**Assignment 3 Problem Solving Steps 1-3**

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**Step 1: Requirements and Techniques**

Requirements: The customer is requesting a program be developed that allows a user to determine the correct integer used. The capabilities of the program must include the ability to prompt the player to guess an initial integer and on preceding guesses tell the user to guess higher or lower. Upon the user guessing the correct integer the program should acknowledge that the user has guessed the right integer and display the number of tries that it took.

Techniques:

1. cout and cin will be required to output information to the console and collect input from the user.

2. if / elseif / else conditional statements that include relational and comparison operators will need to be used to test if the user input is higher or lower than the provided integer. This technique will also be used to validate that the user has input an integer.

3. A do while loop will be necessary to continue prompting the user for input until they guess correctly.

4. An accumulator will be used in determining the number of guesses to print for the user to see.

**Step 2: Testing Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test** | **Number** | **Guess** | **Description** | **Expected Outcome** |
| 1 | 10 | N/A | Enter “10” (w/o the double quotes) when prompted “Enter the number for the player to guess.” in the console. | N/A |
| 5 | Enter “5” when prompted “Enter your guess.” in the console. | “higher” |
| 12 | Enter “12” when prompted “Enter your guess.” in the console. | “lower” |
| -5 | Enter “-5” when prompted “Enter your guess.” in the console. | “higher” |
| 10 | Enter “10” when prompted “Enter your guess.” in the console. | “You guessed it in 4 tries” |
| 2 | 44 | N/A | Enter “44” (w/o the double quotes) when prompted “Enter the number for the player to guess.” in the console. | N/A |
| 44 | Enter “44” when prompted “Enter your guess.” in the console. | “You guessed it in 1 tries.” |
| 3 | -200 | N/A | Enter “-200” (w/o the double quotes) when prompted “Enter the number for the player to guess.” in the console. | N/A |
| 100 | Enter “5” when prompted “Enter your guess.” in the console. | “lower” |
| -200 | Enter “-200” when prompted “Enter your guess.” in the console. | “You guessed it in 2 tries.” |
| 4 | 0 | N/A | Enter “0” (w/o the double quotes) when prompted “Enter the number for the player to guess.” in the console. | N/A |
| 24 | Enter “24” when prompted “Enter your guess.” in the console. | “lower” |
| -4 | Enter “-4” when prompted “Enter your guess.” in the console. | “higher” |
| 0 | Enter “0” when prompted “Enter your guess.” in the console. | “You guessed it in 4 tries.” |

**Step 3: Design Plan**

Pseudocode:

Set the counter to track the number of tries to 0

Prompt the user for a number

While the guess does not equal the number:

Add one to the counter

Prompt user for a guess

If guess > number

Print "lower"

else If guess < number

Print "higher"

else the guess equals the number

Print "You guessed it in (counter) tries"