

Project #2: Prime Number Game

CS0007

Due: June 23rd, at 11:59 PM

1 Instructions

The goal of this project is to test your ability to use the knowledge of Java that you have obtained up to this point in the course. The focus of this project is input validation, looping structures, decision structures, and random number generation. The goal is to create a game in which the user enters whether or not a number posed to her is a prime number. The user will be playing against a computer opponent that will randomly guess yes or no. The program will keep score.

2 Program Functionality

2.1 Program Steps

1. Display the user a randomly generated integer (details in section below) and ask the user if it is prime.
2. Take in a “Yes”, “No”, or “Quit” response (details in section below).
 - (a) If the user enters a “Quit” response, the program should thank the user and the program should terminate.
 - (b) If the user enters anything besides a “Yes”, “No”, or “Quit” response, the program should display an error.
 - i. Start over from step 1.
 - (c) If the user enters a “Yes” or “No” response, this should be considered as their answer to the posed question.
 - i. The computer opponent should choose yes or no (details in section below) and it’s guess should be displayed.
 - ii. Find if the randomly generated integer is prime.
 - iii. Display is the user is correct or not.
 - iv. Display is the computer is correct or not.
 - v. Display the score of the user and the computer (details in section below)
 - vi. Start over from step 1.

2.2 Details

- The randomly generated integer in Step 1 should be in the range 1-1000 inclusive.
- “Y”, “y”, “Yes”, or “yes” are all acceptable “Yes” responses.
- “N”, “n”, “No”, or “no” are all acceptable “No” responses.
- “Q”, “q”, “Quit”, or “quit” are all acceptable “Quit” responses.
- The computer opponent should randomly choose between yes and no. Each response should be as equally likely to be chosen. (i.e 50% chance of “Yes” 50% chance of “No”)
- I would highly consider looping to find whether the generated number is prime.
- The score for both the user and the computer should start at 0, and 1 should be added to a player’s score if she/it answers correctly. (So, if the user answers correctly on the first question and the computer does not, the user’s score should be 1 and the computer’s score should be 0).

3 Example Execution

```
*****  
Prime Number Guessing Game  
Y = Yes, N = No, Q = Quit  
*****
```

```
Is 644 prime? N  
The computer answers...N  
You are correct!  
The computer is correct...  
Your Score: 1  
The Computer’s Score: 1
```

```
Is 567 prime? Y  
The computer answers...Y  
You are incorrect...  
The computer is incorrect!  
Your Score: 1  
The Computer’s Score: 1
```

```
Is 246 prime? Banana  
You did not enter Y, N, or Q!  
Y = Yes, N = No, Q = Quit
```

```
Is 853 prime? Q  
Thank you for playing!
```

4 Concluding Remarks

Since this is a project, I will leave interface design decisions to you. A portion of the grade will be on the design of the interface. Your program should be easy to use and understand. I highly suggest giving the user instructions when the program starts and gently reminding her when she inputs something invalid. You are required to have sufficient internal documentation for your program as discussed in class.

This is meant to be AN INDIVIDUAL ASSIGNMENT. Also, taking large segments of code from other sources without citing is plagiarism. The majority of this assignment should be YOUR OWN ORIGINAL WORK. I recommend getting a small storage device such as a flash drive to save your work on. You can get these for under \$20 at any Radio Shack, and many other stores. When you are done submit your project by zipping up the project folder and FTPing it to the drop box for this course as described in class and here: <http://www.cs.pitt.edu/~eth13/cs0007/submissionGuidelines.html>. On the course webpage there is a grading rubric which I will be grading from. Keep this in mind while doing the assignment.