**Guess the number game**

You are going to write a game program which works as follows :

* The program generates a random number between 1 and 100 inclusive
* The user tries to guess the number and has an unlimited number of guesses
* After each guess the user is informed if the guess was too high or too low.
* When the user guesses the number correctly the program ends and informs the user how many guesses he/she took.
* If the user enters an invalid guess (a number outside the range) the program should re-prompt but it should not count this as one of the user’s guesses

**Task One (Paired)**

**1.** In your pair design a solution to this problem using a flowchart. Think carefully about the problem, try and find the most efficient way to solve it. Don’t forget to deal with invalid guesses.

**2.** Using the table below design a trace table to be used for dry-running your solution from the flowchart. You will need to put the relevant variables which will change throughout the program run as column headings in the trace table. Using the rows dry run the following scenario :

Number generated is 72

User guesses are 101, 99, 23, 37, 72

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Guesses Total | Correct? | Valid? | Higher? | Lower? | Output msg |
| 0 | No | No | N/A | N/A | “This is not a valid number” |
| 1 | No | Yes | Yes | N/A | “This value is  higher than the actual number” |
| 2 | No | Yes | No | Yes | “This value is  lower than the actual number” |
| 3 | No | Yes | No | Yes | “This value is  lower than the actual number” |
| 4 | Yes | N/A | N/A | N/A | “You guessed  the correct number in 4 guesses” |
| N/A | N/A | N/A | N/A | N/A | N/A |

**3.** Once you have proved that your flowchart solution will work convert the flowchart into a programmed solution in Python and test the program with several program runs. It is a good idea to temporarily output the generated number on the screen for testing.

To generate a random number in python :



This generates a random number in the range 1 to 10 (inclusive)

**Stretch and Challenge**

Enhance your program to end if the user has had more than 10 guesses and not guessed the number correctly. In the event of this happening the program should tell them what the correct number was.