Modeling in UML for an Android-based Mobile Game

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Abstract

To encourage mobile games to keep up with the evolution of technology, this paper presents the design of an Android OS-based mobile game called Gallant Fighter with Double Blade that takes use of a variety of cutting-edge methods, such as object pool, multi-threaded, socket connection, maps, and others. The game's backend, service class, sound manager class, game view class, hint window class, and rank window class were all developed using the UML paradigm. The trials validated the method's viability, suggesting it may be used to the development of future browser-based mobile games. The UML framework helps develop better games, which in turn gives players more satisfying downtime.

Keywords:

Operating System (OS), Unified Modeling Language (UML), Mobile Game (GFDL), Gravity Sensing

Introduction

Mobile games, also known as cellular phone games, PDA games, handheld computer games, and portable media player games, are video games that may be played on mobile devices. Video game systems that can be played on the go, such as the Nintendo DS or the PlayStation Portable, are not featured. Mobile games use the user's device's own hardware and software. When it comes to playing games online, you can choose from a number of various technologies. Examples include sending a text, multimedia, or GPS message, and pinpointing your location. The young are often the first to adopt and the most devoted users of new technologies, and this is especially true with mobile gaming. Mobile gaming has risen to the top of the entertainment industry with the meteoric rise of mobile connection. As can be seen in [3], the load is reduced because to the Android platform's incorporation of the mobile web application engine. Providing a whole operating system, a layer for creating applications, a Java SDK, and a suite of system programs, Android [4] is one of the most talked about opensource mobile OSes currently available. Since Android's source code is freely accessible, a huge community of developers has sprung up around it.[5] Many developers have helped expand Android by creating applications (or "apps") that may be used on Android handsets. Most of the coding is done in a variant of Java.[6] Roughly 520,000 Android apps are now accessible to users. [7][8] . We decided to use the mobile gaming sector as a case study. The UML model for the hit mobile game Gallant Fighter with Double Blade is the subject of this research. Everything from drawing adversaries and bosses to designing explosion effects and sketching machinery is handled by a class called "game manager," which is in charge of the game's administration. Threads for collision detection are sketched, as are approaches for listening to events, such as a monitor's keyboard response or the listening capabilities of a touch-screen phone. The UML for managing a game is shown in Figure 1.

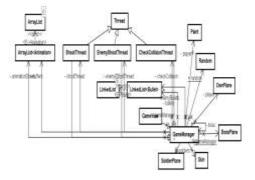


Fig. 1. The game management UML

Gravity sensing

The upper-left corner of the smartphone screen serves as the origin for the Android OS's gravity sensing coordinate system. Figure 2 depicts the straightforward definition. The trigonometric function value may be calculated from the x, y, and z coordinates, allowing for precise measurements of the mobile phone's motion. 1) A hardware controller may be obtained by using sensor=(Sensor Manager) get System Service (SENSOR_SERVICE). A location may be determined by Location Manage, and an audio player can be controlled by Audio Manager. The x, y, and z offset values may be obtained from the sensor by using the formula: sensor = sensorMgr.getDefaultSensor (Sensor. TYPE_ALL). To observe a shift in value, we may use SensorEventListener lsn = new SensorEventListener(). TextView provides access to the dynamic value when a SensorEvent has been defined to listen; the values are stored in a float[] array. That's the x, y, and z values, individually. 4) The listen, sensing device, and delicate parameters. The fastest, normal, and slowest delays are indicated by SENSOR_DELAY_ FASTEST, SENSOR_DELAY_NORMAL, and SENSOR_DELAY_UI, respectively.



Fig. 2 The Coordinate system

UML models for the meat of the game

Modeling Services using UML

Upthread is a realization of the thread class and the run method, whether you want to check whether the client is successfully communicating with the server, use the while cycle control's keep-on option. The IP addresses and port numbers given by the client determine how the Thunderserver class implements the TCP/UDP interface. Thread-based processing and containerization upon client connection. There is a lineage from the array class to the arraylist class. The client's connection may be made. Depending on the kind of client and the server's IP address, TCP or UDP may be used to establish a connection. As seen in Fig.3.

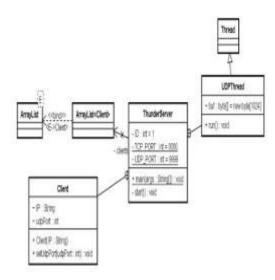


Fig. 3. The game service UML model

The UML Model of Sound Management

he SoundManager class is a compact intelligent entity that can be precisely managed. However, the maximum time a class may spend loading files is one million seconds. This is because, with this way of loading speech, we require a very precise file loading in the plane of the explosion. If the object does not exist or is extremely empty, and there are requests for a static object, the single-instance mode may be used to accomplish this goal via the use of static methods. The system's voice has been specified, and its methods of controlling sound volume and turning off the music when the stomach is full have both been implemented. The system's voice may be retrieved using the getStreamMaxVolume functions. MediaPlayer's public class after awakening is the MusicPlayer class. This kind of thing doesn't restrict the file size during continuous play, but the background music will be delayed. Refer to Fig.3

This is a UML model of the rank and pass tips window.

The cooperative game popwindow makes use of the window bag mechanic. When a user receives a high score, their accomplishments may be shown in a popup window called the Rankwindow. Inflater Layout mLayoutInflater = InflaterLayoutThe mActivity in GameConfig. The given tips class is the passtipswindow class, which is obtained by usingGetSystemService(Context.LAYOUT_INFLATER_SERVICE). It formerly marked the beginning, end, or first break in play. Look at Fig.7.

The gaming piece

The Main Menu class defines five static variables that are used to determine the current state: Sign in, Start, Menu, Help, and Sign out. The ConstantUtil class defines six sub-static constants (Sky, Message, Music, Tool, Flight, and Cloud) that are utilized to determine the current sub-state. When players launch the game from the main menu, they are immediately sent to the Fighting window. The First Fighting Window (a), the Boss Window (b), and the Second Fighting Window (c) are shown in Fig. 8.

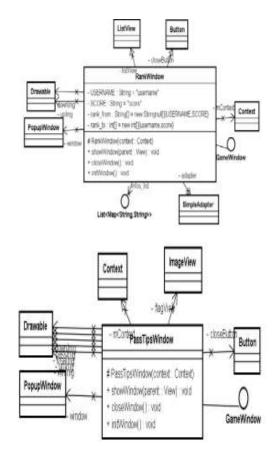


Fig. 7 (a) rank window UML model; (b) pass tips window UML model



Fig. 8 (a) The First fighting window;



(b) the Boss window;



(c) the Second fighting widow

Conclusions

Technologies like game state machines, object pools, multi-threading, wizards, maps, and so on are used in the creation of mobile games. It creates a game engine and straightforward server process well suited to games with single-screen maps by optimizing the code and designing for compatibility. In addition, it provides a useful resource for games of the similar genre. Java has a solid, secure, portable, and scalable platform and is simple to learn and master. For these reasons, Java is an ideal platform for creating new handheld gadgets. The adoption of 3G will hasten the convergence of mobile and fixed-line networks. Mobile terminal editions of established Internet games will be possible via network integration. It's predictable that the whole gaming business will come to terms with PC and mobile phone integration at some point.

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