Serious Gaming

Research document

A research document for the creation of a serious game that will use gamification.

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Introduction

Summary of entire project

The following project will be the development of a new piece of software for the security company Net watch. The project will be the creation of a serious game based on the concept of *****.

The game will be use to register car licence plate that computer cannot register, which is a time consuming process the aim of this project will be to turn this process into a simple and fun game by using gamification.

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Serious game

"Serious gaming describes a technology that can educate and train while entertaining users" (Paolis, 2014). Serious Gaming is the combination of an enjoyable game that also can teach valuable lessons such as new languages, skills or allow for the progress of work in an enjoyable way this is why they are considered learning games.

 "In essence 'a serious game' is a term that can be applied for any game-based initiative that has an additional, 'serious' agenda. Training and development is a serious topic – highly motivated and developed employees can make the difference between a company that succeeds and one that fails. What could be more serious than that?!". (Denny, n.d.)

A serious game helps to teach or reinforce a skill through a game and story, one example of serious gaming is maths blaster this is an educational game used to teach and reinforce the knowledge learned during a maths class by children in primary education by creating a fun way for them to keep learning an improve upon their skills.

Gamification

Gamification is the use of game elements, design and techniques in non-game contexts to encourage participation and engagement but also to motivate and excite people, but note that it is not a learning game or a simulation.

Gamification is about taking the effect of an existing core experience and making it better by applying the game mechanics and techniques, these are what make so many games engaging and fun to play. (Anon., n.d.)

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An example of gamification can be seen through websites such as "Chore Wars" were children create Dungeons and Dragons (D&D) based characters where they are given tasks (chores) to complete receiving EXP upon completing the tasks (household chores),, this makes tasks children would not normally do but with added rewards are egger to do their chores. (Stanley, 2014)

Platform

A Platform is software that allows for the development of other software as well as the testing. There are many mobile application development platforms (MADP) that allow for the development of applications on smart devices.

Some of the biggest platforms which are used to develop an application for mobile devices that available are

- Android
- IOS
- Windows

Android

Android is both a development environment for software development and an operating system (OS) that runs on most smart devices such mobiles phones, tables, car GPS systems and watches.

Android is a system built by Google to be used on smart devices, it is similar but different to IOS in that it is a layered system stacked to provide a rich set of frameworks. The OS is based on the Linux kernel just modified to provide management of processes, memory, device-drivers and the devices power.

They Android OS layers are built on top of each other with the user applications of top of the framework on top
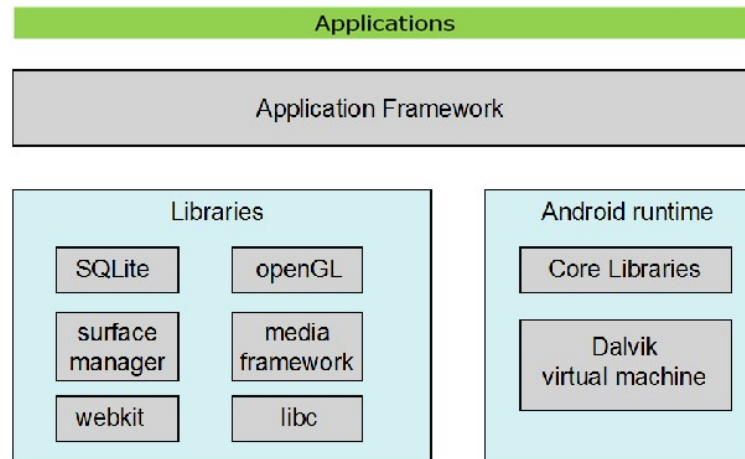
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The Android run environment include a core set of libraries to run applications, Android apps are mainly built in Java, but can also run native which allows for C and C++ development on android.

The Android Development kit is used in the creation of application used on android devices giving access to tools and interface for the development of android applications. (Anon., n.d.)

IOS

The iPhone Operating System (IOS) was created by Apple to manage the applications and hardware of smart devices developed by Apple. Applications are installed physically on a device to always make them available to the user, even if the device is in Airplane mode.

The IOS is created using a layered system which is split into two section hardware and software, communication with the hardware is done only by the core OS itself all other applications and services must first go through the core OS before communicating with the hardware.
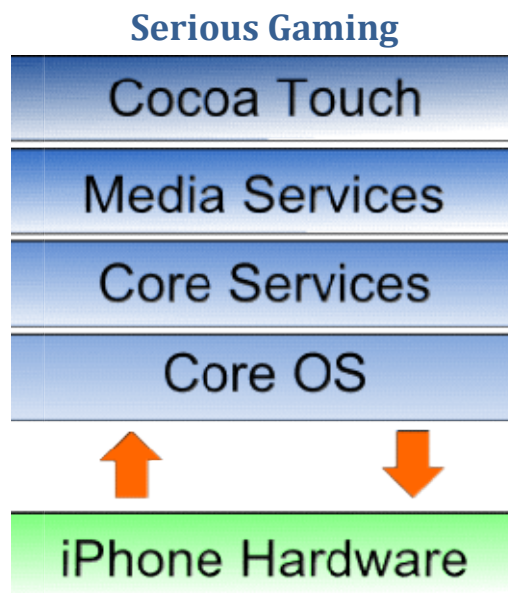
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Figure 2

The software is all built upon itself (as seen in figure 2), Cocoa Touch at the top this as it is the user interface which allows applications to run on the IOS, the media services layer is the layer that handles graphics audio and video in any app. The core services layer is the foundation of the framework managing features such as networking, finally there is the core OS layer that every other layer is built on top of this layer deals with communication with the hardware as well as security.

The iOS Software Development Kit (SDK) gives access to tools and interfaces needed for the development, installation and testing needed to create IOS applications created using the iOS system frameworks and programmed in Objective-C. (Anon., n.d.)

Development Tools

Coding language

There are many different languages to use when developing a mobile application many are aimed at one platform while others are able to be used on multiple platforms. Below is a list of some of the most used and popular languages to use for the development of a mobile application.

- Native
- HTML
- PHP
- Java
- Bootstrap
- Python flask

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- Cordova
- Swift
- XML

Native Android

The Android Native Development Kit (NDK) is a set of tools that allows users to code android apps using C and C++, this provides developers with access to platform libraries to manage activates and access to the devices physical components.

By using native it allows developers to import predefined C and C++ code, it also allows them to squeeze in extra performance of the device due to being able to fine tune the memory management, there is also the low level latency used to run computationally intensive applications such as (Dawson, 2014).

Native is also good for the games development on Android as C and C++ are widely used in the games industry due to it being fast flexible and well-supported allowing developers to use assembly language at the lowest levels to communicate with the hardware.

By also using native it will give access to a large repository of gamine assets (this project will only use free and open source assets available encase of copy right) available to C++ game programmers form graphics to sound and much more.

Bootstrap

Bootstrap is a CSS (Cascading Style Sheets) framework that allows websites and applications to be stylized for devices allow it work on many different devices of varying size (phone to tables) without effecting the position of components or functionality to the application.

Bootstrap allows developers to implement design thymes for quicker development of an applications user interface (UI) allowing the interface to be created without weeks of testing and debugging.

(Rahman, 2014)

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Databases and Server side

Databases

Databases are a large part of any app being developed as large amounts of information relating to the app will need to be stored for that reason any data in a database will need to be sent and receive by the database. To have any app properly communicate with a database a querying language needs to be chosen.

- noSQL
- mySQL
- MariaDB
- Amazon Aurora

Acknowledgements

Glossary

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Appendixes

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