3D Android game Hide-n-Seek

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Abstract— The project is about 3D game development based on android operating system. 3D game development is an exciting activity for many student. The game is all about "3D Hide N Seek".The purpose of this project is to provide students with entertainment and fun. The goal of our project is to develop a game with 3D graphics with good performance. An essential objective is its a "multi-player" feature. Player can connect via bluetooth. The other feature is "leaders board" over the globe playing this 3D game using Database SQL lite. 3D game is being developed using unity 3 software as it required graphics. Graphics using openGL es or photo shop for clean and realistic objects. The game is all bout there will be a diner and other 4 player will hide (as max. 5 players can play at a time).the diner will find all the other players in minimum time as possible. There will be different areas like school, garden , etc. player can select area of his/her choice. Minimum time required to find all players will be player's(diner) high score(only in single player mode where 4 other players will be bots).

Keywords- 3D, Hide-n-seek, OS, Programming

I. INTRODUCTION

To Develop "3D Hide N Seek" game for android operating system which is simulation of real life Hide and Seek game in 3 Dimension with bluetooth connectivity for multiplayer(max. 5 players) and data base for leaders board for all players over the world and artificial intelligence in computer bots(only for single player)[1].

Problem Definition
To Develop "3D Hide N Seek" game for android operating system which is simulation of real life Hide and Seek game in 3 Dimension with bluetooth connectivity for multiplayer(max. 5 players) and data base for leaders board for all players over the world and artificial intelligence in computer bots(only for single player).

Existing System
There are no systems that are exactly similar to this project but certain system have some part of this project such as 3D gaming ,multiplayer gaming using Bluetooth etc[2].

A)3D Game : Zombie Waves
In this game totally 3D environment is provided to user. The interface and area of playing is three dimensional. The task of player is to find zombies and kill them. Player can move in the given area, choose weapon ,change camera position, kill zombies.

B)Multiplayer Game : Pocket Tanks
In this game many players can participate simultaneously and compete with each other. For connectivity WiFi , Bluetooth, internet service can be used. One player creates the server and invites other player then that player can join that server and start playing.

Proposed System

Our proposed system combines many advantages and interesting things in the current system. Our system consists of
- 2 modes (Single player using computer bots and multiplayer using Bluetooth)
- Simulation of real hide n seek
- Leadersboard for high score
- Full 3D HD graphics
- Smart handling(touch and motion)
- Changing camera positions

Programming Tools
- Android studio
- Unity 3D[3]
- C# editor
- MySql DBMS/Oracle/Xampp

Scope
3D games are the latest rage in the games development industry. It is a great source of entertainment as well as it provides great business scope. Many business organizations advertise these games in order to promote their business. Nowadays games are developed mainly in flash, Macromedia and to make them more attractive, innovative storyboard ideas, and more complicated developments are made. Android operating system released by Google.

Games based on android technology are hugely popular among mobile users.

This 3D game will provide entertainment for all group of ages. As Bluetooth connectivity is provided interaction will more between players. It will increase concentration level of small kids. Kids will be familiar with real hide and seek game.

II.   OVERALL DESCRIPTION
Software Process Model

The waterfall model can be used for development of this project. Phases in development are,
1.   Requirements gathering (analysis)
2.   Design resulting in the software architecture and blueprint of project.
3.   Implementation (coding)
4.   Merging.
5.   Testing and debugging.
6.   Installation.
7.   Maintenance.

1.1   Product Perspective
- The Application is only for android smart phones.
- This Application is compatible with android version 4.0 +.
- Application can be access easily with Internet on smart phones (2G or 3G).
- Users can play multiplayer using Bluetooth.
- User can play single player with computer bots using Artificial Intelligence.
- User can compete with other players using leadersboard.

1.2   Product Functions
- 2 modes (Single player using computer bots and multiplayer using Bluetooth)
- Simulation of real hide n seek
- Leadersboard for high score
- Full 3D HD graphics
- Changing camera positions

1.3   User Classes and Characteristics
1.   Server player:
- Create server
- Set password
- Manage other players
- Play

2.   Player:
- Join server
- Choose role
- Play

1.4   Operating Environment
The Application will work on Android base operating system. It requires android version 4.0 and above[5].

1.5   Design and Implementation Constraints
The Application can be developed on windows operating system and can be developed using Unity 3D software having android plugins. It wills reqires a minimum RAM of 4GB. And at lest 1GB of graphic card.
The Application can be implemented using C, C#, java and Mysql.

1.6   User Documentation
The Application consists of a manual, online help and tutorials. User manual has complete guide of using this application.

1.7   Assumptions and Dependencies
We have assume that the user having a smart phone with android platform running android version 4.0 and above.
The Application is dependent on Android platform only. It will not work on other platforms i.e iOS, blackberry or windows

2.   EXTERNAL INTERFACE REQUIREMENTS

2.1   User Interfaces
User can access all the features of the application. There are icons for different for different features. A smooth interface will be providing.

2.2   Hardware Interfaces
This application will work on dual core processors with RAM of 1 GB and above in a smartphone.
2.3   Software Interfaces
This application will only work on android platforms. The required android version 4.0+ and above. Data base will be used to store the data and information about the devices.
2.4   Communications Interfaces
The user can contact support services.User can also contact support services with Email.

III.   SYSTEM FEATURES

- There will be 2 modes in the game which are, Single player using computer bots and multiplayer using Bluetooth.
- It's a simulation of real hide n seek.
- For competing with other players there will be leadersboard which will use database or normal basic file system.
- The GUI will be totally 3D HD. Also the gaming environment will be 3d.
- There will be option to change camera positions.

- There will be various characters which can be used to play.

IV. OTHER NONFUNCTIONAL REQUIREMENTS

A. Performance Requirements

Application requires processor of minimum Ardeno 360 GPU and 2GB CPU which is atleast dual core processor and minimum of 1 GB RAM. Application should not take size more than 50 MB. Application need to be developed in 6 months.

B. Safety Requirements

Use those libraries only which are compatible with the android platforms to develop Android Application.

C. Security Requirements

There is no security required as Application is getting develop for user entertainment. User can access all features of the Application.

D. Software Quality Attributes

The Application should be updated if any bugs found by the user for its good performance.
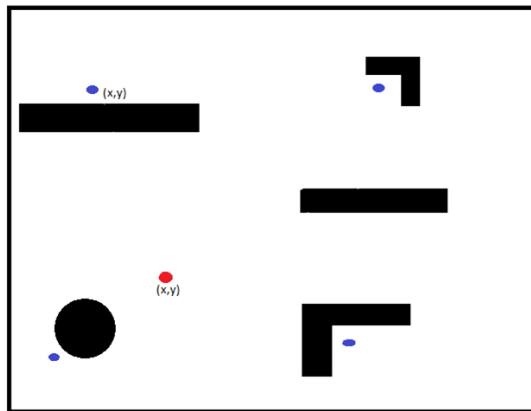
E. Business Rules

Its totally free entainment game.

V. OTHER REQUIREMENTS

The Application code should be written in java, c and c#. User interface should be simple so that user can have easy access to all features.
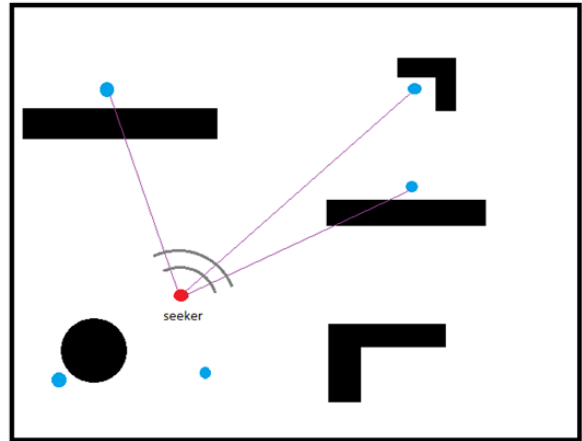
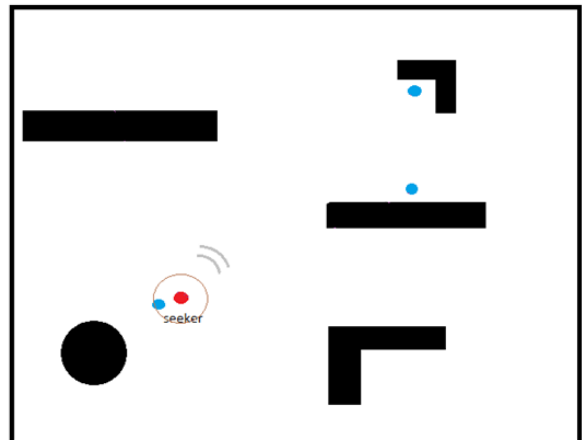Approach and Algorithms
  1)Basic Conceptual Layout:

(Red Dot : Seaker,Blue Dot :Hiding players, Black_objects : Static objects)

2)Line Drawing Algorithm(to check visibility):

(Players connected by lines to seaker which are not passing through any static object are visible and others are invisible)

3)Inside Circle test(to out seaker):

(If any player i.e. blue dot comes inside virtual circle around the seaker and opposite to line of sight of seaker then seaker will get out)

4)3D Human Objects in Unity 3D:

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