2015

Space Invaders

PSEUDOCODE
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Decomposition

- **Summarise the aim of the game.**

  For this assignment, I will build a game called Space Invaders. In this game the player will controls a ship that moves from the side to side at the bottom of the form and the player also will try to fires the missile from the ship to try to distort the Invaders.

- **Give a full description of the game.**
    - **What character are in the game?**
        - Mother ship
        - Invaders
        - Bombs
        - Missiles
        - Fleet

    - **What does each character do?**

Characters	
Mother Ship	Control by the player by using the arrow key and fires the missile try to distort the Invaders.
Invaders	Control by the computer and also moving by the side and down and fires the bombs try to distort the Mother Ship.
Bombs	The bombs will get fires from the Invaders.
Missiles	The Missiles will get fires from the Mother ship.

    - **How do you win the game?**

      The Player will win the game by kill all of the Invaders.

    - **How do you lose the game?**

      The Player will lose the game, when the mother ship got hit by the bombs that come from the Invaders.

- **For each character, identify all the action needed for this character.**

| Characters	Action
Mother Ship	Moves in the X direction only and sits at the bottom of the form dies when it got hit by the bombs. Using the Mouse_Move ().
Invaders	Move across and down (as part of the fleets) dies when it got hit by the missile and move on the timer.
Fleet	Made up of when fleet hits the edge of form, moves down and in opposite direction.
Bombs	Dropped from the front row of the fleet move in the Y direction only and down wards die when hit the bottom of the form.
Missiles	Fired from the Mother Ship position on Mouse_Click have lift spam (live for random lift spam) move in the Y direction only and upwards. Limited the number of the missiles at a times.

- **What are the extra features or functionalities that are not essential to the basic game?**
    - Sound
    - Pause button
    - Menus
    - Multiple Level
    - Multiple Lives

Form Design

- **What will the Form look like?**
  - **The Sketch of the Form at the design time and running.**

The Form in the designing time
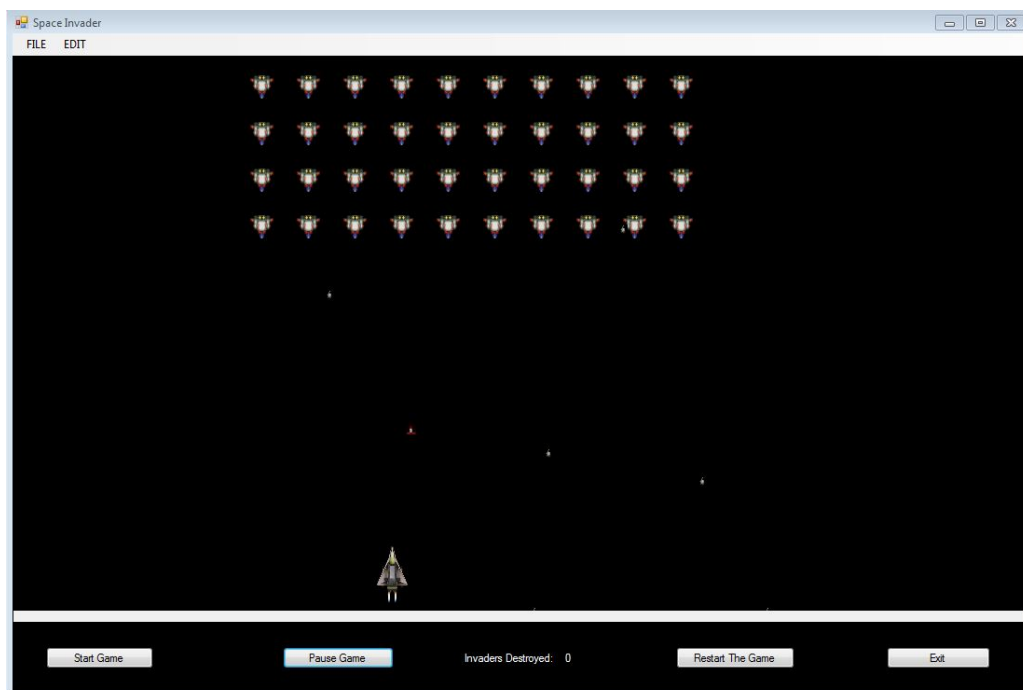
The Form in the running time

What controls and components will you need?
- o   Mouse_Move ()
- o   Mouse_Click ()

What will the user do?
The user will have the control of the Mother Ship by using mouse control to control the mother ship.

Abstraction

How many classes will be needed?
- o   8 classes

What each class name?
- o   Form 1
- o   Controller
- o   Craft
- o   Mother Ship
- o   Invader
- o   Projectile
- o   Bombs
- o   Missiles

Encapsulation

For Each class, list the fields that will be needed.

Form 1
Fields

bufferImage : Bitmap

controller : Controller

graphics : Graphics

buffergraphics : Graphics

player : SoundPlayer

player1: SoundPlayer

backgroundcolor : color

Controller
Constant

INVADER_WIDTH

INVADER_HIGHT

MAX_INVADER_ROW

MAX_INVADER_COL

IMAGE_HIGHT

IMAGE_WIDTH

OFFSET

TOTALINVADER

Fields

mothership : Mothership

buffergraphics : Graphics

direction : Point

boundary : Size

Down : Point

random : Random

mothershipdie : bool

noinverderleft : bool

missiles : List<Missiles>

invader : List <Invader>

bombs : List <Bombs>

Craft
Fields

Position : Rectangle

Image : Bitmap

buffergraphics : Graphics

direction : Point

boundary : Size

Down : Point

alive : bool

Mother Ship
Invader
Projectile
Bombs
Missiles

For each class, list the method.

Form 1

In the form1 I will use four buttons, the first one is the start the game button, the second button is for the pause button, the third button is the restart the game button and the fourth button is the exit button which is let you close the form. There also a label that will show how many invader has been destroy. It will contain a timer and it will also have an event to handler used for the timer tick, mouse move and mouse click.

Form1 ()

This will constructor, to initialize the field for creating the form.

Timer1_Tick ()

Every tick of the time will refreshes the form, also its will run the controller class.

Mouse_Move ()

The mouse move is use for to move the mother ship from one side of the form to the other the side of the form.

Mouse_Click ()

The mouse click is use for to fire the missiles from the mother ship try to kill the invader.

Button1_Click ()

This button is for start the game.

Button2_Click ()

This button is for pause the game.

Button3_ Click ()

This button is for restart the game.

Button4_Click ()

This button is for exit the game.

Menu Strip 1()

This menu strip is for click to start the game.

Menu Strip 2()

This menu strip is for click to pause the game.

Menu Strip 3()

This menu strip id for click to exit the game.

Menu Strip 4()

This menu strip is for to change the background colour to blue.

Menu Strip 5()

This menu strip is for to change the background colour to red.

Menu Strip 6()

This menu strip is for to change the background colour to black.

Menu Strip 7()

This menu strip is for to change the background colour to yellow.

Menu Strip 8()

This menu strip is for to change the background colour to green.

Controller
Controller ()

This will be a constructor to initialize for the fields for creating the controller.

Run ()

This will using for to run all the method.

Move ()

This is use for moving the mother ship.

MoveInvader ()

This is use for moving the invader from side to side.

MoveDownInvader ()

This is use for moving the invader down, once it hit the wall side of the form.

Fire ()

This method is use for calling the missile.

Missile Fire ()

This method is use for fire the missile and using the mother ship position.

KillInvader ()

This method is use for when the missile hit the invader and make the invader disappear.

DropBombs ()

This method is use for to drop the bombs from the invader.

Bombsfire ()

This method is use for firing the bombs from the invader.

KillMotherShip ()

This method is use for when the bombs have hit the mother ship and make the mother disappear.

InvaderFireBombs ()

This method is use for to check, if the invader is in the front and make the invader to fire the bombs.

NumberOfInvader ()

This method is use for to check how many invader have been kill by the mother ship.

InvaderAllDie ()

This method is use for to check if all of the invader have die.

Craft
Craft ()

This will constructor, to initialize the field for creating the craft.

Draw ()

This is the draw method, its use for to draw the mother ship, invader, missiles and bombs.

Move ()

This move method is use for to move the mother ship, invader, missiles and bombs around the form.

Mother Ship
Mother Ship ()

This will constructor, to initialize the field for creating the mother ship.

Move ()

This method is use for moving the mother ship in the x direction.

Invader
Invader ()

This will constructor, to initialize the field for creating the invader.

MoveDown ()

This method to move down in the direction that have been set in the controller class.

SwapDirection ()

This method for the invader to move to another direction, once it's have been move down.

Projectile
Projectile ()

This will constructor, to initialize the field for creating the projectile.

Bombs
Bombs ()

This will constructor, to initialize the field for creating the bombs.

Missiles
Missiles ()

This will constructor, to initialize the field for creating the missiles.