

COMP132: Advanced Programming Programming Project Report

<NBA Simulation Game>

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1.Users

- Name: Zeynep Surname: Yorulmaz Age: 19 Email: zyorulmaz@hotmail.com Username: zeynep Password: 123456a.
- Name: Fatma Surname: Uysal Age: 18 Email: fuysal@gmail.com Username: fatma Password: fatma12!
- Name: Zuhre Surname: Nacir Age: 20 Email: znacir@yahoo.com Username: zuhre Password: zuhre123!

2.Application Usage

- At first you should choose whether you want to log in or register.
- In the register page, you should type your information to the correct input boxes. You can also change your profile picture if you want to, but it is not necessary if you like the default one. If you get warning messages read them and correct your input information.
- In the login page make sure you type the correct username and password.
- After logging or registering you can change some of your personal information in the settings part. You can be directed to settings page by clicking settings button.
- You can start a game by clicking new game button.
- At first you will be directed to Drafting page where you can adjust your team by choosing your players.
- In the drafting page first click start button. After clicking start button you can choose your player from the combobox. after choosing player you can submit by clicking submit button. Everytime you submit a player click continue button. Make sure you don't press any button twice. Make sure you don't press any button that is not mentioned in instructions.
- After drafting process, you can view your team's player's features as well as their weights and positions by clicking view team button. Also you can start the simulation right after the drafting process by clicking the start button.
- At first you will see a score table that are all zeros, please click start button and wait a little while matches are being played. You can pause and resume the simulation with the pause/resume button.
- You can click next and see who are top 8 teams.
- After seeing top 8, you can click next and see the tournament results after that if you press next again you can see who the winner is.
- You can check logging files called users.txt, teams.txt, seasonsMatches.txt, seasonResults.txt, playoffMatches.txt in the default directory.

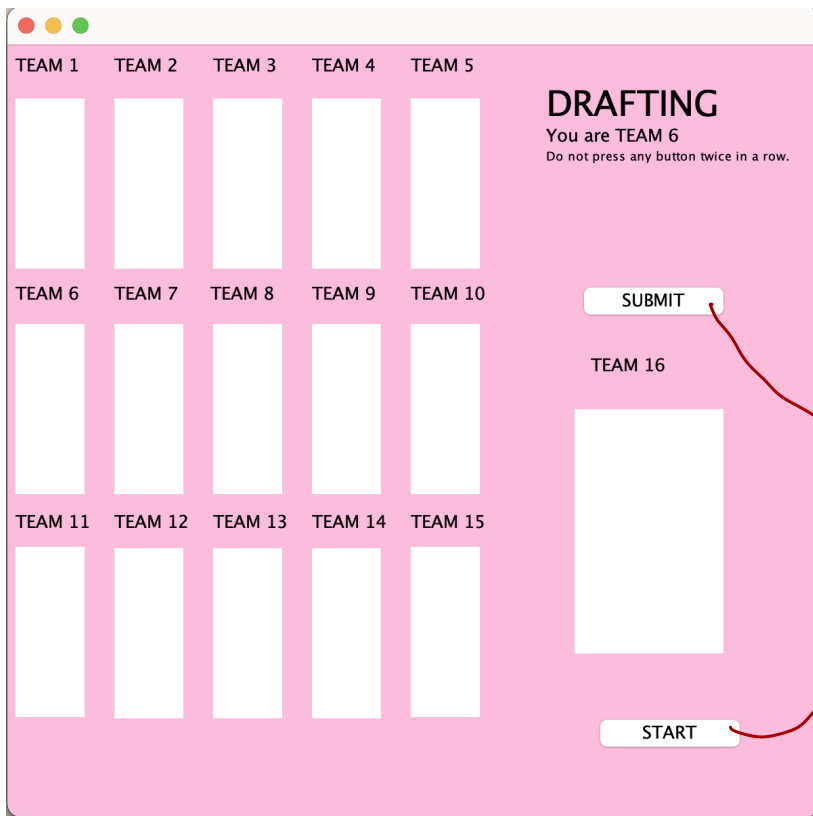
This button directs to
drafting page.



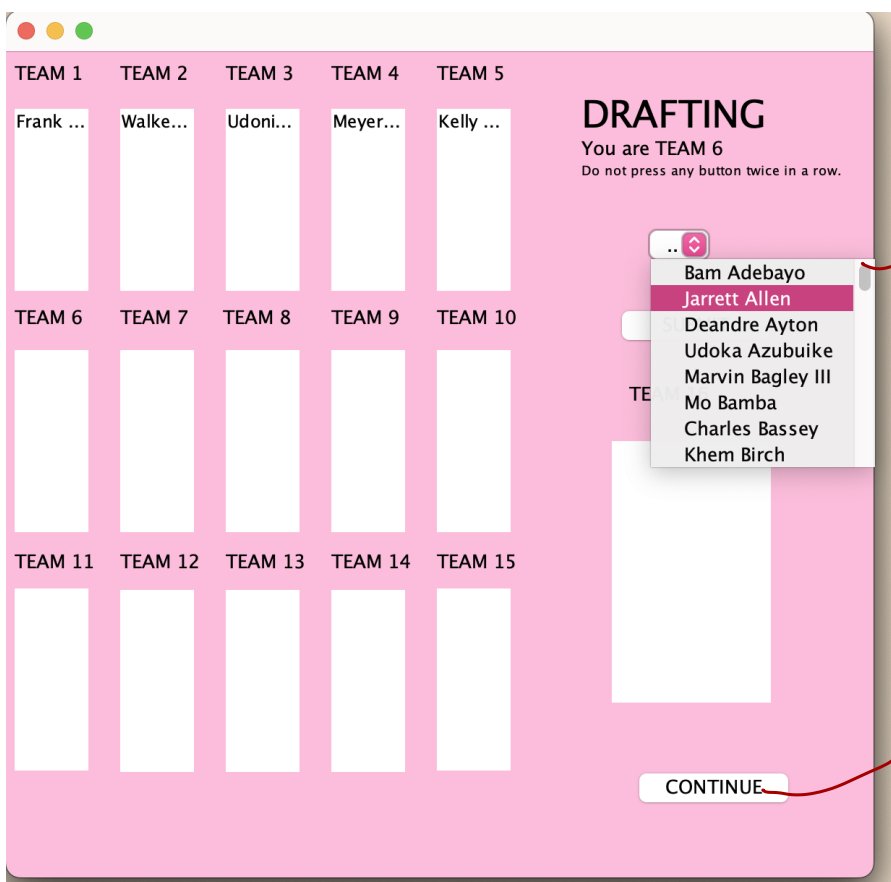
you can change personal
information here

A screenshot of a web form titled 'Register Now!' at the top. The background is light pink. On the left side, there is a section for profile management: a button labeled 'Change Profile Photo' above a placeholder image labeled 'Default Photo' which shows a silhouette of a person sitting. Below this is a list of labels: 'Name:', 'Surname:', 'Age:', 'E-mail:', 'Username:', and 'Password:', each followed by a white input field. To the right of these fields is a large, bold, black text 'REGISTER!!!'. Below the input fields is a white button with the text 'SIGN-UP!'. At the bottom, there is a link 'Already have an account?' in a small, dark pink font, followed by a white button with the text 'LOG-IN'. A red curved arrow originates from the 'Change Profile Photo' button and points towards the right side of the image.

you can choose a
photo from your personal
device



- 1st press this button
 - 2nd choose the player you want
 - 3rd press submit
 - 4th press continue
- Repeat 2,3,4 until drafting finishes.



3.Classes

GUI RELATED CLASSES

- Main class starts the application by displaying HomePage class. In HomePage class there are 2 possibilities you can either go to Register class or Login class. Register and Login classes direct to GameHome class and in GameHome class there are 2 possibilities you can either go to Settings class and change personal info or you can start a game with Drafting class. If one decides to go to Settings class it will direct to GameHome again. After Drafting class you are directed to SimulationHome class. If you would like to view your team, you will be directed to ViewTeam class (If you want to see details of individual player, you will be directed to ViewPlayer class) and if you want to start the matchmaking process you will be directed to TournamentSimulationGUI class. After matchmaking you will be directed to Top8 class and after that you will be directed to Tournament class and finally you will see the winner in ShowWinner class.

OTHER CLASSES

- BasketballPlayerManager class creates player lists according to their positions.
- Team class is used to create team objects that have name, logos, wins, losses, ties, score and players.
- Tree class shows a tree of the tournament.
- User class is used to create user objects that have names, surnames, age, email, username, password.
- In position packages there are subclasses of Player and Player. The subclasses signify position: Center, PointGuard, PowerForward, ShootingGuard, SmallForward. They all have different weights. the player class contains method to calculate a player's score.
- In exception package, I created different subclasses of Exception in order to catch incorrect format while registering a user. They are called: AgeException, EmailException, NameException, PasswordException, SurnameException, UsernameException.

4.Inheritance

- All of my GUI related classes extend from JFrame class and my specific exception classes extend from Exception class. They have is-a relationship.

5.GUI Components

JLabels: I used JLabels for writing text into it or display profile photo.

JComboBox: I used combobox to let user select a player

JPasswordField: I used JPasswordField to hide characters when user types their password in login.

JTextField & JTextArea: I used them to get text input from the user.

JLists: I used JLists for displaying player lists in drafting part.

JToggleButton: I used JToggleButton for pause/resume feature.

6.CSV File Reading

While file reading I checked if the player already exists in order to calculate average values of duplicate players. Because the CSV file has some columns that we do not need, I have splitted the values and get slices of what we need by indexes.

7.Scoring Algorithm

I used nextGaussian() method to determine N, I chose it 5. Every position has its own calculating method since they have different weights. Each value is multiplied by its weight and summed all together for each player. Also in order to find a team's score, I summed every player's score in that team.

8.Drafting Methods

Because we want each position in every team, I have placed players position by position. I have randomized center, small forward, power forward, point guard, shooting guard position players respectively. When a player is added a team, it is deleted from the selectable players. I use CenterRandomize(), SFRandomize(), PFRandomize(), PGRandomize(), SGRandomize() methods. In 1st, 3rd, 5th methods Team 1 makes the first choice then team2, team3... In 2nd and 4th methods Team 16 makes the first choice then team15, team14...

References

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<https://docs.oracle.com/javase/tutorial/uiswing/components/textfield.html>

<https://docs.oracle.com/javase/tutorial/uiswing/components/frame.html>