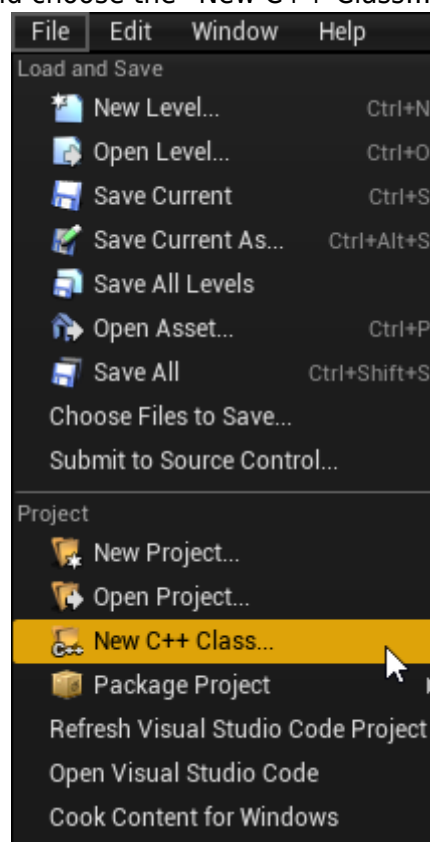# Mechanical

ECS clearly separates the data and the logic operating on that data. This logic in turn is usually executed on an iterative per-frame basis. Apparatus implements this animation-like functionality via a concept called *Mechanical*. Mechanicals are complex in nature and comprise multiple Mechanics that are executed inside of them.
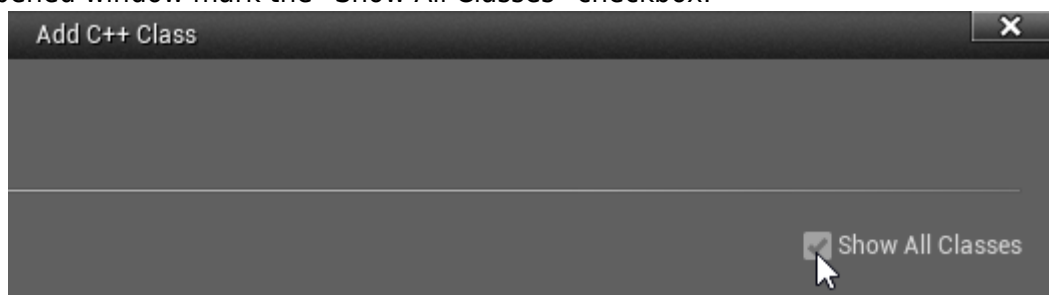
C++ Workflow

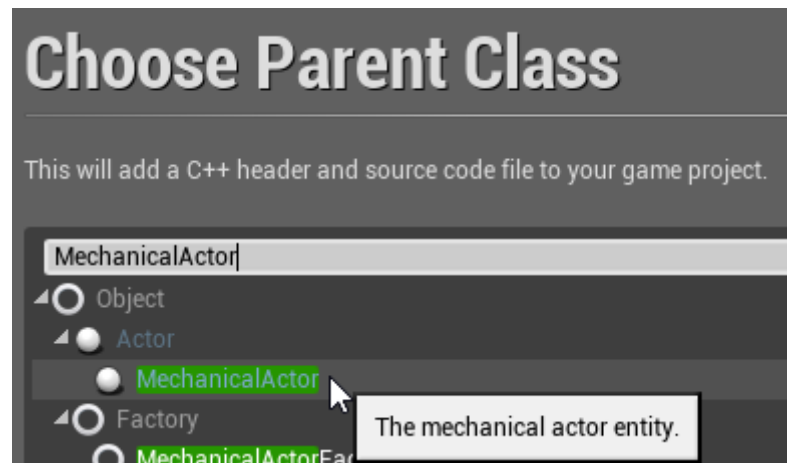If you're going the C++ way, creating your Mechanicals goes like this.

1. Open the main UE File menu and choose the "New C++ Class..." option:
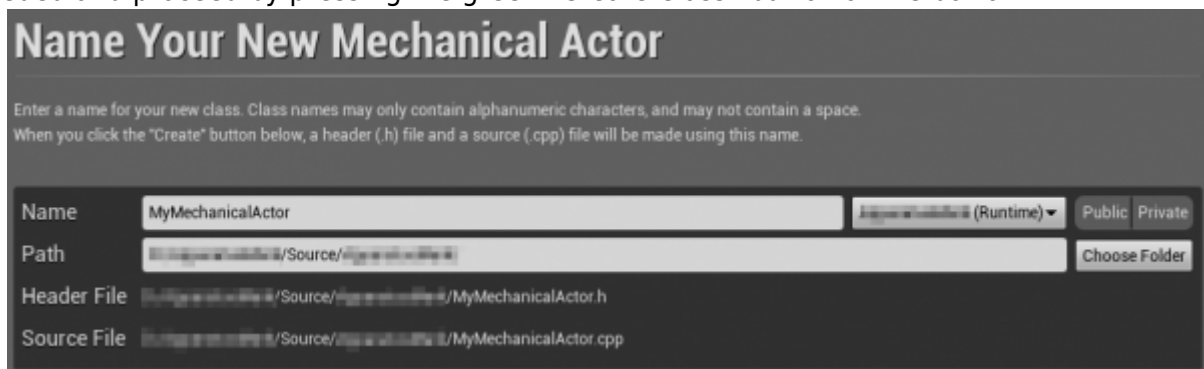

2. In the opened window mark the "Show All Classes" checkbox:

3. Now you can select any of the base classes available including the Apparatus ones. Choose the Mechanical Actor as a base class:

4. Click "Next" and you should see a name choosing dialog. Adjust the name of the class as needed and proceed by pressing the green "Create Class" button at the bottom:

5. The new class gets created as a combo of its header (.h) and a source file (.cpp). All in the Source (sub)folder of your project. You should now see them in the IDE of your choice:
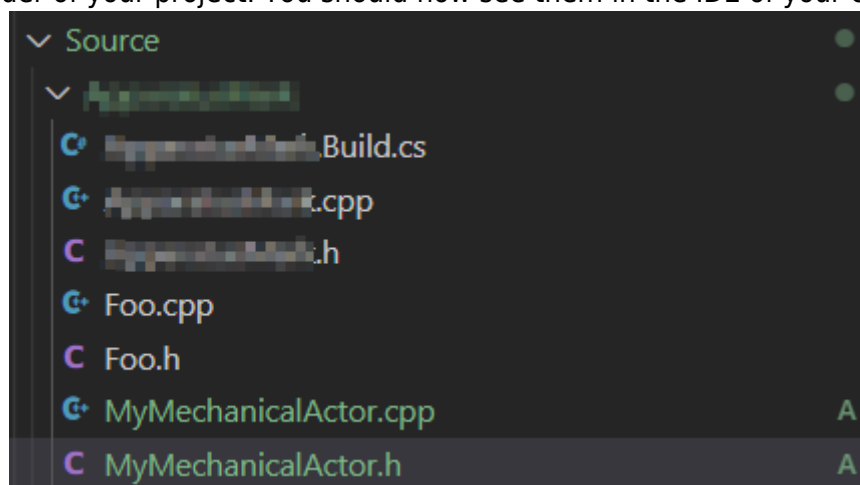
6. Note that you may have to recompile the project and/or restart the Editor after that. Don't be scared by some possible errors here, regenerate the IDE project, rebuild and start again.
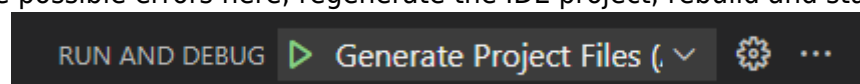
7. The corresponding file contents should be as:
   - MyMechanicalActor.h:

```
// Fill out your copyright notice in the Description page of
Project Settings.

#pragma once

#include "CoreMinimal.h"
```

```cpp
#include "MechanicalActor.h"
#include "MyMechanicalActor.generated.h"

/**
 *
 */
UCLASS()
class MY_API AMyMechanicalActor : public AMechanicalActor
{
    GENERATED_BODY()
};
```

- MyMechanicalActor.cpp:

```cpp
// Fill out your copyright notice in the Description page of
Project Settings.


#include "MyMechanicalActor.h"
```

8. Now you can override one (or multiple) of the Tick methods and implement your actual Mechanics as usually in C++...
    - ... in the header:

```cpp
void Tick(float DeltaTime) override;
```

    - ... and the source file:

```cpp
void AMyMechanicalActor::Tick(float DeltaTime)
{
    // Your mechanical code here...
}
```