Software Design Description

for

Wend AR

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1.0 Introduction

1.1. Purpose

This document will show an overview of the architecture of our system. The purpose of this document is to show the structure of our software components, interfaces, and data. This document will also show an overview of the architecture of our system. The intended audience for this document are our stakeholders, which in this case, is our professor.

1.2. Scope

Our mobile app utilizes a pipe and filter style architecture. In our mobile app, significant amounts of data is passed around. This data includes timer information, location of the targets, targets being found, and final scores. This data is moved throughout the system using pipes, and processed using filters. Our mobile app doesn't communicate with any external systems. The camera utilized is the mobile device's internal camera.

1.3 Glossary

UI[1] - User Interface: The means by which the user and a computer system interact, in particular the use of input devices and software.

1.4 Overview of Document

This document initially introduces the purpose and overview of this document. The document will then address the organization of the system's hardware interface through a deployment diagram. Following that, the document dives a little deeper into the design of our software components. The architecture of the system is addressed, then followed by the data design structure. From there, the document will describe the design of our software through a number of diagrams. The diagrams will show the communication between classes, the system's functions, and the system's services. Finishing this document will be our user interface design.

2.0. Deployment Diagram

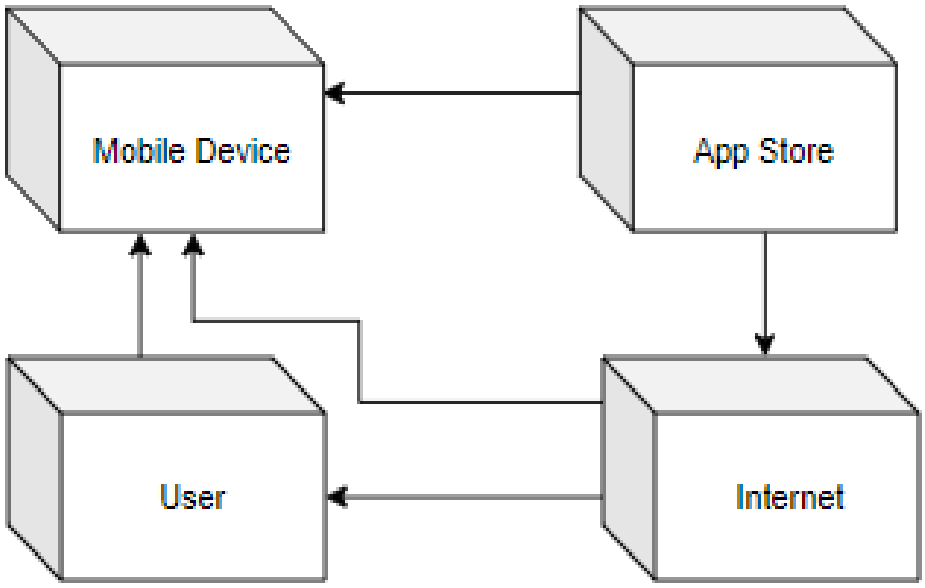


Figure 2.1

The user is connected to the internet on their mobile device. The user then accesses the app store to download the mobile application. Thus, the application now resides on the user's mobile device and is ready to be accessed for game-play.

3.0. Architectural Design

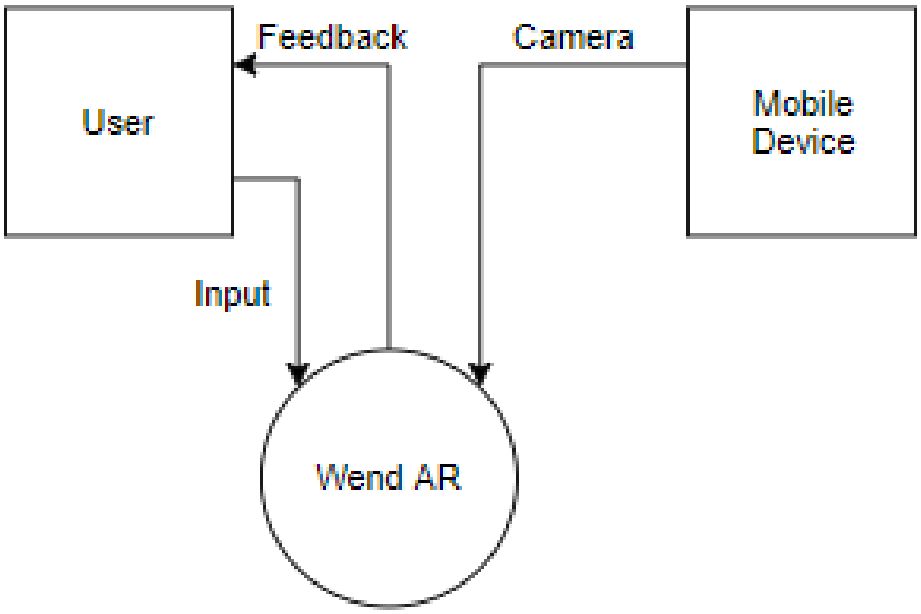


Figure 3.1

Our mobile app utilizes a pipe and filter style architecture. Pipe and filter architecture is a data flow architecture, consisting of pipes and filters. In this architecture style, the pipes and filters can either be active or passive. Active means that that component is controlling the flow of data, and passive components have no control over the flow of data.

In our mobile app, significant amounts of data is passed around. This data includes timer information, location of the targets, targets being found, and final scores. This data is moved throughout the system using pipes, and processed using filters. Because so much data gets processed in our app, we chose the pipe and filter architecture.

4.0. Data Structure Design

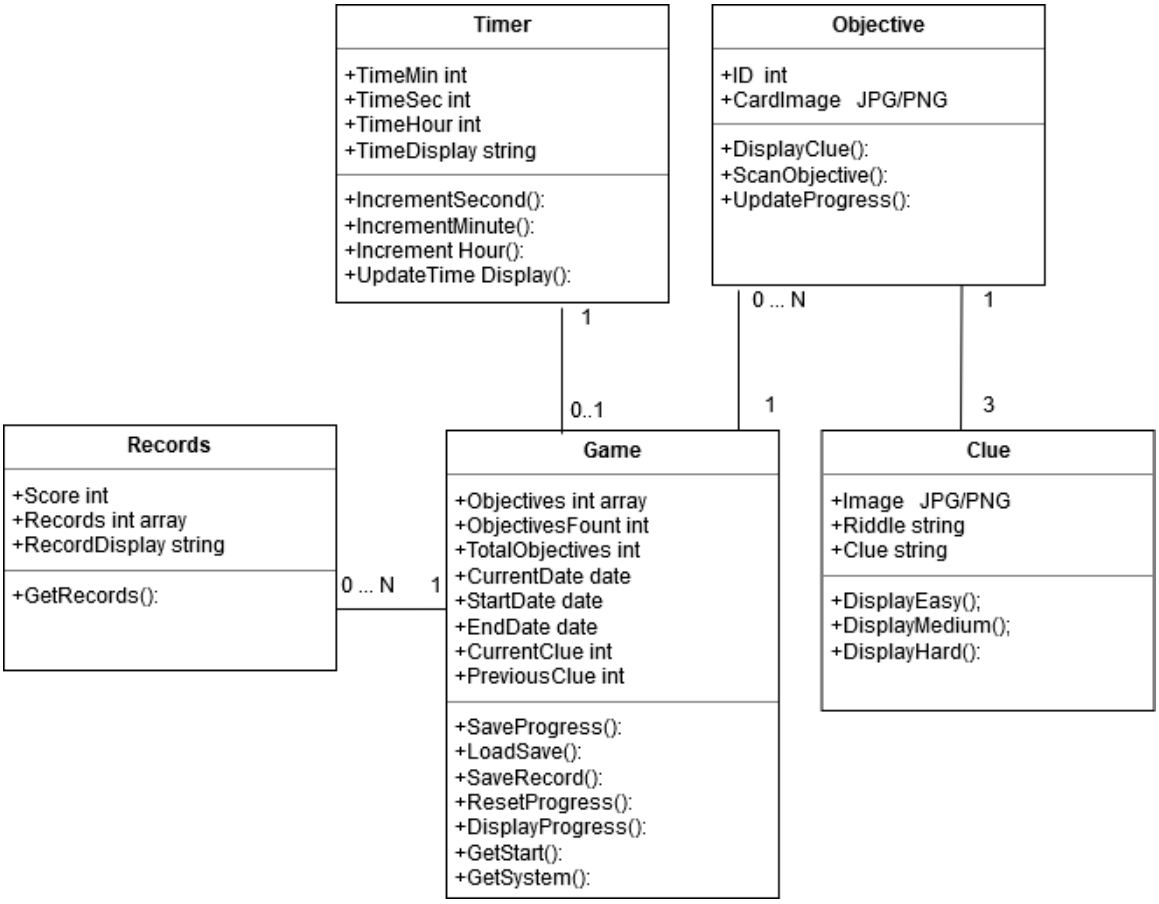


Figure 4.1

Game keeps track of objectives in an array and how many were found along with the start, current and end dates. The 3 top records for each possible game are kept track of. The game has a timer that calculates the time from the start and current times. Each objective has a target image that Vuforia uses to detect a location along with 3 clues (one for each difficulty). An image is used for an easy clue, A description is used for a medium clue and a riddle for a hard clue.

5.0 Use Case Descriptions

5.1 Use Case Diagram

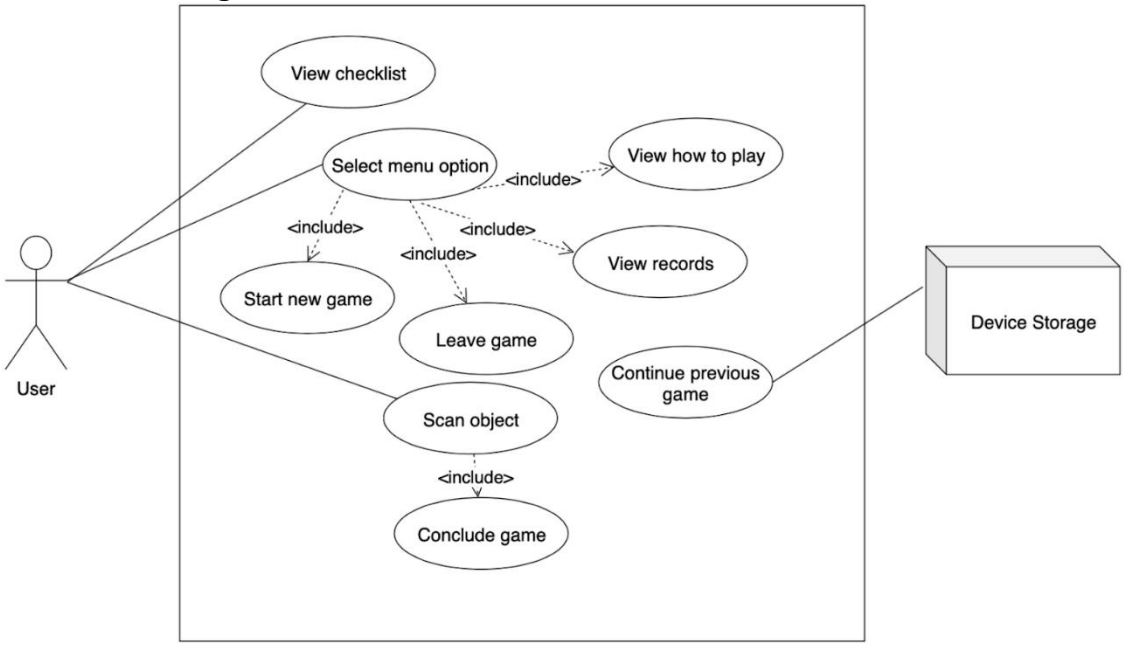


Figure 5.1

When the game is opened the application retrieves previous game data from the device's storage and sets all game data. From the main screen of the app the user can scan a location card, open the checklist or open the menu. When the user scans a location, the location scanned can be correct or incorrect depending on the game progress and if all objectives are scanned the game will be concluded. From the menu the user can view how to play, view records, leave the game or start a new game.

5.2 Activity Diagrams

5.2.1 Select Menu Option

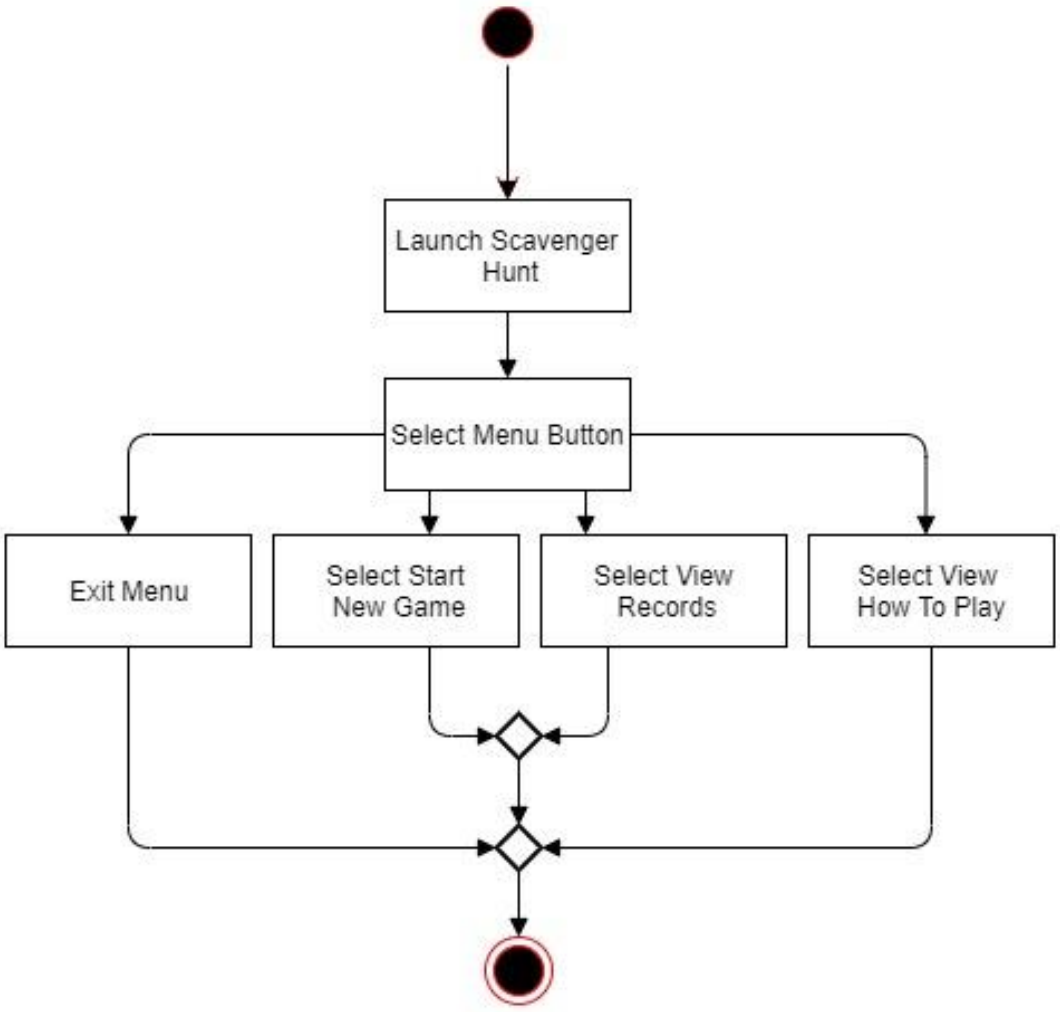


Figure 5.2

5.2.2 Start New Game

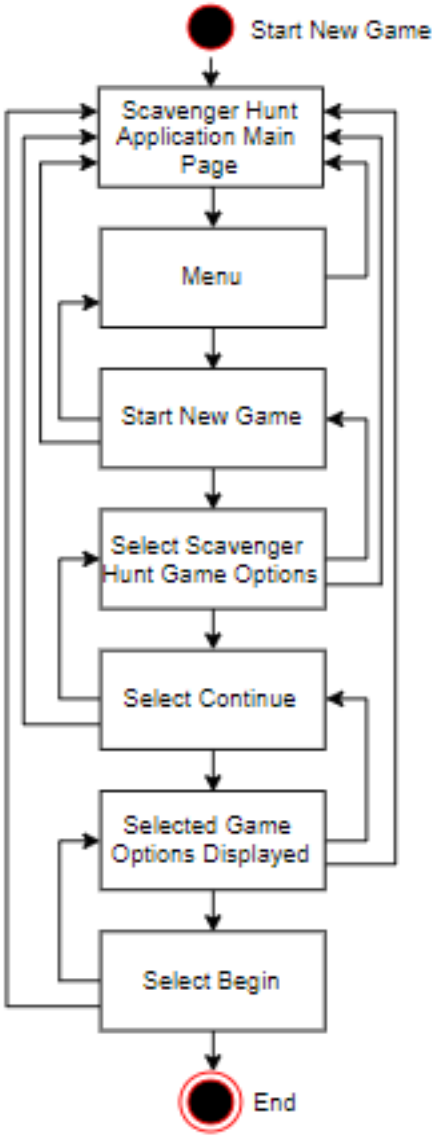


Figure 5.3

5.2.3 Continue Previous Game

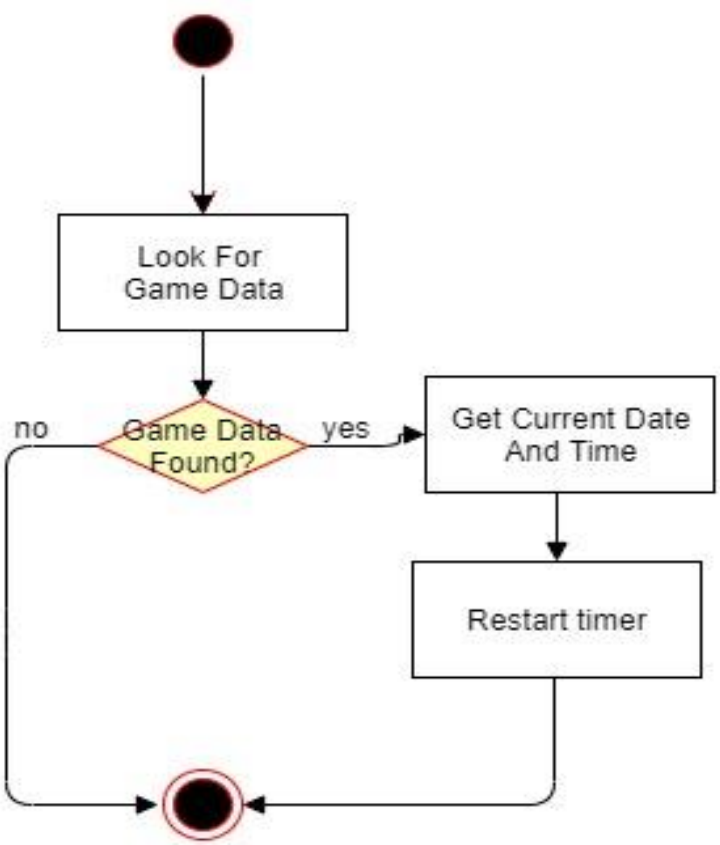


Figure 5.4

5.2.4 Leave Game

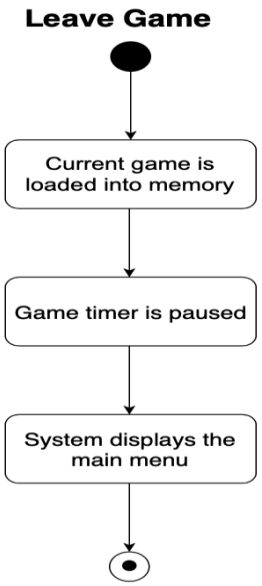


Figure 5.5

5.2.5 View Checklist

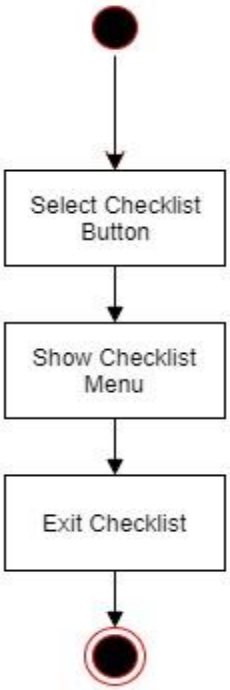


Figure 5.6

5.2.6 Scan Object

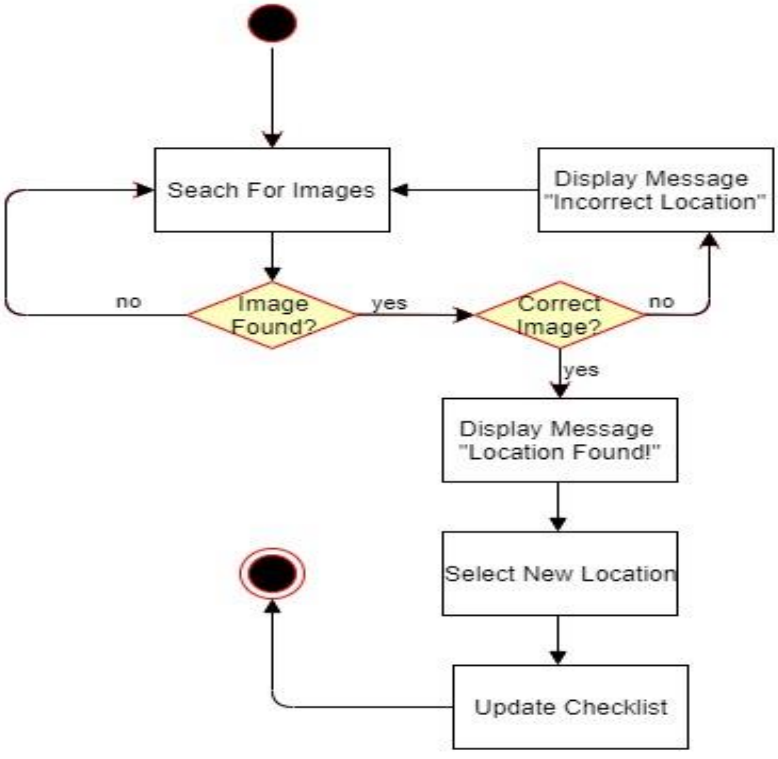


Figure 5.7

5.2.7 Conclude Game

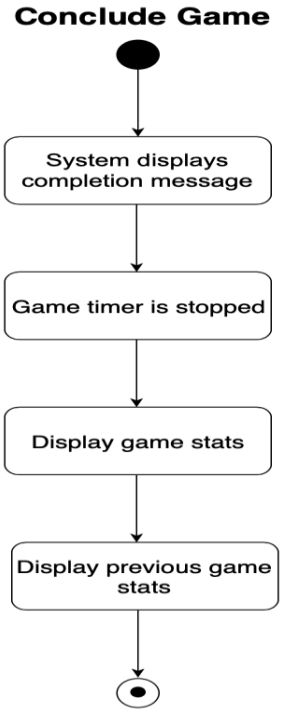


Figure 5.8

5.2.8 View Records

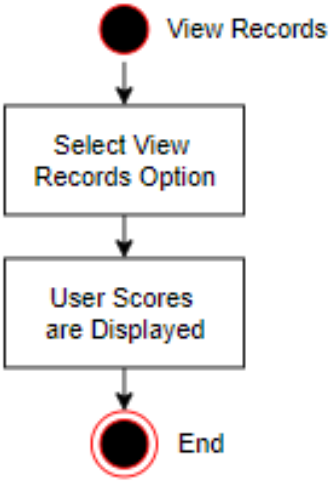


Figure 5.9

5.2.9 View How To Play

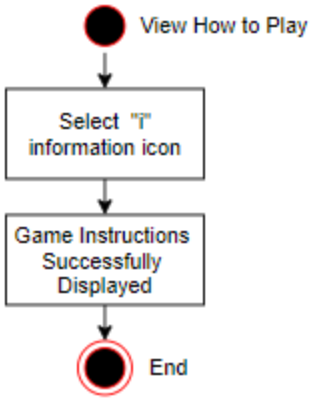


Figure 5.10

6.0 Real-Time Design

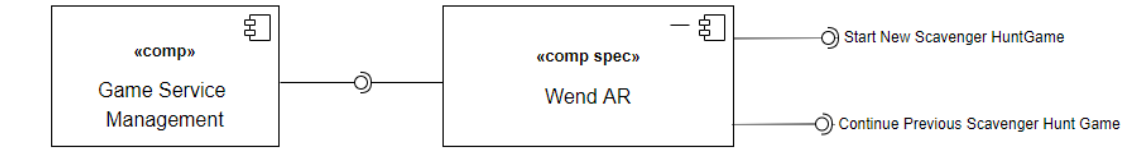
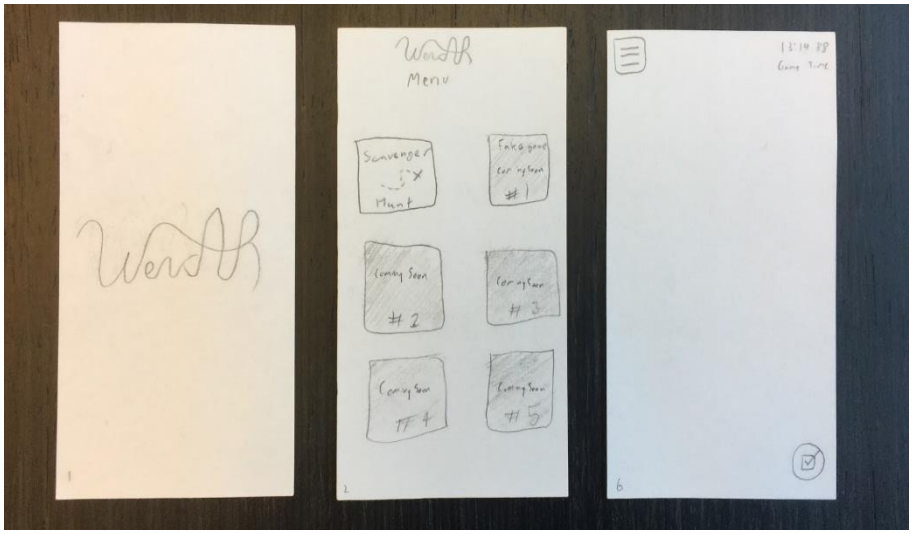


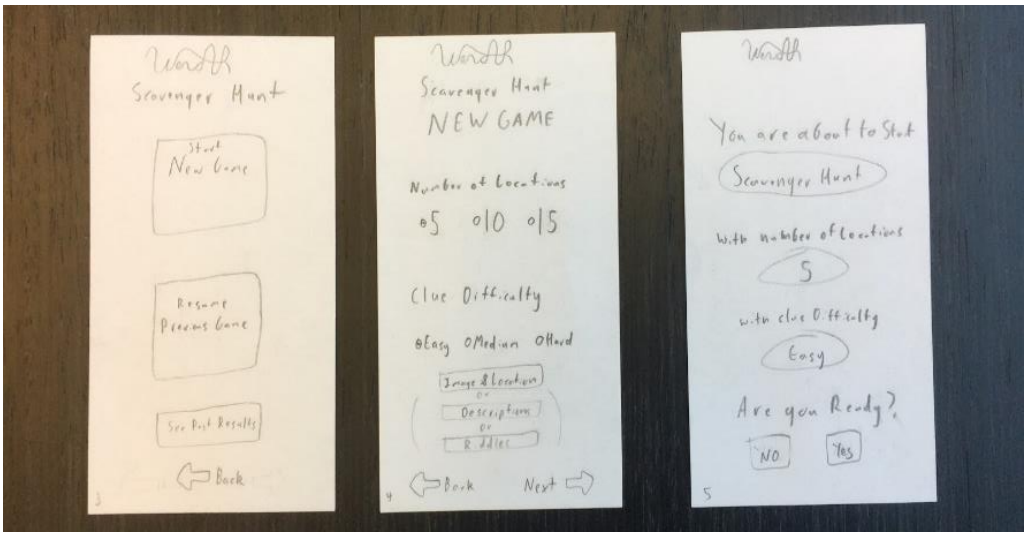
Figure 6.1

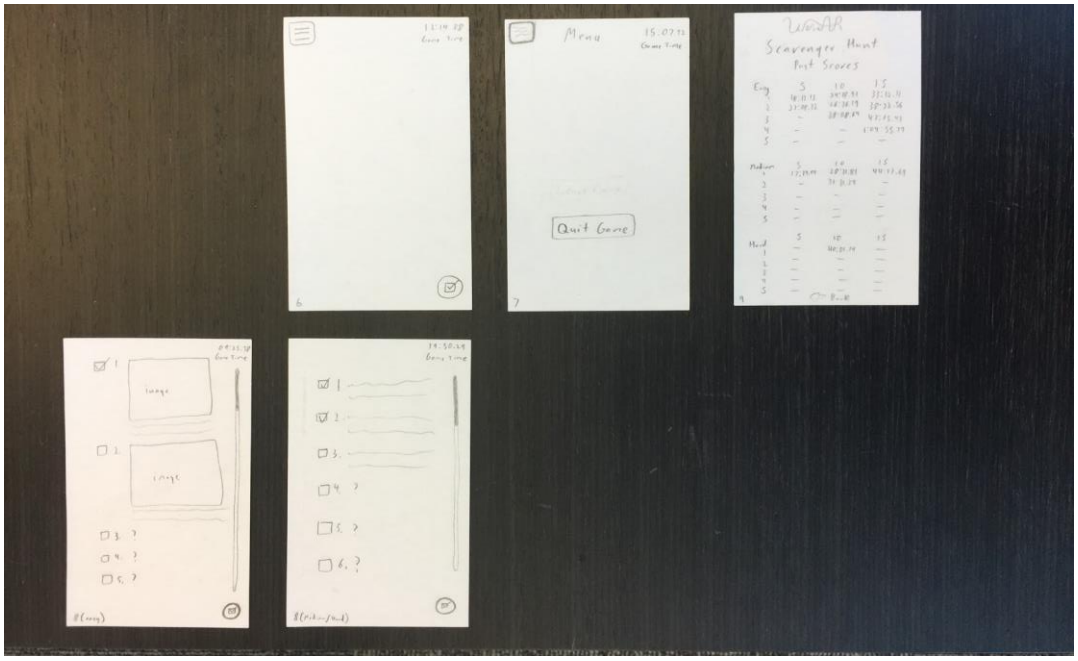
The Wend AR component provides the services of starting a new scavenger hunt game and continuing a previous scavenger hunt game. To provide those services, the Wend AR component requires services from the game service component.

7.0 User Interface Design

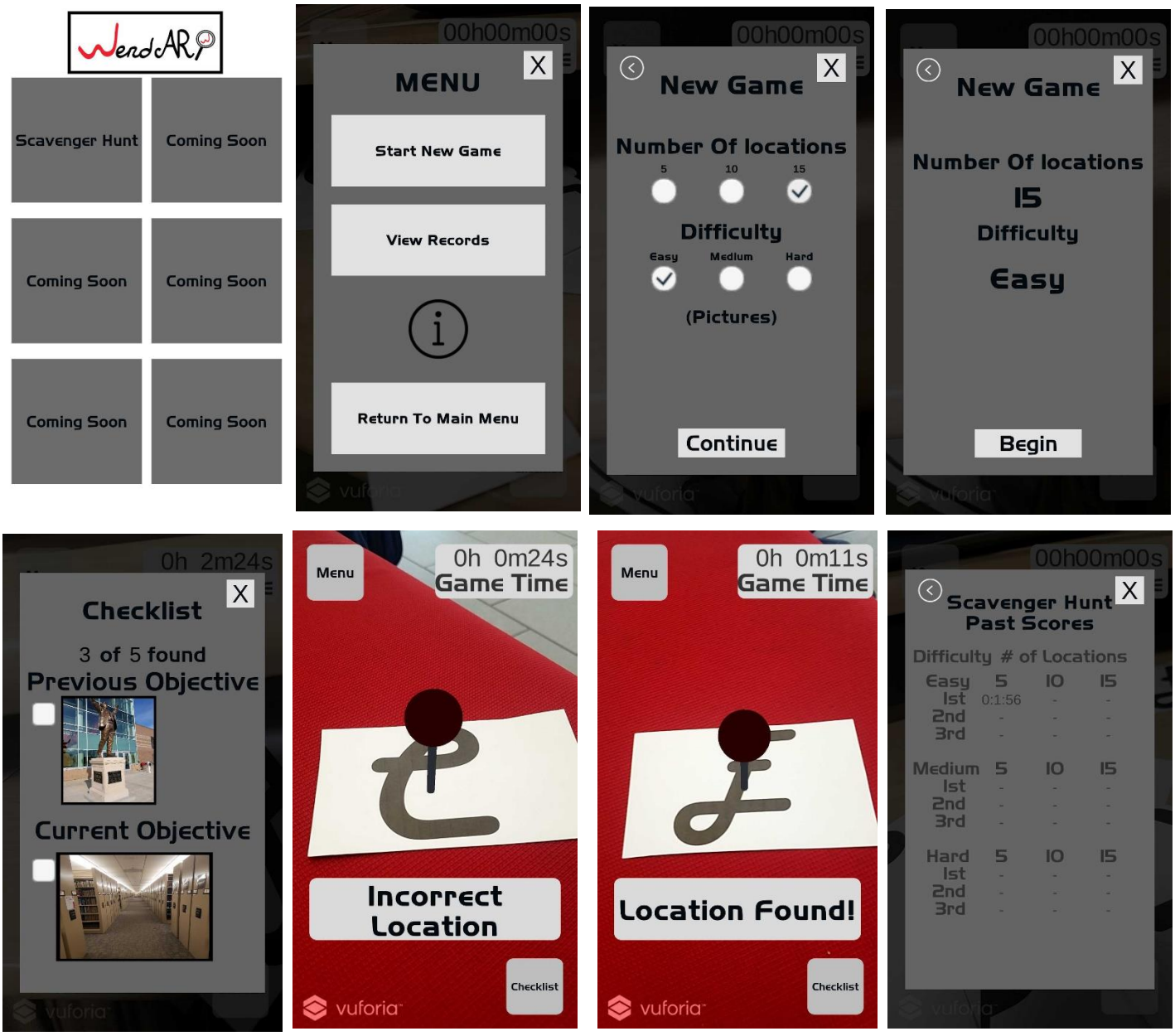
7.1 UI[1] Paper Prototypes




Scavenger Hunt
Start New Game
Resume Previous Game
See Past Results
Back
Scavenger Hunt
NEW GAME
Number of Locations
5 10 15
Clue Difficulty
Easy Medium Hard
Image & Location
Description
Riddles
Back
Next
You are about to Start
Scavenger Hunt
With number of Locations
5
with clue Difficulty
Easy
Are you Ready?
NO
Yes


Menu
Quit Game
Scavenger Hunt
Past Scores

7.2 Final UI Screenshots



8.0 Help System Design

The structure of the help system for our mobile application is that of a menu selection. In which the user or player of the game may click the menu then the “i” icon in the menu displayed and as a result of this the user will be given a description of how to play the current gameplay they have chosen.