Lesson1: Introduction to Visual Basic 6

Before we begin Visual Basic 6 programming, let us understand some basic concepts of programming. According to Webopedia, a computer program is an organized list of instructions that, when executed, causes the computer to behave in a predetermined manner. Without programs, computers are useless. Therefore, programming means designing or creating a set of instructions to ask the computer to carry out certain jobs which normally are very much faster than human beings can do.

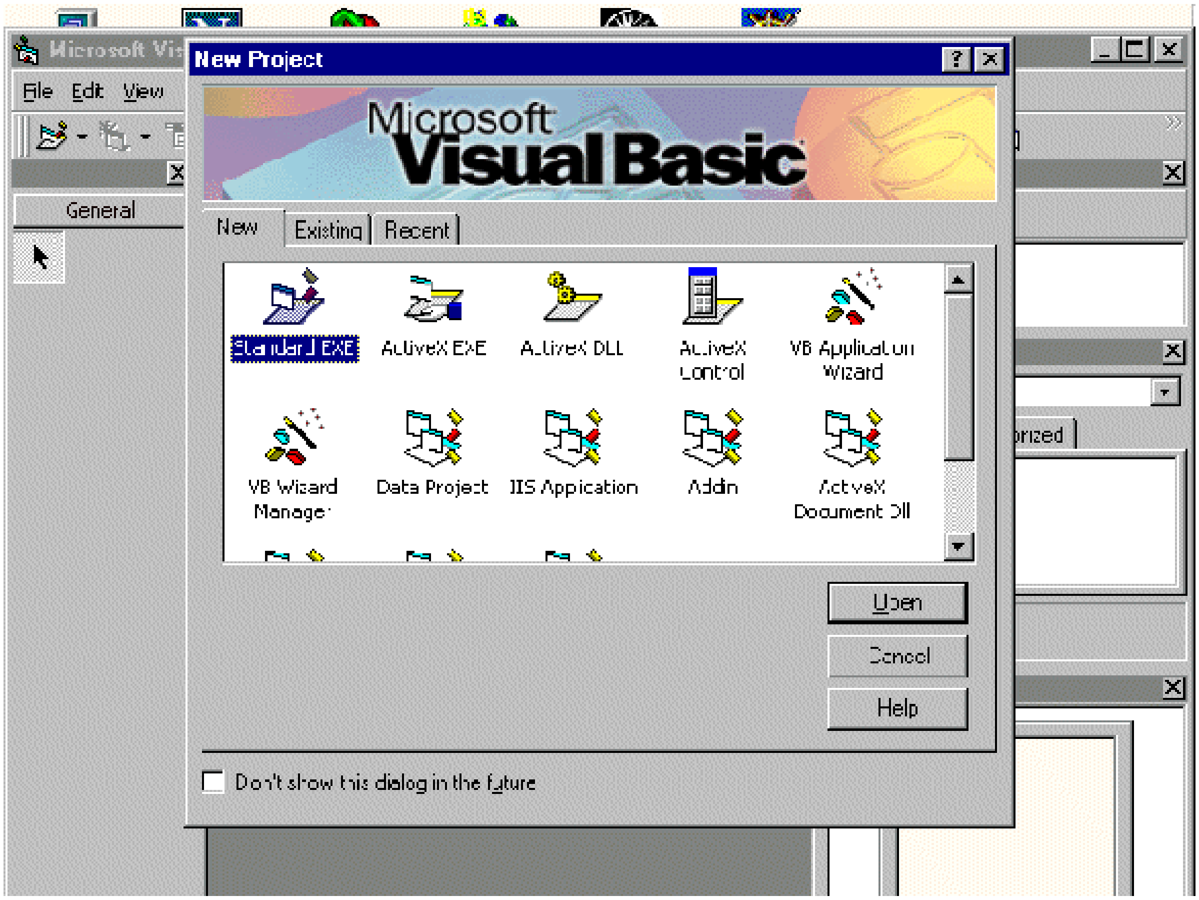
Most people think that computer CPU is a very intelligent thing, which in actual fact it is a dumb and inanimate object that can do nothing without human assistant. The microchips of a CPU can only understand two distinct electrical states, namely, the on and off states, or 0 and 1 codes in the binary system. So, the CPU only understands combinations of 0 and 1 code, a language which we called machine language. Machine language is extremely difficult to learn and it is not for us laymen to master it easily. Fortunately, we have many smart programmers who wrote interpreters and compilers that can translate human language-like programs such as BASIC into machine language so that the computer can carry out the instructions entered by the users. Machine language is known as the primitive language while Interpreters and compilers like Visual Basic are called high-level language. Some of the high level programming languages beside Visual Basic are Fortran, Cobol, Java, C, C++, Turbo Pascal, and more . Among the aforementioned programming languages, Visual Basic is the most popular. Not only it is easily to learn because of its English-like syntaxes, it can also be incorporated into all the Microsoft office applications such as Microsoft words, Microsoft Excel, Microsoft PowerPoint and more. Visual Basic for applications is known as VBA.

What programs can you create with Visual Basic 6?

With VB 6, you can create any program depending on your objective. For example, you can create educational programs to teach science , mathematics, language, history , geography and so on. You can also create financial and accounting programs to make you a more efficient accountant or financial controller. For those of you who like games, you can create those programs as well. Indeed, there is no limit to what program you can create!

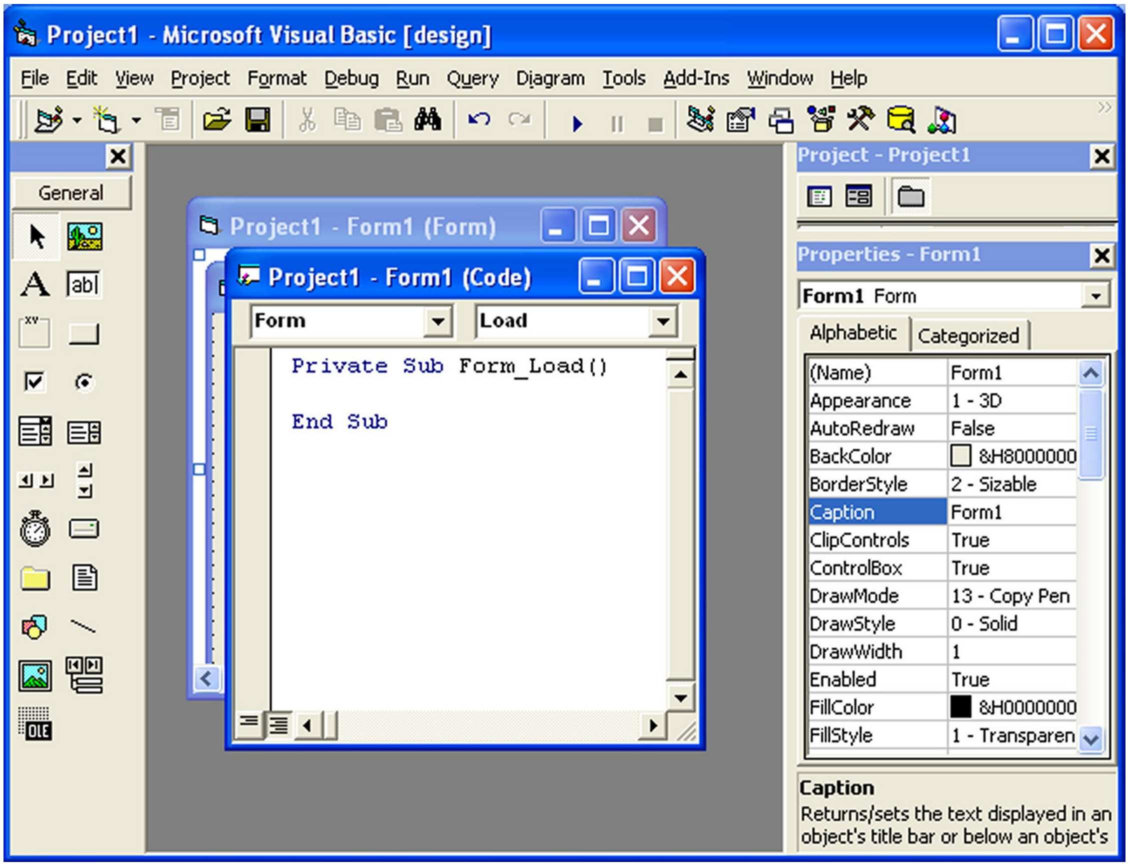
The Visual Basic 6 Integrated Development Environment

On start up, Visual Basic 6.0 will display the following dialog box as shown in **Figure 1.1.** You can choose to start a new project, open an existing project or select a list of recently opened programs. A project is a collection of files that make up your application. There are various types of applications that we could create, however, we shall concentrate on creating Standard EXE programs (EXE means executable program). Now, click on the Standard EXE icon to go into the actual Visual Basic 6 programming environment.



Building Visual Basic Applications

First of all, you have to launch Microsoft Visual Basic 6. Normally, a default form with the name Form1 will be available for you to start your new project. Now, double click on Form1, the source code window for Form1 as shown in figure 2.1 will appear. The top of the source code window consists of a list of objects and their associated events or procedures. In figure 2.1, the object displayed is Form and the associated procedure is Load.



```
Private Sub Form_Load()

End Sub
```

(Name)	Form1
Appearance	1 - 3D
AutoRedraw	False
BackColor	□ &H8000000
BorderStyle	2 - Sizable
Caption	Form1
ClipControls	True
ControlBox	True
DrawMode	13 - Copy Pen
DrawStyle	0 - Solid
DrawWidth	1
Enabled	True
FillColor	■ &H0000000
FillStyle	1 - Transparen

Caption
Returns/sets the text displayed in an object's title bar or below an object's

When you click on the object box, the drop-down list will display a list of objects you have inserted into your form as shown in figure 2.2. Here, you can see a form with the name Form1, a command button with the name Command1, a Label with the name Label1 and a Picture Box with the name Picture1. Similarly, when you click on the procedure box, a list of procedures associated with the object will be displayed as shown in figure 2.3. Some of the procedures associated with the object Form1 are **Activate**, **Click**, **DblClick** (which means Double-Click) , **DragDrop**, **keyPress** and more. Each object has its own set of procedures. You can always select an object and write codes for any of its procedure in order to perform certain tasks.

Figure 2.2: List of Objects

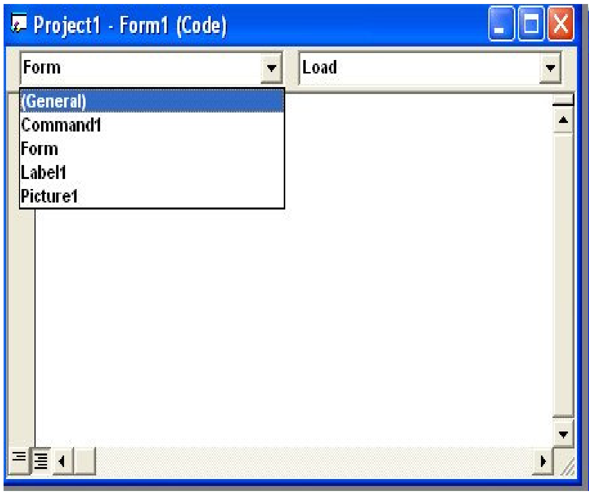
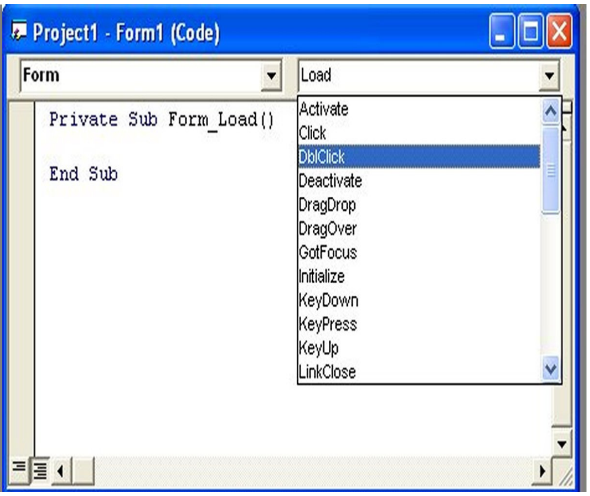


Figure 2.3: List of Procedures



```
Private Sub Form_Load()

End Sub
```

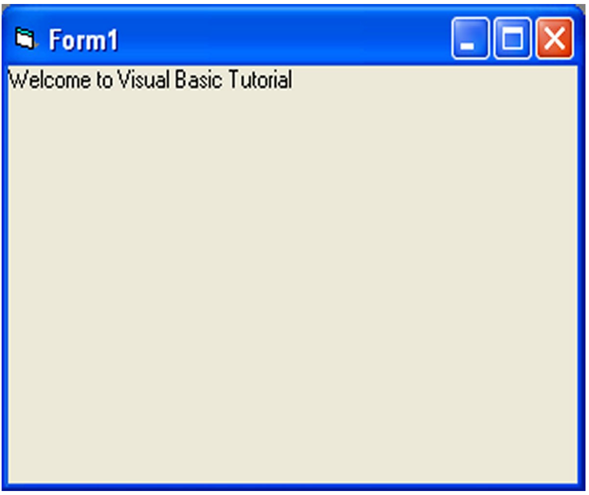
You do not have to worry about the beginning and the end statements (i.e. **Private Sub Form_Load…….End Sub**.); Just key in the lines in between the above two statements exactly as are shown here. When you press **F5** to run the program, you will be surprise that nothing shown up .In order to display the output of the program, you have to add the **Form1.show** statement like in Example 2.1.1 or you can just use **Form_Activate ( )** event procedure as shown in example 2.1.2. The command **Print** does not mean printing using a printer but it means displaying the output on the computer screen. Now, press F5 or click on the run button to run the program and you will get the output as shown in figure 2.4.

You can also perform arithmetic calculations as shown in example 2.1.2. VB uses ***** to denote the multiplication operator and **/** to denote the division operator. The output is shown in figure 2.3, where the results are arranged vertically.

Example 2.1.1

```
Private Sub Form_Load ( )

        Form1.show

        Print "Welcome to Visual Basic tutorial"

End Sub
```

Figure 2.4 : The output of example 2.1.1

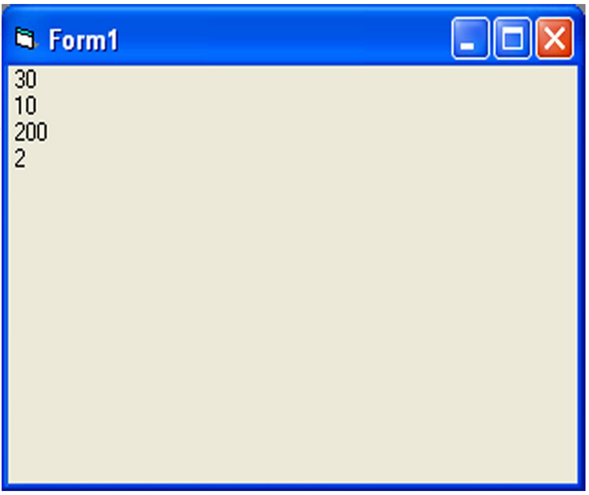


```
Welcome to Visual Basic Tutorial
```

Example 2.1.2

```
Private Sub Form_Activate ( )

        Print 20 + 10
        Print 20 - 10
        Print 20 * 10
        Print 20 / 10

End Sub
```

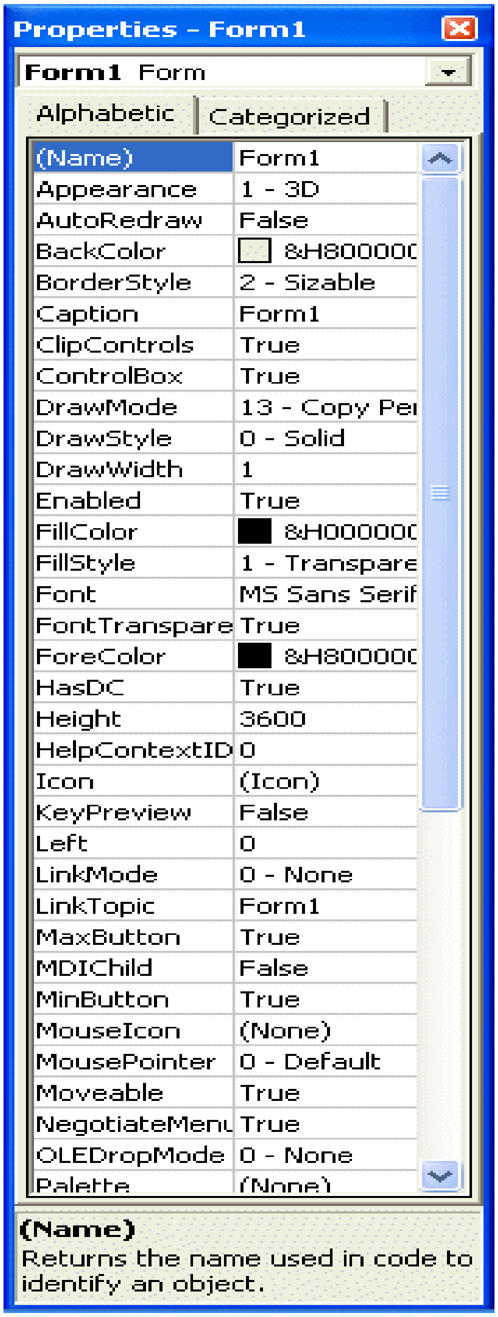
Figure 2.5: The output of example 2.1.2



```
30
10
200
2
```

Lesson 3-Working With Controls

Before writing an event procedure for the control to response to a user's input, you have to set certain properties for the control to determine its appearance and how it will work with the event procedure. You can set the properties of the controls in the properties window or at runtime.



(Name)	Form1
Appearance	1 - 3D
AutoRedraw	False
BackColor	□ &H800000(
BorderStyle	2 - Sizable
Caption	Form1
ClipControls	True
ControlBox	True
DrawMode	13 - Copy Pei
DrawStyle	0 - Solid
DrawWidth	1
Enabled	True
FillColor	■ &H000000(
FillStyle	1 - Transpare
Font	MS Sans Serif
FontTranspare	True
ForeColor	■ &H800000(
HasDC	True
Height	3600
HelpContextID	0
Icon	(Icon)
KeyPreview	False
Left	0
LinkMode	0 - None
LinkTopic	Form1
MaxButton	True
MDIChild	False
MinButton	True
MouseIcon	(None)
MousePointer	0 - Default
Moveable	True
NegotiateMenu	True
OLEDropMode	0 - None
Palette	(None)

(Name)
Returns the name used in code to identify an object.

Figure 3.1 on the right is a typical properties window for a form. You can rename the form caption to any name that you like best. In the properties window, the item appears at the top part is the object currently selected (in Figure 3.1, the object selected is Form1). At the bottom part, the items listed in the left column represent the names of various properties associated with the selected object while the items listed in the right column represent the states of the properties. Properties can be set by highlighting the items in the right column then change them by typing or selecting the options available.

For example, in order to change the caption, just highlight Form1 under the name Caption and change it to other names. You may also try to alter the appearance of the form by setting it to 3D or flat. Other things you can do are to change its foreground and background color, change the font type and font size, enable or disable minimize and maximize buttons and etc.

You can also change the properties at runtime to give special effects such as change of color, shape, animation effect and so on. For example the following code will change the form color to red every time the form is loaded. VB uses hexadecimal system to represent the color. You can check the color codes in the properties windows which are showed up under ForeColor and BackColor .

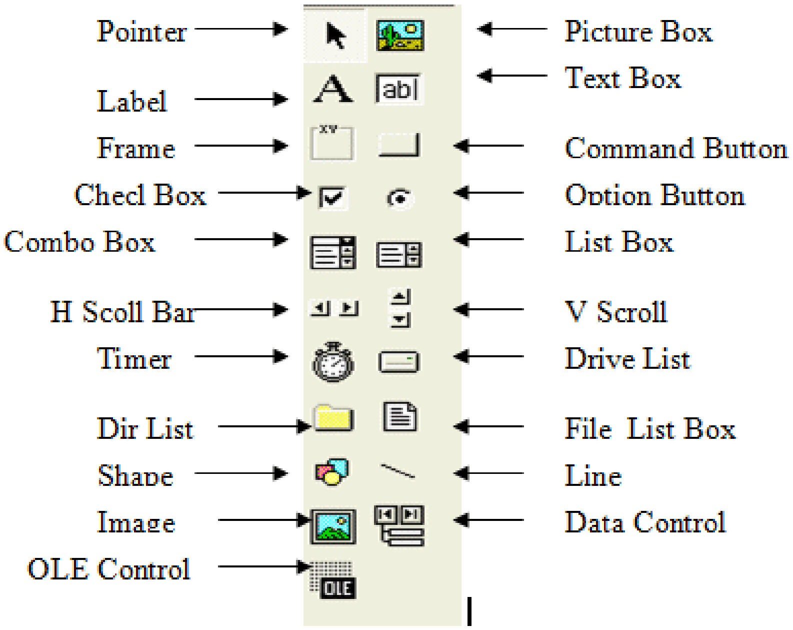
```
Private Sub Form_Load()

Form1.Show
Form1.BackColor = &H000000FF&

End Sub
```

Another example is to change the control Shape to a particular shape at runtime by writing the following code. This code will change the shape to a circle at runtime. Later you will learn how to change the shapes randomly by using the **RND** function.

```
Private Sub Form_Load()

Shape1.Shape = 3

End Sub
```

3.2 Handling some of the common controls in VB6

When we launched Visual Basic 6 standard project, the default controls are displayed in the Toolbox as shown in Figure 3.2 below. Later , you can add more controls as you progress to more advanced programming.



3.2.1 The Text Box

The text box is the standard control for accepting input from the user as well as to display the output. It can handle string (text) and numeric data but not images or pictures. String in a text box can be converted to a numeric data by using the function Val(text). The following example illustrates a simple program that processes the input from the user.

Example 3.1

In this program, two text boxes are inserted into the form together with a few labels. The two text boxes are used to accept inputs from the user and one of the labels will be used to display the sum of two numbers that are entered into the two text boxes. Besides, a command button is also programmed to calculate the sum of the two numbers using the plus operator. The program use creates a variable sum to accept the summation of values from text box 1 and text box

7 !

* : :

%) $ (?$ 56

G (7

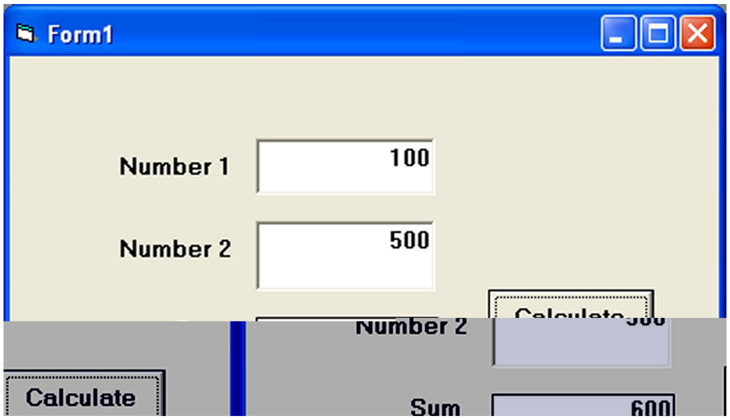
) E 5 (6 . 5 7 6

G ! (

8 ($ E)

0)

! ,",



Form1

Number 1 100

Number 2 500

,"("(&

! !

! 3 $
& ! & "$!
1
% 0 : (* : (

,"(", $

, !

$!

%) $ (?$ 56

)

0)

,"("5 ' 4

%
1 !

1 '
*

% (% E8 % 5H$IJ J, J H6

1

,"("/ 4

, ,

! 9

" ,

%

) % 8 %

*

, (% E8 % 5H$IJ J, J H6

,"(" 4

8

,

* !

(! !

4 ,"(

%) * ?8 5 6

8 (, @8 (A

8 (, @8 7A

8 (, @8 :A

8 (, @8 >A

0)

! 4 !

8 , '

8 , (8 , 7

,"(": $ & 4

$

9

+ ,

! # *

! $ (!

!

4 ,",

%) * ?8 5 6

$ (, @, (A

$ (, @, 7A

$ (, @, :A

$ (, @, >A

0)

,"("; $ % 4

$

$ (

' 1

$ (E($ $ (E'

$

*

1

, K K 0 L

$!

4 ,"5

%) $ (?$ 56

, $ (E ($ 7 E '
H H
0 , $ 7 E ($ (E '
# H3 H
0
H H
0 ,

0)

,"("< * 4

3
9 3
3 3
, ! 3
@ A
< @* A ,
3

' (7 : > =
M
M !

4 ,"/

%) 3 (?$ 5 6

) ( ) E '

0)

%) 3 7?$ 56

) ( ) E (

0)

%) 3 :?$ 56

) ( ) E 7

0)

%) 3 >?$ 56

) ( ) E :

0)

%) 3 =?$ 56

) ( ) E >

0)

%) 3 ?$ 56

) ( ) E =

0)

,"(" = 4

; 8 ! !
!
! !
* : >

,"(" 4

; ! 8 !
!
!
! * : =

,"(" (! 4

* 8 ! !

!

!

! * : =

5 $

, 7 !

/ N

0 " ! !

<

! ! + "

N 5 * 7 :6

!

! " * !

! +

" * !

! +

* 7 (,

I

5O ! ! 6

1 !+ %

) $ (?$ 0)) !

! N

0

! ! !

! ! "

I

*&+ "'

3 " % ! ! 5 6 *

! "-

* (& " & > (

4 " 4 >? ?

(7 E(" ("

7 " & >!

(8 N

I

4 5" %) $ (? 8 (E 8 7 E (EA1 2A 0	%) $ (? 8 ($ EA A , (E 0

%) $ (?

% ( ) E

(0 E

8 ($ EA) $

0

, 0 > ((

7 < A 1

A (, > 7

(@ A

, (, > :

% (

(@) $ A

)! 0 +

' @)A A" A")@

! A8 4 @ - $ A"" - @ 4 - &" *

' B ? !

3

% ! ! !

! 9

!

! !

C 6 " *

2 3

4 D M -E 041"

! - @

$ @ @ ! ('

- F

) P !

5 6) P

! !

8 N > >

> =

4 5"/

%) * ? 56

: E (. 7

0)

%) * ? 56

: E 5 (6. 5 7 6

0)

! > > (7 (:
7 ! (7: ,
" " 3
> = ! (=

/ G

! ! ! *
!
M ! !) !

!
!

/"

"
! < ! ! +
!

& /" 8

	-	7)
!	(!	' 7==
,	7 !	+:7 Q R :7 Q Q

8	> !	+7 (>Q >R: >R 7 (>Q >R: >R
)	> !	+: >'7R7:0.:R +(>'(7SR0+ >= (>'(7SR0+>= : >'7R7:0.:R
;	R !	+(QSQ S:(:>R 7:7 .:'R +> S>' = >=R>(7>Q0+ :7> > S>' = >=R>(7>Q0+ :7> (QSQ S:(:>R 7:7 .:'R
$!	R !	+S77 ::Q 7': R= >QQ =R'R S77 ::Q 7': R= >QQ =R 'Q
;	(7 !	.C+ QS 77R (7 =(> 7 > ::Q =S: =>: S=' ::= .C+ Q S77R(7=(>7 >::Q=S:=>:S='::= 57R 6

/" "(8 6

/ !
! +
! ; !
! ! 5 6 3 "
! ! ! = 7

& /"(8

	-	7
) 5 6	8	(= >"
) 5 6	8 . (' !	' 7
;	R !	- ! ((" ; :(SSSS
	7 !	*
3 "	> !	! "
5 6	(!	! ;

5 6 8 .77 !) +

" ", -)) 4)

8 ! ,

! * E(:'RST ; !
) ! = :

& /",

-)) 4	
F	8
2	)
T	;
U	$!

, M
T) !
I

/ EH - H
/ EH(R"+S"+RRR+QQQH
8 ; !ET:(+; +"T
0 ET(7I" T

! " " # $ %

	! ! ! * ! M ! !) ! ! ! /" " ! ! ! + !

/" " 8

/
!
!

!

!

0

!

!

,

Q   !

!

$
!

,
8

%

M

)
;

! !

*
!

!
!
!
8 !

M

!

!
!

= (
& /" 8

	-	7)
!	(!	' 7==
,	7 !	+:7 Q R :7 Q Q
8	> !	+7 (>Q >R: >R 7 (>Q >R: >R
)	> !	+: >'7R7:0.:R +(>'(7SR0+ >= (>'(7SR0+ >= : >'7R7:0.:R
;	R !	+(QSQ S:(:>R 7:7 .:'R + > S>' = >=R>(7>Q0+ :7> > S>' = >=R>(7>Q0+ :7> (QSQ S:(:>R 7:7 .:'R
$!	R !	+S77 ::Q 7': R= >QQ =R'R S77 ::Q 7': R= >QQ =R'Q
:	(7 !	.C +

QS 77R (7 =(> 7 > ::Q =S: =>: S=' ::=

.C+ Q S77R(7=(>7 >::Q=S:=>:S='::=
57R 6

/" "(8 6

/ !
! +
! ;
! ! ! 5
6 3 " ! ! !
= 7

& /"(8

	-	7
) 5 6	8	(= >"
) 5 6	8 . (' !	' 7
;	R !	- ! ((" ; :(SSSS
	7 !	*
3 "	> !	! "
5 6	(!	! ;
5 6	8 .77 !	) +

/" ", -)) 4)

8 ! ,

! * E(:'RS T
; !) ! = :

& /",

-)) 4	
F	8
2	)
T	;
U	$!

, M
T)
!
I

/ EH - H
/ EH(R"+S"+RRR+QQQH
8 ; !ET:(+; +"T
0 ET(7I" T

/"(G &

! " ,
! !
8
!

/"(" & 8

- , 7==
- /
- ,
- %

0 ! = >

& /"5

8	8
#!?$	#! $
1	(/ !
8 ?/ ?$? &)0	9 F9 * BF

/"(''(&

,
! ! ! !
D
I

;

0 = (

;)
; ! /)
; ,
; ,
; ,
; ; ;

1 !
I

;) ! /)
,

, ! !

*

+ + *

+ " = (

9 + !

I

0 = 7I

; ! /) B ('

! / (' $

/", $

$

/"," $

$

0 = :

$ %) E: (>7

$) E:Q

$)) E("

8 I

" # &

;

E0

!

5 6

l

/ E("

/ E / +

SS

/ EH- 8! H

E

8 (E

$ (E

8 > $ E

(

/ E

5 (6

E / .

/ . /

"(*

, . +

!

(

& " # *

3	#	0
V	0	7V>E(
B	#	>B:E(7 5=B 667E '
C	;	(7C>E:
#	# 5 6	(= # >E: 7== ('E=
J	, ; 5 6	(SJ>E>
. F	)	H HFH HEH H

4 " ; /	4 "(; (7 : ,

) ; /) ; ! /) %) $ (?$ 56 / E (/ E 7 ! / E / . H H . / 8 ($ E ! / 0) , * / / N (7 ! / ! * ! ! / ! 8 (	; % * ?$ (E 5 (6 7E 5 7 6 :E 5 : 6 E (. 7. : E C= 8 ($ E 8 7 $ E 0) , ! !

: $ ' !

:" $ *

! !
$! !

Q (

:"(*

,

Q 7

& :" $ *	& :"(

*	G
E	0M
W	#
X	8
WE	# M
XE	8 M
XW	/ 0M

*	G
	3
	3
4	
/	/

B 1 9
I &
H HXH HXH$HXH;H XHYH

:", H)"""""""" """""""" - * !)"""" """")"""" """")) B ! , 0 0 ,) ! 0	0 I %) 3O?$ 56 E 5 (6 E 5 7 6 E 5 6 , E . 5 6 XW ' E E * 0 E * E 0 , 0)

; - $ """""" $ -

,
)"""") , !
! -
$ 9) $
! , 0 ,
) $! !
5 6
, 0 , ! !
, 0 , ! !
) $!
, 0 ,
!
) $ I

) $

$ (

$ 7
)
$:

$ 0
)

4 ;"

;)

%) $?$ 5 6

E

) $

$ H H
$ EH9 ; H

$ H +H
$ EH; H

$ H H
$ EH$ H

$ H$H
$ EH% H

$ 0
$ EH* H

0)

0)

<

!

! Looping is a very useful feature of Visual Basic because it makes repetitive works easier. There are two kinds of loops in Visual Basic, the Do...Loop and the For.......Next loop

<"

6 ;

8

6 ;

8

6 ; &

8

6 ;

8 &

<"(4

) !
! 0 ; 1
0 S 7

<", ! """"8 4

I

* E / / 5) 6
3
/

% S : S : S :

)
4 !
* K / 8 ! 4 !
< ! , K K
8 N S :

4 <"(

; ,
%) * ? 56
8 (, H H F F H H
;
E . (
) E) .
8 (, F F)
, E ("
0 ;
0 ,
8
0)

! "#"$"%"&&"!"(
)) * +)
) * !(,)))
* + (* !(,)) - - . . - -)
) * +
)) (

4 <", * E((' ! E /	4 <", & * E(('" (' E .(/
4 <", * E('" = += E + (' / B/	4 <", %) * ? 5 6 * E((' , W 0 * 0 , 0 % 0 , 0)

& ' #$ $ ( )

! +
5 6 !

! 8 0 1

, !
G 40 1 4 0 1

=" G 4 0 1 !

" # +
C I

G >G 40' @ - @ 1

% !) !
!
(' (! !
!

& =" -

-	8 $	
'	3 3 !	3
(	3 $	3 $
7	L !,	L ! ,
:	1 / $	1 / $
>	1 /	1 /
=	L !$	L ! $

,
! !

0 I ! # E# 5 H$ 3O % H (H)
H6

! # E# 5H$ 3O % H
3 $ H) # H6

! # !
5 6 ! !
! , , !

& ="(7 $

	8 $	$ %
(	3	3
7	$	$
:		
>	L !	L !
=	,	'
	1	1
Q	/	/

4 =" , I 1 * (' (! ="	I %) ?$ 56 ; , E # 5H$ H (H H6 , E (; ! $ E H) H 0 ; ! $ E H H 0 , 0) * (' 7 3O H H ! C $ H H ! ! ="(

! ! (' : & =",	4 ="(1 , (' (! I %) 7?$ 56 ; # 7 , # 7 E # 5H$ H 1 / $. 0 H # H6 , # 7 E !7 $ E H H 0 , # 7 E Q !7 $ E H ! [H 0 !7 $ E H H 0 , 0) , ! I ! =",

	8 $	
(	$	
:7	Z	
>R	0	
>	,	

="(40 1 !

, 5 6

!

G > 40' @
@) . 4 @ 46 @
6 1

!# !
! !

!
I

· % +
! !
M
· +
,
· + +

!
!
· + !+ +

G !

!
!

!

7 @ -E @
@ #& @ 4 @ @ - @ $ @ @ # @ ! 4 7 "

0 1 7 !
! L ' (
, 0 (((! !
(' ' (L

%) * ?

L

* E(('

% L

/

L !
*
(

07 2 1C 8 N
! I

, , 5L B 6 '
=

(!
(! !
* ! ' SR
! ! = RR
, 5= RR6 =< (!

, !
G N 1

(! <
8 ($ E/
!

4 "(

;

%) $ (?$ 5 6

L

/ E, 5L B 6.(

8 ($ E/

0)

8 !

6 !

* , 57 >6E7
, 5> R6E> , 5+> 6E += , 5' ':76E'

6 -E M *
)M 5>6E7)M 5S6E7

6 #&)
5+R6 E R 5R6E R

6 4 * 0 5(6E (E
7 Q(R7R(R7R>=S'

6 ! 4

9
* * 5+ :>6E +
, 5+ :>6E+Q

6 7
* L 5 6
* L 5Q 7= Q 76 EQ 7

6 8
*

8 ('E 7 :'7=R=

4 ",

, 5 6 * 5 6 L 5 6
, ; 8 L
(' E L 5L B Q Q6
' Q Q &

%) * ? 56

E (

% H H H H H, 5 6H H* 5 6H HL 5 >6H

; X ((

L

E L 5L B Q Q6

% , 5 6 * 5 6 L 5 >6

E . (

8

0)

!

- @ $ @ # "

6)

6 $

6

6

! *
\ M (R']<
(M \ ! (R'
! !
5\C(R'6 9
\ ! !
* (
>=] \C>) \ "
! (> 8 N
I

4 "5

, !
'] : ']
\ M E>B 5(6
! ! !

%) * ? 56

E > B 5(6

% H H H) H H$ H H H

* E ' : ') :'

E B 5 C (R'6

% L 5) 5 6 >6 L 5$ 5 6 >6
L 5 5 6 >6

/

0)

) 4 5

* !
! ! ! ;
! ! !
, * L
9

& -
!

0 1 &)

& 0 1l 4

!

! ! 5 ! !
!6

4

%) * ?

% H,H< 5=6< H H< 5('6< H H< 5(=6< H H<
57'6< H H

%

% 5('6< H,H< 5(=6< H H< 57 '6< H H< 57=6<
H H< 57'6< H H

%

% 5(=6< H,H< 57'6< < H

0 1 -)

- ! !
9 5 6
)
*

4 (

%) * ? 56

% H H<) 5('6< H H

0)

! ('

0 1 !)

! !
! !
* +
!

5 6 *

! 0 @ B ?1

!

-	4	4
^ /	!	* 5RSQ7 7:> @^ / A6ERSQ7 7:>
*	!	* 5RSQ7 7 @* A6ERSQ7 7:
)	!	* 5 >RSQ7 7 = @) A6E >R SQ7 7Q
$!	!	* 5 >RSQ7 7 = @$!A6E P >R SQ7 7Q
%	$! _	* 5' = :7> @% A6E= :7 _

4 ,

%) * ? 56

% * 5RSQ7 7:> H^ / H6

% * 5RSQ7 7 H* H6

% * 5 >RSQ7 7 = H) H6

% * 5 >RSQ7 7 = H$!H6

% * 5' = :7> H% H6

0)

/ ! I

, - G !

@
)

) @
7 @) @ G @ @
@ 7 @ H @
@ @ @ -
@$ # "0 1
!

!

0B' ?1

*

8
5 6
E ((8
5
6 E
77

8

!

*

%
* ?
5 6

4E M 5(6

1E(7:>

YTE('T

% 8 5 6
8 5!6
8 5 6

0)

(> R ! R T
!

0 1 7 !

L

7 0B' ?@ 1

*

L 5@ A >6 E

0 1) !

8 P

) 0B' ?@ 1

*

8 5@ A >6 E

0 1 !

8 !

0B' ?1

*

8 5@ A >6E

0 1 7 !

L !

7 0B' ?1

*

L 5@ A >6 E

0 1)

!

0B' ?1

*

5@ A6 E

0 1 G !

G ,
I

G 0 @ @ 1

*

5@ A : 6 E

0 41 -)

-

0 @ @ & 1

,
*

, 5(@ A A A6ER

041 H)

H 3

*

& 5@ A6 E ,)& 8) $

8 5@ A6 E

04 1 -)

-

04 1 $ #)

$)$,, #
)$,, !)$,,
)$,, @) $, , A
7==)$,, !)$,,)
! ! ! !
! $

$ 0 1

0$ 1

I

$ 5 =6E $ 5(776E $ 5:Q6E_ 5@ A6E 5@FA6E:R

5 $ H 6) !

5" $ J * !

I

' & !) 8 0# # @""""""""""""""1 #

' !) 8 0# # @""""""""""""""1 #

B % "
% !

4 5"

, !
! !
!

% * * 5% 6

D* * 5* 6
D% %
* E % B 5(. C ("6 V

0 *

%) ?$ 56

D *
; *
; %
;
;
% E %
E
E !

D

* E * 5% 6
# 5H * H F * 6

0)

4 5"(!	$ % * 5 6)) $ $, WE R' E H H $, WE Q' E H H $, WE ' E H$H $, WE =' E H;H $, WE >' E H0H $ 0 E H*H 0) 0 * %) ?$ 56 $ E 5 6 0)

# #

"

! ! !
! 9
!
! *
! ("
)
! !
! ! 5(6
576 5:6
!

"( )

! 3 !

!
! !/ 5 6
! !/ 5 !6 !
!/ 5 ! 6 / !
! ! ! ! !
8
!

((3 !

) /	/ 5(6	/ 576	/ 5:6	/ 5>6 / 5	=6	/ 5 6

(7 ; !

/ 5((6	/ 5(76	/ 5(:6	/ 5(>6
/ 57 (6	/ 57 76	/ 57 :6	/ 57 >6

"(

% ; ! " !
% !
; !
!

! I

; !/ 5 6 !

!

4 "

; $ / 5('6)

! (' 3 (
$ / 5(6 $ / 5('6
3 ((! $ / 5'6
$ / 5('6

$ / 5(6	$ / 576	$ / 5:6	$ / 5>6	$ / 5=6	$ / 5 6	$ / 5Q6	$ / 5R6

4 "(

; $ 5(" ="6 ,

! $ 5("6
$ 5="6

! I

; !/ 5) ( ) 76 !

0 (:

;) / 5(' ('6 (' (' (" D
/) / 5((6) / 5(' ('6
", - ' 5 6

5 6 $

; / 5('6
)
; ,

%) / 56
* E (('
/ 5 6 E
, 5H0
H H0
/ H HH (=" >="6
, / 5 6 XW
HH
* (%
/ 5 6
0
0

; / 5('6
)
; ,

%) / 5 6
* E (('
/ 5 6 E
, 5H0
H6
8 (,
/ 5 6
/
0)
%)) ?$ 56
/

0 , 0)

/
0)

,
!

!

!
!

!
('

: % !

:"

& (: !

,

!

$;L [,

! !

:"($)

* K) 8 K ! * # L) 8 &

0

! !

0 I

* K MG M " 4 K ! * # L

! #! ;

! (, ! !

H

* K# M " 4 K ! * # L

, ! 9 #8 !

* K MG M " K ! * # L (

:"(" - ' $ 4)

%) ?$ 56

; #)

;) /)

3 H IJ#! ; J H * 3 T(

# E # 5H* H6

) / E , 5H0 / H6

% T( ) /

# E # 5H H F) / F H H6

$ T(

# E # 5H* H6

0)

B #! ; D
! ! !

:", 7)

(Q 7 ! T 9
! 1

;,#

:"," - ' 7)

%) L ?$ 56
; ( )
3 H IJ#! ; J H * , T(
, T((
(E (
$ T(

0)

B ! (

4 :","($ 7) $ 4 ! ! I ;) %) ?$ 56 $; (* E H `B 6aB H $; ( ) 3 , $; (* / XW HH	! $ "! > K 4) N2" 4 1O2" 4 K ! $; ( ) 3 ! $ "- - ! (E (F ! (3 I

3 $; (* / * , T(; , T((E (F 8 & 03*5(6 0 , $ T(0) %) ?$ 56 $; (* E H `B 6aB H $; ( )) , $; (* / XW HH 3 $; (* / * 3 T(% T(($ T(0 , 0)	

< $ G # 6'

1 ! $;
$;

! !
G) G $! !
9 # # $!
! GG ! $.
!

<" $ $

, ! $; ! $; ! ,
! "
$; , ! !

6 ,

$

%) * ?8 56
D
8 E 5) + 6 J 7
E 5) 9 + 9 6 J 7
D, $;
!$; $ E H3 H
0)

%) !$;?) & 56

D&

/ $ E !$;
0)

%) / ?$ 56
!$; $ E H/ H
0)

%) % !?$ 56
!$; $ E H% !H
0)
%) % ?$ 56
!$; $ E H% H
0)

%)) ?$ 56
!$; $ E H) H
0)

(= $ G # 6'

, $; ! / !
! $; ! ! !
! !
!

, " ! $ & 4 4 4
4 4 ! 4 ! ,) !
! G) G
$ 0GG$ 1 ! ! ! , !
, ,
!

- $ + ! !
- ; 8 + !
  %$
- ; 8 + !
- + !
- * 8 + !

L
!
!I

) (I & ! !

) 7I&

) :I& (
! ! 4

) >I & ! 4 '

) =I & - ! 4

)

$ %) $ (?$ 56 D ! , 8 , E ' * (% E 5HB H6 0 , 8 , E (* (% E 5HB H6 0 * (% E 5HB BH6 0 , 0) bb %) ; (?$ 56 D 5 6 * (% E ; (% , $ (8 , E ' * (% E 5HB H6 0 , $ (8 , E (	bb %) !?$ 56 D ! # * $ 7?$, $ (8 , E ' % ! ; ! E H H 0 , $ (8 , E (% ! ; ! E H) M H 0 , % ! * / E (% ! $ E H3 H % ! $ E H% !H bb

* (% E 5HB H6 0 * (% E 5HB BH6 0 , 0)	0) %) ?$ 56 , % ! # E =7> 0) , % ! # XW =7= % ! E % ! $ E H) H 0 , % ! E % ! $ E H$ H 0)
%) ; (?$ 56 D ; (% E ; (; 0) %) * (?$ 56 , $ (8 , E ' * (% E 5HB H6 0 , $ (8 , E (* (% E 5HB H6 0 * (% E 5HB BH6 0 , , L 5* (% (6 XW HJH E * (% . HJH . * (* / 0 E * (% . * (* / 0 , (E 0) %) * ?8 56 D ! 8 E 5) + 6 J 7 E 5) 9 + 9 6 J 7 $ (E HB H $ (, HB H $ (, HB H	

$ (, H H 0)	

($ G # 6'

, 7' ! / !
! !
! !
! !

) " " ! $ & 4
4 4 4 4 ! 4 ! ,)
!

- $ + ! !
- ; 8 + !
  %$
- ; 8 + !
- + !
- * 8 + !

L
! !I

) (I & ! !

) 7I&

) :I& (
! * 8

) >I & * 8)

) =I & 0

)

$

%) * ?8 56

D !
8 E 5) + 6 J 7
E 5) 9 + 9 6J7

$ (E H H
$ (, H H
$ (, H H

0)
bb

%) $ (?$ 56

, 8 , E '
* (% E 5HB <B <B " <B H6
0
* (% E 5HB BH6
0 ,

0)

D) !
%) ; (?$ 56

* (% E ; (%
* (% E 5HB <B <B " <B H6

0)

D$;

%) ; (?$ 56

; (% E ; (;

0)

%) * (?$ 56

, $ (8 , E '
* (% E 5HB <B <B " <B H6
0
* (% E 5HB BH6
0 , ,

, L 5* (% (6 XW HJH
E * (% . HJH . * (* /
0
E * (% . * (* /
0 ,
(E

0)

%) ?$ 56

, L 5* (% (6 XW HJH
E * (% . HJH . * (* /
0
E * (% . * (* /
0 ,

D
(% E 8 % 5 6

0)

(, $ & 6'

#) ; % ,

,

D

%

/

? !

! ,

8 / ,/; #;

+ ; /
! / ,/; #;
/ + L) !
1
! , H$ $ H
$ / 8
? ! D

D ;) ? ! 3

; * !
$ / / *= 1
D ! "

) "

7)

1 ! * !
$!

(5 $ & 6'

, 8 7: !
, !
!

!
I

. "7 - "G ! D #

. "7 - "G D #

. "7 - "G 8 4 D #

. "7 - "' D #

1 I

. "7 - "# 8 D

. "7 - "H D &

. "7 - " D ;

B I ?

, ! *
L / L % L 8 L !
1
5 (S6 !

/ + !

%) $ 7?$ 56
L # *
0)

%) $ (?$ 56
L # /
0)

%) $:?$ 56
L # %

0)

%) $ >?$ 56
L # 8
0)

L ! !

(/ $ &

*

, 8 77 8 7:

9 ! !

!

;3 ; 3 4 "

;3 4+ 5

! 6 !

! ,

;3 !

! $. # 4

; $! ! ;3+

) 4 &)

;3 *

+ ;3) !

;3

/ !

I

* /	
* $	+ ;3
;3 /	
8 (/	
8 ($	
8 7 /	
8 7 $	I
8 : /	1
8 : $	1 % I
8 > /	,) /
8 > $	,) /I
8 = /	% ,;
8 = $	% D ,;I
8 /	) "
8 $	) " I
(/	
(; *	
(;)	
7 /	%
7 ; *	1 %
7 ;)	
: /	,) /
: ; *	,) /
: ;)	
> /	% ,;
> ; *	% ,;
> ;)	
= /	) "
= ; *	) "
= ;)	
$ (/	)
$ ($	F)
$ 7 /	
$ 7 $	F
$: /	;
$: $	F;
$ > /	$
$ > $	F$
$ =	%

/	
$ = $	FX
$ /	/
$ $	FW
$ Q /	0
$ Q $	0F

! ;3
*"G
;3 I

6 $;3

6 $ $) !

& $ - D 3 /
% & 4 +$ G)
P ,"/ * "

/ *"G " 1
$ $ 3O

* ! L) ! $
& & / ! !

bb

/ ! !
;3

i i

i i

* - l

%)) ?$ 56

L * 5H H6 E
L * 5H1 % H6 E %
L * 5H,) /H6 E ,) /
L * 5H% ,;H6 E % ,;
L * 5H) " H6 E) "
L &

0)

* # l

%) ?$ 56

L /

0)

* I

%) ; ?$ 56

$ E # 5H ! ! [H 1 /
H; $ H6
, $ E 1
L ;
# HL ; 2H H# H
0
# HL / ; 2H H# H
0 ,

0)
bb

* $ I

%) $?$ 56

E HH
% E HH
% ,; E HH
,) / E HH
) " E HH

0)

* % 5X6

%) % ?$ 56

, / L 3*
L # %
, L 3*
L # /

0 ,
0 ,

0)

* / 5W6

%) / ?$ 56

, / L 03*
L # /
, L 03*
L # %
0 ,
0 ,

0)

(H G) Q $ "=

, ! !
;3 $ ' !
! ! !
3 ; ^ ; ^
! ,

; ^ !
; ^
" !
) # ; ^ $ ' !
! !
;3 ! 8 !
3O / ! ;
^ ;3
; ^ ;3

I

! ! # 9

, ! ! ,

!

I

/ ! ;3
;3 ;3;$

/ ; 8 % 5
6 , ! !
%
, 3O
;3;$! ;3;$!
L 7+ $!
3O

* !! ! ; ^
;) ! ; ^ (
1 ! ! &
! , ! !
/ I

(: H -R E

, ; ^ $!
9
! ,
)Z8 M !)Z8 - R !
&)Z8 !
!)Z8 !)080$
! *L3#
! I

- $) @) (@""""""@) 8
!7*G & 8

(7 /
1 ! M ! , !
! ! I

- $ 2 !7*G & 8

,)Z8 M
@ @ # @ J @ - 8@
' & @ ' & % & % " &

/ ;3 ; ^

/ # @

$ # %

! 1 #!

I

/ ! ;3 %
7= 9 ! ;3;$
! L 6 $ 4
! $ 5)Z86 ! - $ 2 !7*G & %"

ii

bb

/ ! I

%) ?$ 56

(L) E H)080$ *L3# H
(L
($ E (L)

0)

!

%) ?$ 56

(L) E H)080$ *L3# H
(L
($ E (L)

0)

* ! !

%) ?$ 56

(L) E H)080$ B *L3# H
(L
($ E (L)

0)

/ ! ; ! !
! I

! ; ! !
! |

8 ! ; ! !

(; G -R S

,)Z8 !)080$
*L3# , !
)Z8 ! 3)Z8 !
90L0 !
)! I

- $) @) (@"""""@) 8
!7*G & 8 9 7 $

E W X XE WE XW 8

& !
* " ; ^
;3 ;3;$!
L 6 $ 4 !
$ 5)Z86 ! - $ 2 !7*G & %" /
; ^
)Z8 M ! , Z !
I

Example 21d1: Query based on Author

Run the program and key in the following SQL query statement

SELECT Title, Author FROM book WHERE Author='Liew Voon Kiong'

Where you click on the query button, the DataGrid will display the author name Liew Voon Kiong. as shown below:

ii

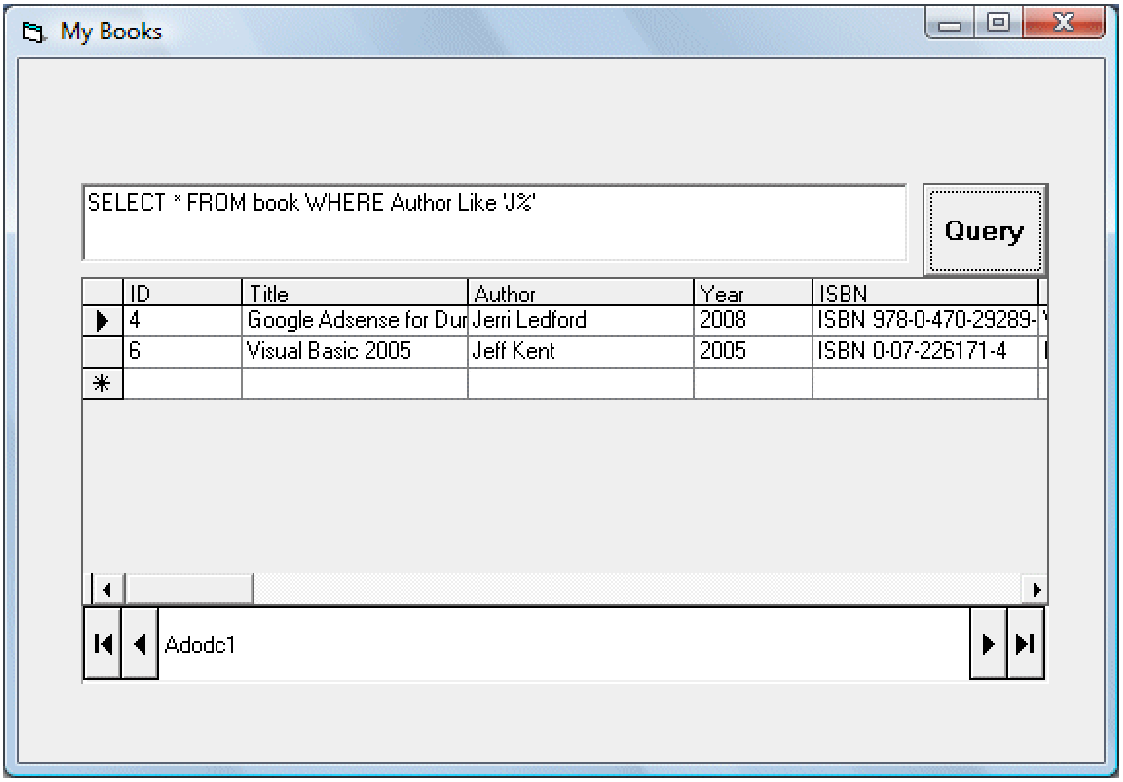
You can also try following queries:

- SELECT * FROM book WHERE Price<=80
- SELECT * FROM book WHERE Year=2008
- SELECT * FROM book WHERE Author<>'Liew Voon Kiong'

You may also search for data that contain certain characters by pattern matching. It involves using the **Like** operator and the **%** symbol. For example, if you want to search for a author name that begins with alphabet J, you can use the following query statement

SELECT * FROM book WHERE Author Like 'J%'

Where you click on the query command button, the records where authors' name start with the alphabet J will be displayed, as shown below:



SELECT * FROM book WHERE Author Like 'J%'

	ID	Title	Author	Year	ISBN
▶	4	Google Adsense for Dur	Jerri Ledford	2008	ISBN 978-0-470-29289-
	6	Visual Basic 2005	Jeff Kent	2005	ISBN 0-07-226171-4
*					

Next, if you wish to rank order the data, either in ascending or descending order, you can use the **ORDER By , ASC (for ascending) and DESC(Descending)** SQL keywords.

The general formats are

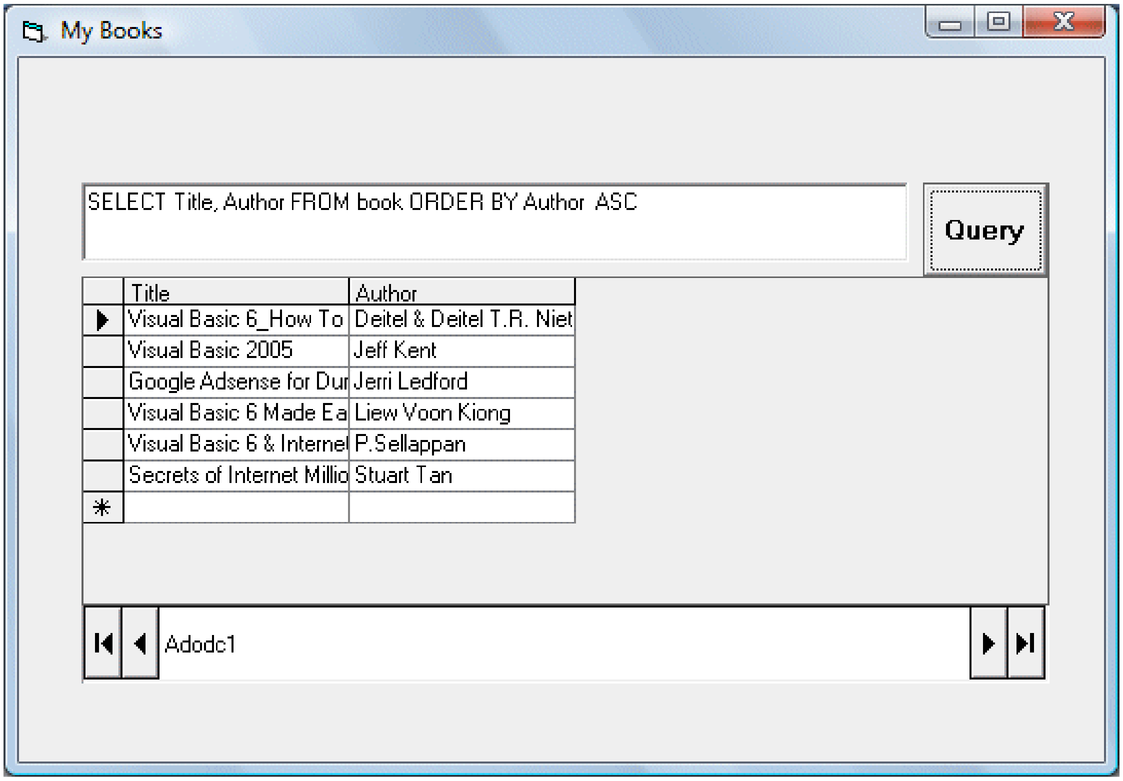
SELECT fieldname1, fieldname2.....FROM table ORDER BY fieldname ASC

SELECT fieldname1, fieldname2.....FROM table ORDER BY fieldname DESC

Example 21d3:

The following query statement will rank the records according to Author in ascending order.

```
SELECT Title, Author FROM book ORDER BY Author  ASC
```

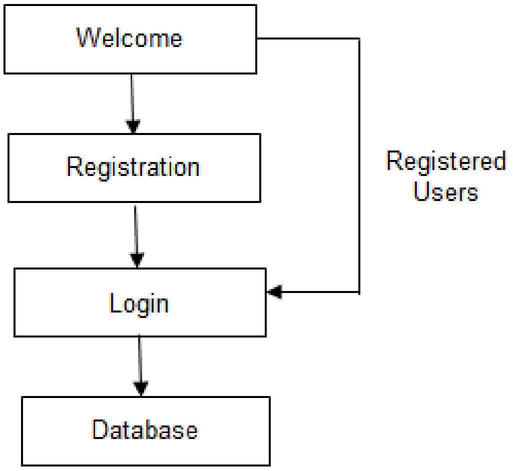


```
SELECT Title, Author FROM book ORDER BY Author  ASC
```

	Title	Author
▶	Visual Basic 6_How To	Deitel & Deitel T.R. Niet
	Visual Basic 2005	Jeff Kent
	Google Adsense for Dur	Jerri Ledford
	Visual Basic 6 Made Ea	Liew Voon Kiong
	Visual Basic 6 & Internel	P.Sellappan
	Secrets of Internet Millio	Stuart Tan
✳		

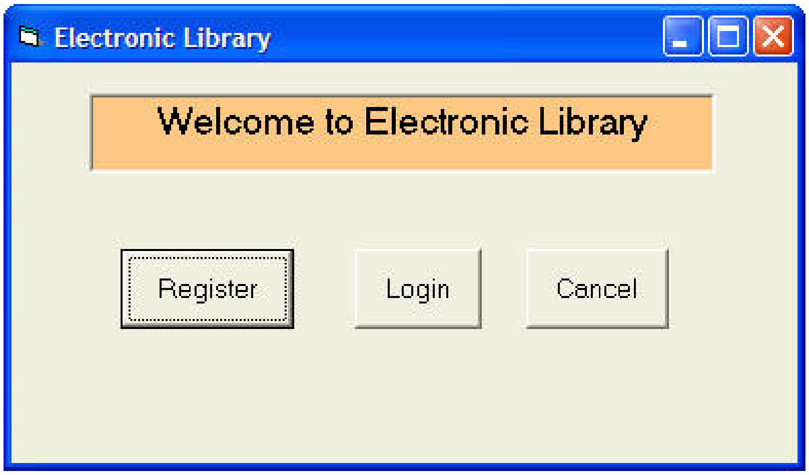
Lesson 29: Creating Advanced VB database application using ADO control

In previous lessons, you have learned how to design database applications using data control and ADO control. However, those applications are very simple and plain . In this lesson, you will learn how to create a more advanced database application using ADO control. The application you are going to create is known as an electronic library. This electronic library will be able to accept the user registration as well as handling login command that require the user's password, thus enhancing the security aspect of the database. Basically, the application will constitute a welcome menu, a registration menu, a Login menu and the main database menu. The sequence of the menus are illustrated as follow:



2.1 The Welcome Menu

First of all, you need to design the Welcome menu. You can follow the example as follow:



In this form, you need to insert three command buttons and set their properties as follow:

¡¡

Form name	main_menu
command button 1 Name	cmdRegister
command button 1 Caption	Register
command button 2 Name	cmdLogin
command button 2 Caption	Login
command button 3 Name	cmdCancel
command button 3 Caption	Cancel

The code is as follows:

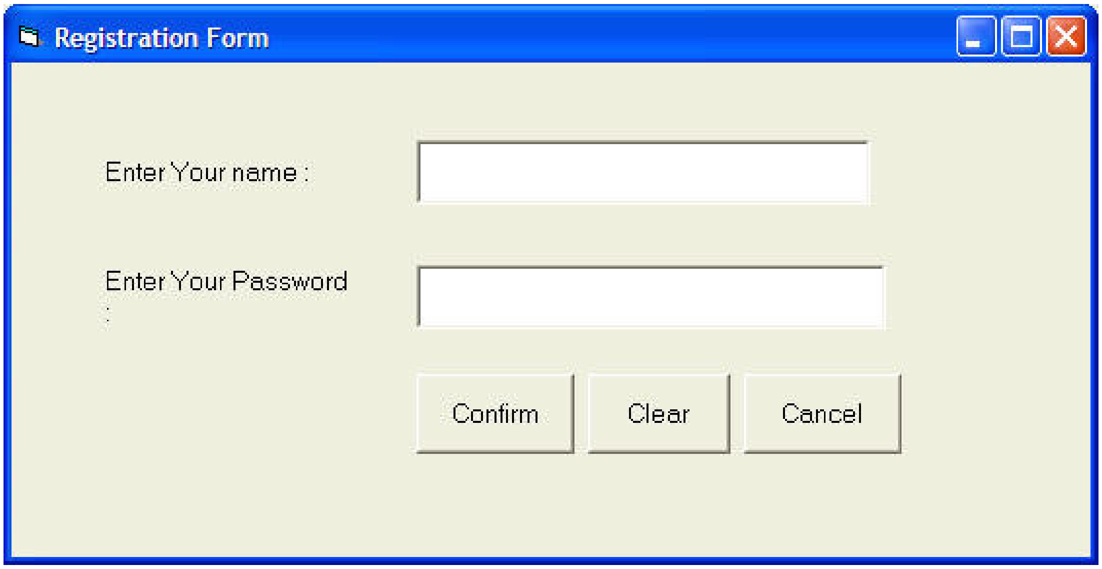
```
Private Sub cmdCancel_Click()
End
End Sub

Private Sub cmdLogin_Click()
main_menu.Hide
Login_form.Show
End Sub

Private Sub cmdRegister_Click()
```

```
main_menu.Hide
Register.Show
End Sub
```

¡¡

29.2 The Registration Form

If a new user click the Register button, the registration form will appear. An example is illustrated as follow:



This registration forms consist of two text boxes , three command buttons and an ADO control. Their properties are set as follow:

Form name	Register
textbox 1 name	txtName
textbox 2 name	txtpassword
textbox 2 PasswordChar	*
command button 1 name	cmdConfirm
command button 1 Caption	Confirm
command button 2 name	cmdClear
command button 2 Caption	Clear
command button 3 name	cmdCancel

command button 3 Caption	Cancel
ADO control name	UserInfo

note that the PasswordChar of textbox 2 is set as * which means users will not be able to see the actual characters they enter, they will only see the * symbol.

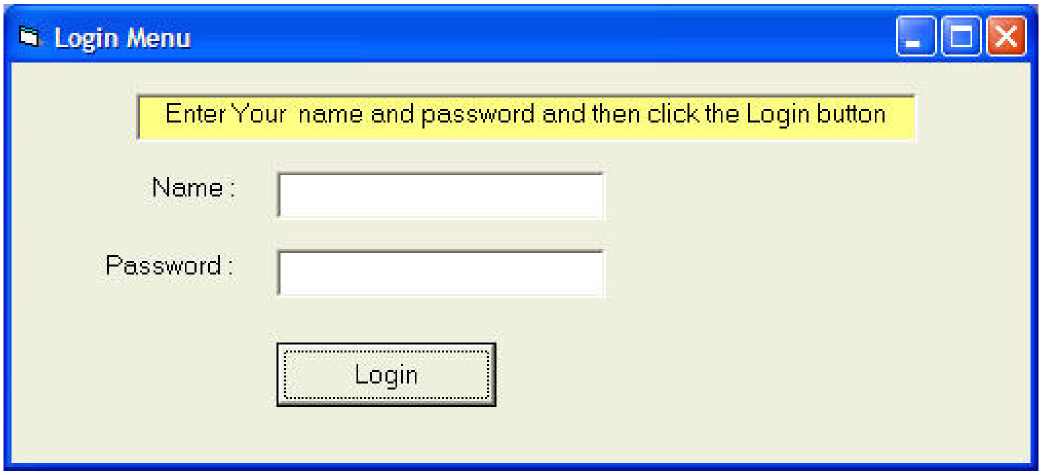
The codes are as follow:

```
Private Sub cancel_Click( )
End
End Sub

Private Sub cmdClear_Click( )
txtName.Text = ""
txtpassword.Text = ""

End Sub

Private Sub cmdConfirm_Click()

UserInfo.Recordset.Fields("username") = txtName.Text
UserInfo.Recordset.Fields("password") = txtpassword.Text
UserInfo.Recordset.Update

Register.Hide

Login_form.Show

End Sub


Private Sub Form_Load()
UserInfo.Recordset.AddNew
End Sub
```

i i

29.3 The Login Menu

The Login menu is illustrated as follow:



Enter Your name and password and then click the Login button

There are two text boxes and a command button, their properties are set as follow:

Textbox 1 name	txtName
Textbox 2 name	txtpassword
Command button 1 name	cmdLogin
Command button 1 Caption	Login
Form name	Login_form

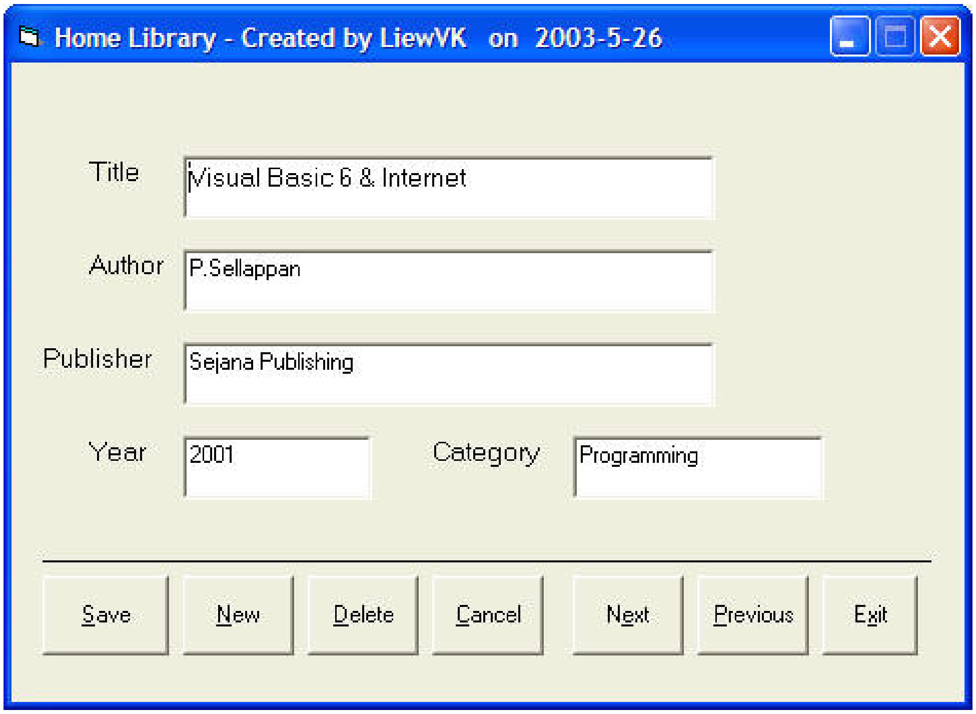
The codes are as follow:

```
Private Sub cmdLogin_Click()

Dim usrname As String
Dim psword As String
Dim usernam As String
Dim pssword As String
Dim Msg As String


Register.UserInfo.Refresh
usrname = txtName.Text
psword = txtpassword.Text


Do Until Register.UserInfo.Recordset.EOF
If Register.UserInfo.Recordset.Fields("username").Value = usrname And
Register.UserInfo.Recordset.Fields("password").Value = psword Then
Login_form.Hide
```

```
frmLibrary.Show
Exit Sub

Else
Register.UserInfo.Recordset.MoveNext
End If

Loop

Msg = MsgBox("Invalid password, try again!", vbOKCancel)
If (Msg = 1) Then
Login_form.Show
txtName.Text = ""
txtpassword = ""

Else
End
End If


End Sub
ii
```

29.4 The Main Database Manager

The main database manager is illustrated as follow:



Home Library - Created by LiewVK on 2003-5-26

Title: Visual Basic 6 & Internet

Author: P.Sellappan

Publisher: Sejana Publishing

Year: 2001

Category: Programming

The properties of all controls are listed in the table below:

¡¡

Form name	frmLibrary
ADO control name	adoLibrary
ADO visible	False
TextBox 1 name	txtTitleA
TextBox 2 name	txtAuthor
TextBox 3name	txtPublisher
TextBox 4 name	txtYear
TextBox 5 name	txtCategory
Command button 1 name	cmdSave
Command button 1 caption	&Save
Command button 2 name	cmdNew
Command button 2 caption	&New
Command button 3 name	cmdDelete
Command button 3 caption	&Delete
Command button 4 name	cmdCancel
Command button 4	&Cancel

caption	
Command button 5 name	cmdNext
Command button 5 caption	N&ext
Command button 6 name	cmdPrevious
Command button 6 caption	&Previous
Command button 7 name	cmdExit
Command button 7 caption	E&xit

¡¡

The codes are as follow:

¡¡

```
Private Sub cmdCancel_Click()
txtTitle.Text = ""
txtAuthor.Text = ""
txtPublisher.Text = ""
txtYear.Text = ""
txtCategory.Text = ""
End Sub

Private Sub cmdDelete_Click()
Confirm = MsgBox("Are you sure you want to delete this record?", vbYesNo,
"Deletion Confirmation")
If Confirm = vbYes Then
adoLibrary.Recordset.Delete
MsgBox "Record Deleted!", , "Message"
Else
MsgBox "Record Not Deleted!", , "Message"
End If

End Sub

Private Sub cmdExit_Click()
End
End Sub
```

```
Private Sub cmdNew_Click()
adoLibrary.Recordset.AddNew

End Sub

Private Sub cmdNext_Click()
If Not adoLibrary.Recordset.EOF Then
adoLibrary.Recordset.MoveNext
If adoLibrary.Recordset.EOF Then
adoLibrary.Recordset.MovePrevious
End If
End If
End Sub

Private Sub cmdPrevious_Click()
If Not adoLibrary.Recordset.BOF Then
adoLibrary.Recordset.MovePrevious
If adoLibrary.Recordset.BOF Then
adoLibrary.Recordset.MoveNext
End If
End If
End Sub

Private Sub cmdSave_Click()

adoLibrary.Recordset.Fields("Title").Value = txtTitle.Text
adoLibrary.Recordset.Fields("Author").Value = txtAuthor.Text
adoLibrary.Recordset.Update

End Sub
```

Lesson 30: Animation-Part I

Animation is always an interesting and exciting part of programming. Although visual basic is not designed to handle advance animations, you can still create some interesting animated effects if you put in some hard thinking. There are many ways to create animated effects in VB6, but for a start we will focus on some easy methods.

The simplest way to create animation is to set the VISIBLE property of a group of images or pictures or texts and labels to true or false by triggering a set of events such as clicking a button. Let's examine the following example:

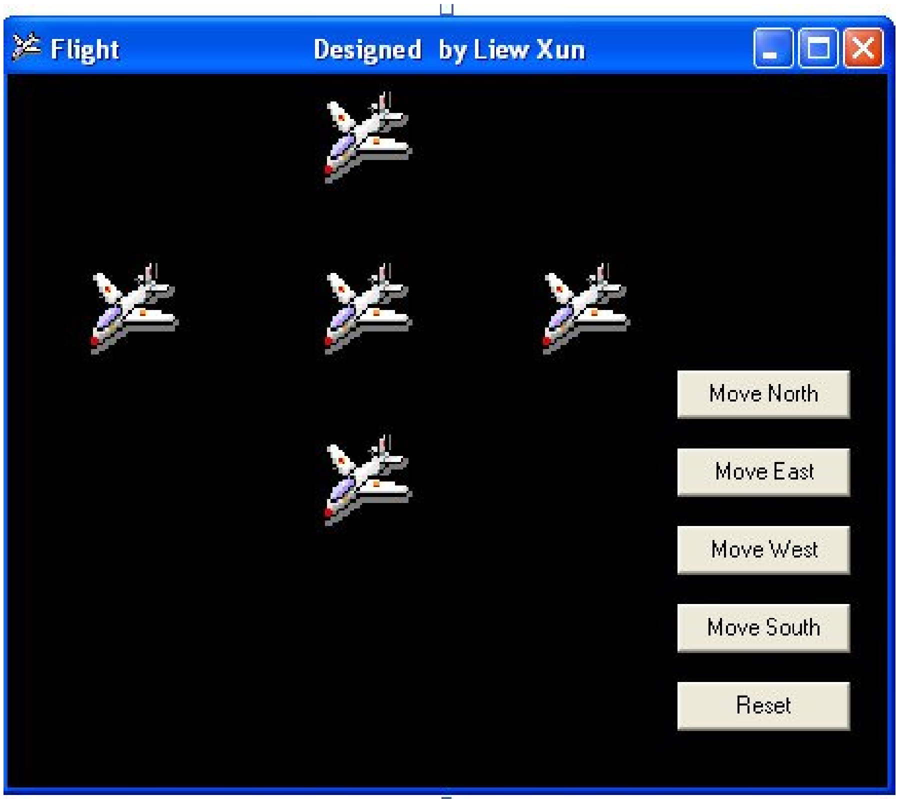
This is a program that create the illusion of moving the jet plane in four directions, North, South ,East, West. In order to do this, insert five images of the same picture into the form. Set the visible property of the image in the center to be true while the rest set to false. On start-up, a user will only be able to see the image in the center. Next, insert four command buttons into the form and change the labels to Move North, Move East, Move West and Move South respectively. Double click on the move north button and key in the following procedure:

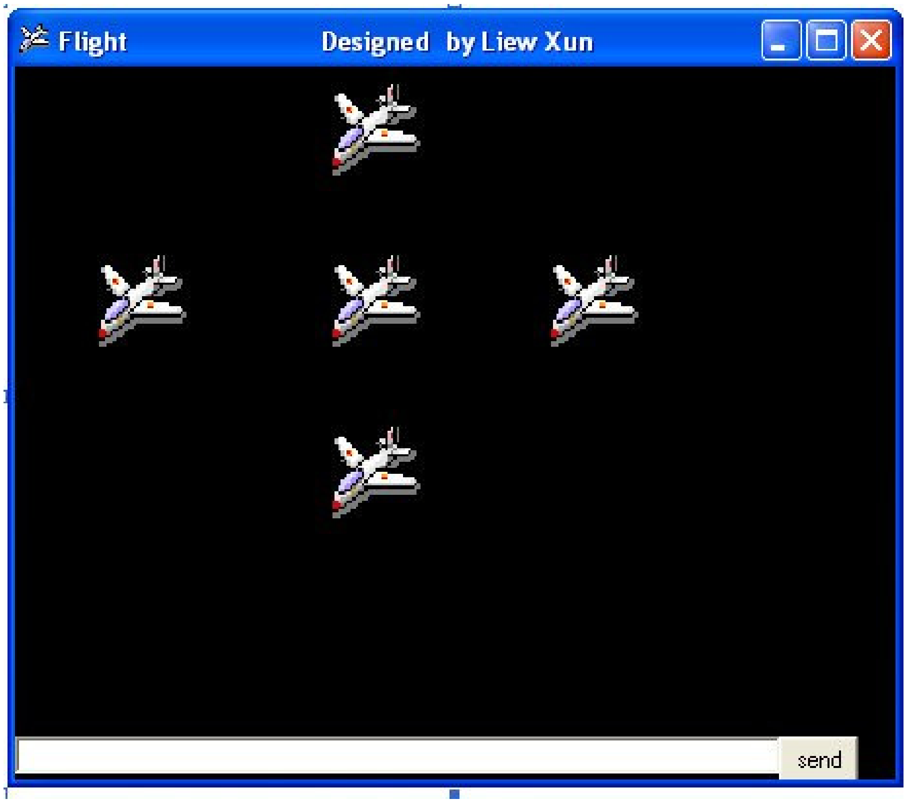
```
Sub Command1_click( )

Image1.Visible = False
Image3.Visible = True
Image2.Visible = False
Image4.Visible = False
Image5.Visible = False

End Sub
```

By clicking on the move north button, only image 3 is displayed. This will give an illusion that the jet plane has moved north. Key in similar procedures by double clicking other command buttons. You can also insert an addition command button and label it as Reset and key in the following codes:

```
Image1.Visible = True
Image3.Visible = False
Image2.Visible = False
Image4.Visible = False
Image5.Visible = False
```

Clicking on the reset button will make the image in the center visible again while other images become invisible, this will give the false impression that the jet plane has move back to the original position.

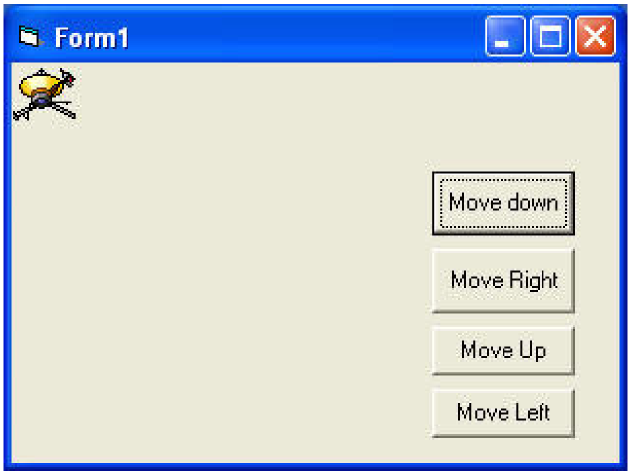

Flight
Designed by Liew Xun
Move North
Move East
Move West
Move South
Reset


Flight
Designed by Liew Xun
send

You can also issue the commands using a textbox, this idea actually came from my son Liew Xun (10 years old). His program is shown below:

```
Private Sub Command1_Click()

If Text1.Text = "n" Then
Image1.Visible = False
Image3.Visible = True
Image2.Visible = False
Image4.Visible = False
Image5.Visible = False

ElseIf Text1.Text = "e" Then
Image1.Visible = False
Image4.Visible = True
Image2.Visible = False
Image3.Visible = False
Image5.Visible = False

ElseIf Text1.Text = "w" Then
Image1.Visible = False
Image3.Visible = False
Image2.Visible = False
Image4.Visible = False
Image5.Visible = True

ElseIf Text1.Text = "s" Then
Image1.Visible = False
Image3.Visible = False
Image2.Visible = True
Image4.Visible = False
Image5.Visible = False
End If

End Sub
```

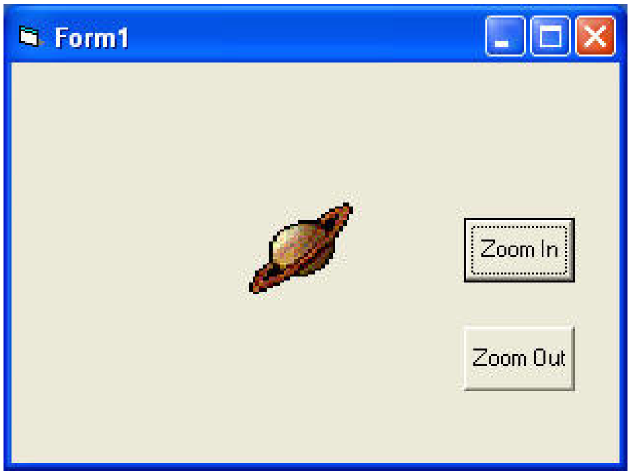
Another simple way to simulate animation in VB6 is by using the Left and Top properties of an object. Image.Left give the distance of the image in twips from the left border of the screen, and Image.Top give the distance of the image in twips from the top border of the screen, where 1 twip is equivalent to 1/1440 inch. Using a statement such as Image.Left-100 will move the image 100 twips to the left, Image.Left+100 will move the image 100 twip away from the left(or 100 twips to the right), Image.Top-100 will move the image 100 twips to the top and Image.Top+100 will move the image 100 twips away from the top border (or 100 twips down).Below is a program that can move an object up, down. left, and right every time you click on a relevant command button.



The Code

```
Private Sub Command1_Click()
Image1.Top = Image1.Top + 100
End Sub

Private Sub Command2_Click()
Image1.Top = Image1.Top - 100
End Sub

Private Sub Command3_Click()
Image1.Left = Image1.Left + 100
End Sub

Private Sub Command4_Click()
Image1.Left = Image1.Left - 100
End Sub
```

The fourth example let user magnify and diminish an object by changing the height and width properties of an object. It is quite similar to the previous example. The statements Image1.Height = Image1.Height + 100 and Image1.Width = Image1.Width + 100 will increase the height and the width of an object by 100 twips each time a user click on the relevant command button. On the other hand, The statements Image1.Height = Image1.Height - 100 and Image1.Width = Image1.Width -100 will decrease the height and the width of an object by 100 twips each time a user click on the relevant command button



The Code

```
Private Sub Command1_Click()
Image1.Height = Image1.Height + 100
Image1.Width = Image1.Width + 100
End Sub

Private Sub Command2_Click()

Image1.Height = Image1.Height - 100
Image1.Width = Image1.Width - 100

End Sub
```

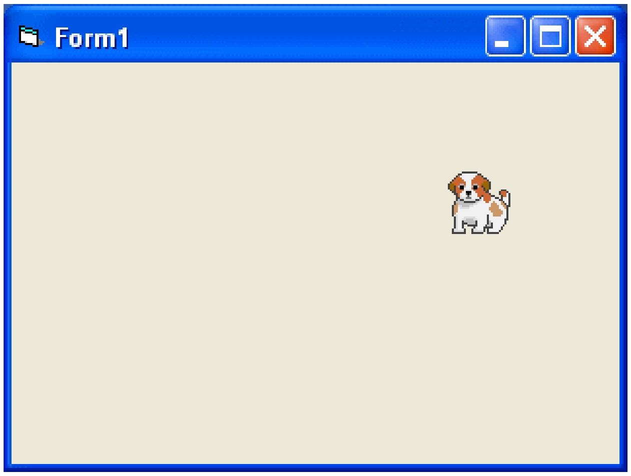
You can try to combine both programs above and make an object move and increases or decreases in size each time a user click a command button.

Lesson 32: Animation - Part III

32.1 Animation using Timer

All preceding examples of animation that you have learn in lesson 23 and lesson 24 only involve manual animation, which means you need to keep on clicking a certain command button or pressing a key to make an object animate. In order to make it move automatically, you need to use a timer. The first step in creating automatic animation is to drag the timer from the toolbox into the form and set its interval to a certain value other than 0. A value of 1 is 1 milliseconds which means a value of 1000 represents 1 second. The value of the timer interval will determine the speed on an animation.

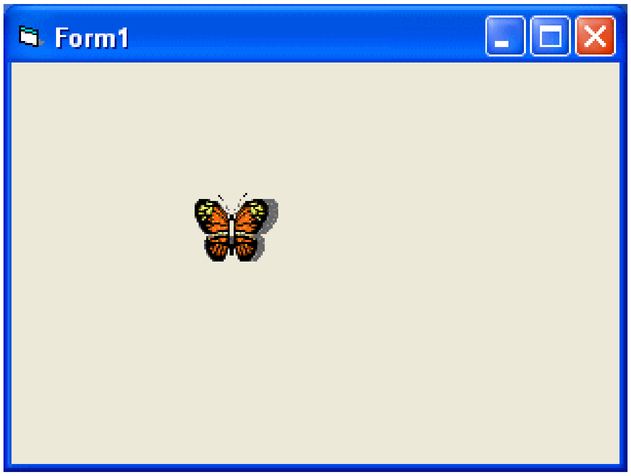
In the following example, I use a very simple technique to show animation by using the properties Visible=False and Visible=true to show and hide two images alternately. When you click on the program, you should see the following animation.



The Code

```
Private Sub
Timer1_Timer()

If Image1.Visible
= True Then
Image1.Visible =
False
Image2.Visible =
True
ElseIf
Image2.Visible =
True Then
Image2.Visible =
False
Image1.Visible =
True
End If

End Sub
```

Next example shows a complete cycle of a motion such as the butterfly flapping its wing. Previous examples show only manual animation while this example will display an automatic animation once you start the program or by clicking a command button. Similar to the example under lesson 24.2, you need to insert a group of eight images of a butterfly flapping its wings at different stages. Next, insert a timer into the form and set the interval to 10 or any value you like. Remember to make image1 visible while other images invisible at start-up. Finally, insert a command button, rename its caption as Animate and key in the following statements by double clicking on this button. Bear in mind that you should enter the statements for hiding and showing the images under the timer1_timer subroutine otherwise the animation would work. Clicking on the animate button make timer start ticking and the event will run after every interval of 10 milliseconds or whatever interval you have set at design time. In future lesson, I will show you how to adjust the interval at runtime by using a slider bar or a scroll bar. When you run the program, you should see the following animation:



```
Private Sub Form_Load()
Image1.Visible = True
x = 0
End Sub

Private Sub Command1_Click()
Timer1.Enabled = True
End Sub

Private Sub Timer1_Timer()
If Image1.Visible = True Then
Image1.Visible = False
Image2.Visible = True

ElseIf Image2.Visible = True Then
Image2.Visible = False
Image3.Visible = True

ElseIf Image3.Visible = True Then
Image3.Visible = False
Image4.Visible = True
ElseIf Image4.Visible = True Then
Image4.Visible = False
Image5.Visible = True
ElseIf Image5.Visible = True Then
Image5.Visible = False
Image6.Visible = True
ElseIf Image6.Visible = True Then
```

```
Image6.Visible = False
Image7.Visible = True
ElseIf Image7.Visible = True Then
Image7.Visible = False
Image8.Visible = True
ElseIf Image8.Visible = True Then
Image8.Visible = False
Image1.Visible = True
End If
End Sub
```