Sapphire Engine

Design Document

# Engine

## UC001: Engine Startup

### Description

The main goal of this Use Case is to get the engine up and running.

### Inputs

The width and height of the display window.

### Outputs

All necessary resources are initialized, the display window is created, everything is ready to run the game loop.

### Procedure

1. Execute UC002: Create The Display Window
2. Execute UC003: Create The Render System

## UC002: Create The Display Window

### Description

Do all the necessary steps to create a window with given dimensions to show a windows on a desktop, on which our engine will be presenting the frames.

### Inputs

The width and height of the window’s client area

### Outputs

An empty window displayed on the screen.

### Procedure

1. Register the Window Class
2. Adjust the Window’s Client Area so it fits exactly the given window dimensions
3. Create Window Instance

# Render System

## UC003: Create Render System

Description

This Use Case will create all the necessary DirectX 12 resources to start producing the fames.

Inputs

The window handle, the width and height of the render area.

Outputs

Procedure

1. Create the DXGI Factory
2. Check system capabilities
3. Enumerate all the available adapters
4. Create DirectX 12 Device
5. Create Command Queue
6. Create Command List
7. Create Swap Chain
8. Create Descriptor Heap