# Unit 2 - Lesson 5. Introduction to Simple Projectiles

**Aim:** How do set up simple projectiles in 3D unity game?

**Objectives:** After the lesson, students should be able to:

* Create simple projectiles using C# script

**CLASS PROCEDURE:**

***Do Now:***

Go to the public drive, and copy the AngryBird zip file to your USB flash drive. Unzip the file, and open the game in Unity. Play the game. Study the source code and study how projectiles are being implemented in the game.

***Class Discussion / Presentation:***

1. Open the Garden Defender scene you created in the previous class.
   1. How can we make the garden gnome throws potatoes?
   2. How can we make the potatoes spin and fly in projectiles?
   3. How can we load a lot of potatoes?
2. Unity projectiles are controlled / modeled after physics.
3. What are the must – have features of projectiles?

***Pair – sharing Activity #1 – Adding PotatoLauncher to Garden Defender:***

1. Open Garden 1, create a new C# script in the Game Scripts folder, and name it PotatoLauncher.
2. In the script, declare a GameObject and name it projectile, and declare a float speed and set it to 20f
3. In the Update() function, add the conditional statement to detect the button (left ctrl)

if (Input.GetButton(“Fire1”)){

ShootProjectile();

}

1. Create the ShootProjectile() method to shoot the potato.
2. Save the script.
3. On the Hierarchy view, under Gnomatic Garden Defender, select the Bazooka Arm, focus on the viewport.
4. Create an Empty gameObject, and name it Fire Point.
5. Using the ortho views, position the Fire Point at the front of the bazooka.
6. Drag the PotatoLauncher script onto the Fire Point object, and drag the Fire Point object into the Bazooka Arm in the Hierarchy view.
7. Create a new Sphere, and scale it to 0.2 x 0.2 x 0.2
8. Add a Rigidbody component to it.
9. Drag it to the root Prefab folder.
10. Select the Fire Point, and drag the Sphere prefab onto its Projectile parameter.
11. Delete the Sphere in the scenen.
12. Click Play, and press the left mouse button, or the left ctrl key.

***Solution to the script:***

using UnityEngine;

using System.Collections;

public class PotatoLauncher : MonoBehaviour {

public GameObject projectile; // the projectile prefab

public float speed = 20f; // give speed a default of 20

float loadRate = 0.5f; // how often a new projectile can be fired

float timeRemaining; // how much time before the next shot can happen

// Use this for initialization

void Start () {

}

// Update is called once per frame

void Update () {

timeRemaining -= Time.deltaTime; //

// if the Fire1 button (default is left ctrl) is pressed and the alloted time has passed

if (Input.GetButton ("Fire1") && timeRemaining <= 0) {

timeRemaining = loadRate; // reset the time remaining

ShootProjectile ();// …shoot the projectile

GetComponent<AudioSource>().Play (); // play the default audio clip on this component's gameObject

}

}

void ShootProjectile () {

// create a clone of the projectile at the location & orientation of the script's parent

GameObject potato = (GameObject) Instantiate (projectile, transform.position, transform.rotation);

// add some force to send the projectile off in its forward direction

potato.GetComponent<Rigidbody>().velocity = transform.TransformDirection(new Vector3 (0,0,speed));

}

}