CSC 431

Hot Air

Software Requirements Specification (SRS)

Team 09

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Version History

Version	Date	Author(s)	Change Comments
0.1	2/17/23	Titus	Drafted the constraints section.
0.2	2/21/23	Tyler	Drafted the functional requirements section
0.3	2/23/23	John	Drafted the non-functional requirements section. Cleaned up the formatting. Began implementation of the Table of Contents.
0.4	2/24/23	Titus	Drafted the evolutionary requirements section.
0.5	2/24/23	John	Added Overall Use Case Diagram. Updated Table of Contents. Updated Table of Figures

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1. System Requirements

1.1 Functional Requirements

1.1.1 View Welcome Screen

Title	Viewing welcome screen
Description	The user will access this page upon opening the app, giving them access to the options provided.
Priority	0
Precondition(s)	The user needs to open the app
Basic Flow	The user opens the app Views the welcome screen to start the game or other features
Postconditions(s)	User is able to use the application
Use Case Diagram	N/A

1.1.2 Options/Settings

Title	View and change options/settings for the game
Description	The user will access this page upon opening the app, giving them access to the options provided.
Priority	0
Precondition(s)	User needs to be in the menu or welcome screen to access the settings
Basic Flow	open the menu open the settings configure the settings how you want
Postconditions(s)	User has to be in the menu or welcome screen to access
Use Case Diagram	3.1.1

1.1.3 Customization

Title	Customization option
Description	The user will be able to customize the balloon, as well as the background
Priority	2
Precondition(s)	The user needs to open it from the menu and need currency to buy customization
Basic Flow	open the menu open customization and spend currency to buy items
Postconditions(s)	User has to be in the menu or welcome screen to access
Use Case Diagram	3.1.1

1.1.4 Purchase for no Advertisements

Title	Purchase to stop ads
Description	The user will be able to stop ads from playing
Priority	4
Precondition(s)	The user needs to open it from the menu or welcome screen and purchase it through the play store or app store
Basic Flow	open the menu click on stop ads button go to app store or play store and purchase to get no ads
Postconditions(s)	User has to be in the menu or welcome screen to access
Use Case Diagram	N/A

1.1.5 Gameplay

Title	Gameplay
Description	The user will be able to play the mobile game
Priority	0
Precondition(s)	The user needs to hit the play button on the welcome screen
Basic Flow	Start the app click play then enjoy
Postconditions(s)	The user needs to start the application
Use Case Diagram	3.1.1

1.1.6 Advertisement Banner

Title	Advertise Banner
Description	While in the menu, the user will see a small thin banner on the bottom of the screen that will cycle advertisements
Priority	2
Precondition(s)	The user must be on the menu screen & be connected to the internet
Basic Flow	User enters the menu Banner will automatically load on menu overlay Banner will cycle advertisements pulled from server
Postconditions(s)	1. If the user taps the ad banner, then the user will be taken to the link of whatever ad was playing at the time of tapping 2. Otherwise, the ad banner will continue cycling until the user either closes the menu or their internet connection is cut off
Use Case Diagram	3.1.1

1.2 Non-Functional Requirements

1.2.1 Welcome Screen Load Time

Title	Time to load the app to the welcome screen
Description	The app should load and open to the welcome screen within 30 seconds.
Priority	2
Applicable FR(s)	1.1.1

1.2.2 Play Game Load Time

Title	Time to load the gameplay after hitting the play button on the welcome screen.
Description	Players should be able to load into the game within 15 seconds of hitting the play button
Priority	1
Applicable FR(s)	1.1.5

1.2.3 Ad Banner Click Load Time

Title	Time to load the App Store or Google Play Store after an ad is tapped on.
Description	Our app should immediately begin the linking process and have its end of the process complete within 10 seconds. (Total time may vary due to App Store or Google Play Store's loading time).
Priority	4
Applicable FR(s)	1.1.6

1.2.4 Customization Options Efficiency

Title	Users should have an efficient experience when selecting or previewing customization options for the balloon and background.
Description	Customization options should be easily loaded and logically stored, and be accessed within a second of the user selecting them so that they can be viewed, equipped, or bought.
Priority	3
Applicable FR(s)	1.1.3

1.2.5 Secure Purchase

Title	Secure In App Purchases
Description	Users should be able to make an in-app purchase through a secure line that will keep their purchase details encrypted, even in failure.
Priority	2
Applicable FR(s)	1.1.4

2. System Constraints

2.1 Tool Constraints

2.1.1 Game Engine & UI

Title	Unity
Description	Unity game engine will be used for constructing the game and its UI.
Priority	0

2.1.2 Backend

Title	Firebase
Description	The backend will be constructed using Firebase as the host. Note: Firebase has compatibility with Unity.
Priority	0

2.2 Language Constraints

2.2.1 Game & UI

Title	C#
Description	Since the game will be constructed in Unity, its native language of C# will be used.
Priority	0

2.2.2 Backend

Title	Java
Description	Due to team familiarity, Java will be used to construct the entire backend (in Firebase).
Priority	0

2.3 Platform Constraints

2.3.1 Android

Title	Android Devices
Description	The game will be able to run on any device running Android 5.1 or later.
Priority	0

2.3.2 IOS

Title	IOS Devices
Description	The game will be able to run on any device running IOS11 or later (or an equivalent).
Priority	0

2.4 Hardware Constraints

2.4.1 App Store Compatibility

Title	Apple Store or Google Play Store
Description	Since this application will be distributed by the Apple App Store and the Google Play Store, a user's device must meet the respective store's compatibility standards.[1] [2]
Priority	5

2.5 Network Constraints

2.5.1 Internet is Necessary

Title	Internet Connection Requiring Components Exist
Description	In app purchases, updating the backend, and advertisements will all require an internet connection. However, the game will still be able to run without these features.
Priority	1

2.6 Deployment Constraints

2.6.1 Android

Title	Google Play Store
Description	For Android devices, this app will only be available on the Google Play Store.
Priority	0

2.6.2 IOS

Title	Apple Store
Description	For Apple devices, this app will only be available on the Apple App Store.

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[1] Android: https://developer.android.com/guide/practices/compatibility

[2] IOS: https://developer.apple.com/library/archive/documentation/DeviceInformation/Reference/iOSDeviceCompatibility/DeviceCompatibilityMatrix/DeviceCompatibilityMatrix.html

Priority	0

2.7 Transition & Support Constraints

2.7.1 Laissez-Faire Release

Title	First & Final Release
Description	Due to the nature of this project, once it is released it will receive no updates or maintenance of any kind from us as a team.
Priority	5

2.8 Budget & Schedule Constraints

2.8.1 Deadline

Title	Project Deadline
Description	The hard deadline of this project is May 3rd, 2023.
Priority	0

3. Requirements Modeling

3.1.1 Overall Use Case Diagram

Hot Air

User

Options/ Settings

Change Settings

<<include>>

<<include>>

Buy New Items

<<include>>

Customization

<<include>>

Fetch Current Settings and Data

Change Customization Preference

<<include>>

<<include>>

Gameplay

<<include>>

Show Advertisements

<<extend>>

Connect user to App Store

App Store (iOS)

Google Play Store (Android)
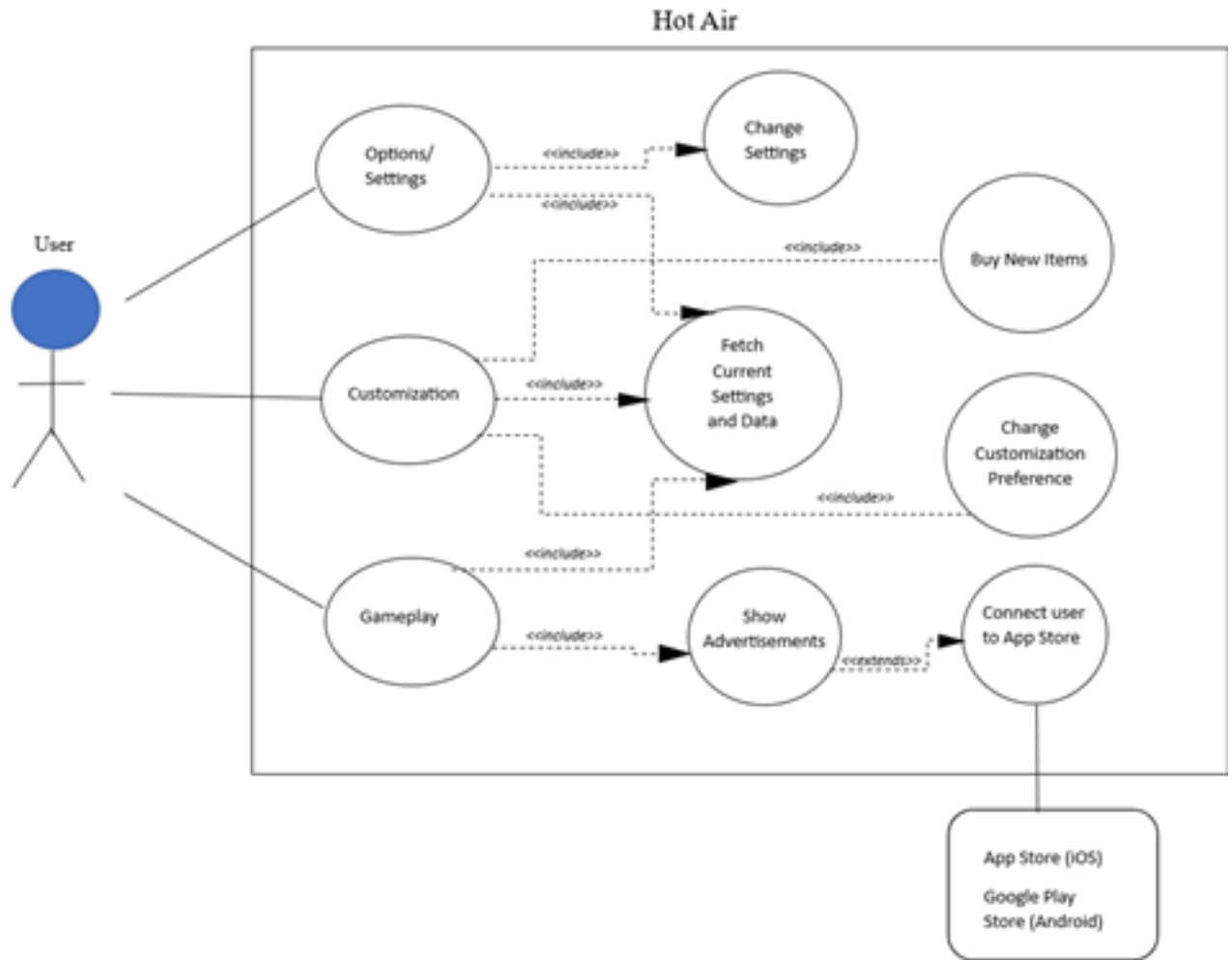
4. Evolutionary Requirements

4.1 Functional Requirements

4.1.1 Restore Purchases

Title	Restore Purchases Button
Description	If a user has purchased something from the app, their purchase should remain forever. In case it disappears, this button will verify and restore the purchase to the user.
Priority	4
Precondition(s)	A user has made an in app purchase.
Postconditions(s)	If that purchase is to the user, it will be restored.
Use Case Diagram	N/A

4.1.2 Intrusive Advertisements

Title	Popup Ads
Description	An advertisement interface will appear that covers the entire screen. There will be an x in the top right corner to close the advertisement and tapping anywhere else will take the user to the advertisement link.
Priority	5
Precondition(s)	A user has failed the game many times in a row
Postconditions(s)	The user gets back to the menu OR follow the advertisement link
Use Case Diagram	N/A

4.1.3 Random Chance Cosmetics

Title	Gacha Cosmetics
Description	Rather than through game play, users will have the option to earn cosmetics through random chance by watching an advertisement.
Priority	5
Precondition(s)	A user clicks a button to watch an advertisement or doesn't click the x of a popup advertisement until it is finished
Postconditions(s)	The user unlocks a random cosmetic from a select pool (whether they have it already or not)
Use Case Diagram	N/A

4.1.4 Credits Box

Title	Credits Box

Description	This box will contain the credits for the game as well as the version number that the user currently has installed. There will also be an email to which users can send bugs and other inquiries.
Priority	5
Precondition(s)	A user goes to settings then taps the credits button.
Postconditions(s)	A box pops up on the screen with game and inquiry information written on it.
Use Case Diagram	N/A

4.2 Non-Functional Requirements

4.2.1 Purchase Authentication

Title	Purchase Authentication
Description	Since the application doesn't have user accounts, Apple's Game Center and Google Play's Google Play Games accounts will be used for validation of the Restore Purchases Button.
Priority	4
Applicable FR(s)	4.1.1

4.2.2 Game Size

Title	Game Size, Low Tens
Description	For fast download times and to keep it at the bottom of user's app storage lists, the game size should always stay within the low tens of megabytes.
Priority	5
Applicable FR(s)	4.1.3