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Implementation of "Olympic NXT "Android Gaming Application

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ABSTRACT: The number of android users is increasing day by day, and with that, there is an increase in the demand for interesting and challenging games. This has motivated various developers to create interesting games on the Android platform. We aim to develop an entertaining and visually appealing game based on four of the Olympic events, namely 100m sprint, 110m hurdles, Long jump and Javelin throw. Our game is a single-player game on the Android platform. In the game, the player will have to have very good timing and superb reflexes in order to win. In the 110 m hurdles the player will have to run very fast by constant taps on the screen and jump over the hurdles by quick swipes on the screen. In the javelin throw the player will have to throw the javelin at a precise angle in order to win. The games will require resourcefulness, quick timing, nimbleness and presence of mind. The platform of the game is Android having Front End as Unity 3D and Back End as JAVA/CSharp. Smartphone users have a desire not only for games in general, but for quality games that provide them entertainment and a level of challenge too. Thus games need to be constructed in a way that is organized and well planned to give the users the best experience possible. Thus we will try to create a game which is extremely entertaining and intriguing with great graphics to make it visually appealing

***Keywords*: Android platform, Unity 3D, Olympics**

I. INTRODUCTION

We aim to build an android based gaming application based on four popular Olympic events. We will develop this game in Unity3D. Our initial task was to understand the working of the Unity 3D software, with all its assets, character controllers, first person controller, game objects and other features. The game is a Role Playing Game (RPG). A role playing game is one in which the character takes on the role of the player. It accepts new challenges, overcomes them and wins the game. The character interacts with non-playable characters (NPC), which in our game would be the hurdles, javelin, running track and the rigid bodies which would be the AIs. The project includes different modules for each of the events, development of a good user interface, development of game objects and characters, and their movements and actions, using Unity 3D software. This will be linked on the Android platform using Java. The player has to progress through the game by overcoming hurdles, jumping with accuracy and precise timing and manipulate the game environment and the character in order to win the game. The game is challenging because the player has to tap the button at the exact right time in order to jump. In case of sprint, the player has to run extremely fast by constant left and tight taps.

The paper will describe the system that is going to be developed, the functional requirements of the game, the materials used, the implementation, the basic architecture and the various phases involved.

in game design

II. MATERIALS

UNITY3D:

Unity is a game engine developed by Unity Technologies. It has a built-in integrated development environment. It is used for development of video games on various devices including consoles, desktop computers and mobile devices. The Unity engine as of now, supports development for iOS, Linux, Android, Windows, Flash, PlayStation3, Xbox360 and PlayStation Vita. Unity can handle and support several art assets and file formats from Maya, Blender, Adobe Photoshop, SoftImage and Adobe Fireworks. All these assets are handled by Unity's GUI(Graphical User Interface). They can be very easily added onto any project.

Unity's scripting is built on MONO which is basically the open-source implementation of the .NET framework. Programmers can script using UnityScript (which is similar to JavaScript) or CSharp.

The Unity Engine has integrated Nvidia's PhysX engine but has improved upon certain features such as the collision layers, meshes and raycasts.

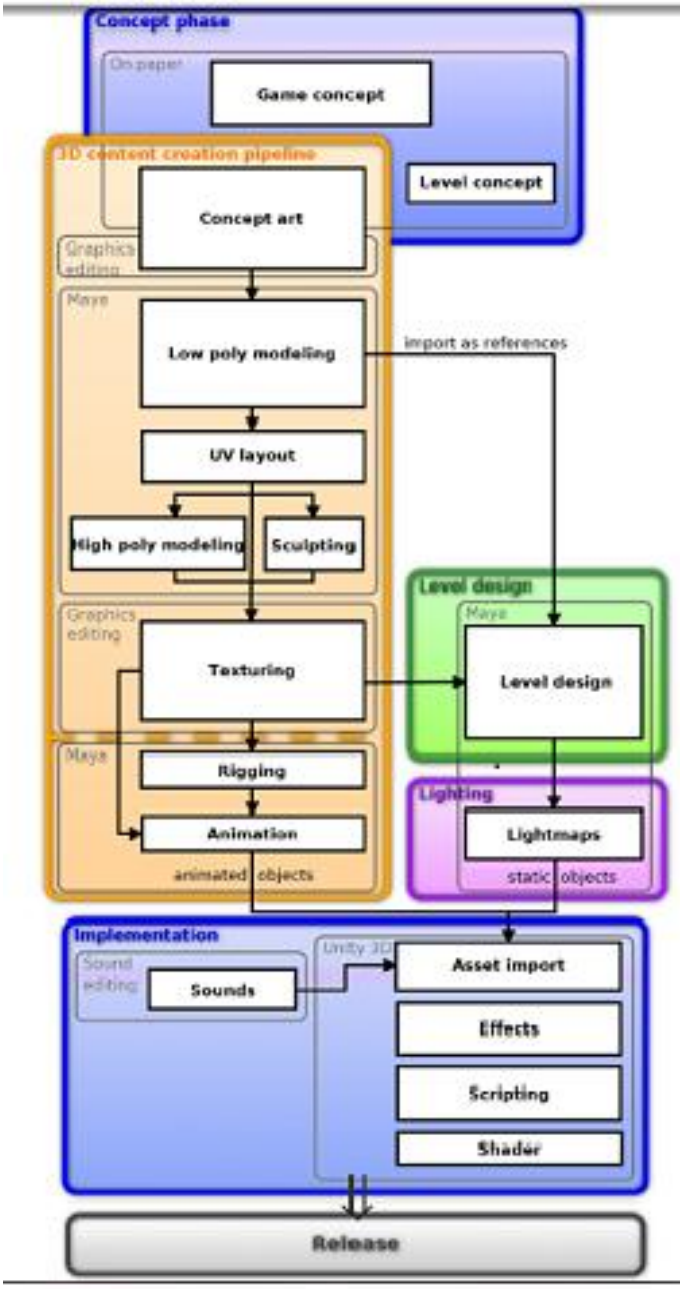
BLENDER:

Blender is computer graphics software product that is used for creating video games and 3D applications. Blender allows for 3D modeling, simulation of particles or smoke, animating, texturing, rigging and various other activities. In our project, we have used Blender to design our game objects and characters. Designing and 3D modeling is much simpler and more efficient in Blender. Thus the designing is done in Blender and then imported to our game project.

ANDROID:

Android is a relatively new platform. It is an operating system invented by Google. It is open source. Several users all around the world have Android phones and they can easily download android apps, most of which are free, through Google Play Store. Thus it is very easy to create different games and distribute them through the android platform. The official Android website describes Android as a software collection for mobile devices ,based on the linux kernel, that includes an operating system, middleware and key applications.

III. METHODS:



CONCEPT PHASE:

During the concept phase a small team draws an outline of the plot, the setting and the game mechanics.

3D CONTENT CREATION PIPELINE:

1. Concept art:

In this phase, the main assets of the game(characters and environment) is created.

2. Low polygon Modeling:

The first step from concept to 3D model is to create a low polygon model. This helps us to get a basic overview of the game structure.

3. High polygon modeling:

After the low polygon modeling, high resolution models are created.

4. Texturing.

5. Rigging and Animation:

To create naturally looking animations of characters, a technique called 'rigging' is used, which creates a virtual bone structure for each character. This structure can then be used to control the movements of the characters.

LEVEL DESIGN PROCESS:

Previously, we just dealt with how static and dynamic objects were created. But in this stage, we actually integrate all those objects together to create a meaningful, playable game which is visually appealing and is also completely efficient in its working.

SOUND:

In the last phase sound effects can be added to the game. To add a sound file to an object in Unity, an 'Audio Source Component' had to be added to any of the objects. In Unity's audio source options, we need to define the audio and some other options like the volume are individually adapted.

There are various scripts and characters that are used in our project. The First Person Control script is used to control the main character or the player. In our project, the player is supposed to run on the basis of alternate taps in the 100m sprint, and jump over hurdles in the 110m hurdles. The thisTransform.TransformDirection is used to move the character a particular distance on the basis of the taps on the touchpads. The FirstPersonContol script also has a jump function which enables the character to jump on a tap. The dragRigidbody script is used to move the AIs or the rigid bodies that are considered as the competitors in our game. They run and jump automatically at a predefined speed. Their movement and jump action is defined in the dragRigidbody script. Our first person control object and all the other characters are capsule. We attach colliders to them to prevent them from sinking into the ground. A rigidbody is also attached to the AIs.

IV. DISCUSSION-

Android is developed by Google and is an open source operating system. As of now, 75% of the mobile market is covered by Android and later this number will only increase further. Android allows for developing of various applications easily and effectively. These can then be distributed into the market space. Therefore, we are going to develop our game on the Android platform. Thus, we can develop an interesting, challenging and entertaining game using Unity3D and Blender, which can be played by many android users.

Product Feasibility:

Product feasibility is used to find out whether the idea we wish to implement is new. In our case, Olympic games is an old concept but it will be a new and interesting when developed on the Android platform. Being an Android game it will be more fun and user friendly as majority of the population is accustomed with the Android Operating System.

Economical Feasibility:

This helps us analyze the resource cost. In our case, we are using Free-wares and open source designing and programming, so we do not need to account for any software purchases. Only we will need to specify the Hardware elements required to implement this project, such as an Android based Smart Phone for testing and running of the Project and Laptops or Desktop Computers for development.

Technical Feasibility:

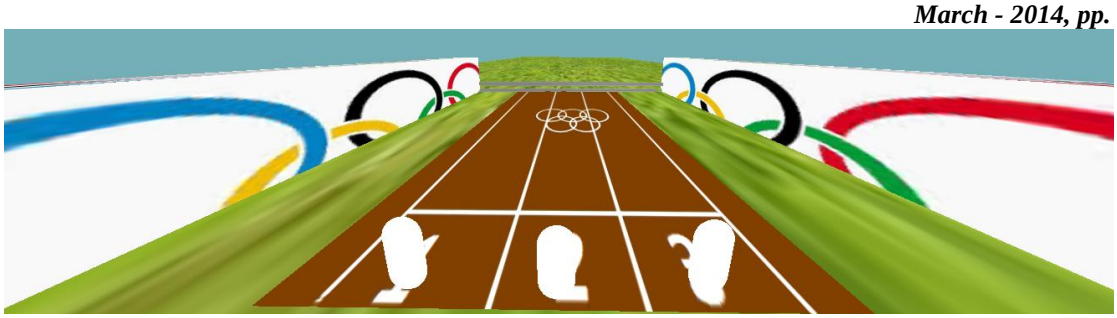
The technologies being used are the latest ones, with the most advanced features and capabilities**.** Our game will be compatible with almost all the versions of Android OS. All the versions from Gingerbread to Kitkat will be feasible in supporting our game. We are trying to lessen the memory space occupied by our app to the minimum possible value so as to save the users phone memory.

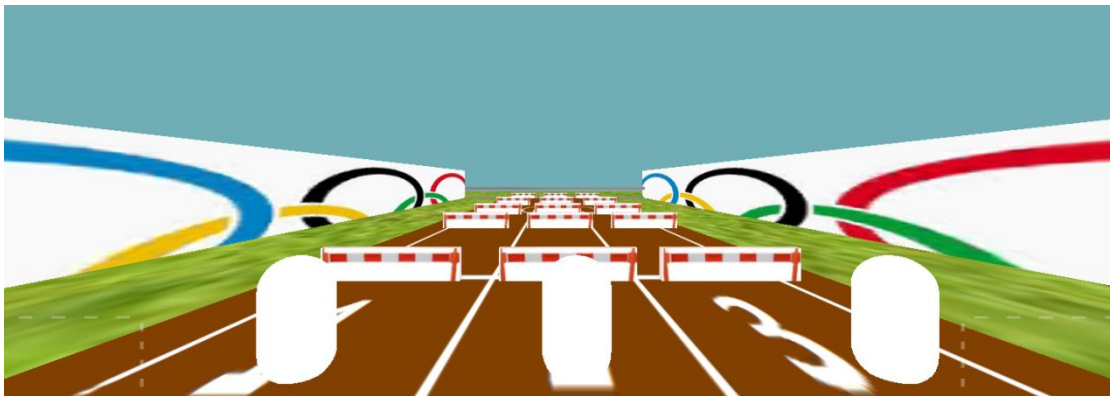
V. RESULT

This project results in a successful definition of the instructions for the development techniques of an Android Base Game Application.

Olympic video games is a name given to sport video games including more than one event and/or several sports. They are one of the older video game genres, having first appeared with the 1983 arcade classic Track and Field. Since then, numerous titles have been released, usually in the immediate run up to the Olympic Games each game is intended to cover. Official IOC licenses became a norm since the first official game, Olympic Gold, was released in time for the 1992 Summer Olympics. Companies like Epyx, Accolade, U.S. Gold and Konami developed many of the early games. The genre is often overlooked by the gaming industry and considered little more than a novelty or memorabilia attached to the event, with some considering it as purely an exercise in licensing and merchandise. Gameplay is the common target for detractors

To develop a game in 3D for Android Phone using Unity3D, Blender and Unity-script.Unity3D is a software to design games in 3D, movements, controls, and all other motions are implemented using the codes scripted in it. Blender is for designing different game models. The objective is to design the game using all the things mentioned above and their collaboration. To obtain the game OlympicNXT in 3D for Android phone is the goal of this project.





VI. SUMMARY

The project describes the process involved in the development of a game on the android platform. This game has been developed using Unity3D. We initially define the features of the project and the materials required for the implementation. After that, the methods and implementation techniques involved are explained. These techniques are then used for the development process. The project aims at developing an entertaining, challenging, visually appealing and interesting gaming application based on four Olympic events. The various requirements, functional and non functional, of the game and the features and implementation techniques are explained. The game is created using the Unity 3D software and then run on the android platform.

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