

Computer Science I: Lab 5

due Monday, April 11, 11:59pm

For this lab, we will write a guessing game.

1. The user begins with 0 points.
2. The computer will “roll” a digital six-sided die and “flip” a digital two-sided coin.
3. The user must guess the number on the die (1, 2, 3, 4, 5, or 6) and the side the coin has landed on (H for heads or T for tails).
4. The roll and flip result are revealed.
5. If the user was right, s/he wins 10 new points. If the user was wrong, s/he loses 1 point.
6. The user is asked whether to continue the game. If so, the program goes back to step 2.

In writing your program, you should define **at least** the following functions:

- `rollAndFlip(...)` – called by `main()`
Computes the outcome of a random die roll and coin flip
- `userInput(...)` – called by `main()`, takes in **two** formal parameters
Prompts the user for his/her guess about the die roll and the coin flip.
- `userInput(...)` – called by `main()`, takes in **one** formal parameter
Prompts the user whether s/he wants to continue the game or not.

Note: All user input must be obtained through one of the two `userInput` functions.

It is your job to determine the inputs and outputs for each function you write, making sure to fulfill the specifications written above.

In this lab you must:

- use the `rand()` function
- create and use at least one call-by-reference function; really, all three functions specified above should be call-by-reference
- write pre- and post-conditions for each function (except for `int main`) in comments

An example execution of the calculator program is given on the next page.

Start early and look over my programming advice online!

Submitting your file:

Submit the final C++ code as `guessingGame.cpp` using `submit1600` (and verify proper submission using `verify1600`).

Example execution:

```
> ./guessingGame.out  
Guess a (6-sided) die roll and a coin flip: 3 H  
Incorrect! Die roll was 5, coin flip was H.  
Total points: -1
```

```
Do you want to try again? (Y/N) Y
```

```
Guess a (6-sided) die roll and a coin flip: 1 H  
Incorrect! Die roll was 2, coin flip was T.  
Total points: -2
```

```
Do you want to try again? (Y/N) Y
```

```
Guess a (6-sided) die roll and a coin flip: 5 T  
Correct! Die roll was 5, coin flip was T.  
Total points: 8
```

```
Do you want to try again? (Y/N) N
```

```
Goodbye. Thanks for playing!
```