CS225 Software Development

Class Project

FURPS+

**Functionality**

Original by Katherine, edited by Phoenix, finalized by Andrew.

* What will the system do?
  + Login Screen
    - The screen shows a basic description of how the application works and how to interact with it.
    - Next, the user enters a username and password.
      * If username is unused, the application creates a new account for the user.
    - The list of saved usernames are shown in a dropdown menu.
    - Each created account is retained between sessions.
    - Entering matching user credentials allows access to a previously created bracket.
    - All users’ passwords are stored as a hash value.
  + Bracket Prediction
    - The application generates an empty bracket for a new account or the bracket associated with an account.
    - Each user can construct their predicted bracket.
      * Teams can be moved forward and back on the bracket at will by selecting their name on the bracket.
    - A right click can show team stats and information.
    - User bracket can be finalized once filled out, which makes the prediction eligible for the leaderboard once the simulation is run and completed.
  + Simulation
    - The simulated bracket shows the winners of each match including their score.
    - Each team’s score is weighted based on their seeding (1 to 16, where 1 is the biggest weight.
    - The simulation calculates points earned by each user’s prediction bracket based on the amount of correct predictions.
      * The later the matchup in the bracket, the higher the points rewarded for making a correct selection.
      * Points earned for each matchup will be shown to user upon right-clicking on the bracket selection.
    - A button shows the user leaderboard of all accounts with finished brackets and their scores.

**When will the application perform actions?**

* + Login Screen
    - On program startup, the user is met with the login screen.
  + Bracket Prediction
    - After a valid login is entered or account is created, a new prediction begins.
  + Simulation
    - When the simulation button is pressed after the bracket has been finalized, the application makes a simulated bracket using the weighted values based on each team’s seeding.

**What kind of computation or data transmission will be performed in the application?**

* + The program computes winning teams using weighted randomizations.
  + Scores are calculated for player brackets using round based weighted points.

**Usability**

**What visual/technical aspects appeal to the user when using the application?**

* Scalable GUI
  + The elements in the GUI adjust in size with the window size. Depending on screen size, scroll bars on the bottom and right side appear to assist in viewing each element of the bracket.
* Undo
  + Users can choose to erase a bracket or a division of a bracket, so they can start from scratch in their predictions.
* Display Simulated Match Information
  + The scores of every match will be shown when the user right clicks on the matchup post-simulation.
  + The winners and losers of each match will be highlighted to indicate the result.
* Feedback
  + Inactive buttons are greyed out to the user to prevent confusion over possible actions at each stage of simulation.
  + If a button has been misused a popup will occur letting the user know what happened to cause the error.

**Reliability**

**In what ways does the program handle issues/errors during operation?**

* Bracket Validation
  + Ensure that all necessary fields are filled out before the user finalizes their bracket.
* Handling Missing Files
  + If any of the files required to run the program are missing, the program will inform the user.

**Performance**

**How does data flow through the application?**

* File Reading
  + Bracket objects corresponding to a given account must be stored and read in from files.
  + Team information is read from files, specifically 2 .txt files.
  + Data quantity should be relatively small given the simplicity of the files utilized for data input.

**Supportability**

**In what ways might the application be changed in the future?**

* Syncing Simulations
  + Create a universal event that runs a single simulation that corresponds to all brackets associated with the simulation across all users.
  + This would better simulate the idea of a single March Madness event taking place, and each person making a prediction would be able to compare their personal bracket to the real one, as well as comparing it to their friends’ brackets.

**PLUS**

**What is an element of the program that is unique to each user?**

* Customization
  + The user can customize the name of their account when initially creating their login.
  + Each user creates a custom bracket that is saved between sessions if finalized and submitted to the application.