Report

Requirements

The program shall use the java.util.Set interface

Allow a player to input 6 lottery numbers, validate them and store them in a Set titled “player_num”

Run the lottery by generating 6 random numbers between 1 and “max” using a random number generator and then placing these in a set called “lottery_num”

Find out if the user has won by cross referencing the two sets to see what numbers are common between them, and if there are count them up and decide the winnings based on those. It will be displayed on the screen for the user.

Enable the user to define the range of the lottery numbers to use by letting them input and upper limit and using that limit in the random number generation and in the inputting of player numbers.

Extend your program to ask the user for the number of weeks of lottery draws they would like you to run with the same set of player numbers. Then run the draw this number of times with the same set of player numbers, checking whether they have won anything. This means that the user keeps the same set of player numbers for each week, but a different set of lottery numbers are randomly generated for each week. Each winning is added onto the previous weeks. Finally output their total winnings and take away the amount of money spent on tickets. This means that the total won could be negative to show the user that they lost money.

Designs

Lottery Class

Import the java set interface

Create variables that will hold the upper limit of the lottery, the amount of numbers in the matching set, the winnings for certain matching numbers, the number of weeks it will run for, the tickets, and the total winnings.

Create the lottery number set and the player number set

Create a method which will allow the user to input a maximum number for the lottery to go up to and will use a while loop to make sure any numbers less than 6 will not be accepted

Create a method with an input parameter of the maximum number. It will use the random class from java to generate random numbers between 0 and maximum number. Uses a while loop to make sure the numbers are not above or below the range and that the number generate is not already contained in the set. If this loops is not activated then the number is added to the set. This will be contained in a for loop so it will run 6 times for 6 numbers

Create a method that will allow the user to input numbers that will then be tested using a while loop to make sure they are within the range and that they don't already exist in the set. If they are in the range and not already in the set they will be added to the set. This will be contained in a for loop so it will run 6 times for 6 numbers

Create a method to create a copy of the player number set and will cross reference the copy with the lottery number set and remove all the numbers that don't match. Then it will count the remaining numbers and save that in a matching number variable

Create a method called winnings that will use the matching number variable and if statements to decide what message to display and what winnings they have earned

Create a method to have a menu at the start of the program

Create a method to have a menu at the end of the lottery

Create a method called lottery to put all the methods together and actually run the lottery and calculate the winnings minus the price of tickets

Tester class

Create an instance of the lottery class

Create an instance of the tester class

Create the max variable

Include the main method in this class to run tests

Create a method for each test and call the corresponding methods from the lottery class.

Test Plan

Test Description	Test Data	Expected Result	Worked?
Test that the number inputted is correctly stored in the max variable. Do this by printing the max value at the end of the method	max = 10	The system will print out "You entered 10"	Y
Test that the max number entered cannot be less than 6	max = 2	The system will print out "Please enter a number greater than 6" and will allow the user	Y

		to reinput the number until it is greater than 6	
Test that the lottery numbers are being randomly generated and added to the set	Lottery_num = 15,26,43,32,1,10	The system will print out the “15,26,43,32,1,10”	Y
Test that the lottery numbers are not exceeding the range		The system will print out the “lottery_num” set with 6 random numbers that do not exceed the upper limit	Y
Test that the player can input numbers that will be saved into the set	User input = 10, 15, 49, 36, 25, 6	The system will print out the “10, 15, 49, 36, 25, 6”	Y
Test that the player cannot enter a number above the “max”	max = 10 num = 50	The system will print out “Please enter a valid number within the range of 0-10” and the user will have to reinput a number until it falls within that range	Y
Test that the player cannot enter a number that already exists in the set	Max = 10 num = 3	The system will check if 3 already exists in the set. Then it will print “Please enter a valid number within the range of 0-10” and the user will have to reinput a number until it falls within that range	Y
Test that the set has been copied correctly	Matching set = 10, 7, 3, 6, 1, 2	The system will print out “Matching set 10, 7, 3, 6, 1, 2”	N
Test that the set has been copied correctly by setting up the matching set after the player numbers have been entered	Matching set = 10, 7, 3, 6, 1, 2	The system will print out “Matching set 10, 7, 3, 6, 1, 2”	Y
Test that the matching set after it has been cross-referenced with the lottery number set	Matching = 10, 6	The system will print out “Matching set 10, 6” after the sets have been cross referenced	Y
Test that the matching set has had it’s size correctly counted	Matching = 10, 6	The system will print out "There are 2 matching numbers"	Y
Test that the winnings are correctly matched with amount of matching numbers	Matching numbers = 3	The system will print out the player set and the lottery set, then it will display “there are 3 matching numbers” and it will add 25 to the winnings variable	Y
Test that the number input for the weeks is saved correctly	Weeks = 3	The system will print out “3”	Y
Test if inputting the number of weeks as 0 displays an error	Weeks = 0	The system will display "Please enter a valid number of weeks" and make the player input a valid number	Y
Test if inputting a number greater than 1 works	Weeks = 3	The system will loop the lottery numbers, check sets and winnings 3 times before	Y

		calculating the total winnings for the player	
Test that the menu numbers work	Input = 1	Runs the lottery	Y
Test that the menu numbers work	Input = 2	Closes the program	Y
Test that the menu numbers work	Input = 5	Displays an error message and restarts the menu	Y
Test that the return menu at the end of the lottery works	Input = 1	Goes to the menu	Y
Test that the return menu at the end of the lottery works	Input = 2	Displays a goodbye message	Y
Test that the return menu at the end of the lottery works	Input = 0	Displays an error message and reruns the method	Y

Evaluation

I found this assignment easier to understand and work through than previous assignments. The concept of the lottery was simple enough to work through and figure out what I needed to do to achieve certain aspects. I feel like my code is a bit messy in areas and I have some methods that could be merged into one so in my next assignment I'll work harder to make my code neater.