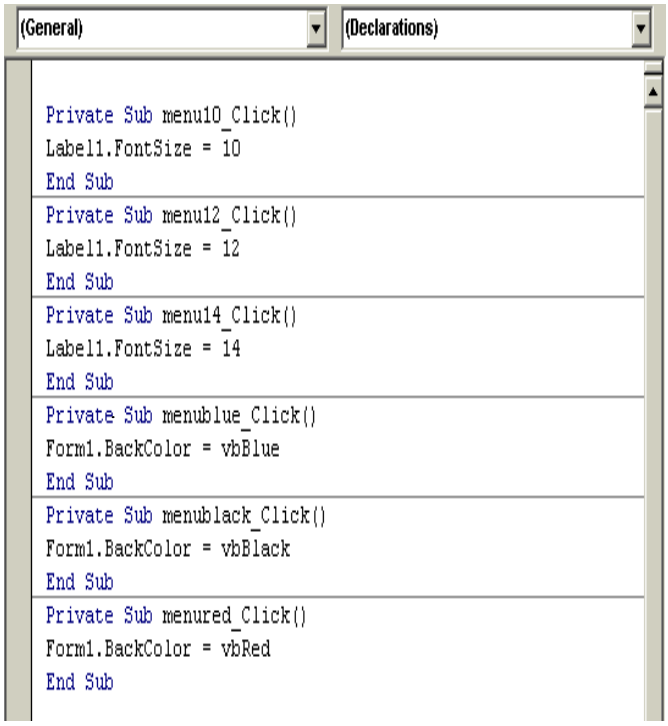
10- click up command (next) and add close in the caption ,(menu close) in the name(make close in the right by

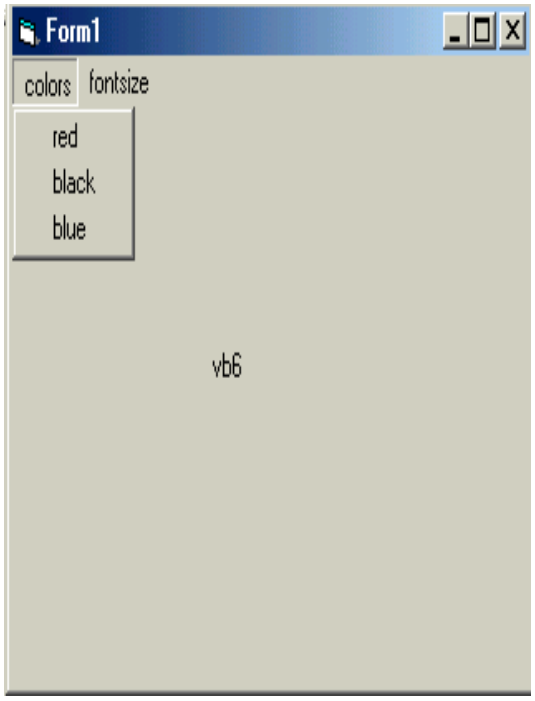
11-click the ok



Example 2:

Design project which contain menu colors and this the menu including (red, black, blue) and write the code for the menu which change the color project to pressure write the coding for the list which change font size for the label when pressure the any click form (10,12,14) any color form colors , and add menu font size including (10,12,14) and label .





UNIT TEVELEVE

Control Statement

It took sometimes to implement inter more than once or that we Execution of this part more than once as long as a certain condition is not achieved must be put sentences, especially in the software to control the functioning of steps Execution of sentences program as required by the nature of the issue.

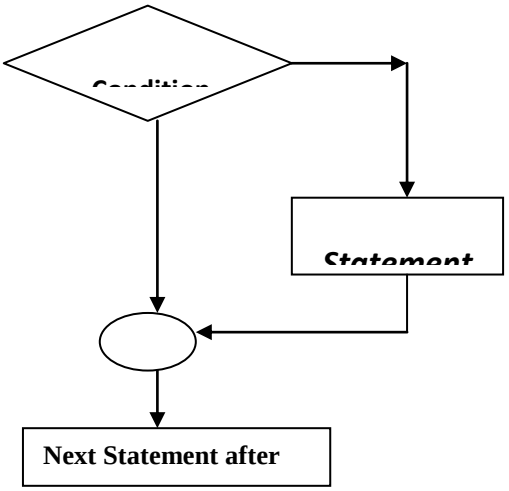
And supports the Visual Basic language this property through the use of sentences and private control functions>

تطلب الامر في بعض الاحيان ان ننفذ جملة اكثر من مرة آو ان نعيد تنفيد هذا الجزء أكثر من مرة طالما لم يتحقق شرط معين فلا بد من وضع جمل خاصة في البرنامج للتحكم في سير خطوات تنفيد جمل البرنامج حسب ما تتطلبه طبيعة المسألة .

وتدعم لغة فيجوال بيسك هذه الخاصية عن طريق أستخدام جمل ودوال خاصة بالتحكم وهي :

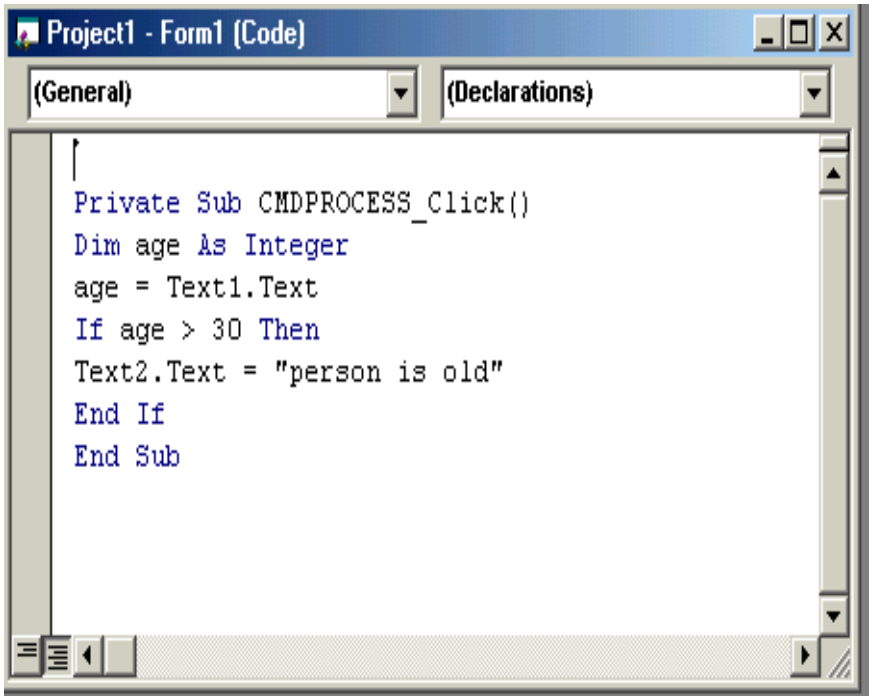
1-Simple IF Statement:

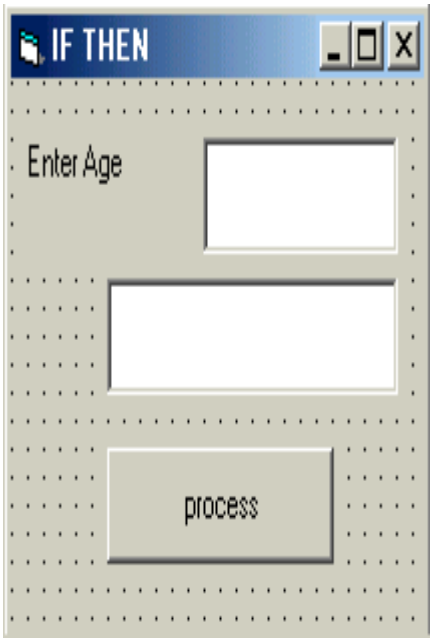
IF Condition = True Then
VB Statement or statements
End if



Example:

Enter value for Age in the text1. In the case the greater from 30 display message in the text2 detect the person is old .



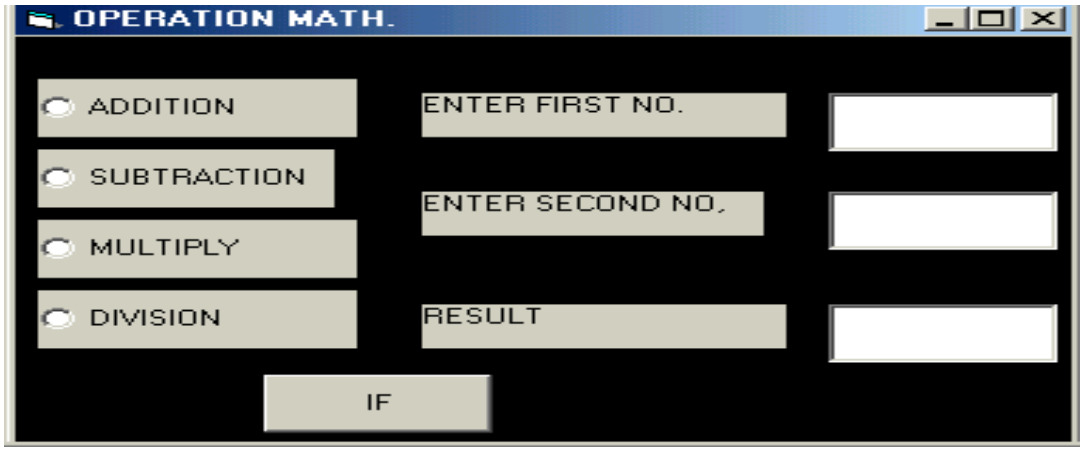


Example2: used (IF) condition doing process(Addition , Subtraction , Multiplication , Division)for two numbers and put the result in the text

Object	Property	setting
Label	Name Caption	Label1 Enter first no.
Label	Name Caption	Label2 Enter second no.
Text	Name Text	Text1
Text	Name Text	Text2
Text	Name Text	Text3
Label	Name Caption	Label3 Result
command	Name Caption	Command1 if
option	Name	Option1

	Caption	Addition
option	Name Caption	Option2 Subtraction
option	Name Caption	Option3 Multiply
option	Name Caption	Option3 Division

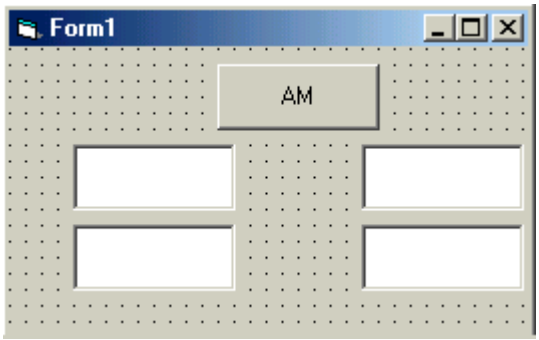
```
Private Sub Command1_Click()
If Option1.Value = True Then Text3.Text = CInt(Text1.Text) +
CInt(Text2.Text)
If Option2.Value = True Then Text3.Text = CInt(Text1.Text) -
CInt(Text2.Text)
If Option3.Value = True Then Text3.Text = CInt(Text1.Text) *
CInt(Text2.Text)
If Option4.Value = True Then Text3.Text = CInt(Text1.Text) /
CInt(Text2.Text)
End Sub
```



Example:

Write the program for reading (2)numbers and printing addition and multiplicand

Note (condition the two numbers are equal)



```
Private Sub Command1_Click()
If CInt(Text1.Text) = CInt(Text2.Text) Then
Text3.Text = CInt(Text1.Text) + CInt(Text2.Text)
Text4.Text = CInt(Text1.Text) * CInt(Text2.Text)
End If
End Sub
```

Note: Can be using compare factors (= ,>,<,=> ,=<,< >)

Example:

Enter the student through the text box and based on the entered value is determined by the level of the student through fund MsgBox statement as follows:

100-90 Excellent 0.89 to 80 very good 0.79 to 70 0.69 to 60 good average 0.59 to 50 acceptable 0.49 to 35 failed

```
Private Sub Command1_Click()
x = Val(Text1.Text)
If (x >= 90) And (x <= 100) Then MsgBox "excellent "
If (x >= 80) And (x <= 89) Then MsgBox "vbgood"
If (x >= 70) And (x <= 79) Then MsgBox "good "
If (x >= 60) And (x <= 69) Then MsgBox "medium "
If (x >= 50) And (x <= 59) Then MsgBox "accept "
If (x >= 35) And (x <= 49) Then MsgBox "fail "
If (x >= 100) And (x <= 35) Then MsgBox " incorrect "
End Sub
```

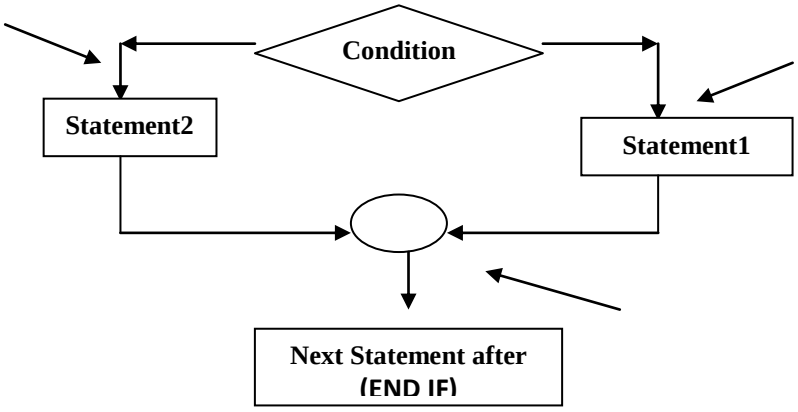
2-IF.. THEN..ELSE

Another second case to the IF .. THEN where they are branching in two directions, the condition was logical Condition true branching direction that follows the keyword THEN wholesale and exhausted all up to the keyword ELSE and then divided into the following sentence END IF.

And that the condition is logical Condition wrong branch direction that follows the keyword ELSE and exhausted all the subsequent sentence until the keyword end

وهي حالة ثانية أخرى لجملة IF..THEN حيث يتم التفرع في أتجاهين فان كان الشرط المنطقي Condition صحيحا يتم التفرع بالاتجاه الذي يلي الكلمة المفتاحية THENوتنفذ جميع الجملة لغاية الكلمة المفتاحية ELSEومن ثم يتفرع آلى الجملة التي تلي جملة END IF.

وان كان الشرط المنطقي Condition خاطئا يتم التفرع بالاتجاه الذي يلي الكلمة المفتاحية ELSEوتنفد جميع الجملة اللاحقة لغاية الكلمة المفتاحية

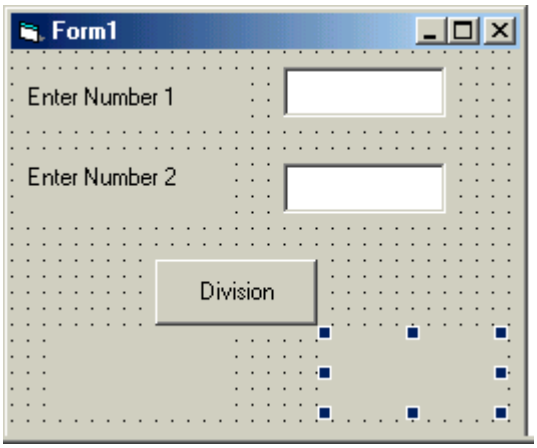


Example: design the program for doing process division on the denominator condition not to equal to zero where if the value the given equality zero the program is display message (no result) in the label4result and statement (illegal division) in the label3 error. And in the case denominator not to equal to zero the program is display message (no error) in the label4 error and put the result in the label3.

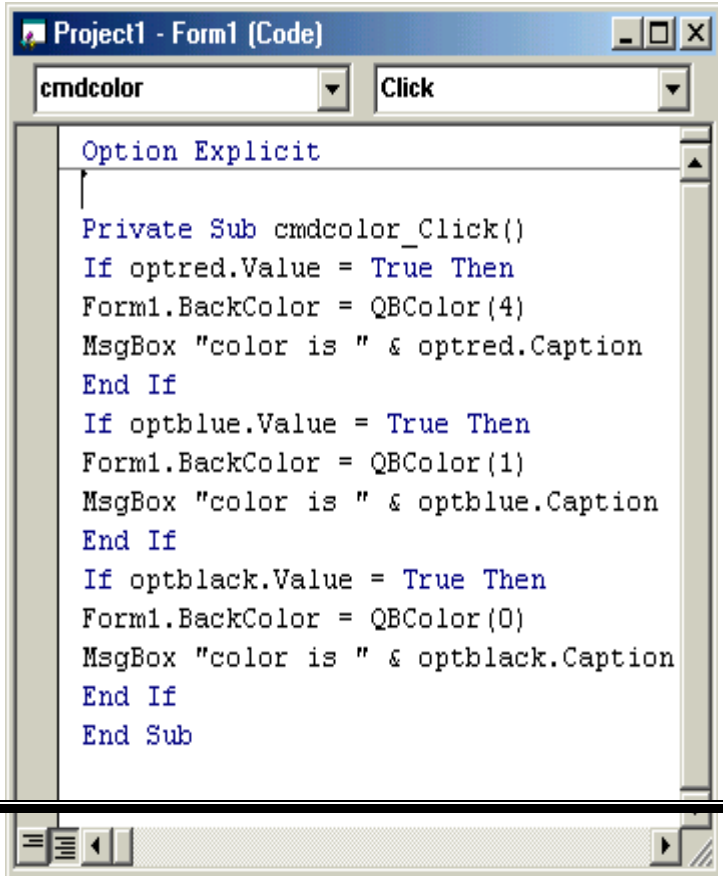
Object	property	setting
command	caption	division
label1	caption	enter number1
label2	caption	enter number2
label3	caption	
label4	caption	
text1	text	

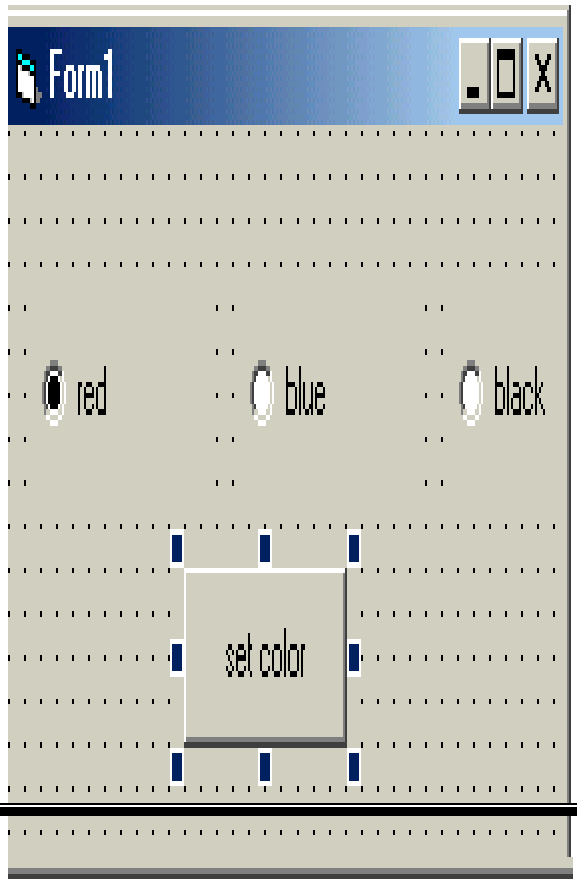
text2 text

```
Private Sub Command1_Click()
If CInt(Text2.Text) <> 0 Then
Label3.Caption = CInt(Text1.Text) / CInt(Text2.Text)
Label4.Caption = "no error"
Else
Label3.Caption = "illegal divisions operation"
Label4.Caption = "no result"
End If
End Sub
```



Example : Design the windows done to select one the colors (red , blue, black)through used object (option button) and show the color





Object	property	setting
Command button	Name caption	Cmdcolor Set color
Option button	Name Value caption	Opt red True red
Option button	Name Value caption	Opt blue false blue
Option button	Name Value caption	Opt black False black

Example: used Timer in change back color Form with alternation back color label and writing the properties for this program.

object	Property	setting
label	Name caption	Label1
timer	Interval	500

```
Dim a As Integer
Private Sub Timer1_Timer()
Form1.BackColor = QBColor(a)
Label1.BackColor = QBColor(15 - a)
a = a + 1
If a = 16 Then a = 0
End Sub
Private Sub Command1_Click()
End
End Sub
```

The table is display the colors in the visual basic

Color	Number
Black	0
Blue	1

Green	**2**
Cyan	**3**
Red	**4**
Magenta	**5**
Yellow	**6**
White	**7**
Grey	**8**
Light Blue	**9**
Light Green	**10**
Light Cyan	**11**
Light Red	**12**
Light Magenta	**13**
Light Yellow	**14**
Bright White	**15**

3-Select Case:

Suitable phrase IF condition if the answer is a requirement two possibilities or three, but if more than that, it is better to use a Select Case statement and the general shape of this formula Select Case Test value

Case Val1: Statement - Group1

Case Val2: Statement - Group2

Case Valn: Statement - Groupn

End Select

Example	Style variable
Case Is <=25	relational
Case Is =25	equal
Case 25	equal
Case -25 To25	Range
Case Is <25 ,Is >0	Varity
Case “iraq”	String

Example :Write and design the program carry out display the result at the enter the Degrees the following?

90-100(EXCELLENT) , 80-89 (V.GOOD)
70-79 (GOOD) , 60-69 (MIDUM)
50-59 (ACCEPTED) , 0-49 (FAIL)

SOL:

```
Private Sub Command1_Click()
Dim x As Integer
x = CInt(Text1.Text)
Select Case x
Case 90 To 100
MsgBox "excellent"
Case 80 To 89
MsgBox "v.good"
Case 70 To 79
MsgBox "good"
Case 60 To 69
MsgBox "medium"
Case 50 To 59
MsgBox "accept"
Case 0 To 49
MsgBox "fail"
End Select
End Sub
```

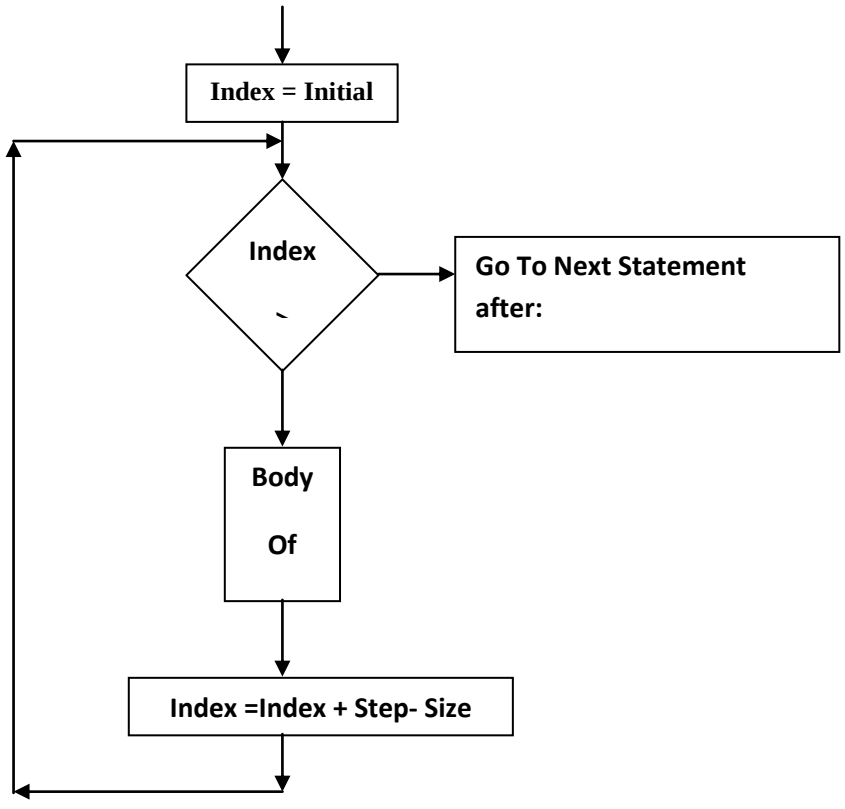
The Looping

The aim of this is to repeat sentences Execution number of instructions several times and must therefore determine these instructions through the development of the beginning and the end of it and this is what is called looping and show the importance of rotation through using in dealing with the looping matrix in terms of reading and writing.

1- For Next

The general function

for Index =Initial To Final Step{Step – Size}
'Body of the Loop
'One or More Statements
Next [Index]



Example : Write the program for sum numbers from (0-N) and put the result in the label

Private Sub Command1_Click()
Dim INI As Integer
Dim FIN As Integer
Dim X, Y, N As Integer

```
N = CInt(Text1.Text)
INI = 0
FIN = N
For Y = INI To FIN
X = X + 1
Next Y
Label1.Caption = X
End Sub
```

Example :Write the program for sum numbers from (0-10) and put the result in the label.

```
 Private Sub Command1_Click()
Dim INI As Integer
Dim FIN As Integer
Dim X, Y As Integer
INI = 0
FIN = 10
For Y = 0 To 10 Step 1
X = X + Y
Next Y
Label1.Caption = X
End Sub
```

Can be write looping FOR Y=INI TO FIN STEP -1 أوFOR Y= 0 TO 10 STEP -1

<u>2-Do ..While .. Loop</u>

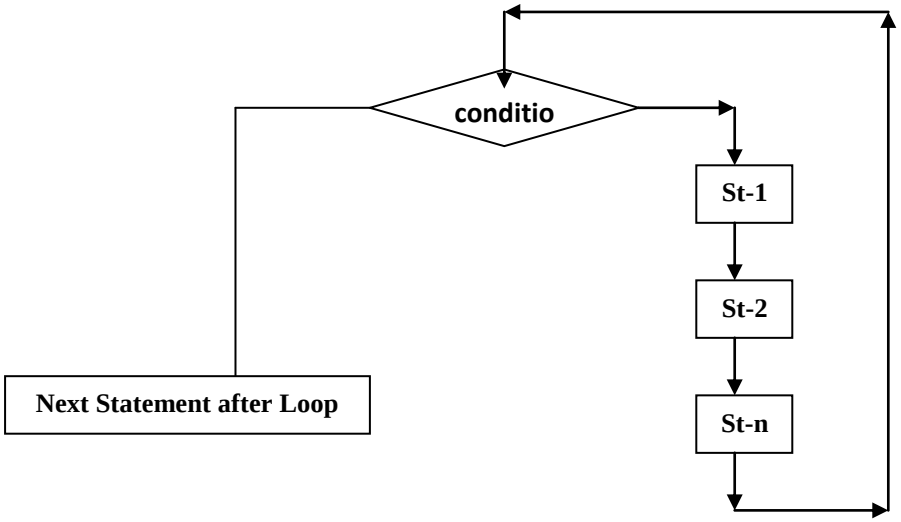
In this type must be there inter into the LOOP control the condition and stop Execution of sentences rotation if certain condition is met are examined this condition at the beginning of ring (rotation) If check this condition at the beginning of ring, the group sentences within sentences repetition can not be implemented at all in check condition at the beginning of the iteration. The general shape of this formula is:

في هذا النوع يجب ان تكون هنالك جملة داخل الLOOP تتحكم بالشرط وتتوقف تنفيذ جمل الدوران حال تحقق شرط معين ويتم فحص هذا الشرط عند بداية الحلقة (الدوران) فاذا تحقق

هذا الشرط في بداية الحلقة فان مجموعة الجمل داخل جمل التكرار يمكن ان لا تنفذ مطلقا في تحقق الشرط في بداية التكرار .
حيث أن condition: تعبير منطقي يتحكم في أمكانية تكرار تنفيذ جمل الحلقة أو أيقاف التكرار ، واذا تم التحقق من هذا الشرط فان كانت قيمته صحيحة يستمر تنفيذ جمل الحلقة St-1…St-2 ثم يعاد التكرار ويستمر تنفيد مجموعة جمل الحلقة لحين عدم تحقق الشرط أي عندما تصبح قيمته خاطئة False وفي هذه الحالة يتم التفرع آلى الجملة التي تلي الجملة loop . والمخطط الأنسيابي التالي يوضح عمل هذه الجملة.

The general function

Do While Condition
St – 1
St – 2
Loop



Example: used input box function for enter sum numbers and every after pressure on key (ok). Calculate sum the numbers into become the sum > = 500. Print the sum .

```
Private Sub Command1_Click()
Dim sum As Integer
Dim num As Integer
Do While sum < 500
num = InputBox("enter first integer ")
sum = sum + num
Loop
Print " sum " & sum
End Sub
```

Example: Write the program for sum numbers from (1-10) and print the result used (Do – While).

```
Private Sub Command1_Click()
Dim x As Integer
Dim y As Integer
x = 0
y = 0
Do While x <= 10
x = x + y
y = y + 1
Loop
Label1.caption = x
Label2.caption = y
End sub
```

RESULT x=15 ، y=6

NOTE : Can be exit from Do While by using Exit Do

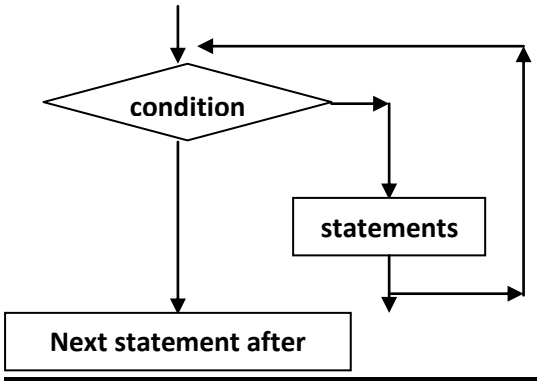
```
Private Sub Command1_Click()
Dim x As Integer
Dim y As Integer
x = 0
y = 0
Do While x <= 10
If  y = 5 then
Exit Do
End if
x = x + y
y = y + 1
Loop
Print x, y
End sub
```

RESULT x= 10 ، y=5

3-Do Until .. Loop

They reverse Execution of inter rotation Do While ..Loop as are Execution of sentences rotation as long as the condition is false test result, the general shape of this sentence is:

وهي عكس تنفيد جملة الدوران Loop .. Do While اذ تتم تنفيد جمل الدوران طالما كانت نتيجة أختبار الشرط خاطئة، الشكل العام لهذه الجملة هو :



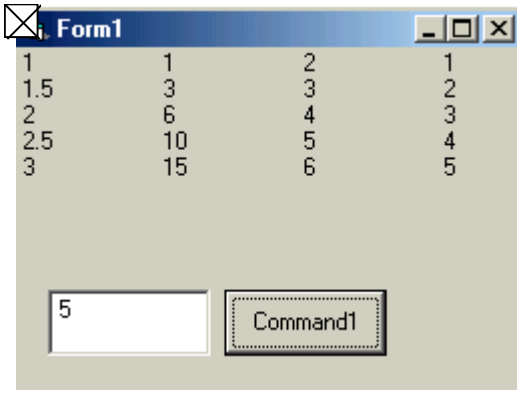
Example: Write the program for sum numbers from (1-10) and print the result used (Do – Until).

```
Private Sub Command1_Click()
Dim x As Integer
Dim y As Integer
Do Until x > 10
x = x + y
y = y + 1
Loop
Print x, y
End sub
```

Example: Write the program for average numbers from (1-N) and print the result used (Do – Until).

```
Private Sub Command1_Click()
Dim x, y, n As Integer, a As Double
x = 0
y = 1
n = Cint(Text1.Text)
Do Until y > n
x = x + y
y = y + 1
Loop
a = x / n
```

Print a, x, y, n
End Sub



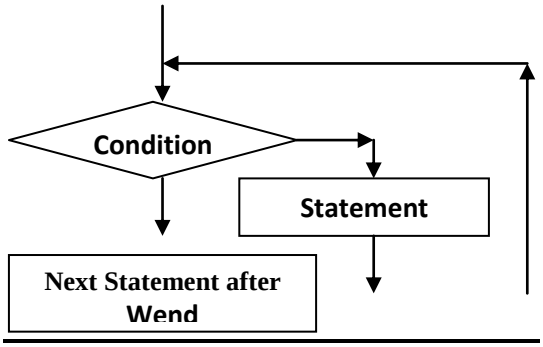
4-(While.. Wend)

Where required condition is achieved when its true value to complete the Execution of sentences rotation confined between While, Wend and stops execution to take place the following sentence Wend as soon as they become requirement False value

The general function

While Condition
Statements
Wend

حيث يمثل الشرط المطلوب تحقيقه عندما تكون قيمته صحيحة لأستكمال تنفيد جمل الدوران المحصورة بين While ,Wend ويتوقف التنفيد آلى الجملة تلي Wend حالما تصبح قيمة الشرط False،



Example: Write the program for sum numbers from (1-10) and print the result used (While-Wend)

Private Sub Command1_Click()
Dim x As Integer
Dim y As Integer
x = 0
y =1

```
While x <= 10
x = x + y
y = y + 1
Wend
Print "x=" & x
Print "y=" & y
End Sub
```

هنا يتم تنفيذ جمل الحلقة أكثر من مرة لحين تحقق الشرط (x>10)وعندها يصبح شرط الاختبار x=<10 خاطئا ويتم التفرع آلى الجملة التي Wendوتتم طباعة قيمة المتغيرx حيث عند الضغط على Command يظهر الناتج x=15 ، y=6

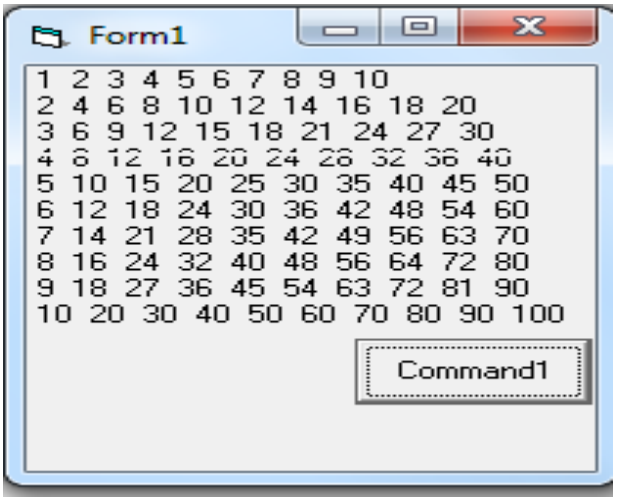
5-Nested loops:

وتعني وجود حلقات دوران ضمن حلقات دوران أخرى فأول حلقة دوران في البرنامج تسمى الحلقة الخارجية وما يليها ضمن الحلقة الخارجية تسمى الحلقة الداخلية واخر حلقة داخلية تسمى الحلقة الداخلية الاخيرة Most Inner Loop واول حلقة خارجية بالنسبة لما هو تحتها في الموقع من الحلقات تسمى الحلقة الخارجية الأخيرة Most Outer Loop كما هو موضح في الشكل التالي

```
Dim a,b,c,d , I,J as integer
For I =1 To 10
C=C+1
A=a+1
D=5
For J=1 To 5
D=D +1
B =B+D
Next J
Print A,B
Next I
```

Example: Write the program for print multi schedule from (1-10) and print the result

```
Private Sub Command1_Click()
Dim x As Integer
Dim y As Integer
For x = 1 To 10
For y = 1 To 10
Print x * y;
Next y
Print
Next x
End Sub
```



QUESTION VARITY

Example: Write program for generation series for the numbers used object command for show the result in the form . **1**

1 2

1 2 3

1 2 3 4

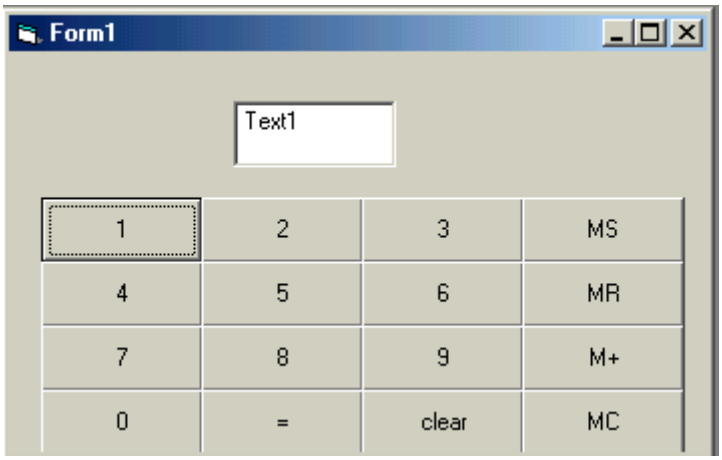

```
Private Sub Command1_Click()
Dim x, y As Integer
For x = 1 To 4
For y = 1 To x
Print y;
Next y
Print
Next x
End Sub
```

Example: Print a variable I that is common to all sub procedures .when you click on button I increased by one.

```
Private I As Integer
```

Private Sub Command1_Click()
Print I
I = I + 1
End Sub

Example: Design a from and write a code of previous example .



Private Sub Command1_Click()
Text1.Text = Text1.Text & 1
End Sub
Private Sub Command10_Click()
Text1.Text = Text1.Text & 0
End Sub
Private Sub Command12_Click()
Text1.Text = ""
End Sub
Private Sub Command13_Click()
xm = Text1.Text
End Sub
Private Sub Command14_Click()
Text1.Text = xm
End Sub
Private Sub Command15_Click()
xm = xm & Text1.Text
End Sub
Private Sub Command16_Click()
xm = ""
End Sub
Private Sub Command2_Click()

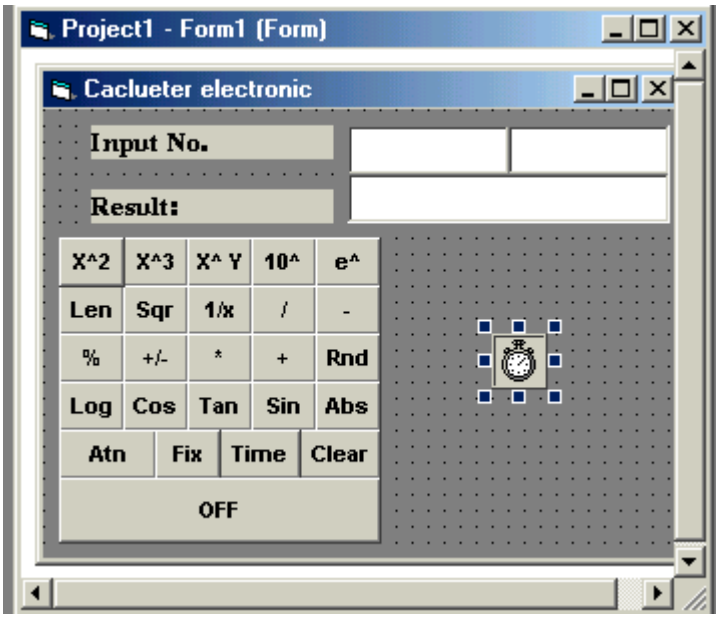
```
Text1.Text = Text1.Text & 2
End Sub
Private Sub Command3_Click()
Text1.Text = Text1.Text & 3
End Sub
Private Sub Command4_Click()
Text1.Text = Text1.Text & 4
End Sub
Private Sub Command5_Click()
Text1.Text = Text1.Text & 5
End Sub
Private Sub Command6_Click()
Text1.Text = Text1.Text & 6
End Sub
Private Sub Command7_Click()
Text1.Text = Text1.Text & 7
End Sub
Private Sub Command8_Click()
Text1.Text = Text1.Text & 8
End Sub
Private Sub Command9_Click()
Text1.Text = Text1.Text & 9
End Sub
```

Example: Design a from with a text box and command button . use (if statement) and (go to statement) so that when user enters 1 in text box , then from back color changes to black and if the user enters 2 in the text box from back color will be blue.

```
Private Sub Command1_Click()
Dim x As Integer
x = Text1.Text
Select Case x
Case Is < 4
Form1.BackColor = vbBlack
Case Is < 8
Form1.BackColor = vbRed
Case Is < 11
```

Form1.BackColor = vbBlue
Case Else
End Select
End Sub

Example:
Design the project the which is done window's some operation mathematical (sin,log,cos,abs,….) with may show the time electronic clock and the shown in the figure .




```
Option Explicit
Const  pi =22/7
Dim x, y As Integer
'في حدث التربيع
Private Sub Command1_Click()
x = Val(Text1.Text)
Text3.Text = x ^ 2
End Sub
'في حدث عملية طرح حدين
Private Sub Command10_Click()
Text3.Text = Val(Text1.Text) - Val(Text2.Text)
End Sub
'في حدث عملية النسبة المئوية
Private Sub Command11_Click()
```

```
Text3.Text = Val(Text1.Text) & "%"
End Sub
'في حدث عكس أشارة الناتج
Private Sub Command12_Click()
Text3.Text = Val(Text1.Text) * (-1)
End Sub
'في حدث عملية ضرب الحدين
Private Sub Command13_Click()
Text3.Text = Val(Text1.Text) * Val(Text2.Text)
End Sub
'في حدث عملية جمع الحدين
Private Sub Command14_Click()
Text3.Text = Val(Text1.Text) + Val(Text2.Text)
End Sub
'في حدث الرقم العشوائي
Private Sub Command15_Click()
x = Val(Text1.Text)
Text3.Text = Rnd(x)
End Sub
'في حدث عملية اللوغاريتم
Private Sub Command16_Click()
x = Val(Text1.Text)
Text3.Text = Log(x)
End Sub
'في حدث عملية جيب تمام جتا
Private Sub Command17_Click()
x = Val(Text1.Text)
Text3.Text = Cos(val(text1.text)*pi/180)
End Sub
'في حدث عملية ظل الزاوية ظا
Private Sub Command18_Click()
x = Val(Text1.Text)
Text3.Text = Tan(val(text1.text)*pi/180)
End Sub
'في حدث عملية حيب الزاوبةجا (x)
Private Sub Command19_Click()
x = Val(Text1.Text)
```

```
Text3.Text = Sin(val(text1.text)*pi/180
End Sub
'في حدث عمليةالتكعيب
Private Sub Command2_Click()
x = Val(Text1.Text)
Text3.Text = x ^ 3
End Sub
'في حدث عملية القيمة المطلقة
Private Sub Command20_Click()
x = Val(Text1.Text)
Text3.Text = Abs(x)
End Sub
'في حدث عملية الظل العكسي
Private Sub Command21_Click()
x = Val(Text1.Text)
Text3.Text = Atn(x)
End Sub
'في حدث مسح مربع النص
Private Sub Command22_Click()
Text1.Text = ""
Text2.Text = ""
Text3.Text = ""
End Sub
'في حدث أظهار الوقت في النتيجة
Private Sub Command23_Click()
Label2.Caption = Time
Timer1.Enabled = True
End Sub
'في حدث عملية ايجاد الجزء العددي الصحيح
Private Sub Command24_Click()
x = Val(Text1.Text)
Text3.Text = Fix(x)
End Sub
'في حدث خروج من المشروع أي أغلاق الحاسبة
Private Sub Command25_Click()
End
End Sub
```

```
'في حدث عملية متغير أس متغير
Private Sub Command3_Click()
x = Val(Text1.Text)
y = Val(Text2.Text)
Text3.Text = x ^ y
End Sub
'في حدث عملية عشرة أس المتغير
Private Sub Command4_Click()
x = Val(Text1.Text)
Text3.Text = 10 ^ (x)
End Sub
'في حالة حدث عملية ئيكس بونيشل
Private Sub Command5_Click()
x = Val(Text1.Text)
Text3.Text = Exp(x)
End Sub
'في حدث عمليةكون المعامل من نوع السلسلة الحرفية
Private Sub Command6_Click()
x = "ahmad"
Text3.Text = Len(x)
End Sub
'في حدث عملية الجذر
Private Sub Command7_Click()
x = Val(Text1.Text)
Text3.Text = Sqr(x)
End Sub
'في حدث عملية الناتج بالمقلوب
Private Sub Command8_Click()
x = Val(Text1.Text)
Text3.Text = 1 / x
End Sub
'في حدث عملية قسمة حدين
Private Sub Command9_Click()
Text3.Text = Val(Text1.Text) / Val(Text2.Text)
End Sub
'في حدث أظهار المؤقت
Private Sub Timer1_Timer()
```

Label1.Caption = Time
End Sub

PROPERTIES PROJECT

object	property	setting
Label	Name caption	Label1 Input No.
Label	Name caption	Label1 result
Text	Name text	Text1
Text	Name text	Text2
Text	Name text	Text3
Form	Name caption	Form1 Calculator electronic

Example: write program for print double number 5 from (5-200) by using : 1-Do Until Loop 2-For –Next 3-Do While

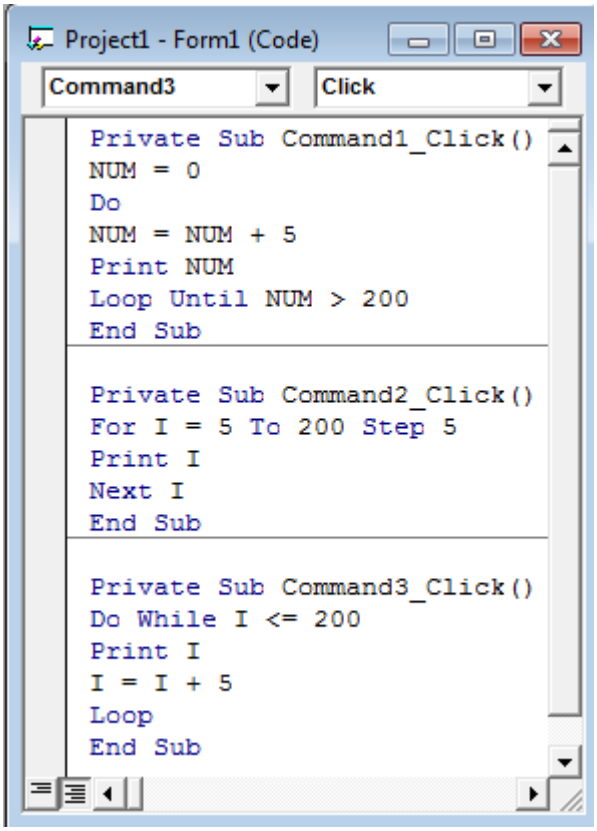
1- Do Until Loop

```
Private Sub Command1_Click()
NUM = 0
Do
NUM = NUM + 5
Print NUM
Loop Until NUM > 200
End Sub
```

2-For –Next

```
Private Sub Command2_Click()
For I = 5 To 200 Step 5
Print I
Next I
```

End Sub
3-Do While –Loop
Private Sub Command3_Click()
Do While I <= 200
Print I
I = I + 5
Loop
End Sub



Example: in the call Form2 not moving into form2 until if the password is true.
Private Sub Command1_Click()
Dim password As String
Do While password = "vb"
password = InputBox("enter your pass word")
If password = "vb" Then
Unload Me
Form2.Show
End If
Loop
End Sub

UNIT THREETEEN

THE ARRAYS

المصفوفة هي عبارة عن مجموعة من العناصر تشترك معا في صفة واحدة . ولتسهيل التعامل معها نعطيها اسما معينا بحيث ان مترجم عندما تختبر هذا الاسم يعتبره اسما مصفوفيا وليس اسم متغير بسيط

جملة الاعلان عن المصفوفات : Dim Array –name (max-value) As Data type

Array-name : اسم المصفوفة

Max-value : تمثل عدد عناصر المصفوفة آو الحد لقيم دليل الفهرس ابتداء" من الترتيب (صفر)

Data type : نوع البيانات الموحد لجميع عناصر المصفوفة

فالجملة التالية : Dim Num (5) As Integer

تعلم مترجم اللغة بضرورة حجز ستة عناصر لمصفوفة احادية الابعاد اسمها Numوجميع عناصرها من النوع العددي الصحيح اما العدد 5 فيمثل الحد الاقصى لعدد عناصر هذه المصفوفة وكذلك القيمة العظمى لدليل الفهرس ولا يجوز ان تتعدى قيمة هذا الدليل القيمة 5 عند الاشارة آلي أي عنصر من عناصر هذه المصفوفة اما الحد الادنى لهذا الدليل فهو القيمة (صفر)

Num (0)
Num (1)

Num (2)

Num (3)

Num (4)

Num (5)

ونستطيع ان نخصص أي قيمة عددية لأي عنصر من عناصر المصفوفة باستخدام جملة التخصيص المعروفة كما يلي :

Num (0)=22
Num (1)=15

Num (2)=3

Num (3)=16

Num (4)=2

Num (5)=1

Example: declare for array contain (5) elements then with give value for every element

Private Sub Command1_Click()

Dim Num(5) As Integer

Num(1) = 15

Num(2) = 3

Num(3) = 16

Num(4) = 2

Num(5) = 1

Print Num(0), Num(5), Num(2)

End Sub

ويمكن ملاحظة ان عناصر المصفوفة داخل الذاكرة تبدو متتابعة Sequential (العنصر الصفري ، العنصر الاول ، ... ، العنصر الخامس)مع اننا نستطيع ان نتعامل مع هذة العناصر بأي ترتيب نريده

ومن خلال جمل البرنامج نستطيع التعامل مع هذه العناصر مباشرة مثال ذلك Print Num(0) , Num(5),Num(2)

حيث ستتم طباعة مجموع محتويات عناصر المصفوفة ذات الدليل الفهرس subscript 0،5،2 ولا يجوز باي حال ان يظهر اسم المصفوفة دون ان تكون متبوعا بدليل الفهرس محاطا بقوسين للدلالة على موقع العنصر في المصفوفة .

كذلك يمكن ان تجري حسابات معينة على عناصر المصفوفة آو ان تقوم بتخزين أي من عناصرها في متغير بسيط Y= Num (3) وبناءا"على ما سبق فأن قيمة y=16

ونستطيع ان نخصص قيمة ابتدائية لجميع عناصر المصفوفة باستخدام جمل الدوران فلو اردنا تخزين الثابت العددي (100) في عناصر المصفوفة (NUM) نكتب ما يلي :

Example: declare for array contain (5) but the all values this array equal.

Private Sub Command1_Click()

```
Dim Num(5) As Integer
Dim I As Integer
For I = 0 To 5
Num(I) = 100
Print Num(I)
Next I
End Sub
```

كما يمكن الاعلان عن مصفوفة معينة لا يبدأ دليل فهرسها بالقيمة صفر

Dim array Name (initial to final) as data type

Intial : القيمة الابتدائية لدليل الفهرس (موجبة آو سالبة)

Final : القيمة العظمى لدليل الفهرس (اكبر آو تساوي intial)

Dim dayofweek1 (1 to7) as string كالاعلان عن ايام الاسبوع day of week1 من 1 آلى 7 مثلا 1

ولتخصيص قيم ابتدائية للمصفوفة المعلن عنها اعلاه من نوع السلسلة الحرفية نستطيع كتابة ما يلي :

Example: declare for array day of week and show the results on one line .

```
Private Sub Command1_Click()
Dim DW(1 To 7) As String
DW(1) = "السبت"
DW(2) = "الأحد"
DW(3) = "الاثنين"
DW(4) = "الثلاثاء"
DW(5) = "الأربعاء"
DW(6) = "الخميس"
```

DW(7) = "الجمعة"

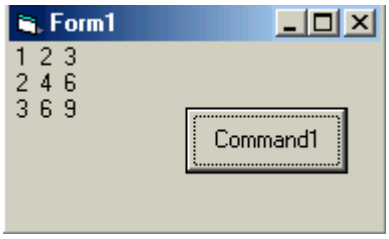
Print DW(1), DW(2), DW(3), DW(4), DW(5), DW(6), DW(7)

End Sub

ويمكن أن يكون دليل الفهرس ذا قيمة سالبة فمثلا للإعلان عن مصفوفة تمثل عدد سكان العالم من سنة 300 قبل الميلاد آلى500 بعد الميلاد يتم التعبير عن ذلك كمايلي: Dim People (-300 To 500) As integer

حيث ان هذه المصفوفة تحتوي على 801 عنصر

استخدام جمل الدوران مع المصفوفات :



Example: Write coding for this form :

```
Private Sub Command1_Click()
Dim a(1 To 3, 1 To 3) As Integer
Dim i As Integer, j As Integer
For i = 1 To 3
For j = 1 To 3
a(i, j) = i * j
Print a(i, j); "";
Next j
Print
Next I
End Sub
```

Example: What is the product for this program:

```
Option Explicit
Dim a(5) As Integer
Dim I As Integer
Private Sub Command1_Click()
For I = 0 To 5
 a(I) = I * 2
 Print a(I)
Next
End Sub
```

ويمكن قراءة المصفوفة باستخدام (input box)

```
Dim a(5) As Integer
Dim I As Integer
Private Sub Command1_Click()
For I = 0 To 5
 a(I) = InputBox("enter value")
Print a(I)
Next
End Sub
```

Example: 1-Read the array including from (6) elements

2- Find the sum numbers the array and show the sum

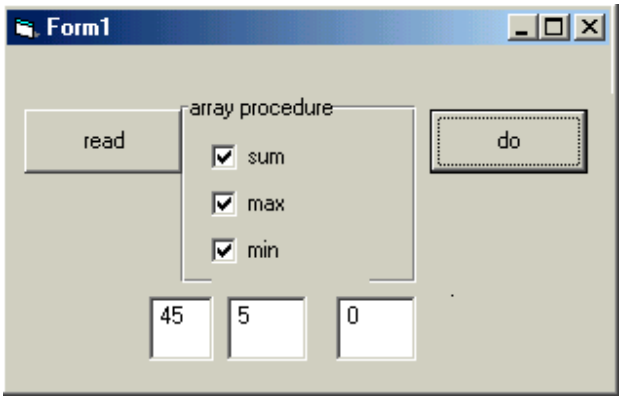
3- Find the max value for the array

4- Find the min value in this array

solution :

```
Option Explicit
Dim a(5) As Integer
Dim i, sum, emax, emin As Integer
Private Sub Command1_Click()
For i = 0 To 5
a(i) = CInt(InputBox("enter value"))
Next
End Sub
Private Sub Command2_Click()
If Check1.Value Then
For i = 0 To 5
sum = sum + a(i)
Next
Text1.Text = CStr(sum)
End If
If Check2.Value Then
emax = a(0)
For i = 1 To 5
```

```
If a(i) > emax Then
emax = a(i)
End If
Next
Text2.Text = CStr(emax)
End If
If Check3.Value Then
emin = a(0)
For i = 1 To 5
If a(i) < emin Then
emin = a(i)
End If
Next
Text3.Text = CStr(emin)
End If
```

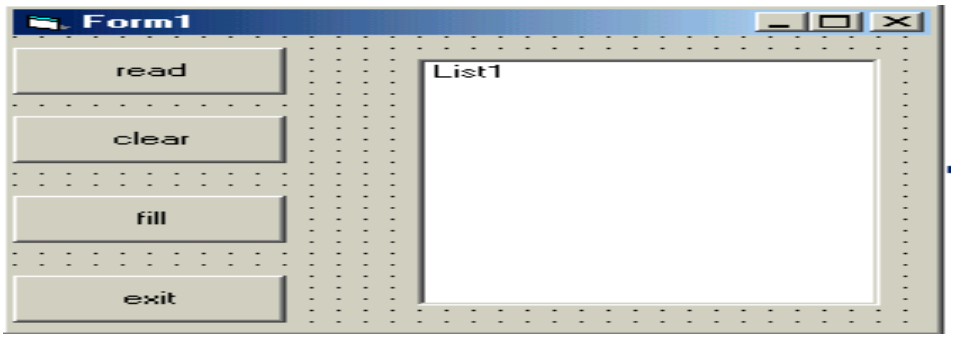



```
End Sub
```

object	property	setting
Check1	Name	Check1

	Caption ***enabled***	***Sum*** ***true***
Check2	***Name*** ***Caption*** ***enabled***	***Check2*** ***max*** ***true***
Check3	***Name*** ***Caption*** ***enabled***	***Check3*** ***min*** ***true***
Command 1	***Name*** ***Caption*** ***enabled***	***Command1*** ***Read*** ***true***
Command 2	***Name*** ***Caption*** ***enabled***	***Command2*** ***Do*** ***true***
Frame1	***Name*** ***caption***	***Frame1*** ***Array procedure***

<u>Example: Read the array from keyborad by inputbox and show the result in the listbox by the arrangement the following:</u>



Dim a(6) As String

Dim c As Integer

Private Sub Command1_Click()

For c = 0 To 6

a(c) = InputBox("enter value")

Next

End Sub

Private Sub Command2_Click()

List1.Clear

End Sub

Private Sub Command3_Click()

For c = 0 To 6

List1.AddItem a(c)

Next

End Sub

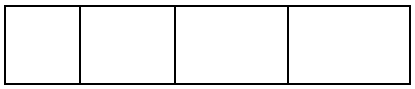
Private Sub Command4_Click()

End

End Sub

المصفوفة ذات البعدين (Two dimensional array):

المصفوفة ذات البعد الواحد: هي المصفوفة التي تحتوي على سطر واحد من المتغيرات ذات النوع الواحد



X(1) x(2) x(3) x(40)

المصفوفة ذات البعدين :هي مصفوفة تتكون من مجموعة من السطور ومجموعة من الاعمدة التقاء السطر والعمود يسمى خلية cell فهي مجموعة من الخلايا تحمل نفس الاسم ونفس النوع من البيانات ويتم الاعلان عنها بالشكل التالي :

dim public/private name array (subscript Row ,subscript column) as data type

subscript Row : عدد الصفوف في المصفوفة

subscript column: عدد الاعمدة في المصفوفة

X(x,y)		Cell

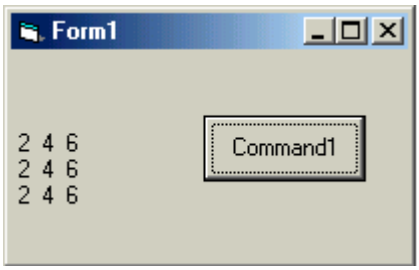
X: سطر y: عمود

وللأعلان عن مصفوفة بصفين واربعة اعمدة تكون Dim I (2,4)as integer

Example: read the two arrays by two dimensional and put the sum result in the another array .

```
Option Explicit

Dim a(3, 3) As Integer
Dim b(3, 3) As Integer

Dim c(3, 3) As Integer

Dim i As Integer, j As Integer

Private Sub Command1_Click()
```

```
For i = 1 To 3
For j = 1 To 3
a(i, j) = InputBox("enter element")
Next
Next
For i = 1 To 3
For j = 1 To 3
b(i, j) = InputBox("enter element")
Next
Next
For i = 1 To 3
For j = 1 To 3
c(i, j) = a(i, j) + b(i, j)
Print c(i, j); "";
Next j
Print
Next i
End Sub
```



Example: What is the product the program .

```
Private Sub Command1_Click()
```

Dim a(1 To 4) As Integer

Dim b(1 To 4) As Integer

Dim c(1 To 4) As Integer

Dim i As Integer

For i = 1 To 4

a(i) = i

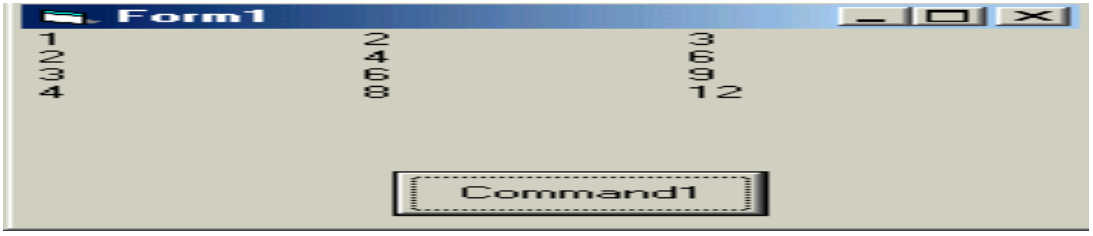
b(i) = 2 * i

c(i) = a(i) + b(i)

Print a(i), b(i), c(i)

Next i

End Sub



Example: Find the sum of two random integer arrays x(4,3) and y(4,3)

```
Private Sub Form_Load()
Dim x(4, 3) As Integer
Dim y(4, 3) As Integer
Dim c(4, 3) As Integer
Form1.Show
Print "x="
For i = 1 To 4
For j = 1 To 3

x(i, j) = CInt(100 * Rnd)

Next j
```

```
Print x(i, 1), Space(2); x(i, 2); Space(2); x(i, 3)
Next i
Print "y="
For i = 1 To 4
For j = 1 To 3
y(i, j) = CInt(100 * Rnd)
Next j
Print y(i, 1), Space(2); y(i, 2); Space(2); y(i, 3)
Next i
Print "c=x+y"
For i = 1 To 4
For j = 1 To 3
c(i, j) = x(i, j) + y(i, j)
Next j
Print c(i, 1), Space(2); c(i, 2); Space(2); c(i, 3)
Next i
End Sub
```