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Computer Science 112-Final Project Write Up

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Our program is a game of cup pong that the user can play against the computer. Initially, the program will display two sets of ten cups set up in a diamond formation across from each other. The computer and the user will alternate taking turns. During each turn, each side gets one to two shots depending on the game mode. To play, the user will select a cup when it is their turn and then they will need to pick a number within a certain range (varies depending on the stage of the game). If they pick the same number as the one randomly generated by the computer then it counts as ‘going in’ and the cup is eliminated. To win, the user must eliminate all their cups before the computer does.

To pick which cup they would like to shoot at, the user will click on the cup using their cursor and to guess the number they will use their keyboard.

The program will contain three classes: cup, rack, and game.

## Game Class

* There will be one instance of the game class.
* Contains the main method that runs the program and is responsible for initializing the rack class and keeping track of the score
* Has a method called numGen that is responsible for creating the number that the user or computer must guess to make the shot.
* Contains the method that utilizes the java KeyListener and MouseListener that allows the user to pick what cup they would like to shoot at and to shoot their shot.
* Will also contain a method that will allow the user to ‘rerack’ (change the position) of the cups at certain points in the game.
* Finally, it will contain a method that controls the computers turn and how it shoots and what cups it shoots at.
* All its methods will be public so that they can be accessed by the other classes if necessary.

# Rack Class

* There will be two instances of the rack class (one for each player).
* Will contain variables that keep track of the positions of different cups and how many neighbors it has.
* Will be responsible for initializing all 20 instances of the cup class.
* All its methods will be public so that they can be accessed by the other classes if necessary.

# Cup Class

* There will be 20 instances of the cup class, one for each cup in the game.
* Each instance of the class, or cup, will keep track of the position of its cup and whether it is dead or alive.
* When initialized, each cup will be given its position from the rack class and will automatically be set to alive.
* It will contain a method that makes the cup dead when it has been hit as well as a method that the rack class can use to change its position during the rerack.
* All the methods in the class will be public so that they can be accessed by the game and rack class.

Overall, the game class will run the main part of the game, setting everything up and allowing the user to make inputs as well as make the computer function for the user to play against it. The rack class will be in charge of managing the position of the cups as well as creating them while the cup class will solely be responsible for keeping track of whether the cups are dead or alive.