CS 4850/5850 – Building Game Engines
Game Engine Deconstruction
Assignments 2 & 3
300 points (Two Parts)

Professor: Nik Bear Brown

Game Engine Deconstruction Proposal (Part A) (100 Points):

Due: Friday, February 3 2017 (In class)

On Friday, February 3 2017 students will present a game engine to deconstruct. This can either be an extension of one of the sample game engine to deconstructions provided or a new engine. Students can work alone or in a group of two.

A. If presenting a new game engine the student(s) must present a review of the code for the game loop for that engine in class.

B. If extending an extension of an existing game engine deconstruction the student(s) must present a proposal how they will improve the existing report. The amount of work needs to be approved. The students must show that the code exists to allow them to analyze the features of the engine that need improvement.

Game Engine Deconstruction (Part B) (200 Points):

Due: Friday, February 17 2017

A Game Engine Deconstruction is a code review and analysis of a game engine. Your analysis should include how the following works:

i. Time and the Game Loop
ii. Human Interface Devices
iii. Resource management
iv. 3D Rendering/Drawing
v. Character Animation/Sprites
vi. Physics
vii. Collision Detection
viii. Rigid Body Dynamics
ix. Game Object Models
x. Events and message passing
xi. Game Audio
xii. Devices/Hardware

If a game engine doesn't have one of the above features this must be noted and thoughts as to why this feature is missing must be included in the report.

It is recommended that you analyze an open source game engine (see List of game engines http://en.wikipedia.org/wiki/List_of_game_engines) or a game that has its own engine such as Doom (see https://github.com/id-Software/)

Game Engines?

Note if deconstructing Unreal Engine 4, you can focus on an aspect of it rather than tackle all 4.5 million lines of code. For example, the renderer, the physics, etc.

Unreal Engine 4
https://www.unrealengine.com

Some other engines:

Game Engines and Game Source Code
Prince of Persia source code https://github.com/jmechner/Prince-of-Persia-Apple-II
Shmup: Source code shoot'em up 3D engine http://fabiensanglard.net/shmup_source_code/index.php
"Fabother World" an interpreter for Another World (Out of this world) :: source code https://github.com/fabiensanglard/Another-World-Bytecode-Interpreter
dEngine: A iOS 3D renderer source code https://github.com/fabiensanglard/dEngine
id Software source code https://github.com/id-Software/ @idSoftware
DOOM-IOS2 Doom Classic for iOS version 2 :: source code https://github.com/id-Software/DOOM-IOS2@idSoftware
DOOM-3-BFG Doom 3 BFG Edition :: source code https://github.com/id-Software/DOOM-3-BFG@idSoftware
wolf3d-browser WOLF3D Browser Version GPL source release :: source code https://github.com/id-Software/wolf3d-browser @idSoftware
wolf3d The original open source release of Wolfenstein 3D :: source code https://github.com/id-Software/wolf3d @idSoftware
DOOM-3 forked from TTimo/doom3.gpl Doom 3 GPL source release :: source code https://github.com/id-Software/DOOM-3 @idSoftware
Wolf3D-iOS Wolfenstein 3D for iOS Source Release :: source code https://github.com/id-Software/Wolf3D-iOS @idSoftware
DOOM-iOS DOOM Classic for iOS Source Release :: source code https://github.com/id-Software/DOOM-iOS@idSoftware
Quake - Quake GPL Source Release :: source code https://github.com/id-Software/Quake @idSoftware
DOOM -DOOM Open Source Release :: source code https://github.com/id-Software/DOOM @idSoftware
Enemy-Territory Wolfenstein: Enemy Territory GPL Source Release :: source code https://github.com/id-Software/Enemy-Territory @idSoftware
Quake-2 - Quake 2 GPL Source Release :: source code https://github.com/id-Software/Quake-2 @idSoftware

Game Engine Ketsji Game Engine Framework, Analysis (Blender Game Engine Architecture)http://www.blender.org/documentation/intranet/docs/develop/gameengine_high_level/index.html
Game Engine Pygame http://www.pygame.org/
Game Engine Panda3D Architecture https://www.panda3d.org/documentation.php
Game Engine Cocos2d Architecture http://www.cocos2d-x.org/wiki/Architecture_and_Directory_Structure
Game Engine kivy Architecture http://kivy.org/docs/guide/architecture.html
Game Engine id Tech 1 to 5 (Doom, Wolfenstein & Quake) https://github.com/id-Software/http://www.moddb.com/company/id-software/engines http://www.fabiensanglard.net/
Game Engine Ogre Engine http://www.ogre3d.org/ http://www.cppdepend.com/Ogre3D.aspx
Game Engine Box2D http://box2d.org/ https://code.google.com/p/box2d/wiki/FAQ

Submission of Assignments

Your submission must include the code, along with a write-up of the project.

You will submit your assignments via BlackBoard. Click the title of assignment (blackboard -> assignment -> <Title of Assignment>), to go to the submission page. You will know your score on an assignment, project or test via BlackBoard. BlackBoard represents only the raw scores. Not normalized or curved grades.