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Assignment 3 Design

**1)**

1. Declare Variables
2. Get max number of asterisks
3. Get pattern direction
4. Output asterisks pattern

Step 1, declare all the variable needed in the code. This includes the max number of asterisks, the direction variable, and 2 the loop iterators. They are all integers because no decimals were needed. Steps 2 and 3 prompt the user for the max number of asterisks and the direction of the pattern (1 ascending and 2 descending). For step 3, I create 2 if statements, one for each choice of direction. I chose to do this over using an if else statement so that the user is forced to chose either 1 or 2 not 3. Within each statement I have a nested while loop within a for loop. The for loop iterates every line, and the while loop iterates the number of asterisks on the line. Both of these loops are determined by the parameter entered in step 2.

**2)**

1. Declare Variables
2. Get max number
3. Get max number of guesses
4. Create Random Number
5. Receive Guesses
6. Output response
7. Ask the user to play again

Step 1, declare all the variable needed in the code, including the random number, the max parameters, the iterators, and the restart switch. All the variables are integers because no precision is really needed as we are only using whole numbers. Step 2 and 3 prompt the user for the max number and the max number of guesses. Step 4 then create the random number using the equation given and the parameters from step 2. Step 5 and 6 prompts the user for the guess and then outputs whether the guess is correct, too high, or too low using if statements. These steps are repeated using a for loop using the parameters given in step 3. The last step is to ask the user if they want to play the game again. Steps 2-7 are all within a while loop and if the user chooses not to play the loop is broken by changing the iterator of the while loop.