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THE COMPARATIRE ANALYSES OF GAME ENGINES UNITY 5 AND UNREAL ENGINE 4

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Анотація

У статті розкривається сутність поняття "движок гри" і дається порівняння основних характеристик ігрових движків.

Ключові слова

Ігровий движок, Unity, Unreal Engine, вихідний код, форуми, відео-уроки, ПК з Windows, Mac OS X, IOS, Android, платформи, шейдери, користувацький інтерфейс, JavaScript, C #, 2D гри.

Abstract

The article reveals the essence of the notion “game engine” and gives the comparison of the main characteristics of game engines.

Keywords

Game engine, Unity, Unreal Engine, source code, discussion forums, video tutorials, Windows PC, Mac OS X, iOS, Android, platforms, shaders, User Interface, JavaScript, C#, 2D games.

The game engine, much like a car's engine, is what makes the game go. Sometimes there's a fuzzy line between where a game's engine ends and where the content of a game begins.

Generally though, the concept of a game engine is fairly simple: it exists to abstract the details of doing common game-related tasks, like rendering, physics, and input, so that developers can focus on the details that make their games unique.

A game engine is a software framework designed for the creation and development of video games. Developers use them to create games for consoles, mobile devices and personal computers. The core functionality typically provided by a game engine includes a rendering engine for 2D or 3D graphics, a physics engine or collision detection and response, sound, animation, networking, streaming, memory management and a scene graph. The process of game development is often economized, in large part, by reusing or adapting the same game engine to create different games.

With over four and a half million registered users, Unity is the most popular game engine. 47% of game developers use Unity, while only 13% use Unreal Engine. But let as examine both of them.

Price can be a big factor in deciding which game engine to use. Unity’s “Personal Edition” of Unity 3D is a free, full featured engine. The professional edition, Unity Pro is $1500 per major release or $75/month. If you have Unity Pro, you get features such as a customizable splash screen, beta access, unlimited revenue and funding, Unity Analytics Pro, source code access, and others. If your game makes above a hundred profit annual gross revenue, you must purchase Unity Pro. Unreal Engine 4 cost previously $19 a month, but as of March 2015 Unreal has been and will be free, and you get the C++ source code. Once your game ships, you pay Epic Games 5% of your quarterly gross revenue per product after you make your first three grand.

Both engines have a very active community, with discussion forums and answers hubs, as well as great documentation, tutorials, and wikis. Unreal’s documentation is written very well with great explanations and screenshots. While Unity’s docs are also great, they have some room to improve. Unity has an amazing number of video tutorials on learn.unity3d.com. They have hundreds of professional tutorials uploaded so far, for beginners and advanced users, covering every aspect of the game creation process. Both engines occasionally host live seminar style training sessions (Unity more often than Unreal).

Unreal Engine works at such platforms as Windows PC, Mac OS X, iOS, Android, VR, Linux, SteamOS, HTML5, Xbox One, and PS4. While Unity 3D supports platforms Windows PC, Mac OS X, Linux, Web Player, WebGL, VR(including Hololens), SteamOS, iOS, Android, Windows Phone 8, Tizen, Android TV

and Samsung SMART TV, as well as Xbox One & 360, PS4, Playstation Vita, and Wii U. It seems Unity is the winner in this area.

With the release of Unity 5 new features appeared that enabled developers to make beautiful, next-gen games. But it seems Unreal is one step ahead in nearly every area of graphics: terrain, particles, post processing effects, shadows and lighting, and shades all look amazing in Unreal Engine 4.

Unity has always been known for their easy to use interface where beginners can jump right in and start making games. Though Unreal Engine 4 was a major improvement, they still take second place behind Unity in the area of user experience. Both interfaces are very similar, with toolbars and settings within resizable & movable windows. Unreal's User Interface is still quite bloated and complex. Everything takes longer and is more complicated than it should be. Assets take a long time to import and save, and simple tasks require extra, unnecessary steps. Unity 3D is fast, and the interface is quick and responsive. It's so easy it can run on Windows XP (SP2), while UE4 requires at least Windows 7 64-bit. Though the final product can look nicer in Unreal than in Unity, it takes longer to get and much more effort, to get especially for beginners.

Unity games are programmed with JavaScript, C#, or Boo. Most developers use either JS or C#. It's not required to use only one. You can use one or the other, or all three. Unreal engine are shipped with the Blueprints Visual Scripting system, which can be used to make an entire game, or in combination with the somewhat faster C++ scripting. Unity 3D does not have a visual scripting system built-in (yet), however there are excellent solutions that can be purchased on the Unity Asset Store, most notably Playmaker and uScript Professional.

Unity Tech offers many amazing services such as Unity Ads, Everyplay (for recording & sharing mobile gameplay), Unity Multiplayer, Analytics, Cloud Build, Performance Reporting, Premium Support, and more. Epic Games does not have so many services, but they have created a five million dollar development fund to "provide financial grants to innovative projects built in and around Unreal Engine 4".

In conclusion I can say that both engines are fantastic game creation tools, and are similar in many ways. But perhaps their best quality is that they are free. So you can download them both and try them out. It should be noted that Unreal Engine is not good at 2D games. If you are making a 2D game, use Unity.

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