

## Buttons, Mouse-Clicks and Sub-Routines

Let's look at this code closely together. What is happening in it?

```
'*****  
'Setting Graphics Window  
'*****  
GraphicsWindow.Width = 400  
GraphicsWindow.Height = 400  
  
'*****  
'Initiating Variables  
'*****  
BallX = 0      'starting location of ball  
BallSize = 30 'constant - width of ball  
changeX = 1    'constant - movement change amount  
exit = 0      'constant - control exit loop state  
  
'*****  
'Making Button  
'*****  
Stop_Button = Controls.AddButton("Stop", 150,175) 'title, x, y  
Controls.SetSize(Stop_Button,100,50) 'button name, width, height  
  
Start_Button = Controls.AddButton("Start", 150,250)  
Controls.SetSize(Start_Button,100,50)  
  
Exit_Button = Controls.AddButton("Exit", 150,325)  
Controls.SetSize(Exit_Button,100,50)  
  
Controls.ButtonClicked = MouseAction 'Calls Subroutine that waits for mouse  
click  
  
'*****  
'Ball Bounce. Ends when exit = 1  
'*****  
GraphicsWindow.BackgroundColor = "yellow"  
ball = Shapes.AddEllipse(BallSize,BallSize)  
  
loop: 'endless Loop  
  
While exit = 0  
    BallX = BallX + changeX  
    Shapes.Move(ball,BallX,100)  
    If BallX = GraphicsWindow.Width-BallSize Then  
        changeX = -changeX
```

```

elseif BallX = 0 then
    changeX = -changeX
EndIf
Program.Delay(4)
endWhile

```

Goto loop

```

'*****
'Subroutine - actions when mouse clicked
'*****

```

Sub MouseAction

```

'grabs mouse location
x = GraphicsWindow.MouseX
y = GraphicsWindow.MouseY

```

```

'Determining which button was clicked

```

```

If (x>150 And x<250) And (y>175 And y<225) Then 'Stop

```

```

    exit = 1

```

```

ElseIf (x>150 And x<250) And (y>250 And y<300) Then 'Start

```

```

    exit = 0

```

```

ElseIf (x>150 And x<250) And (y>325 And y<375) Then 'Exit

```

```

    exit = 1

```

```

    GraphicsWindow.ShowMessage("Exit?", "Message")

```

```

    Program.End()

```

```

EndIf

```

EndSub

**Activity:** Create a program with rectangle, circle and triangle buttons. When the buttons are clicked their respective graphics are drawn.

Done?

- Try adding in a “rotate” and “zoom” option.
- Try implementing freehand drawing

## Extra Code

Simple Mouse Click Example:

```
GraphicsWindow.MouseDown = MouseClick
```

```
Rectangle = Shapes.AddRectangle(200,200)  
Shapes.Move(Rectangle,100,100)
```

```
Sub MouseClick
```

```
    x = GraphicsWindow.MouseX
```

```
    y = GraphicsWindow.MouseY
```

```
    If x>100 And x<300 And y>100 And y<300 Then
```

```
        GraphicsWindow.ShowMessage("Clicked!","Message")
```

```
    EndIf
```

```
EndSub
```

The above example can also be programmed with a image.

## Basic Text Input:

```
GraphicsWindow.TextInput = OnTextInput 'Start a character text event
LiveX = 225
LiveY = 100

GraphicsWindow.DrawText(100,100,"Enter your Name: ") 'Ask for name
GetText()
GraphicsWindow.DrawText(100,150,"Hello " + UserInput) 'If it is Enter (return),
then we are done and output name

Program.Delay(2000)
GraphicsWindow.Clear()

Sub GetText
    UserInput = ""
    done = 0
    While done = 0
        Program.Delay(10)
        GraphicsWindow.DrawText(LiveX,LiveY,UserInput) 'Print Typed Text
    EndWhile
EndSub

'Event subroutine called when a key is pressed when the GraphicsWindow is
active
Sub OntextInput
    If done = 0 Then
        char = GraphicsWindow.LastText ' get the character entered
        If (Text.GetCharacterCode(char) = 13) Then
            done = 1
        Else
            UserInput = UserInput+GraphicsWindow.LastText ' Append key input to data
being read
        EndIf
    EndIf
EndSub
```

**Activity:** Create a program that lets the user type in which kind of shape they want to make, and then create that shape wherever the user clicks on the GraphicsWindow.

Harder activity? Have the user be able to create a triangle based on clicking in three different places.