

GAME DEVELOPMENT AS A PERSPECTIVE FIELD OF IT-INDUSTRY

Vinnitsa National Technical University

Анотація

У статті розповідається про розробку комп'ютерних ігор як про важливу сучасну галузь ІТ. В дослідженні детально розглянуті етапи розробки ігор, описано загальний процес їх програмування, дизайну графіки та тестування.

Ключові слова: ігри, ІТ, тестування, геймплей, RPG, скрипт, рушій.

Abstract

The article tells about the development of computer games as an important modern IT-field. The study examines in detail the stages of game development, describes the overall process of their programming, graphics design and testing.

Keywords: games, IT, testing, gameplay, RPG, script, engine.

As IT-industry has been developing more and more, new contemporary spheres of entertainment become perspective and popular. The game development industry is such a vivid example of the sector, where IT, marketing, monetization and advertisement are cooperating together.

Game programming, a subset of game development, is the central part of video game industry and means software development of video games. Game programming requires substantial skill in software engineering as well as specialization in one or more of the following areas, which overlap heavily to create a game: simulation, computer graphics, artificial intelligence, physics, audio programming, and input. For massively multiplayer online games, additional areas, such as network programming and database programming are often included.

Now it would be useful to talk about the development of role-playing games in particular. Is a video game genre where the player controls the actions of a character (and/or several party members) immersed in some well-defined world and it still attracts a wide audience by its complexity, reality and a fantastic number of interesting tasks and quests.

There is no doubt that most modern RPG games are 3D games that usually make use of three-dimensional geometry, with materials and textures rendered on the surface of game objects to make them appear as solid environments, characters and objects that make up your game world. The camera can move in and around the scene freely, with light and shadows cast around the world in a realistic way. 3D games usually render the scene using perspective, so objects appear larger on screen as they get closer to the camera.

So, the main developers' task on the starting stage is to decide what game engine would be the most effective for management between different game components and perhaps improve it or develop a new game engine if it's necessary.

Then, programmers are required to produce prototypes of gameplay ideas and features. A great deal of prototyping may take place during pre-production, before the design document is complete, and may help determine what features the design specifies.

One of the hardest things for any developer or company to do is create the world in which your game will occur. The creating your own original world is the best way to truly engross yourself in the fantasy adventure

and will massively improve the game as a whole. To make this virtual world alive in the game, developers should name it, create its landscape, make some sketches, invent wild life, population, faith, create a detailed map of the world, to finalise country borders, mark in geographical features and write out the history of the world. To realize all these ideas practically it is necessary to start work with the third stage of developing named creating gameplay.

Creating gameplay is a volume and complicated part of game development and it consists of building scenes, game objects, representing of rotation and orientation, adding special components and working with lights or camera.

Scenes contain the environments and menus of the game. You should think of each unique scene file as a unique level. In each scene, you place your environments, obstacles, and decorations, essentially designing and building your game in pieces.

The game object is the most important concept in the any game engine. Every object in your game is a game object, from characters and collectible items to lights, cameras and special effects. However, game object can't do anything on its own; you need to give it properties before it can become a character, an environment, or a special effect. Components help to make your game object functional and with required behavior. By default, all game objects automatically have a Transform Component. This is because the Transform dictates where the game object is located, and how it is rotated and scaled. Without a Transform Component, the game object wouldn't have a location in the world. You can attach any number or combination of Components to a single game object. Some Components work best in combination with others.

Representing of rotation and orientation is the most difficult block of gameplay's creation. Rotations in 3D applications are usually represented in one of two ways, Quaternions or Euler angles. Euler angles have a simple representation, that being three angle values for X, Y and Z that are applied sequentially. To apply a Euler rotation to a particular object, each rotation value is applied in turn, as a rotation around its corresponding axis. Quaternions' representation internally consists of four numbers (often referenced as x, y, z & w) however these numbers don't represent angles or axes and you never normally need to access them directly. In the same way that a Vector can represent either a position or a direction, a Quaternion can represent either an orientation or a rotation - where the rotation is measured from the rotational "origin". It because the rotation is measured in this way - from one orientation to another - that a quaternion can't represent a rotation beyond 180 degrees.

Lights are an essential part of every scene. While meshes and textures define the shape and look of a scene, lights define the color and mood of your 3D environment. The most basic rule of lighting is that it always needs a lightsource. Even more important, and this is the second rule: the light should appear to be cast by a source. Also to be avoided is lighting that is out of balance with the size of the source. For example, a small light source that somehow manages to illuminate an entire room or corridor, completely breaks the illusion and looks fake.

A camera is a player's vantage point in a game, her eye into the world. The most widespread cameras used in RPG are first person camera and pushable camera. Those two kinds are often represented together and a player can make a choice what of them to use. First person perspective combines the camera and the avatar which means the player sees through the avatar's eyes. He uses one set of controls to move the avatar's body and another to turn its head. Pushable cameras occupy a default position (usually behind the avatar) when not controlled, but the player can push them using a mouse. The camera then rotates around the avatar. While developing a camera, you should remember a plenty of rules. Firstly, an overview has to start with what players need to see rather than what story developers want to tell. The second rule of camera design is to make sure that the camera can always see the surrounding space and that camera's management should be clear even for the most disoriented player. Thirdly, it's necessary to compensate for distance to action because if you need to know a lot of information from all over a battlefield then the ability to see over the whole field is vital. Finally, the camera and lighting need to lead rather than follow.

The third stage of developing RPGs is highly related with the previous one – that's the game design. Though the programmer's main job is not to develop the game design, the programmers often contribute to the design, as do game artists.

The next stage is production, when programmers may create a great deal of source code to create the game described in the game's design document. Along the way, the design document is modified to meet limitations or expanded to exploit new features. The design document is very much a "living document", much of whose life is dictated by programmer's schedules, talent and resourcefulness. Scripting is an essential ingredient in the production. Even the simplest game needs scripts, to respond to input from the player and arrange for events in the gameplay to happen when they should. Beyond that, scripts can be used to create graphical effects, control the physical behavior of objects or even implement a custom AI system for characters in the game.

When the game's developing is finished in fact, there are some errors and bugs that need to be fixed. The formal quality assurance testing process, performed by professional game testers, begins well into game development. High-budget titles may begin testing with the first playable alpha, while low-budget and casual games might not enter testing until a release candidate is ready. Game developers may have a beta testing period, but the definition of such varies from developer to developer. Often a beta contains all of the game's features, but may have a few bugs or incomplete content. When the game is deemed complete, it is said to have "gone gold" and is shipped off to the publisher.

The last period after game's full completing begins, named the maintenance phase. Programmers wait for a period to get as many bug reports as possible. Once the developer thinks they have obtained enough feedback, the programmers start working on a patch. The patch may take weeks or months to develop, but it's intended to fix most bugs and problems with the game. Occasionally a patch may include extra features or content or may even alter gameplay.

As you can see, game development (and RPG development in particular) is a long process complicated with a number nuances and requires specific knowledges in many fields like graphics, programming, physics, database, networks, digital advertising and artificial intelligence. Besides, developing company should be solid, purposeful and friendly. Also a good video game company should be enthusiastic and think about its players, not only about benefits. Then you'll achieve your aim and have a great moral pleasure of enjoying and entertaining people as a result.

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Zelinska Dariia – student of the 2KN-16b group, Faculty of Information Technologies and Computer Engineering, Vinnytsa National Technical University, Vinnytsa, e-mail: dariia050500@gmail.com.

Зелінська Дарія Олегівна - студент групи 2КН-16б, Факультет інформаційних технологій та комп'ютерної інженерії, Вінницький національний технічний університет, м.Вінниця, e-mail: dariia050500@gmail.com.

Присяжна Олеся Дмитрівна - кандидат філологічних наук, старший викладач кафедри іноземних мов Вінницького національного технічного університету, м.Вінниця, e-mail: prsyazhnalesya@gmail.com.

Prysyazhna Olesya Dmitrievna - Candidate of Linguistics' Department, Senior Lecturer of Foreign Languages Department in Vinnitsa National Technical University, Vinnytsa, e-mail: prsyazhnalesya@gmail.com.