BingChillings Game Program Software Requirements Specification

Project Team: Alex Yang, Nathan Pfau, Kevin Lee, Yutian Qin, Thomas Ford

1. Introduction

1.1 Purpose

The purpose of this document is to build a game with user accounts to enable users to track their performance and to compare themselves against a global leaderboard.

1.2 Project Scope

The purpose of the application will be to provide an easy way for users to create profiles and play a game. The users will be stored as JSON objects with all of their profile information, along with the full history of their game scores. A separate JSON Document will contain a list of the current top scores of all time, along with a global leaderboard containing the single best score for each individual user. Our first priority is to make the experience for users to create an account, sign in, or play as a guest as easy as possible. The second priority is to make an enjoyable game that will encourage competition between users with a leaderboard.

2. Overall Description

2.1 Window/Form Specifications

- **Launch Window:**

  The launch window will have a field for a username and password to login. There will also be a button to create a new account and a second button to play as guest.

- **Create Account Window:**

The create new account window will have the following fields:

  - First name
  - Last name
  - Date of birth (required format DD/MM/YYYY)
  - Gender (optional)
  - Profile picture – selectable from five choices included in resources
  - Username
  - Password (at least 8 characters, must contain one number and both upper- and lower-case letters)

  There will be a button to submit, which will first check that all required fields have been filled out. It will then check the password meets password requirements. The username will be checked against the record of all previously created users in a HashMap of users loaded when the application is launched.

If all checks are successful, the user is added as a JSON object to the JSON document and the user proceeds to the main application window.

- **Main Application Window:**

The main application window will appear after the user has logged in, created a new account, or selected to play as guest. The window will have two choices: play game or view leaderboard.

- **Game Application:**

When the user selects the play game option, a window with the game application will appear. The user will be able to select between three difficulties at this point. After selecting their difficulty, the game will be played. After finishing one game, the users score will be stored in their history and compared against the global leaderboards for updating. The user will then have the ability to play another round or go back to the main application window.

The current plan is to implement the rain drop game previously developed, but with updates to provide the features above. If time allows, a new game called helicopter cave patrol is planned for the second phase of development.

- **Leaderboard Window:**

The leaderboard window will have three choices for viewing scores:

  - Top 10 – shows the 10 highest scores of all time from all users.
  - Global Leaderboard - shows the single highest score from each user in descending order from highest score to lowest
  - My Scores – shows the users score history from their top 100 games

2.2 Design and Implementation

- The application will be developed in Qt using C++
- Users will be stored as JSON objects in a JSON document
- Global leaderboards and top 10 scores will be stored in a JSON document
- Upon application launch, users and scores will be loaded into hash tables for reference and updating.
- Passwords will be hashed with SHA256 for security. If time allows, each user will also have a salt stored in their JSON object for salting the password prior to hash.