**ITP-120 Java – Flip a Coin Lab**

Requirements: Write a program that simulates a coin flip. Ask the user guess whether the flip of a coin results in heads or tails. Use the code number of 0 to indicate Heads and 1 to indicate Tails. Then, to “flip” the coin, the program will randomly generate an integer of 0 or 1, which represents Heads or Tails. The program will report whether the guess is correct or incorrect. Sample output is shown below. Be sure to use named constants for for the 0 and 1 codes. To generate a random number, use code examples provided in class.

After you get that code working, add a loop to your program. Ask the user if they want to quit. If they enter “Y” or “Yes”, then quit the program (be sure to work with both upper case and lower case). Before ending the program, print a “good-bye” message.

Requirements – Planned Output for the Program:

**Take a guess: enter 0 for Heads or 1 for Tails: 0**

**You chose Heads.**

**Computer chose Heads.**

**Congratulations! You guessed correctly.**

**Do you want to flip again? Yes**

**Take a guess: enter 0 for Heads or 1 for Tails: 0**

**You chose Heads.**

**Computer chose Tails.**

**Incorrect guess. Nice try.**

**Do you want to flip again? Y**

**Take a guess: enter 0 for Heads or 1 for Tails: 1**

**You chose Tails.**

**Computer chose Heads.**

**Incorrect guess. Nice try.**

**Do you want to flip again? no**

**Good bye!**

Design – IPO – What are the input variables for the program?

|  |  |
| --- | --- |
| **Variable Name** | **Data Type** |
| **userResponse** | **int** |
| **computerFlip** | **int** |

Testing – Test Suite #1 – What are the four scenarios we should try for the outcome of the flip?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case #** | **User Guess** | **Outcome of Flip** | **Expected Results**  **Output Message** | **Actual Results**  **Pass or Fail?** |
| 1 | 1 | 0 | You have got the number | Pass |
| 2 | 0 | 1 | You have guessed incorrect | Fail |
| 3 | 0 | 1 | You have guessed incorrect | Fail |
| 4 | 1 | 0 | You have guessed incorrect | Fail |

Testing – Test Suite #2 – Identify 4 scenarios we should try for the “do you want to flip again” question?

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Case #** | **User Input to Question** | **Expected Results**  **Loop Again or Quit?** | **Actual Results**  **Pass or Fail?** |
| 5 | “Yes” | Loop Again | Pass |
| 6 | “Y” | Loog Again | Pass |
| 7 | “y” | Loog Again | Pass |
| 8 | “n” | Quit the program | Pass |

Coding - Write the code and copy your code here:

**import** java.util.Scanner;

**public** **class** CoinFlip {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner keyboard = **new** Scanner(System.***in***);

**while**(**true**) {

System.***out***.println("Enter your guesss 0 for tail 1 for head");

**int** userGuess = keyboard.nextInt();

**if** (userGuess== 0) {

System.***out***.println("You choose haid");

}**else** **if** (userGuess == 1) {

System.***out***.println("You choose tail");

}**else**

System.***out***.println("You entered incorreect value");

**int** computerFlip = (**int**) (Math.*random*() \* 2);

**if**(userGuess == computerFlip) {

System.***out***.println("You have got the number");

}**else**

System.***out***.println("You have guessed incoreert");

System.***out***.println("Do you want to continue the loop?");

String userResponse = keyboard.next();

**if** (userResponse.equalsIgnoreCase("Yes")|| userResponse.equalsIgnoreCase("Y") ) {

}**else** **break**;

}

System.***out***.println("Good bye");

}

}

Testing – Run your program through all 8 Test Cases and show the output here:

Enter your guesss 0 for tail 1 for head

1

You choose tail

You have got the number

Do you want to continue the loop?

y

Enter your guesss 0 for tail 1 for head

0

You choose haid

You have guessed incoreert

Do you want to continue the loop?

y

Enter your guesss 0 for tail 1 for head

0

You choose haid

You have guessed incoreert

Do you want to continue the loop?

y

Enter your guesss 0 for tail 1 for head

1

You choose tail

You have guessed incoreert

Do you want to continue the loop?

no

Good bye

Paste **one screenshot** of your program here (it OKAY if not all code and output show):

