***Documentation***

Number Guessing Game is the very first and basic one project in the fields of Computer Sciences. Here is the complete Algorithm for it in Programming Language.

**Task:**

*Below are the steps:*

* Build a Number guessing game, in which the **user selects a range.**
* Let’s say User selected a range, i.e., from**lower bound**to **upper bound**, where **lower** and **upper bounds**belong to Integer.
* Some **random integer will be selected by the system** and the user has to guess that integer in the **minimum number of guesses.**

**Analysis:**

If the User inputs range, let’s say from 1 to 100. And compiler randomly selected 42 as the integer.

And now the guessing game started, so the user entered 50 as his/her **first guess**. The compiler shows “Try Again! Please Guess Lower”. That’s mean the random number (i.e., 42) doesn’t fall in the range from 50 to 100. That’s the importance of guessing half of the range.

And again, the user guesses half of 50 (Could you tell me why?). So, the half of 50 is 25. The user enters 25 as his/her **second guess**. This time compiler will show, “Try Again! Please guess higher”. That’s mean the integers less than 25 (from 1 to 25) are useless to be guessed.

Now the range for user guessing is shorter, i.e., from 25 to 50. Intelligently! The user guessed half of this range, so that, user guessed 37 as his/her **third guess**.  This time again the compiler shows the output, “Try Again! Please guess higher”. For the user, the guessing range is getting smaller by each guess.

Now, the guessing range for user is from 37 to 50, for which the user guessed 43 as his/her **fourth guess**. This time the compiler will show an output “Try Again! Please guess lower”.

So, the new guessing range for users will be from 37 to 43, again for which the user guessed the half of this range, that is, 40 as his/her **fifth guess**.  This time the compiler shows the output, “Try Again! Please guess higher”.

Leaving the guess even smaller such that from 41 to 43. And now the user guessed 41 as his/her **sixth guess**. This is wrong and shows output “Try Again! Please guess higher”.

And finally, the User guessed the right number which is 42 as his/her **seventh guess**.

**Total Number of Guesses = 7**

**Algorithm:**

**Below are the Steps:**

* Import *random*
* Use *def.* function then all further process will take place in it.
* User inputs the **lower bound** and **upper bound** of the range.
* The compiler generates a random integer between the ranges and stores it in a variable for future references.
* For repetitive guessing, a while loop will be initialized.
* The function is called at the end after finishing coding in the defined function.
* If the user guessed a number which is greater than a randomly selected number, the user gets an output “*Try Again! Please guess lower*“
* Else if the user guessed a number which is smaller than a randomly selected number, the user gets an output “*Try Again! Please guess higher”*
* And if the user guessed in a minimum number of guesses, the user gets a “*Congratulations! You won*” Output.
* Else if the user didn’t guess the integer in the minimum number of guesses, he/she will get “*Oops! You lost”* output.
* Either the user wins or loses; the compiler will ask the user *“Would you like* *to play again?* Press small *‘y’* for yes or small *‘n’* for not”.
* The code exit if the user press *‘n’* or it will restart from 1st step if the user press *‘y’*.

**Below is the Implementation of the Algorithm:**

import random

def inputs():

    # Taking inputs

    lower=int(input("Enter lower bound:- "))

    # Taking inputs

    upper=int(input("Enter upper bound:- "))

    # Generating random number between the lower and upper

    number=random.randint(lower,upper)

    # Initializing the number of tries

    tries=0

    # Asking for user name

    user\_name=input("Enter your name: ")

    user\_name=user\_name.strip()

    print(f"hello! {user\_name}")

    # Asking the user to play or not

    print("Would you like to play a game?")

    print("1) Yes")

    print("2) No")

    # Asking the user to choose options

    option=input("Select your option: ")

    option=int(option)

    if option==1:

            print("I am thinking a number between",lower,"and",upper)

            print("You have to guess a number in five tries")

            # Taking guessing number as input

            guess=input("Guess a number: ")

            guess=int(guess)

            tries+=1

            # Condition Testing

            if guess>number:

                print("Please guess lower...")

            if guess<number:

                    print("Please guess higher...")

            while guess!=number and tries<5:

                guess=input("Try Again: ")

                guess=int(guess)

                tries+=1

                if guess>number:

                    print("Please guess lower...")

                if guess<number:

                    print("Please guess higher...")

            if guess==number:

                print("Congratulations,You won!")

                print(f"Number of tries: {tries}")

                print("Would you like to play again?,press small 'y'for yes or small 'n' for not ")

                print("1) y")

                print("1) n")

                play\_again=input("Enter your choice: ")

                if play\_again=="y":

                    inputs()

                elif play\_again=="n":

                    print("Thanks for playing")

            else:

                print("Oops,You lost!")

                print("Would you like to play again?,press small 'y'for yes or small 'n' for not ")

                print("1) y")

                print("1) n")

                play\_again=input("Enter your choice: ")

                if play\_again=="y":

                    inputs()

                elif play\_again=="n":

                    print("Thanks for playing")

    elif option==2:

            print("As you wish")

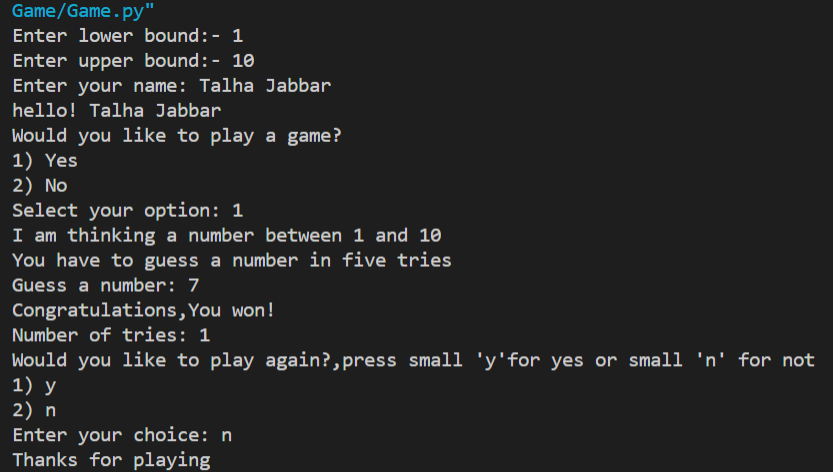
    else:

            print("You have entered invalid option")

inputs()

**OUTPUT:**

***Below is the output of the above Program***

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