

# CS408 Project Backlog

**Members:** Jingzhou Wang, Shirley Fu, Dan Luo, Wenya Zhu, Jay Cha

## 1 Problem Statement

Looking for a nostalgic game to play during the breaks while not taking much time? Minesweeper perhaps would be a good choice. However, we found out that a computer might be just a big block sometimes. Like, on the way back home, none of the users would prefer accessing the game by a bulky laptop or through a website--which are always the first income ideas when we think of Minesweeper. Moreover, visual fatigue caused by the never-changed black&white board is another stumbling block on the way to a further development and popularity for this game. Therefore, an easy and accessible Minesweeper App with a more user-friendly UI would be a valuable project that could bring back good childhood memories and give the users a relaxed and fun experience on the breaks of exhausting study or works.

## 2 Background Information

### Targeted Users

For our generation, Minesweeper is our childhood memory. It was published on windows XP and was systematically installed on Win 7, Win 8. However, Minesweeper was not on Win 10. Is because, as time goes by, people stop playing such small game on their computers, they start to play game on their phone and tablet. Therefore, providing a ios app Minesweeper for all of the people in our generation can effectively bring childhood memory to our generation

### Similar Application:

Minesweeper Deluxe:

It is a traditional Minesweeper with few new features. Three classic board sizes and customizable board (up to 30\*30) is added to the application. Zoom in/ out to overview button is also introduced to this application. Online and offline also are provided for the user to create a ranking system.

## 3 Environment

*Frontend Environment*

Swift

*Database Environment*

Firebase

*Backend Environment*

Firebase

*GNU General Public License*

GPLv3

Swift was chosen over Objective-C because of Objective-C's type unsafe pointer management, unfamiliar syntax for blocks, lack of enums and more. Also, every new version

of Swift offers more and more powerful tools. Xcode was chosen because there are not many alternatives there (besides AppCode from JetBrains), in addition the whole Xcode IDE was made by Apple.

We chose Firebase, because in Firebase, data is stored as JSON and is synchronized in real-time to every connected client. And GPLv3 was chosen for its predominant usage for protecting our rights among GNU general public licenses.

## 4 Functional Requirements

A list of functional requirements of your software product. Your product should be approximately 2500 lines of code or more – not counting comments or blank lines, that is 2500 actual lines of code or more.

Backlog Id	Functional Requirement	Hours	Status
Account Management			
1	As a user, I would like to login/sign up	4	Planned for sprint 1
2	As a user, I would like to change my username/password on my profile page	0.5	Planned for sprint 2
3	As a user, I would like to view my total points on my profile page	1	Planned for sprint 2
Main Page Feature			
4	As a user, I would like to play two different modes (traditional (old-style), new minesweeper)	0.5	Planned for sprint 1
5	As a user, I would like to navigate to profile or account page	0.5	Planned for sprint 1
Gameplay (In-general) *applies to both modes			
6	As a user, I would like to click flag button for placing/removing a flag on the cell.	2	Planned for sprint 1
7	As a user, I would like to have a game timer.	2	Planned for sprint 1
8	As a user, I would like to see a celebration message after passing each level.	1	Planned for sprint 1

9	As a user, I would like to see how many flags left during the game	1	Planned for sprint 1
10	As a user, I would like to pause the game while I am playing it	2	Planned for sprint 1
11	(If time allows) As a user, I would like to zoom in and zoom out during the game.		
Traditional Gameplay			
12	As a user, I would like to click replay botton while I am playing the game	1	Planned for sprint 1
13	As a user, I would like to see a percentage of completion and how many flags I missed after game end	2	Planned for sprint 1
14	(If time allows) As a user, I would like to customize number of cells and number of mines in the game		
New Mode Gameplay			
15	As a user, I would like to be able to play harder stage when I pass the current stage.	4	Planned for sprint 1
16	As a user, I would like to buy in-game items using in-game currency.	5	Planned for sprint 2
17	As a user, I would like to use in-game item such as invincible for 3-clicks	2.5	Planned for sprint 2
18	As a user, I would like to use in-game item such as +10 seconds.	2.5	Planned for sprint 2
19	As a user, I would like to use in-game item such as reveal one mine.	2.5	Planned for sprint 2
20	As a user, I would like to see how many items are in-effect at the bottom of the screen	2	Planned for sprint 2
Settings			
21	As a user, I would like to have a profile .	3	Planned for sprint 2

22	As a user, I would like to have a setting page.	1	Planned for sprint 2
23	As a user, I would like change volume of game in setting page.	2	Planned for sprint 2
24	As a user, I would like change the UI style in the setting page.(If time allows, choose background picture)	2	Planned for sprint 2
25	As a user, I would like turn off/ turn on vibration in the setting page.	1	Planned for sprint 2
26	(If time allows) As a user, I would like to have a instruction page for the game.		
27	(If time allows) As a user, I would like to change the Touch n's Hold Sensitivity of the game.		
Rank System			
28	As a user, I would like to have and see my game scores recorded.	5	Planned for sprint 1
29	As a user, I would like to check who scored top 10 in the game	3	Planned for sprint 1
30	(If time allows) As a user, I would like to check my rank in the game		
	Total:	53	

Use the 'Status' column to indicate whether that requirement is planned to be implemented in sprint 1.

## 5 Non-Functional Requirements

Appropriate non-functional requirements that are related to your project. These may include security, scalability, reliability, easy recovery, etc.

### Security

Security in our application is important part for our project. All user information stored in our database should be encrypted. All requests to the application program interface should be checked before execution.

### Scalability

Scalability is the ability of a project to scale. When we done the beginner level game algorithm, the algorithm should work well as on a large set. Different level

game would have a linear growth of resource requirements. The project would consider more details about Big-O notation.

### Reliability

We would create different new versions of the application reliability testing. Consider about the data on the testing of each version, we predict the reliability of the new version of application.

## 6 Use Cases

Case: Sign Up	
<b>Action</b> 1.Click sign up button 3.Type in email and username 4.Type in password 5.Click submit button	<b>System Response</b> 2. Sign up page appears  6.Check username legality 7.Check password legality 8.Game welcome page appears
Case Login	
<b>Action</b> 1.Click login button 3.Type in email 4..Type in password 5..Click submit button	<b>System Response</b> 2.Login page appears 6.Check the legality of username and password. 7.Game welcome page appears if password matches the username otherwise an error message appears
Case: Change Username	
<b>Action</b> 1. Navigate to the profile page from the bottom navigation bar and choose change username button 3. Enter new username 4. Press the submit button	<b>System Response</b> 2. New view appears that allows users to enter a new username  5.Update the username in database and return
Case: Change Password	
<b>Action</b> 1.Navigate to the profile page 2. Choose change password button	<b>System Response</b> 3.New view appears that allows users to enter the current password and the new one

4. Enter the current and the new password 6.Click submit button	5.Check new password legality 7.Update the password in database and return to the profile page
<b>Case: View Total Points</b>	
<b>Action</b> 1. Navigate to the profile page	<b>System Response</b> 2.The total points appears along with the username and change username/password button
<b>Case: Start a game</b>	
<b>Action</b> 1.Click on game button on navigation 3.Choose the game difficulty	<b>System Response</b> 2.System opens modal with game options table 4.System open game interface 5.System start the timer
<b>Case: Pause Game</b>	
<b>Action</b> 1.Click on pause button	<b>System Response</b> 2.The timer stops counting down and the board is hided
<b>Case: End of the game</b>	
<b>Action</b> 1. Click on the Mine or click all the cells with flags placed on all the mines.	<b>System Response</b> 2. The timer stops couting down and game is stoped. 3. percentage of board that is unhidden is calculated 4. correct Mine guess will showed on the board 5. Celebartion message is displayed.
<b>Case: Continue to the Next Level</b>	
<b>Action</b>  2.Choose continue	<b>System Response</b> 1.When the game finished, a window pop-up with “continue” button and “replay” button 3. Prompt to the next level with higher difficulty
<b>Case: Replay</b>	

<b>Action</b>  2.Choose replay	<b>System Response</b> 1.When the game finished, a window pop-up with “continue” button and “replay” button 3.Restart the game
<b>Case: Game Settings</b>	
<b>Action</b> 1. Click on game settings button on navigation	<b>System Response</b> 2. System open game settings page which allows users to change bgm volume, UI styles and enable/disable vibration
<b>Case: Check Game Scores</b>	
<b>Action</b> 1.Navigate to the profile page from the 3.Click score history button	<b>System Response</b> 2.Profile page appears 4.Score history view appears
<b>Case: Flag Mines</b>	
<b>Action</b> 1. Press the flag button to enter the flagging mode. 2. Tap a (or multiple) cell(s) 4. Tap a cell that is flagged 6. Press the flag button again to quit from flagging mode 7. Long-tap a cell 9. Long-tap a cell that is flagged	<b>System Response</b>  3. The chosen cell(s) will be flagged as bomb 5. Tap a cell that is flagged  8. The chosen cell is flagged as a bomb 10. The chosen cell is unflagged
<b>Case: Buy a item in a game</b>	
<b>Action</b> 1. Click on game button on navigation. 3. Choose the game difficulty  5. Click on item on items bar	<b>System Response</b> 2. System opens modal with game options table. 4. System open game interface 6. System verifies user is logged in and requests user to log-in. 7. System check user points. If they have enough points, reduce their points and shows success dialog box. If they not have enough points, shows failed dialog box. 8. System change user points in database.
<b>Case: See Top 10 Players</b>	

**Action**

1. Navigate to the ranking page through the bottom navigation bar

**System Response**

2. Ranking page appears and shows players with highest 10 scores