Game Engines

A look at some common game engines

Game Development Foundations

Last modified 22/10/15 by Sam Cartwright



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What is a Game Engine

- A collection of systems and tools that communicate together as a whole
- Supports content creation
- A game engine might include:
 - A rendering (drawing) engine (aka renderer)
 - A level editor
 - A physics engine
 - An audio system
 - A scripting engine
 - Animation, AI, networking, streaming, memory management, and other components



What is a Game Engine

- It cold be described as all the non game-specific technology needed to make the game run
 - Drawing to the screen, communicating over the network, simulating physics, reading and writing files
- The game itself could be considered the gamespecific content
 - 3D models, animation, sound, videos, etc.
 - Game specific code or scripts (player controls, enemy AI, etc.)
 - All of these are called assets



Why Use a Game Engine

- Modern game engines take a long time to build
 - All that effort could be used to make your games!
- 'Off-the-shelf' game engines give you a quick head-start
 - Start building the content of your game immediately
- All major engines have a large community of users that can help find solutions to development problems
- Benefit from the constant evolution of game engines
 - All major engines regularly add new features, fix bugs, and add support for new platforms and devices



What Game Engines Are Available?

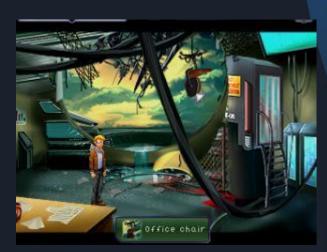
- There are two main categories of game engine:
 - 2D Engines, and
 - 3D Engines
- Some game engines can make both 2D and 3D games
- A 3D engine is substantially more complicated (both to use and make) than a 2D engine
- Let's look at some commonly used game engines (there are many, many more than shown here)



Adventure Game Studio

- Specifically for making 2D point-and-click adventure games
- **2D/3D Oriented**: 2D
- Platforms: Windows, Linux
- Scripting Language: Custom
- Price: Free

http://www.adventuregamestudio.co.uk/





Construct 2

- Lots of platforms supported.
 Can make games without writing code.
- **2D/3D Oriented**: 2D
- Platforms: Web, Wii U, iOS, Android, Windows, Win
 Phone, Mac, Linux, Blackberry, Firefox, Tizen, Facebook,
 Chrome, Amazon
- Scripting Language: None (custom event system)
- **Price**: From around \$150, free trial available

https://www.scirra.com/





Game Maker

- Designed for easy, fast development of cross-platform games
- 2D/3D Oriented: 2D
- Platforms: Web, iOS, Android, Windows, Win Phone, Mac, Linux, Play Station, XBOX, Tizen
- Scripting Language: Custom
- Price: Basic version Free, depending on release platform up to \$800

https://www.yoyogames.com/



CryEngine 3

- First used in Far Cry and Crysis. Extensive toolkits for world building and game content creation
- 2D/3D Oriented: 3D
- Platforms: Windows, Play Station, XBOX, Wii U, Android, iOS
- Languages: C++, Lua, Visual Scripting
- Price: Free or Paid (Pro)

http://cryengine.com/



Source Engine

- Used to make Half Like 2. The Source Engine comes bundled with any Source-based game
- 2D/3D Oriented: 3D
- Platforms: Windows, Play Station, XBOX, Linux, Mac
- Languages: C++
- Price: Free or Paid



https://developer.valvesoftware.com/wiki/Main_Page

Unreal Engine 4

- A Complete suite of development tools to support everything from 2D mobile games to console blockbusters
- 2D/3D Oriented: 2D and 3D
- Platforms: Windows, Web, Play Station, XBOX, Mac, Linux,
 - Android, iOS
- Languages: C++, Visual Scripting
- Price: Free (5% royalty)

http://cryengine.com/



Choosing a Game Engine

- Your choice of game engine will depend on:
 - Type of game / technology needed
 - Target platforms
 - Skill level of your team
 - Cost
 - Popularity of the engine (longevity / support)



Summary

- Game engines provide an integrated environment to support game development
- You write the game code and supply the assets, the game engine takes care of the rest
- There are many engines available for 2D and 3D game development
- There are many factors to consider when choosing an engine



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