**AG 131  
Lab 3 – Guns, Lots of Guns**[**https://www.youtube.com/watch?v=5oZi-wYarDs**](https://www.youtube.com/watch?v=5oZi-wYarDs)

**READINGS:**

<https://www.unrealengine.com/en-US/blog/damage-in-ue4>

<https://docs.unrealengine.com/latest/INT/API/Runtime/Engine/GameFramework/AActor/TakeDamage/>

<https://docs.unrealengine.com/latest/INT/API/Runtime/Engine/Engine/FDamageEvent/index.html>

<https://docs.unrealengine.com/latest/INT/API/Runtime/Engine/GameFramework/UDamageType/index.html>

<https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/keywords/typeof>

<https://msdn.microsoft.com/en-us/library/wccyzw83(v=vs.110).aspx>

**Written Work:**

1. What is the Damage Event used in Unreal’s Take Damage function? How is it used?
   1. Hint: look at the inherited damage event classes.
2. What are the three types of Damage Events?
3. How is a Damage Type Defined? How is it assigned in code?
4. What is a Default Property. In the C# Version given to you, how are they used?
5. Explain the following lines of code

PWCarPawn CP = (PWCarPawn)PossesedPawn;

if (CP)

{

CP.Vertical(value);

}

Given:  
 PosssedPawn is of type of Pawn   
 PWCarPawn inherits from Pawn

Vertical is member of PWCarPawn, but not Pawn

**Code Work:**You are given a Project that demonstrates (Input, Controller, Pawn) and a Damage System via actor. Review the Binds in the Unity Project. (Has both Keyboard and Controllers Setup)

1. Create at least 2 different projectiles prefabs
   1. Give each Projectile different Properties and Visuals
   2. Two different prefabs have been given to you
2. Update PWCarPawn
   1. New Property
      1. Public Transform for Where Projectile is spawned
      2. GameObject for two Projectile prefabs (Projectile1, Projectile2)
      3. GameObject for Current Projectile
   2. Changes to Existing Functions::
      1. Fire1 – Shoots a new Projectile
         1. You must use the Factory method in Actor!
      2. Fire2 – Switch Projectile

**Out of Scope:**

* Don’t worry about your car pawn “dying”
  + That’s the Next Lab!
* Don’t worry about a HUD showing health (or shields or energy)
  + That’s the Next Lab!

**EXTRA CREDIT:**

* Implement many different projectiles.
  + Have a list of projectiles the PWCarPawn can use.
  + Use Fire2 to select the next projectile from the list
  + Use Fire3 to select the previous projectile from the list.
* Implement a Weapon Class
  + Use to encapsulate weapon fire.
* Implement an Instant Fire Weapon