Learning 2D Game Programming: Basic FrameWork Part 5 - Adding Missiles
(c) Assari 2006

Table of Contents

Introduction

Now that we have a good framework in place, adding more objects into our game becomes relatively easier. To add missile firing capability we will need to things.

- A missile firing behaviour from our player. We will add the capability to fire missiles when the spacebar is pressed
- A missile type to create our missile from

OK, lets us gets started

The New Game Program

I'm presenting you the new additions below. Go ahead and build and run the program so you can see what it does. The highlighted text are our new changes:-

```
' ----------------SETUP GAME CONDITIONS-------------------
Global GameObjectList:TList=CreateList()
Graphics 640,480,0

Local URL:String="http::www.2dgamecreators.com/tutorials
/gameprogramming/basic/"
Local Player:TSpaceShip =
TSpaceShip.Create(URL+"/blobship_1-1.png",320,420)
Local Alien:TAlienShip =
TAlienShip.Create(URL+"/cartoonufo_1-1.png",320,0)

 ' --------------------MAIN LOOP-----------------------
Repeat
     Cls
     For o:TGameObject=EachIn GameObjectList
         o.DrawSelf()
         o.UpdateState()
      Next
      Flip
Until KeyDown(KEY_ESCAPE) Or AppTerminate()
End

' --------------------TYPES, ATTRIBUTES AND BEHAVIOURS-----------------------
Type TGameObject

    Field X:Int = 320
```
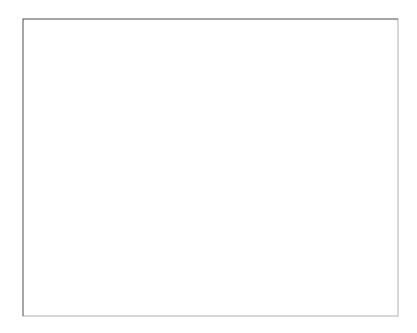
```
      Field Y:Int = 420
      Field Speed:Int=3
      Field Image:TImage

      Method DrawSelf()
         DrawImage Image,X,Y
      End Method

       Method UpdateState() Abstract

   End Type

    Type TSpaceShip Extends TGameObject

       Field MissileDelay:Int

       Function Create:TSpaceShip(File:String,xstart:Int,ystart:Int)
         Local Ship:TSpaceShip=New TSpaceShip
         Ship.X=xstart
         Ship.Y=ystart
         Ship.Image=LoadImage(LoadBank(File))

         If Ship.Image=Null
            Print "Not able to load image file. Program aborting"
            End
         EndIf

         ListAddLast GameObjectList, Ship
         Return Ship
      End Function

      Method UpdateState()

         If KeyDown(KEY_LEFT)
            X :- Speed
         EndIf
         If KeyDown(KEY_RIGHT)
            X :+ Speed
         EndIf
          If KeyDown(KEY_SPACE)
            FireMissile()
         EndIf
         MissileDelay :- 1

         If X<0 Then X=0
         If X>620 Then X=620

      End Method

      Method FireMissile()
          If MissileDelay<0
            Local FileName:string="D:\Program Files\BlitzMax\samples\firepaint
\bullet.png"
            Local Missile:TMissile=TMissile.Create(FileName, X+23,Y)
            MissileDelay=10
          End If
```

```
        End Method

    End Type


    Type TAlienShip Extends TGameObject

        Function Create:TAlienShip(File:String,xstart:Int,ystart:Int)
            Local Ship:TAlienShip=New TAlienShip
            Ship.X=xstart
            Ship.Y=ystart
            Ship.Image=LoadImage(LoadBank(File))

            If Ship.Image=Null
                Print "Not able to load image file. Program aborting"
                End
            EndIf

            ListAddLast GameObjectList, Ship
            Return Ship
        End Function

        Method UpdateState()
            X :- Speed
            If X<-ImageWidth(Image) Then X=620
        End Method

    End Type

    Type TMissile Extends TGameObject

        Function Create:TMissile(File:String,xstart:Int,ystart:Int)
            Local Ship:TMissile=New TMissile
            Ship.X=xstart
            Ship.Y=ystart
            Ship.Image=LoadImage(LoadBank(File))

            If Ship.Image=Null
                Print "Not able to load image file. Program aborting"
                End
            EndIf

            ListAddLast GameObjectList, Ship
            Return Ship
        End Function

        Method UpdateState()
            Y :- Speed
            If Y<0  Then ListRemove(GameObjectList,Self)
        End Method

    End Type
```
-.
Running the above program will give our game the ability to start firing missiles at our alien ship.

The Missile Type

Note the small differences between the TMissile Type and the TAlienShip Type. The main difference is the UpdateState() behaviour. For our missiles, once they leave the upper part of the graphic screen we should remove them from our game.

```
Type TMissile Extends TGameObject

  Function Create:TMissile(File:String,xstart:Int,ystart:Int)
    Local Ship::TMissile=New :TMissile
    Ship.X=xstart
    Ship.Y=ystart
    Ship.Image=LoadImage(LoadBank(File))

    If Ship.Image=Null
      Print "Not able to load image file. Program aborting"
      End
    EndIf

    ListAddLast GameObjectList, Ship
    Return Ship
  End Function

  Method UpdateState()
    Y :- Speed
    If Y<0  Then ListRemove(GameObjectList,Self)
  End Method

End Type
```

The **ListRemove** function will remove/delete the missile from the GameObjectList as once they leave the screen we do not need them anymore. Remember that during our Create function, we inserted the created missile into the GameObjectList so that they will be updated and displayed during the Main Loop.

Modifying the TSpaceShip Type

We need to add the ability to detect the SPACEBAR and then add in the **FireMissile** method to our TSpaceShip type plus adding some sort of delay to our Missile Reload Mechanism:-

```
Type TSpaceShip Extends TGameObject

  Field MissileDelay:Int

  Function Create:TSpaceShip(File:String,xstart:Int,ystart:Int)
     Local Ship:TSpaceShip=New TSpaceShip
     Ship.X=xstart
     Ship.Y=ystart
     Ship.Image=LoadImage(LoadBank(File))

   If Ship.Image=Null
      Print "Not able to load image file. Program aborting"
      End
   EndIf
   ListAddLast GameObjectList, Ship
   Return Ship
End Function

  Method UpdateState()

   If KeyDown(KEY_LEFT)
      X :- Speed
   EndIf
   If KeyDown(KEY_RIGHT)
      X :+ Speed
   EndIf
   If KeyDown(KEY_SPACE)
      FireMissile()
   EndIf
   MissileDelay :- 1

   If X<0 Then X=0
   If X>620 Then X=620

  End Method

  Method FireMissile()
     If MissileDelay<0
        Local FileName:string="D:\Program Files\BlitzMax\samples\firepaint\bullet.png"
        Local Missile:TMissile=TMissile.Create(FileName, X+23,Y)
        MissileDelay=10
     End If
  End Method

End Type
```

Summary

That was a relatively painless exercise of adding missile shooting capability to our game. The next obvious addition is collision! That will be in our next tutorial.

Blitzmax commands introduced in this tutorial

No new commands in this tutorial