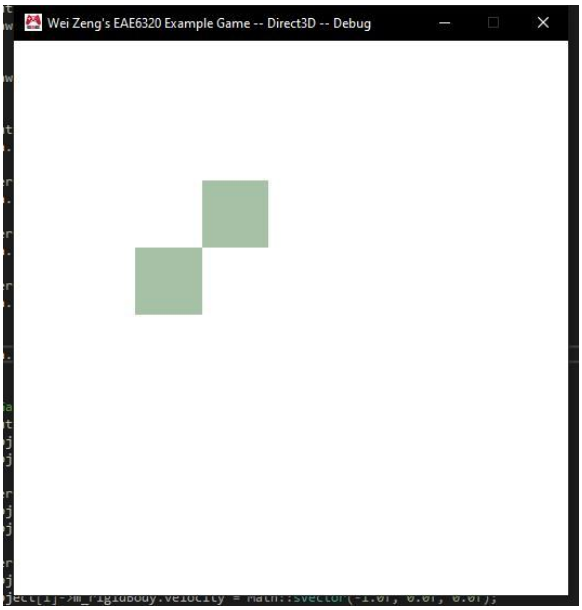
Assignment 5 Writeup

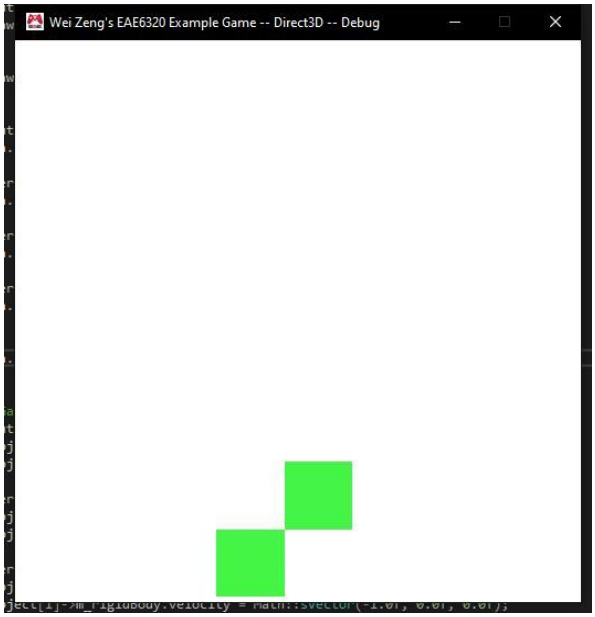
Game Executable:

https://github.com/WayGold/EAE6320_Assignments/blob/Assignment05/MyGame_.zip

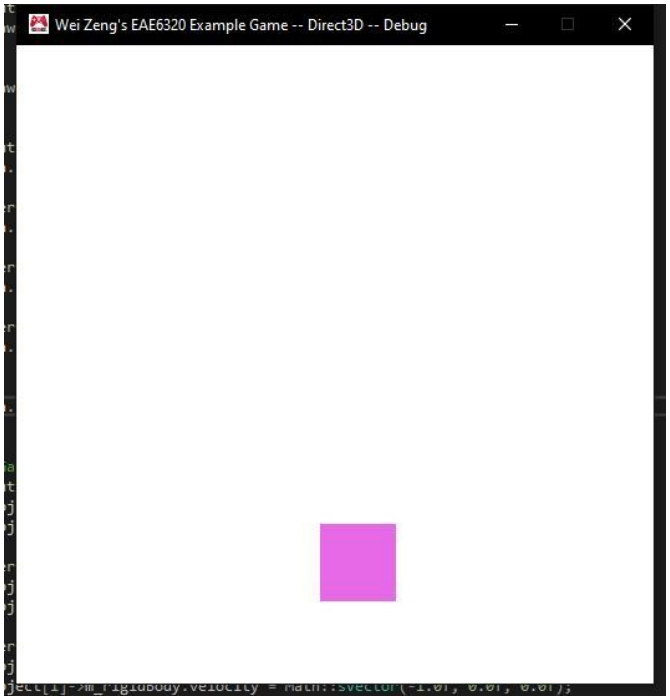
Game running:



(Move toward upper left)



(Move towards mid bottom)



(Press Space Change Mesh)

```
namespace eae6320 {
    namespace RenderObject {
        class RenderObject {
        public:
            Graphics::Mesh::Mesh* m_mesh;
            Graphics::Effect::Effect* m_effect = nullptr;
            Physics::sRigidBodyState m_rigidBody;
```

(GameObject Representation)

I placed the game object representation in the graphics project and called it RenderObject since essentially the data it stores is for rendering it out on screen. It stores mesh, effect and a rigidbody inside and the user could swap which mesh and effect the object points to anytime to switch shader effect or geometry data.

```
void SubmitRenderObjectData(RenderObject::RenderObject* i_data, const Math::cMatrix_transformation& i_drawCallData);
```

(Interface to Submit Game Object)

```
m_gameObject[0]->BindEffect(effectArr[0]);
Graphics::SubmitRenderObjectData(m_gameObject[0],
    m_gameObject[0]->m_rigidBody.PredictFutureTransform(i_elapsedSecondCount_sinceLastSimulationUpdate));
```

(Submitting in game code)

To submit a game object to be rendered, users would need to bind an effect to the game object first and then calculate the future transform passing into the interface.

```
Opened log file "eae6320.log"
Initialized time
Registered main window class "Wei Zeng's EAE6320 Example Main Window Class"
The user settings file "settings.ini" doesn't exist. Using default settings instead.
Created main window "Wei Zeng's EAE6320 Example Game -- Direct3D -- Debug"
Set main window resolution to 512 x 512
Size of app thread budget - 968
Size of render thread budget - 968
Size of Mesh - 40
Size of Effect - 56
Size of RenderObject - 88
Size of RigidBody - 68
My Game Initialized.
The application was successfully initialized
My Game Cleaned Up.
Unregistered main window class
Closing log file
```

(Data Sizes)

Since I set the render limit pretty low at just 10 render objects for the engine, this time we will just have 10 more rigidbody objects to cache.

Prediction of movement is necessary because we want to have a smooth movement.We must predict how much the object has moved based on the time passed. We need to take into account the time difference between the render system and the physics calculation.