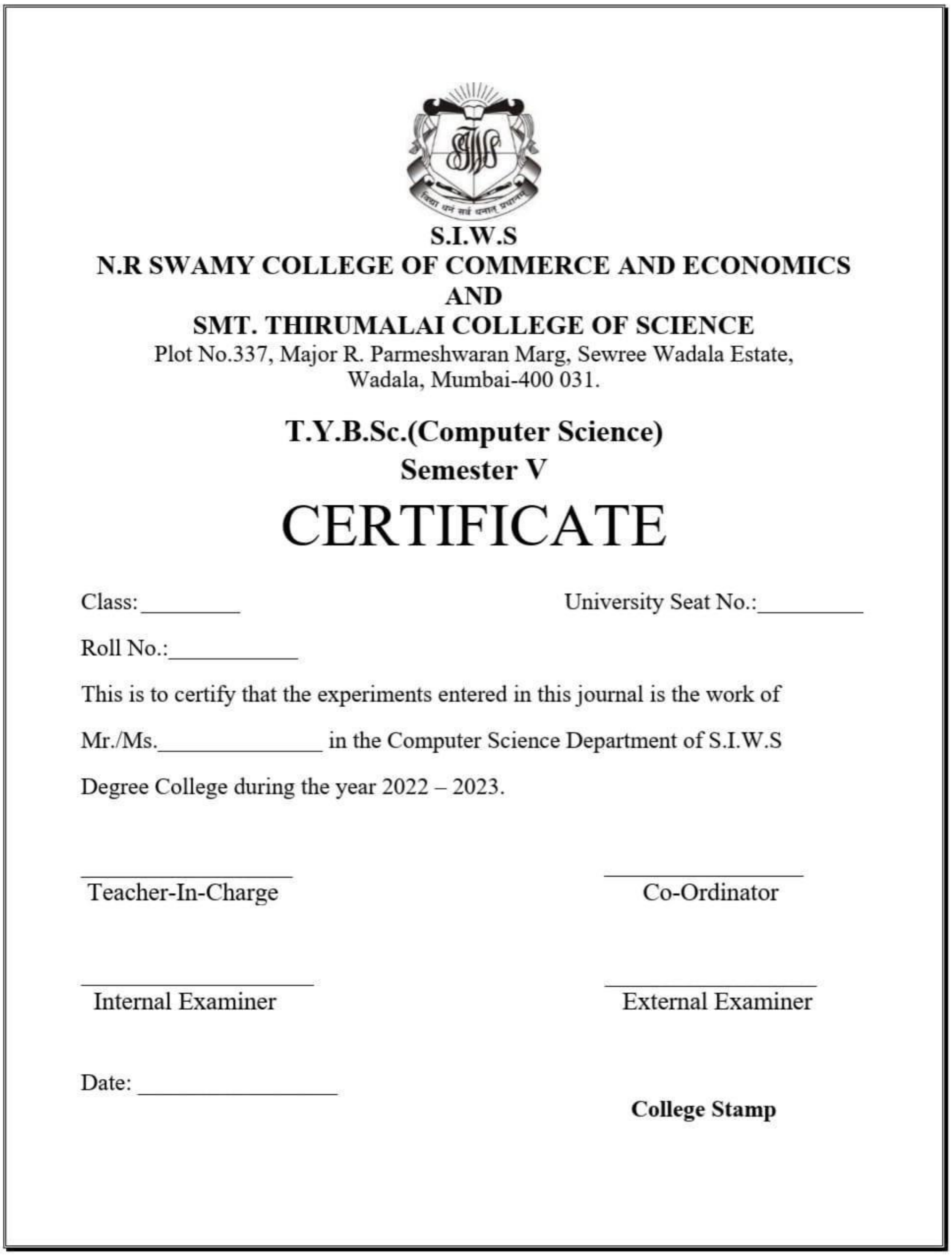
S.I.W.S

N.R SWAMY COLLEGE OF COMMERCE AND ECONOMICS
AND SMT.THIRUMALAI COLLEGE OF SCIENCE.

GAME PROGRAMMING

Harshad Upadhyay
T.Y.Bsc C.S. 39050

Year 2022-2023



S.I.W.S

N.R SWAMY COLLEGE OF COMMERCE AND ECONOMICS

AND

SMT. THIRUMALAI COLLEGE OF SCIENCE

Plot No.337, Major R. Parmeshwaran Marg, Sewree Wadala Estate,
Wadala, Mumbai-400 031.

T.Y.B.Sc.(Computer Science)

Semester V

CERTIFICATE

Class:_________ University Seat No.:_________

Roll No.:____________

This is to certify that the experiments entered in this journal is the work of

Mr./Ms._______________ in the Computer Science Department of S.I.W.S

Degree College during the year 2022 – 2023.

____________________ ____________________
Teacher-In-Charge Co-Ordinator

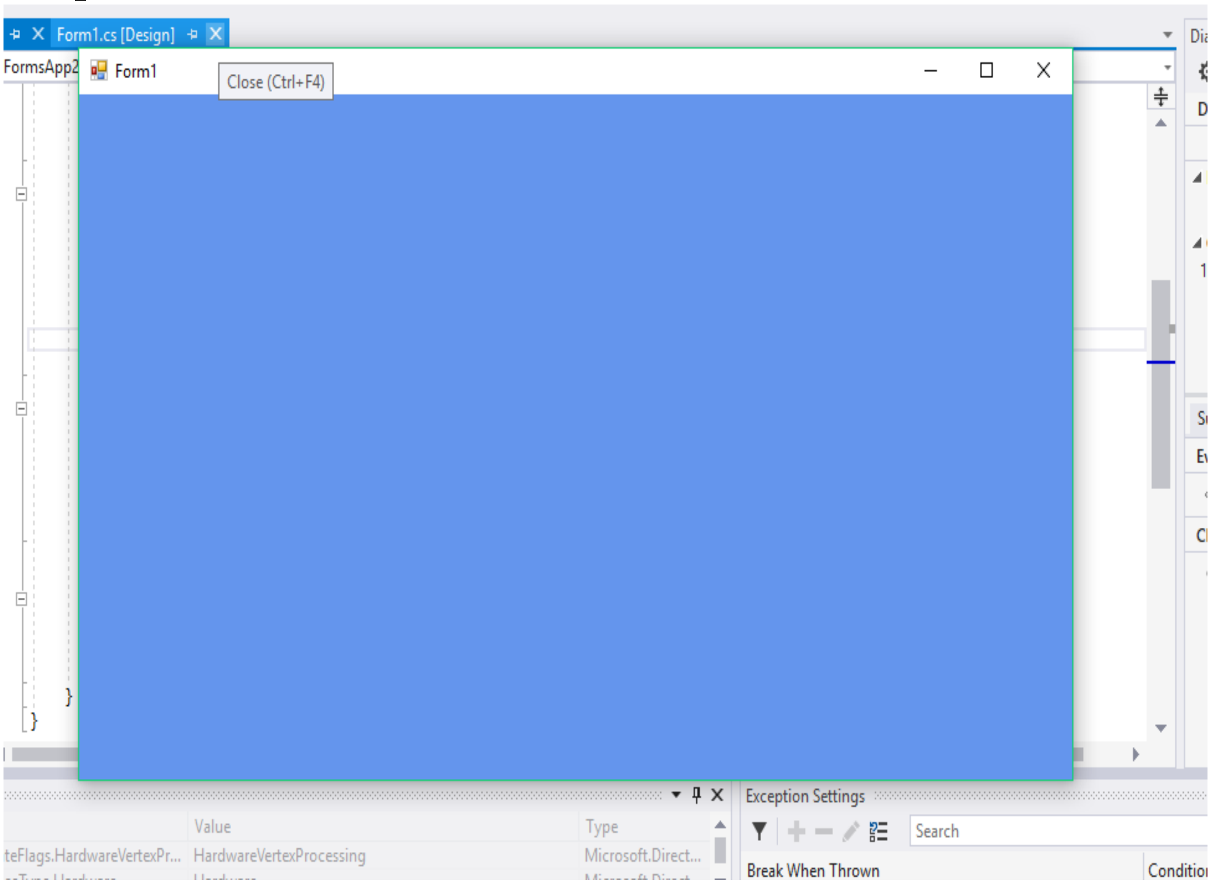
____________________ ____________________
Internal Examiner External Examiner

Date: __________________

College Stamp

INDEX

Output of the code:



PRACTICAL NO 1

Aim:

Input of the code:
In this practical we are just learning the window framework and initializing a Direct3D device.

Step 1:
Create new project, and select "Windows Forms Application", select .NET Framework as 2.0 in Visuals C#.
Right Click on properties Click on open click on build Select Platform Target and Select x86.

Step 2: Click on View Code of Form 1.

Step 3:
Go to Solution Explorer, right click on project name, and select Add Reference. Click on Browse and select the given .dll files which are "Microsoft.DirectX", "Microsoft.DirectX.Direct3D", and "Microsoft.DirectX.DirectX3DX".

Step 4:
Go to Properties Section of Form, select Paint in the Event List and enter as Form1_Paint.

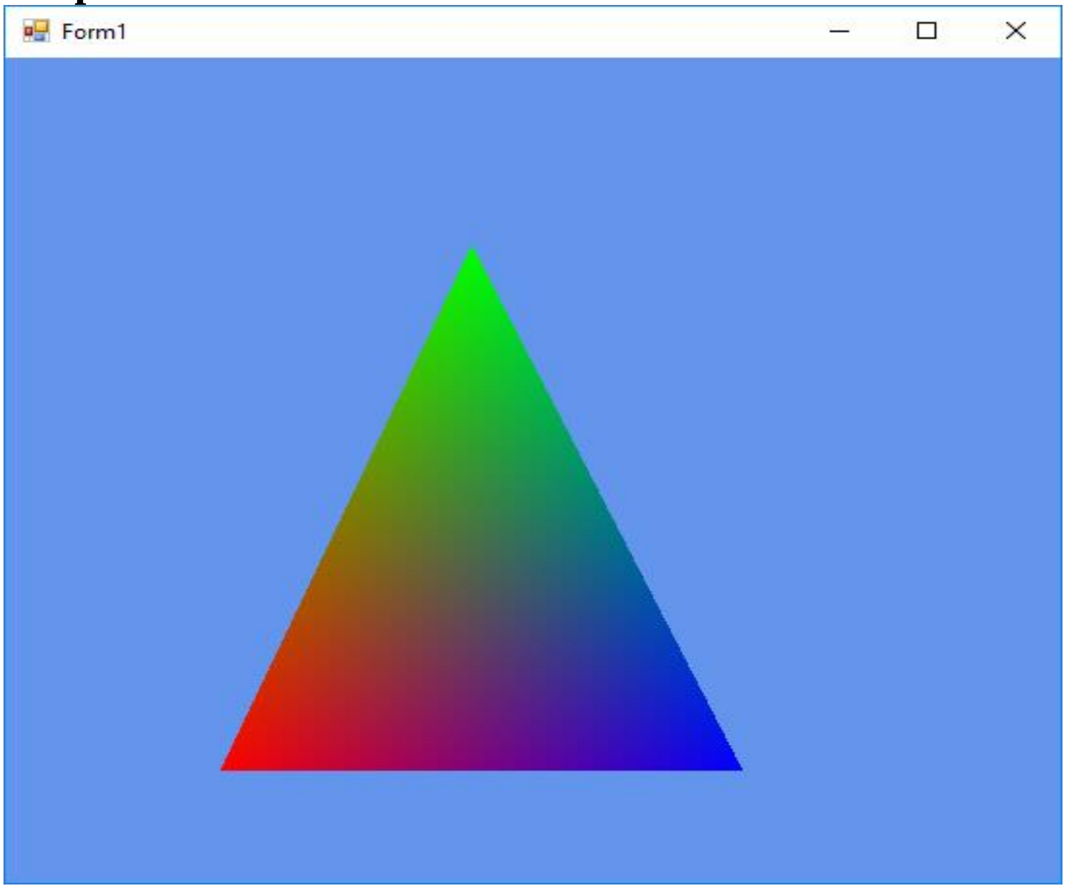
Step 5:
Edit the Form's C# code file. Namespace must be as same as your project name.

```
using System;
usingSystem.Collections.Generic;
usingSystem.ComponentModel;
usingSystem.Data;
usingSystem.Drawing;
usingSystem.Text;
usingSystem.Windows.Forms;
usingMicrosoft.DirectX;
using Microsoft.DirectX.Direct3D;
namespace GP_P1
{
public partial class Form1 : Form
    {
Microsoft.DirectX.Direct3D.Device device;
public Form1()
        {
InitializeComponent();
InitDevice();
        }

public void InitDevice()
        {
PresentParameterspp = new PresentParameters();
pp.Windowed = true;
pp.SwapEffect = SwapEffect.Discard;
device = new Device(0, DeviceType.Hardware, this,
              CreateFlags.HardwareVertexProcessing, pp);
        }

private void Render()
        {
device.Clear(ClearFlags.Target, Color.Orange, 0, 1);
device.Present();
        }

private void Form1_Paint(object sender, PaintEventArgs e)
        {
Render();
        }
    }
}
```

Step 6: Click on Start. And here is the output. We have initialized 3D Device.

<u>Conclusion:</u>

Output of the code:



PRACTICAL NO 2

<u>Aim:</u>

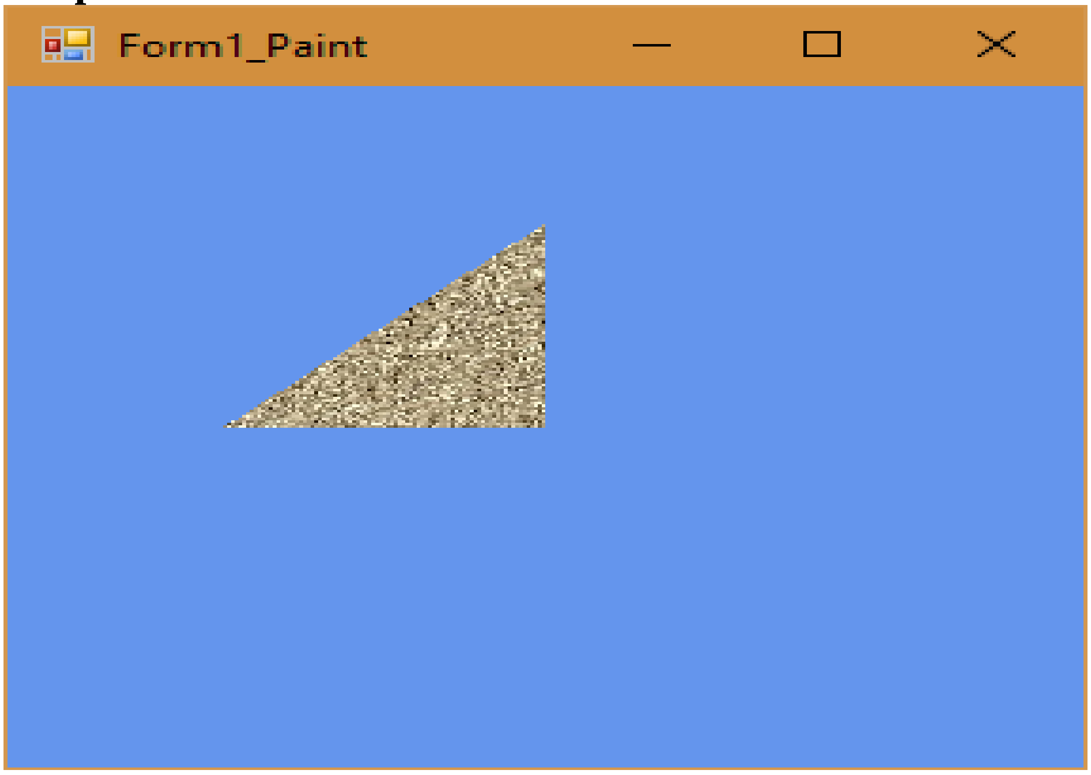
Input of the code:

<u>Solution:</u>

```
using System;
usingSystem.Collections.Generic;
usingSystem.ComponentModel;
usingSystem.Data;
usingSystem.Drawing;
usingSystem.Text;
usingSystem.Windows.Forms;
usingMicrosoft.DirectX;
using Microsoft.DirectX.Direct3D;
namespace GP_P2
{
public partial class Form1 : Form
    {
Microsoft.DirectX.Direct3D.Device device;
public Form1()
        {
InitializeComponent();
InitDevice();
        }
private void InitDevice()
        {
PresentParameterspp = new PresentParameters();
pp.Windowed = true;
pp.SwapEffect = SwapEffect.Discard;
device = new Device(0, DeviceType.Hardware, this,
CreateFlags.HardwareVertexProcessing, pp);
        }
private void Render()
        {
CustomVertex.TransformedColored[]
vertexes = new CustomVertex.TransformedColored[3];

vertexes[0].Position = new Vector4(240, 110, 0, 1.0f);//first point
vertexes[0].Color = System.Drawing.Color.FromArgb(0, 255, 0).ToArgb();
vertexes[1].Position = new Vector4(380, 420, 0, 1.0f);//second point
vertexes[1].Color = System.Drawing.Color.FromArgb(0, 0, 255).ToArgb();

vertexes[2].Position = new Vector4(110, 420, 0, 1.0f);//third point
vertexes[2].Color = System.Drawing.Color.FromArgb(255, 0, 0).ToArgb();

device.Clear(ClearFlags.Target, Color.CornflowerBlue, 1.0f, 0);
device.BeginScene();
device.VertexFormat = CustomVertex.TransformedColored.Format;
device.DrawUserPrimitives(PrimitiveType.TriangleList, 1, vertexes);
device.EndScene();
device.Present();
        }
private void Form1_Load(object sender, EventArgs e) { }

private void Form1_Paint(object sender, PaintEventArgs e)
        {
Render();
        }
    }
}
```

Conclusion:

Output of the code:



PRACTICAL NO 3

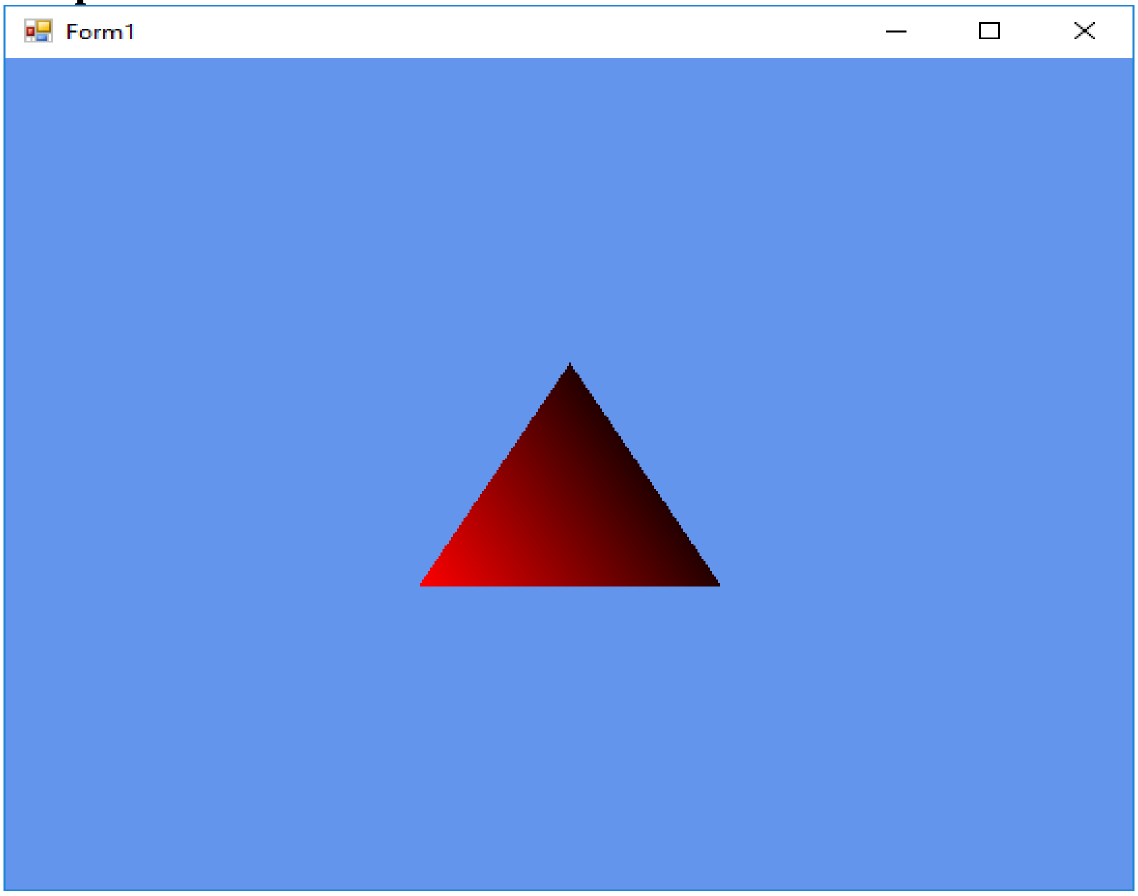
Aim:

Input of the code:
Solution:

```
using System;
usingSystem.Collections.Generic;
usingSystem.ComponentModel;
usingSystem.Data;
usingSystem.Drawing;
usingSystem.Text;
usingSystem.Windows.Forms;
usingMicrosoft.DirectX;
using Microsoft.DirectX.Direct3D;

namespace Gp_prac3
{
public partial class Form1 : Form
    {
private Microsoft.DirectX.Direct3D.Device device;
privateCustomVertex.PositionTextured[]
vertex = new CustomVertex.PositionTextured[3];
private Texture texture;
public Form1()
        {
InitializeComponent();
InitDevice();
        }
private void InitDevice()
        {
PresentParameterspp = new PresentParameters();
pp.Windowed = true;
pp.SwapEffect = SwapEffect.Discard;
device=newDevice(0,DeviceType.Hardware,this,CreateFlags.HardwareVertex
Processing, pp);

device.Transform.Projection=
Matrix.PerspectiveFovLH(3.14f/4,device.Viewport.Width/
device.Viewport.Height, 1f, 1000f);
device.Transform.View = Matrix.LookAtLH(new Vector3(0, 0, 20), new
Vector3(),
new Vector3(0, 1, 0));

device.RenderState.Lighting = false;

vertex[0] = new CustomVertex.PositionTextured(new Vector3(0, 0, 0), 0, 0);
vertex[1] = new CustomVertex.PositionTextured(new Vector3(5, 0, 0), 0, 1);
vertex[2] = new CustomVertex.PositionTextured(new Vector3(0, 5, 0),-1, 1);
texture=new Texture (device,new Bitmap ("E:\\TYCS\\images\\img1.jpg"), 0,
 Pool.Managed );
        }
  private void Form1_Load(Object sender, EventArgs e)
        { }
  private void Form1_Paint(Object sender, PaintEventArgs e)
        {
device.Clear(ClearFlags.Target, Color.CornflowerBlue, 1, 0);
device.BeginScene();
device.SetTexture(0,texture);
device.VertexFormat = CustomVertex.PositionTextured.Format;
device.DrawUserPrimitives(PrimitiveType.TriangleList, vertex.Length / 3,
vertex);
device.EndScene();
device.Present();
        }
    }
}
```

Conclusion:

Output of the code:



PRATICAL NO 4

Aim:

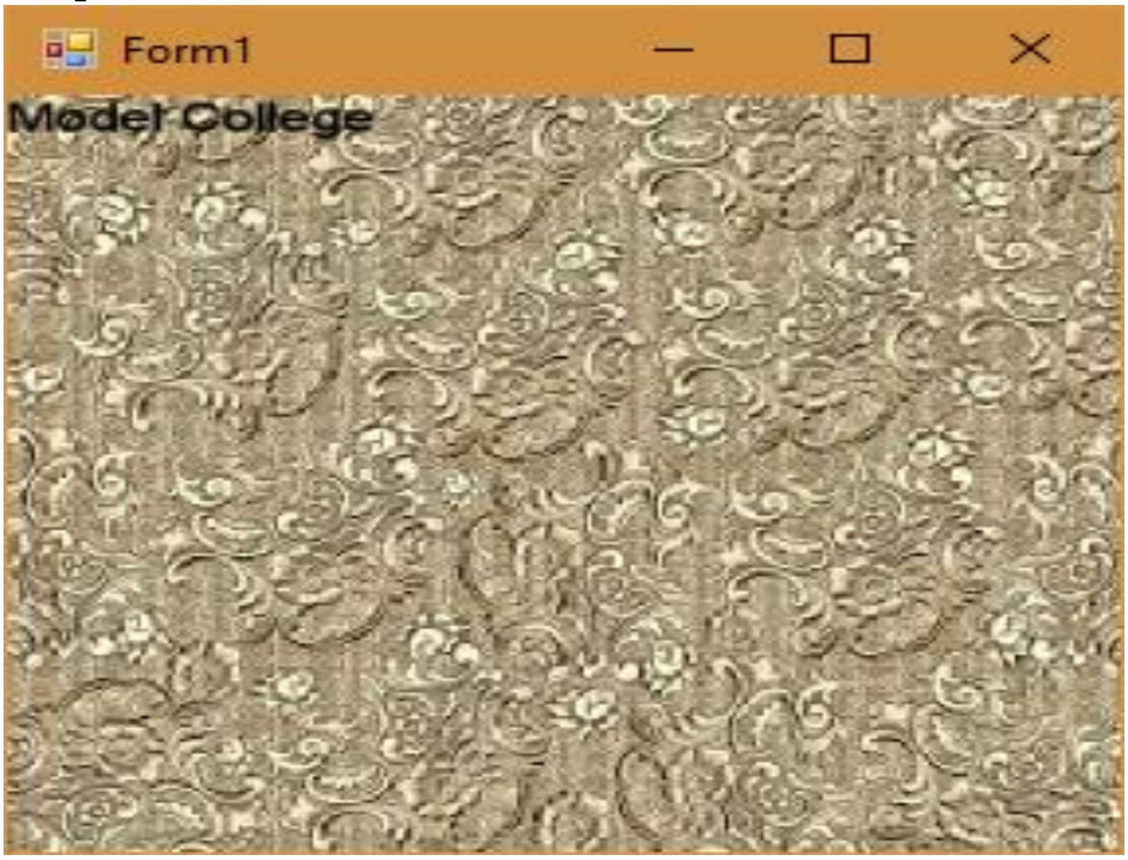
Input of the code:

Solution:

```
using System;
usingSystem.Collections.Generic;
usingSystem.ComponentModel;
usingSystem.Data;
usingSystem.Drawing;
usingSystem.Text;
usingSystem.Windows.Forms;
usingMicrosoft.DirectX;
using Microsoft.DirectX.Direct3D;
namespace GP_P2
{
public partial class Form1 : Form
    {
private Microsoft.DirectX.Direct3D.Device device;
privateCustomVertex.PositionNormalColored[]
vertex = new CustomVertex.PositionNormalColored[3];
public Form1()
        {
InitializeComponent();
InitDevice();
        }
public void InitDevice()
        {
PresentParameterspp = new PresentParameters();
pp.Windowed = true;
pp.SwapEffect = SwapEffect.Discard;
device=newDevice(0,DeviceType.Hardware,this,CreateFlags.HardwareVertex
Processing, pp);
device.Transform.Projection=Matrix.PerspectiveFovLH(3.14f/4,
device.Viewport.Width / device.Viewport.Height, 1f, 1000f);

device.Transform.View = Matrix.LookAtLH(new Vector3(0, 0, 10), new

Vector3(), new Vector3(0, 1, 0));
device.RenderState.Lighting = false;
vertex[0] = new CustomVertex.PositionNormalColored(new Vector3(0, 1, 1),
new Vector3(1, 0, 1), Color.Red.ToArgb());
vertex[1] = new CustomVertex.PositionNormalColored(new Vector3(-1, -1, 1),
new Vector3(1, 0, 1), Color.Red.ToArgb());

vertex[2] = new CustomVertex.PositionNormalColored(new Vector3(1, -1, 1),
new Vector3(-1, 0, 1), Color.Red.ToArgb());

device.RenderState.Lighting = true;
device.Lights[0].Type = LightType.Directional;
device.Lights[0].Diffuse = Color.Plum;
device.Lights[0].Direction = new Vector3(0.8f, 0, -1);
device.Lights[0].Enabled = true;
        }

public void Render()
        {
device.Clear(ClearFlags.Target, Color.CornflowerBlue, 1, 0);
device.BeginScene();
device.VertexFormat = CustomVertex.PositionNormalColored.Format;
device.DrawUserPrimitives(PrimitiveType.TriangleList, vertex.Length / 3,
vertex);
device.EndScene();
device.Present();
        }
private void Form1_Load(object sender, EventArgs e)
        {
 }
private void Form1_Paint(object sender, PaintEventArgs e)
        {
Render();
        }


    }
}
```

Conclusion:

Output of the code:



Model College

PRACTICAL NO 5

Aim:

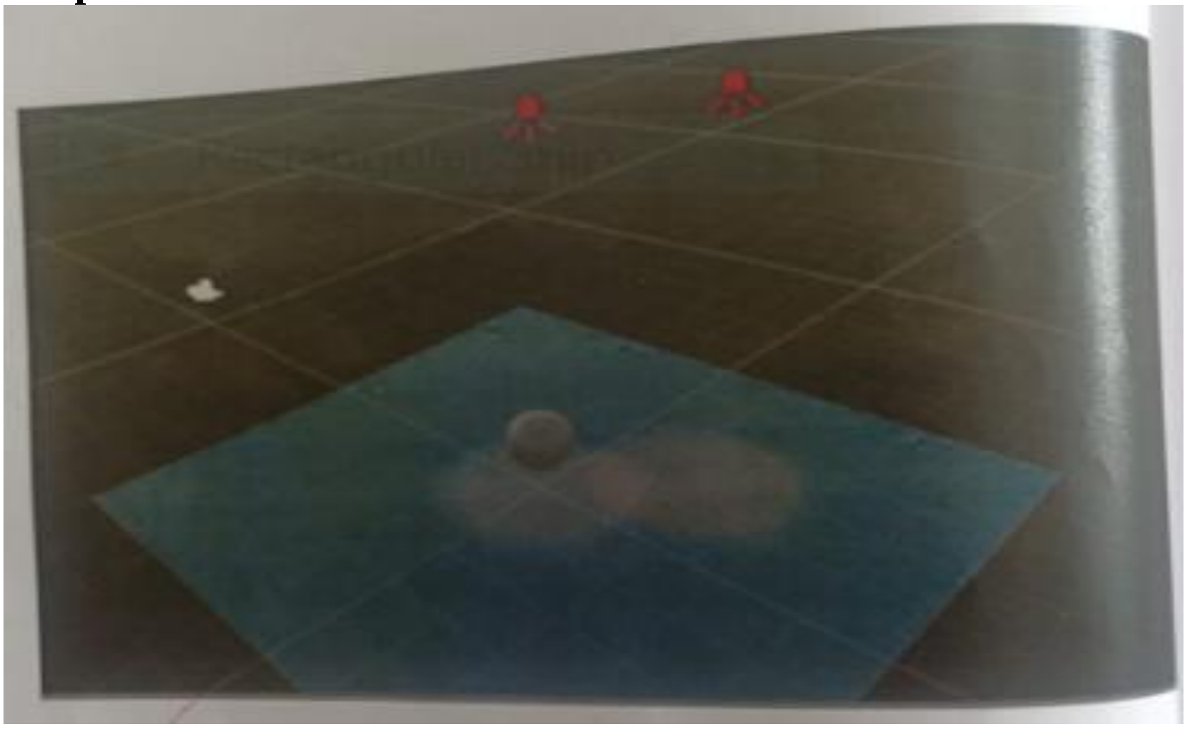
Input of the code:

```
using System;
usingSystem.Collections.Generic;
usingSystem.ComponentModel;
usingSystem.Data;
usingSystem.Drawing;
usingSystem.Text;
usingSystem.Windows.Forms;
usingMicrosoft.DirectX;
using Microsoft.DirectX.Direct3D;

namespace GP_P5_Loading_Model
{
public partial class Form1 : Form
 {
 Microsoft.DirectX.Direct3D.Device device;
 Microsoft.DirectX.Direct3D.Texture texture;
 Microsoft.DirectX.Direct3D.Font font;

public Form1()
 {
InitializeComponent();
InitDevice();
InitFont();
LoadTexture();
 }

private void InitFont()
 {
System.Drawing.Font f = new System.Drawing.Font("Arial", 16f,
FontStyle.Regular);
font = new Microsoft.DirectX.Direct3D.Font(device, f);
 }

private void LoadTexture()
 {
```

```
texture = TextureLoader.FromFile(device,"E:\\TYCS\\images\\img1.jpg",400,
400, 1, 0, Format.A8B8G8R8, Pool.Managed, Filter.Point, Filter.Point,
Color.Transparent.ToArgb());
 }

private void InitDevice()
 {
PresentParameterspp = new PresentParameters();
pp.Windowed = true;
pp.SwapEffect = SwapEffect.Discard;
device = new Device(0, DeviceType.Hardware, this,
CreateFlags.HardwareVertexProcessing, pp);
 }

private void Render()
 {
device.Clear(ClearFlags.Target, Color.CornflowerBlue, 0, 1);
device.BeginScene();
using (Sprite s = new Sprite(device))
 {
s.Begin(SpriteFlags.AlphaBlend);
s.Draw2D(texture, new Rectangle(0, 0, 0, 0), new Rectangle(0, 0,
device.Viewport.Width, device.Viewport.Height), new Point(0, 0), 0f, new
Point(0, 0), Color.White);
font.DrawText(s, "Model College", new Point(0, 0), Color.Black);
s.End();
 }
device.EndScene();
device.Present();
 }
private void Form1_Paint(object sender, PaintEventArgs e)
 {
Render();
 }
 }
}
```

Conclusion:

Output of the code:



PRACTICAL NO 6

Aim:

Input of the code:
Solution:

Steps:

- Add a plane using Game Object
- Add a sphere using Game Object
- Change sphere Y axis position to “2”, X=0, Z=0
- Select Directional light and disable it
- Add a Spot Light using Game Object ->light
- Change Spot lights position to X=0 Y=3 Z=0
- Change Spot plane’s Scale to X=5 Y=5 Z=5 8.Create a duplicate Spot light by right clicking on it
- Change the color of light
- Save scene or your work will vanish
- Go to project window right click>create>c # script 12. Code for NewBehaviourScript.cs
- Add Newly created script to spot lights
- Click on Play button

Program:

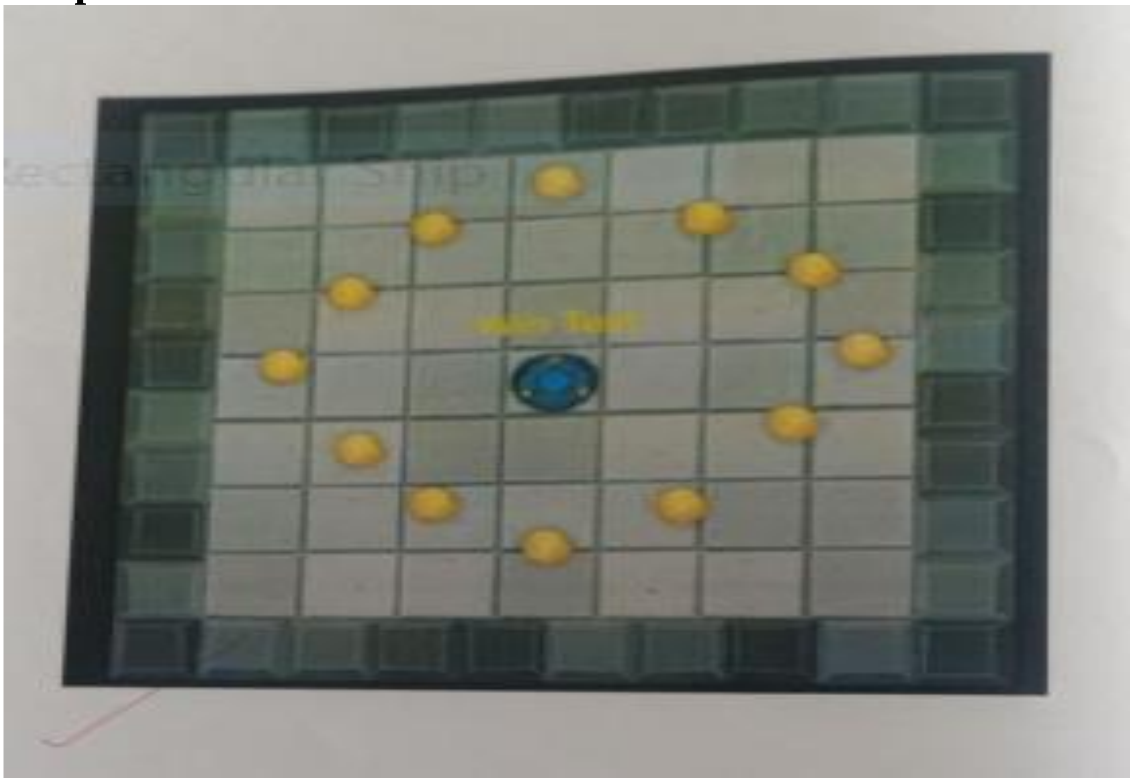
NewBehaviourScript.cs

```
Using System.Collections;
Using System.Collections.Generic;
Using UnityEngine;

Public class NewBehaviourScript:MonoBehaviour
{
//Use this for initialization
Void Start()
{
}
//Update is called once per frame void Update()
{
Transform.RotateAround(Vector3.zero,Vector3.up,40*Time.deltaTime);
}
```

}

<u>**Conclusion :**</u>

Output of the code:



PRACTICAL NO 7

<u>Aim:</u>

Input of the code:

- Step 1: Open unity software and create a new project.

  Choose the 2d option, create the project.
  - Go to window button and open asset store.
  - Click on Unity essential, then go to sample projects
  - You see 2d UFO tutorial package then open it.
  - Import the package in software
  - Save your scene. (Crtl+s)

- Step 2: Setting up the field
  - Then click on sprites.
  - This is your 2d UFO sprites.
  - Drag background to hierarchy.
  - Then you see right corners inspector button click on it.
  - Sprite Renderer box is created.
  - Same as it is UFO. Drag to hierarchy.
  - You can change the name.
  - Then you see sorting layer in sprite renderer, then set that layer background to background and UFO to player.

- Step 3: Controlling the player.
  - Click on UFO and add component
  - Click on 2d physics
  - Click on rigidbody
  - Then you see in inspector rigidbody box created
  - We need to create a script for moving our UFO
  - Click on add component and create
  - Name the script.
  - That script drag into your asset scripts
  - Open the script
  - Write that script into it.
  - Then test your game.

- Then your UFO fall down because of gravity scale
- Go to rigidbody2d and gravity scale 1 to change 0.
- Then your UFO speed is so slow then go to your script and add that 2 lines
- “ Public float speed ;
- Go to inspector and see your rigidbody 2d is updated with speed.
- Set your speed

➢ Step 4 : Adding Collision.
  - Go to add component and type circle collider this is for UFO.
  - This is the circle collider.
  - This the Radius 2.15 for UFO collider.
  - Then we use as same for our background.
  - Go to add component and go to 2D physics and choose box collider.
  - Then go to your scene and 1inch down you see shaded button click on this and change to wireframe.
  - Then set you x axis offset size 14.3 and y axis is zero. Box collider size for x axis 3.3 and y axis is 31.64.
  - Then copy that component and paste component.
  - See diagram above.
  - And same as it y axis -14.3 for offset and x is zero
  - Same as size collider y axis is 3.3 and x axis is 31.64

➢ Step 5: Following the player with camera
  - That is a simple for camera
  - We need to create script for camera control
  - That is our script.
  - And that script drag to player script

➢ Step 6: Creating a collectables objects.
  - Then you see drag a UFO to hierarchy same as it go to sprites an take pick-ups object and drag it.
  - Click on pick up and see inspector click on sprite render set sorting layer to pick-ups
  - Then deactivate player object

- Then go to add component and add again circle collider box for our pick objects.
- Set radius to 0.94.
- We need to rotate our object or animate, then create a new scripts
- Then pickup object   in hierarchy to drag into see this.
- Then we need to create a game object
- Go to game object and create empty click on it.
- Then our new object is created and drag into 1st pick-up in new game object.
- Then create duplicate our object
- Go to edit and duplicate
- Set your objects in game scene your own mind

➢ Step 7: picking a collectables object.

- We create pick-ups object then we need change our script in player module.
- Then go inspector see circle collider box the right corner you see setting button and book manual. Click on book manual
- The search onTriggerEnter2d and click on it.
- Copy the code and paste our UFO script.
- Below the rb2d.AddForce.
- Then delete this 2

→lines 1st public bool
→2nd characterInQuicksand.

- The type that code in script.
- Then select untagged in inspector and change into pickups.
- Then go to circle collider body and activated is trigger.
- Add component rigiddbody 2d and activated kinematic field on

➢ Step 8: Collecting object count and Displaying score

- Go to player script again and add the code.

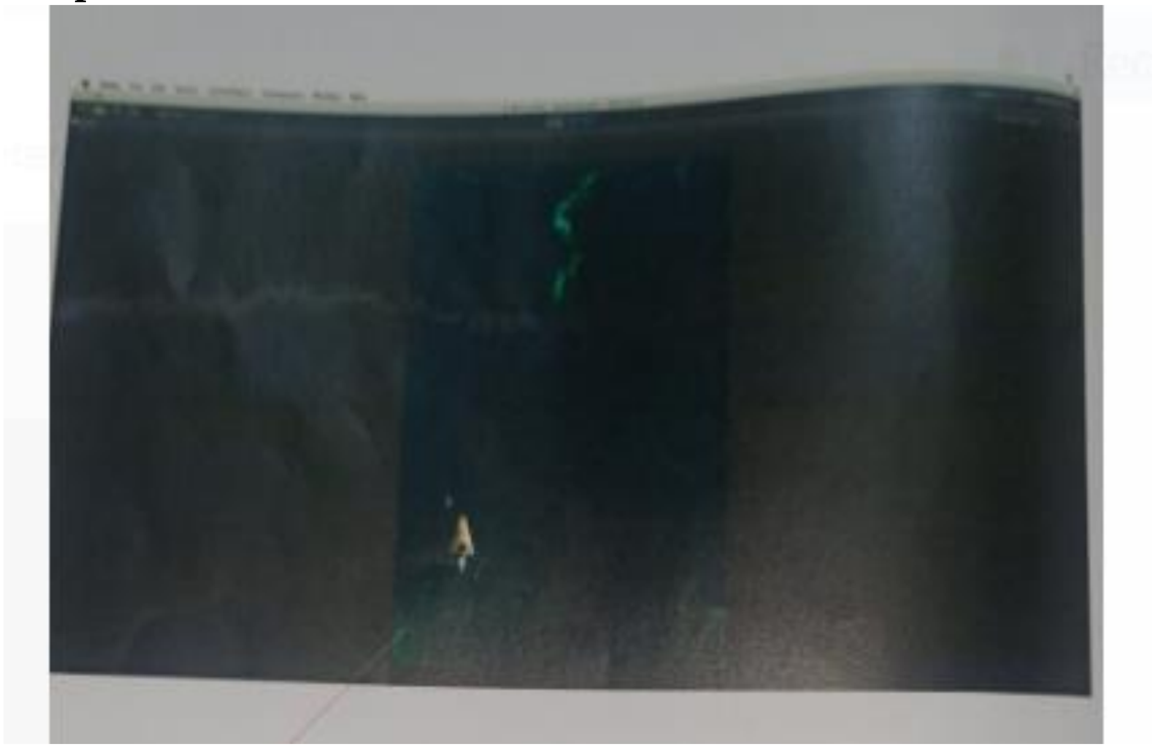
➔ " Private in count ;"
➔ Add " count =0 ; "
➔ Count = count+1;

- Create gaming UI object
- Rename the UI object.

- Press the f button then you see new text then go to setting and reset coordinate
- Then click on anchor and shift+ alt click.
- Hold the that key and click to that square
- Set x axis 10 and y axis -10.
- Add this code for UFO for count text.

Conclusion:

Output of the code:



PRACTICAL NO 8

Aim:

Input of the code:

Step 1: **Open unity software create a new project.**

- ❖ Go to file-> New Project->Click on create new project ->set the location (By clicking on Set Button)-> Give the name to your project As Space Shooter->Click on save Button->Click on Create Button.
    - Go to window button and open asset store.
    - Click on Unity essential, then go to sample projetcs
    - Import the package in software

The Scene will look after Importing the Asset-> Select All Packages->Click on Import.

- Save the Asset is created your scene. (Crtl+s)
- Save the scene inside the Asset directory make new folder as _Scene. Give the name to your scene as main the save it.
- Now we will set the build target to our scene
- Go to file->Build Setting Web Player->Click on Switch Platform
- Now we need to fill the build detail.
- Go to file->Project setting->Player->
  Set the resolution:
- Go to Inspector window(Right middle corner of the scene)->Resolution-
- >Change the resolution width as 600 AND height as 900.
- Drag the game view to the top.
- Now save the layout**:** Choose layout->click on save layout->Give the name as Space Shooter->click on save button.

STEP 2: Setting Up the player Game Object

- Go to scene view->Add the player Ship Model From mode Directory->Drag the vehicle player ship from model directory to hierarchy
- Go to edit ->choose frame selected
- Now Ho To Hierarchy->double click on Vehicle ship->Rename it as player-> press Enter Key
- Add New Component into the Inspector window
- Click on Add Component Tab->Select physics->Rigid Body

- Go to Right Body Component->Deselect use Gravity->
- Add New Component into the Inspector Window

- Click on Add Component Tab->Select Physics->Select Capsule Collider
- Now change the capsule collider Direction to Z-axis->change the radius and Height also->
- Go to Add component button again->Physics->Mesh collider->Replace

- Go to mesh collider component inside the Inspector window->turn off the mesh render tab

- Open the model->Select the mesh Asset->Drag it in to the Mesh Slot on the Mesh on the mesh collider->Turn On the Mesh Renderer tab->Select Is Trigger tab

- Go to->Asset->Prefab->VFX->Engines->Drag it into the player Hierarchy

- You Can Change the position of Ship By Changing the Tab View .

Step:3:
Setting up the main camera and lighting for the scene

- Click on the main camera from hierarchy->Go to Inspector window->go to transform component->Click on Reset Tab->Change the rotation of x-axis as 90->go to camera view->click on the project-> Set it as orthographic->Se the size to 10
- Go to camera->Change the clear flags to solid color->Change the background color as Black

- Setting up the light
- Go to edit->Render setting->change the Ambient light 0.0.0.0(Black in color)

- Go to hierarchy->click on create->Directory light->Rename it with main light->Reset the light position->set the rotation x axis as 20->y axis as-115->

  - Select the main light from hierarchy->go to edit menu->Select duplicate->Rename the duplicate as fill light

  - Go to Inspector ->reset the rotation of fill light

  - Change the light Intensity as 0.05->Change the Colors->Change the rotations x-axis as 5 and y- axis as 125-Duplicatthe fill light->Rename it with Rim Light->Deselect the RimLight FromInspector Window->selectRim Light From Hierarchy->Reset the transform

  - Add Empty gameobject to the scene->press Shift+Ctrl+N-> Rename it with Lighting->Reset the transform Component

Step 4: Adding the background

- Click on player in the hierarchy->go to transform component ->deselect Player tab
- Create the quad to hold the background Image
- Go to Hierarchy->click on Create->Select Quad->Rename it as Background->reset the game object

- Change the rotat ion of background x-axis as 90 Go to Mesh Collider->Remove

- Now Add The Texture To Our Background: Go To Project ->Assets->Texture->Select Nebula

- Reset the scale of Quad-> set the Scale x as 15

Change the Shedder: go to Shedder ->Unlit->Texture
Click on background in the hierarchy->go to inspector window->change the y position to -10

Step 5: Moving the player

- Go to asset->click on create->folder->give the name as Script->press Enter->Now we will create a new script to our player ship->Click on player in the hierarchy->Go to inspector window ->Click on Add component Tab-> select New Script->Give the Name to script as Player Controller->Click on Create and Add Button. The Script is created in c-sharp .

- NowDragthePlayer Controller Script Into the Script Folder
- Open the script folder to view
- Select the script->Click on Open
- The Script will Open in the mono Developer code window Remove all the sample code from the script

- Set x-min value as 6->x-max value as 6->z-min value as 4-.z-mzx value as-4
- From the Inspector Set x- In the Inspector Window do the following settings

->Set x-min Value as 6
->x-max value as -6
->z-min value as 4
->z-max value as -4
->Adjust the tilt value
->Set the speed to the ship

Step 6: Creating Shots

- Now Will Create Shots to Our Player
- Now Create new Empty Game Object In the Hierarchy->Press Shift+Cntrl->Give the name to the Game Object (Bolt)

- Click on Bolt From Hierarchy->Reset the game object of Transform to Origin
- Create Quad From Hierarchy->Rename it as VFX-> Reset the Transform position to Origin

- Now Drag The VFX Game Object Into the Bolt->Change x-axis position as 90

- Go to Asset->Texture->select FX Lazer

- Go to material folder in the asset->Click on Create tab->Choose Material->give the name as Fx-bolt-orange

- Now will add the Texture Into the Material

Go to Inspector Window ->Click on fx-bolt-orange->click on Select->click on the Texture U want to add into material

- Now go to material->drag the vfx-Bolt-Orange on to the scene.

- Go to Inspector window->fs-bolt-orange->Shader-.Mobile->particles->Additive select Bolt from Hierarchy->Go to inspector->Click on Add Component ->physic->Rigid body->Deselect Use gravity Tab

- Now Go to hierarchy->Click on VFX-> Go to inspector->Select->Mesh Renderer tab

- In Inspector Window->Go to mesh Collider->Click on Setting Button->Click on Remove Component

- In the hierarchy Window->click on Bolt->Go to inspector Window->click on Add Component Button->Select Physics->Capsule Collider

- Go to Capsule Collider Tab in to inspector window ->Change the radius and 0.03->Height 0.58->Direction as Z

- Click on Is trigger tab in collide

- Click on Bolt in the hierarchy-<Go to inspector window->Click on Add Component->Click on New Script ->Give the Name to the Script as Mover->Press Enter

- Go toAssets-> Move the Script File into The Script Folder->open the Mover Script->

- Write the following Lines of Code into the Mover Script->Save the Script and come to the unity Window

- Drag the Bolt Game Object From Hierarchy to the Asset Prefab->Set the Script Speed As 20 Inspector Window.

- Turn Of the Maximize on play Button on the Scene->Click on the Play Button->Drag the Bold Into the Hierarchy To see the How Ship is running

Step 7: Shot Spawn

- Select player from hierarchy->go to inspector window->Go to player Controller Script->Click on Setting Tab->Select Edit Script Option

- Add Code into the Script

- Create New Empty Game Object->Name it as Shot Spawn
- Drag the Shot Spawn Game Object into The player

- Now go to player Controller Script And add some lines Of Code

Program:

Done_BGScroller.cs

```
using UnityEngine;
using System.Collections;

Public class Done_BGScroller : MonoBehaviour
{

public float scrollspeed;
public float tilesizeZ;

private Vector3 startPosition;

void Start ()
{

startPosition = transform.position;
}
void Update ()
{
float newPosition = Mathf.Repeat(Time.time * scrollspeed, tile
SizeZ);
transform.position = startPosition + Vector3.forward * newPosi
tion;
}

}
```

Done_DestroyByBoundry.cs

```
using UnityEngine;
using System.Collections;

public class Done_DestroyByBoundary : MonoBehaviour

{
void OntriggerExit (Collider other)
{
 destroy(other.gameObject);
}
}
```

Done_DestroyByContact.cs

```
using UnityEngine;
Using System.Collections;


public class Done_DestroyByContact : MonoBehaviour
{
public GameObject explosion;
public GameObject playerExplosion;
public int scoreValue;
private Done_GameController gameControllers;

void Start ()


 {
```

```
 Gameobject gameControllerobject = GameObject .FindGameObjectWait
hTag ("Gamecontroller");
if (gameControllerObject != null)
{
gameController = gameControllerObject.GetComponent <Done_G
ameController>();

}
If (gameController == null)
{
Debug. Log ("Cannot find 'GameController’ script”);
}
}
void OnTriggerEnter (Collider other)
 {
if (other.tag == “Boundary” || other.tag == "Enemy")
{
return;
}
if (explosion != null)
{
Instantiate(explosion, transform.position, transform.rotat
ion);

}

if (other.tag == "Player")
{
Instantiate(playerExplosion, other.transform.position, oth
 er.transform. rotation) ;
gameController.Gameover();
}
gameController.AddScore(scoreValue) ;
Destroy (other.gameObject);
Destroy (gamedOject)
}
}
```

Done_DestroyByTime.cs

```
using unityEngines ;
using System.collections;
```

```
public class Done_DestroyByTime :ManoBenaviour
{

(public float 1ifetine;
 void start ()
{
Destroy (gameObject, lifetime);
}
}
```

Done_EvasiveManeuver.cs

```
using UnityEngine;
using System.Collections;

public class Done_EvasiveManeuver : MonoBehaviour
{
public Done_Boundary boundary;
public float title;
public float dodge;
public float smoothing;
public Vector2 startWait;
public Vector2 maneuverTime;
public Vector2 maneuverWait;
private float currentSpeed;
private float targetManeuver;
void Start ()
{
currentspeed = GetComponent <Rigidbody>().velocity.z;
StartCoroutine(Evade());
}
IEnumerator Evade ()
{
yield return new WaitForSeconds(Random.range(startWait.x,startWait.y));
while (true)
{
targetManeuver = Random.Range (1, dodge) * -
Mathf.Sign (transform. position.x);
yield return new WaitForSecond(Random.Range(maneuverTim

e.x, maneuverTime.y));
targetManeuver = 0;
yieldreturnnew
WaitForSecond(Randow.Range(maneuverWait.x,maneuverWait.y));
}
)
vold FixedUpdate ()
{
float newmaneuver = Mathf.MoveTowards (GetComponent<Rigidbody>
().velocity.x, targetManeuver, smoothing * Time.deltaTime);
GetComponent<Rigidbody>().velocitynew
Vector3(newManeuver,0.0f,currentSpeed);
GetComponent<Rigidbody>().position = new vector3
(
Mathf.Clamp(GetConponent<Rigidbody>().position.x, boundary
x.Min, boundary.xMax),
0.0f,


Mathf.Clamp (GetComponent<Rigidbody>().position.z,boundary
.zMin, boundary.zMax)
);

GetComponent<Rigidbody>().rotation = Quaternion.Euler (0, 0, G
etComponent<Rigidbody>().velocity.x * -tilt);
}
}
```

Done_GameController.cs

```
using UnityEngine;
using UnityEngine.SceneManagement;
using System.Collections;

public class Done_GameController : MonoBehaviour
{

public GameObject[] hazards;

public Vector3 spawnValues;

public int hazardcount;

public float spawnWait;
public float startwait;

public float waveWait;

public GUIText scoreText;
public GUIText restartText;
Public GUIText gameOverText;

Private bool gameOver;
Private bool restart;

private int score;
void Start ()
{
gameove= false;
restart = false;
restartText.text = "";
gameOverText.text = "";
UpdateScore ();
StartCoroutine (SpawnWaves ());
}
void Update ()
{
if (restart) ;
(
if (Input.GetkeyDown (KeyCode.R));
{
SceneManager.LoadScene(SceneManager.GetActivescene().b
uildIndex);
}
}
}
IEnumerator SpawnWaves ()
{ |
yield return new WaitForSeconds (startWait);
while (true)
{
for (inti=0;i<hazardCount; i++)
{
GameObject hazard = hazards [Random.Range (0, hazards.Length)];

Vector3 spawnPosition = new Vector3 (Random.Range (-
spawnValues.x, spawnValues.x), spawnValues.y, spawnValues.z); |
Quaternion spawnRotation = Quaternion. identity;
Instantiate (hazard, spawnPosition, spawnRotation);
yield return new WaitForSeconds (spawnWait) ;
}

yield return new WaitForSeconds (waveWait);
if (gameOver)

{
restartText.text = "Press 'R' for Restart";
restart = true;
break;
}
}

}
public void AddScore(int newScorevalue)
{
score+=newscoreValue;
Updatescore();
}
void updatescore ()
{
scoreText.text="score:"+score;
}
public void GameOver ()
{
gameoverText.text="Game Over!";
gameOver = true;
}
}
```

Done_Mover.cs

```
using UnityEngine;
using System.Collections;
public class Done_Mover : MonoBehaviour
{
public float speed;
void Start ()
{
GetComponent<Rigidbody>().velocity = transform.forward * speed;
}
 }
```

Done_PlayerController.cs

```
Using UnityEngine;
using System.Collections;

[System.Serializable]
public class Done_Boundary
{
Public float xmin, xMax, zMin, zMax;
}


public class Done Playercontroller:MonoBehaviour
{
public float speed;
public float tilt; .
public Done_Boundary boundary;

public GameObject shot;
public Transform shotSpawn;
public float fireRate;
private float nextFire;

void Update ()
{
if (Input.GetButton("Firel") && Time.time > nextFire)
{
nextFire = Time.time + fireRate;
Instantiate(shot, shotSpawn.position, shotSpawn.rotation);
GetComponent<AudioSource>().Play ();
}
}
void FixedUpdate ()
{
float moveHorizontal = Input.GetAxis ("Horizontal");
float moveVertical = Input.Getaxis ("Vertical");
Vector3 movement = new Vector3 (moveHorizontal,0.0f, moveVertical);
movement * speed;

GetComponent<Rigidbody>().velocity=movement*speed;

GetComponent<Rigidbody>().position = new Vector3
(
Mathf.Clamp (GetComponent<Rigidbody>().position.x, boundar
y.xMin,boundary.xMax),
0.0f,
Mathf.Clamp (GetComponent<Rigidbody>().position.z, boundar

y.zMin, boundary.zMax)
);
Getcomponent <Rigidbody>().rotation=Quaternion.Euler(0.0f,0.0f,
GetComponent <Rigidbody>().velocity.x * -tilt);
```

Done_RandomRotator.cs

```
using UnityEngine;
using System.Collections;

public class Done_RandomRotator : MonoBehaviour
{

public float tumble;

void Start ()

{
GetComponent<Rigidbody>().angularvelocity = Random.insideunits
phere * tumble;
}
}
```

Done_WeaponController.cs

```
Using UnityEngine;
using System.Collections;

public class Done_WeaponController : MonoBehaviour

{
public GameObject shot;
public Transform shotSpawn;
public float fireRate;
public float delay;
void Start ()
{
```

```
InvokeRepeating ("Fire", delay, fireRate);
}

void Fire ()

{
Instantiate(shot, shotSpawn.position, shotSpawn.rotation);
GetComponent <AudioSource>().Play();
}
}
```

<u>Conclusion</u>: