1. **Problem statement:**

To design a game that allows two people to enter numbers from 1-100. The two players should then be able to take turns guessing each other’s numbers. After each guess the program should tell the person if their guess was too high or too low. When one person guesses the correct number, the computer should output the total number of guesses it took them to get the correct answer.

After the game is finished the program should give the option to terminate or start again.

**2. Analysis:**

Inputs: two initial numbers, every guesses they take and whether they want to start again ‘Y’ and ’N’.

Outputs: whether the guess is high, low or correct and the total number of guesses

Additional requirements: none

1. **Design:**

Algorithm

-1. Declare variables

-2. Ask user to input two initial numbers

-3. Read the input integer number and store the value of such an integer number into number1, number2

-4. Use a do-while loop to circulate

-5. Use if-else to test whether the guess was high, low or correct, and give the output.

-6. Jump out of the loop if both players guess correctly

-7. Ask user if they want to start again

-8. Use if-else to test whether user want to start again

-9. Use goto statement to go back to step 2 if the user input ‘Y’

-10. End the program if the user input ‘N’

**4. Implementation**: see C code in file 1405347\_2-1.c with comments.

**5. Testing:**

The C program was tested by carrying out a set of experiments; and the C program was verified successfully. For instance,

Enter the first number from 1-100:50

‘Clear the screen’

Enter the second number from 1-100:60

‘Clear the screen’

Please guess the first number: 51

Your guess was high

Please guess the second number: 62

Your guess was high

Please guess the first number: 49

Your guess was low

Please guess the second number: 58

Your guess was low

Please guess the first number: 50

Your guess was correct

The total number of guess was: 3

Please guess the second number: 59

Your guess was low

Please guess the second number: 61

Your guess was high

Please guess the second number: 60

Your guess was correct

The total number of guess was: 5

Do you want to start again? (Y/N): Y

Enter the first number from 1-100:5

‘Clear the screen’

Enter the second number from 1-100:6

‘Clear the screen’

Please guess the first number: 6

Your guess was high

Please guess the second number: 7

Your guess was high

Please guess the first number: 5

Your guess was correct

The total number of guess was: 2

Please guess the second number: 6

Your guess was correct

The total number of guess was: 2

Do you want to start again? (Y/N): N