Assignment 05 MORE LOOPS & IF STATEMENTS [FLOWGORITHM & PYTHON]

(Worth 15 points)

RESOURCES NEEDED TO COMPLETE ASSIGNMENT:

- See Videos in CONTENT LINK LOOPS AND the RANDOM MODULE
- CHAPTER 4

-Please study the attached examples and use them to help you.

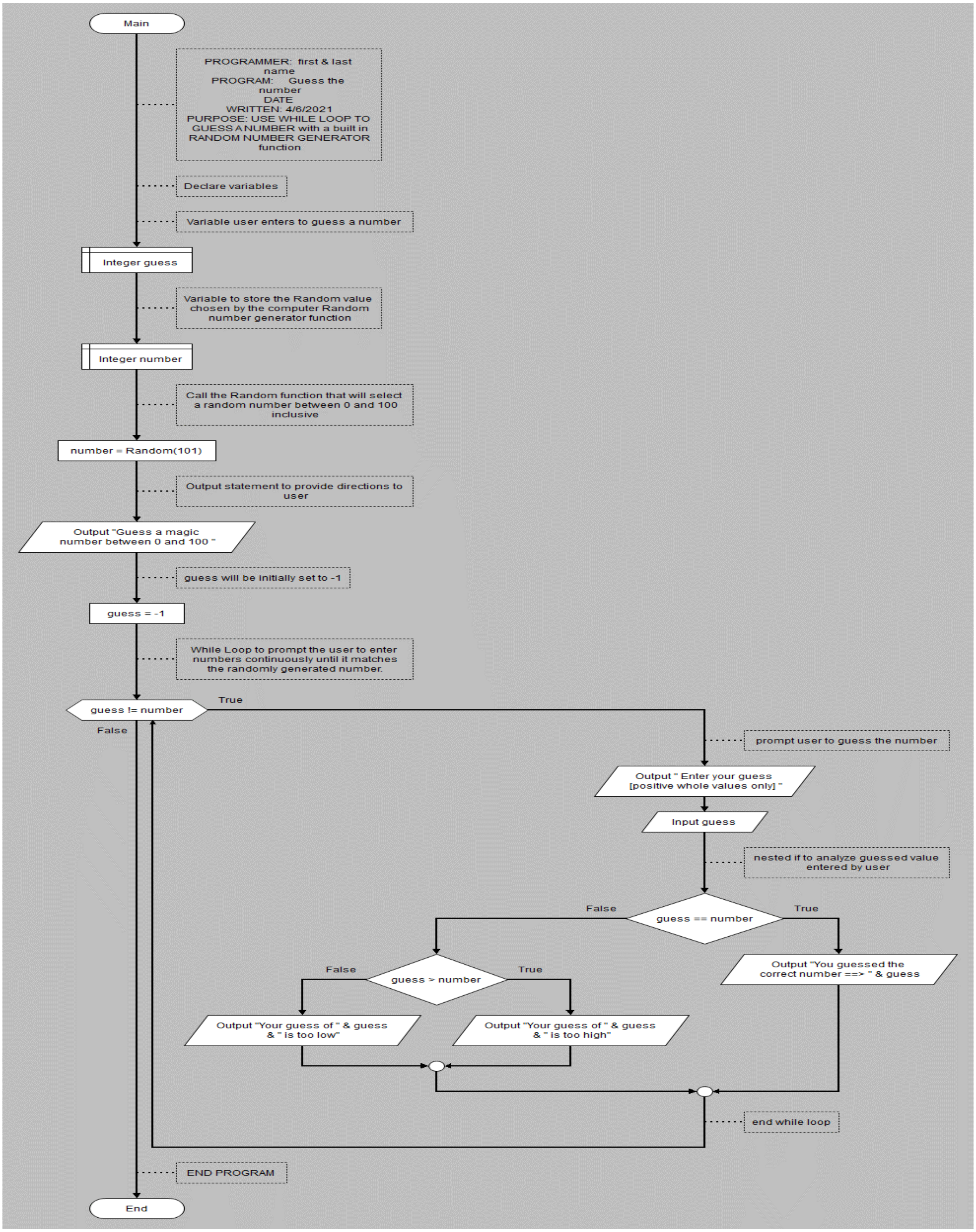
Description for Assignment 05 –

Writing a program to guess a number using the Random module.

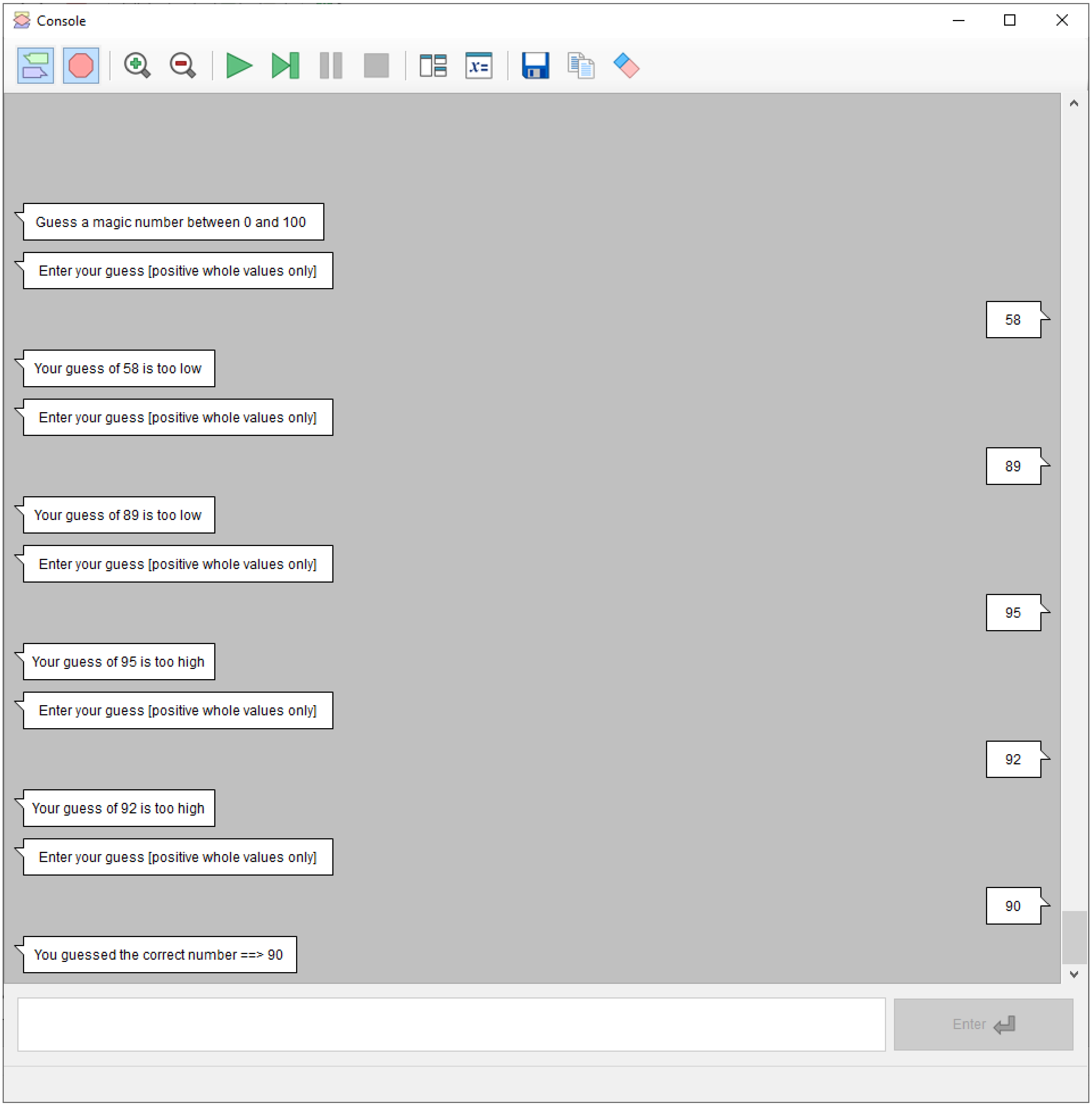
The problem is to guess what number a computer has in mind.

1. □ You will write a program that randomly generates an integer between 0 and 100, inclusive using flowgorithm
2. □ The program prompts the user to enter numbers continuously until it matches the randomly generated number
3. □ For each user input, the program is to display whether it is too low or too higher, so that the user can choose the next input intelligently. as illustrated below (also shown in the guessing game video).
4. **This flowchart enables the player to play the guessing game once**

SAMPLE FLOWGORITHM PROGRAM

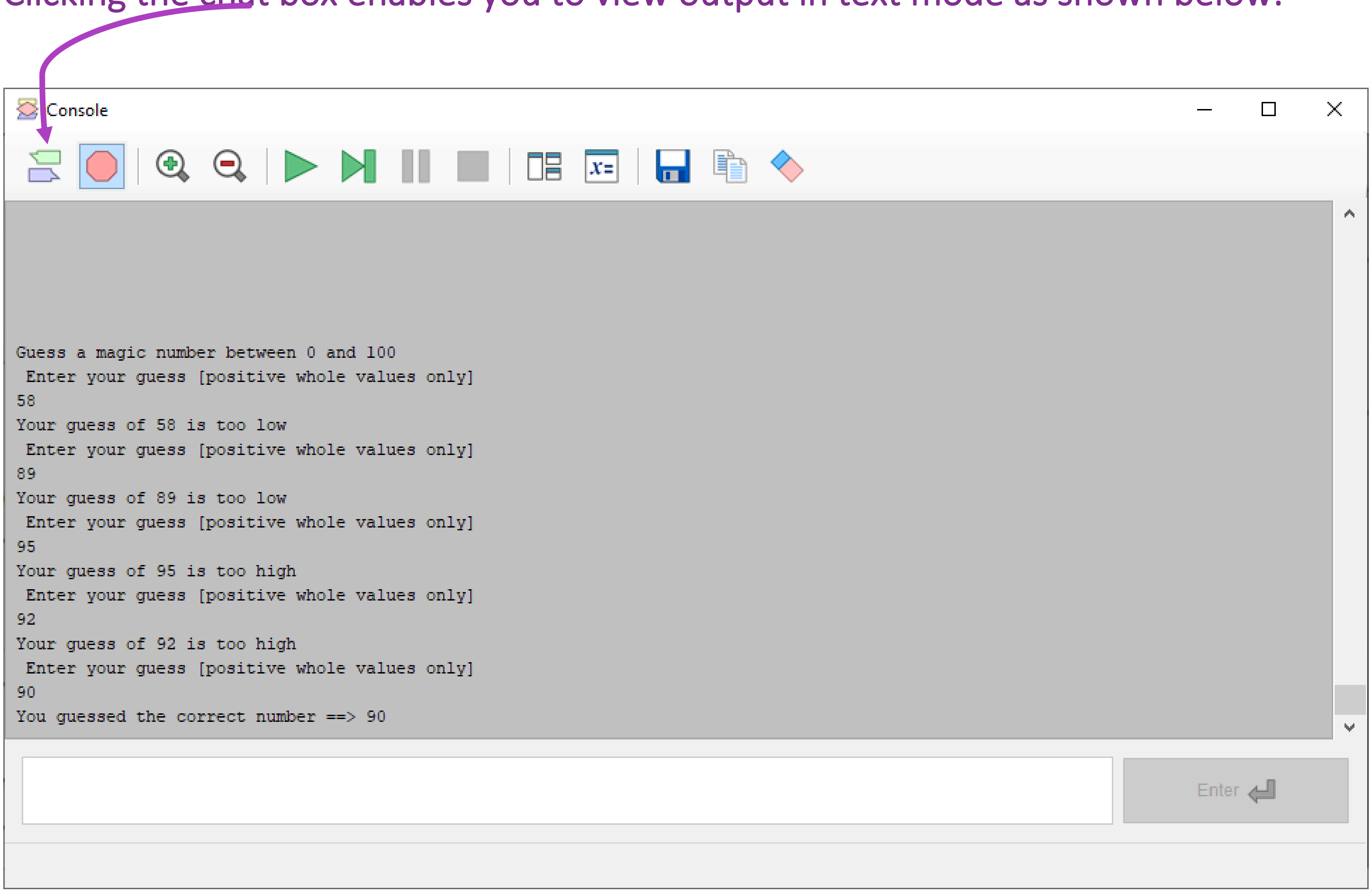

Main
PROGRAMMER: first & last name
PROGRAM: Guess the number
DATE WRITTEN: 4/6/2021
PURPOSE: USE WHILE LOOP TO GUESS A NUMBER with a built in RANDOM NUMBER GENERATOR function
Declare variables
Variable user enters to guess a number
Integer guess
Variable to store the Random value chosen by the computer Random number generator function
Integer number
Call the Random function that will select a random number between 0 and 100 inclusive
number = Random(101)
Output statement to provide directions to user
Output "Guess a magic number between 0 and 100 "
guess will be initially set to -1
guess = -1
While Loop to prompt the user to enter numbers continuously until it matches the randomly generated number.
guess != number
True
False
prompt user to guess the number
Output " Enter your guess [positive whole values only] "
Input guess
nested if to analyze guessed value entered by user
False
guess == number
True
Output "You guessed the correct number ==> " & guess
False
guess > number
True
Output "Your guess of " & guess & " is too low"
Output "Your guess of " & guess & " is too high"
end while loop
END PROGRAM
End

RUN/EXECUTE SAMPLE GUESSING GAME PROGRAM [FLOWGORITHM]



```
Guess a magic number between 0 and 100
Enter your guess [positive whole values only]
                                                            58
Your guess of 58 is too low
Enter your guess [positive whole values only]
                                                            89
Your guess of 89 is too low
Enter your guess [positive whole values only]
                                                            95
Your guess of 95 is too high
Enter your guess [positive whole values only]
                                                            92
Your guess of 92 is too high
Enter your guess [positive whole values only]
                                                            90
You guessed the correct number ==> 90
```

Clicking the chat box enables you to view output in text mode as shown below:



```
Guess a magic number between 0 and 100
 Enter your guess [positive whole values only]
58
Your guess of 58 is too low
 Enter your guess [positive whole values only]
89
Your guess of 89 is too low
 Enter your guess [positive whole values only]
95
Your guess of 95 is too high
 Enter your guess [positive whole values only]
92
Your guess of 92 is too high
 Enter your guess [positive whole values only]
90
You guessed the correct number ==> 90
```

View and Study the flow diagram carefully.

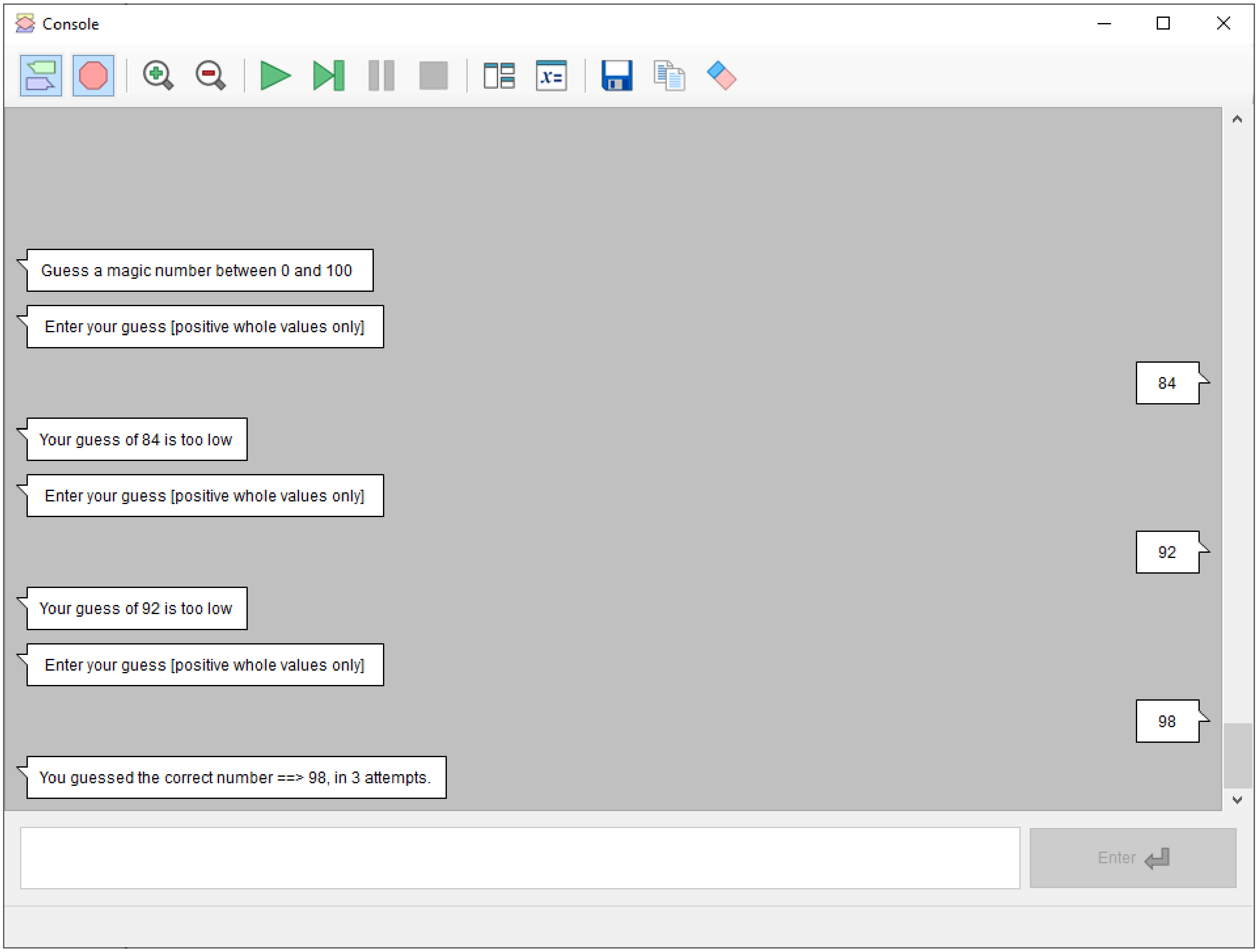
- **Notice the random function: Random(101) (range of numbers are between 0 and 100**
- **Once again, this flowchart enables the player to play the guessing game once**

MAKE THE FOLLOWING REVISIONS:

REVISION #01 - Count the number of attempts from player to guess correct number

5. □ Revise the flowgorithm program to keeps a count of the number of guesses that the user makes. When the user correctly guesses the random number, the program should display the number of guesses. HINT: Add a variable that will keep track of the number of guesses: i.e. count; This variable needs to be initialized to 0 and it needs to be updated.
Here are the results of what your program should resemble after revising:

FLOWGORITHM OUTPUT FOR REVISION #01



```
Guess a magic number between 0 and 100
Enter your guess [positive whole values only]
                                                            84
Your guess of 84 is too low
Enter your guess [positive whole values only]
                                                            92
Your guess of 92 is too low
Enter your guess [positive whole values only]
                                                            98
You guessed the correct number ==> 98, in 3 attempts.
```

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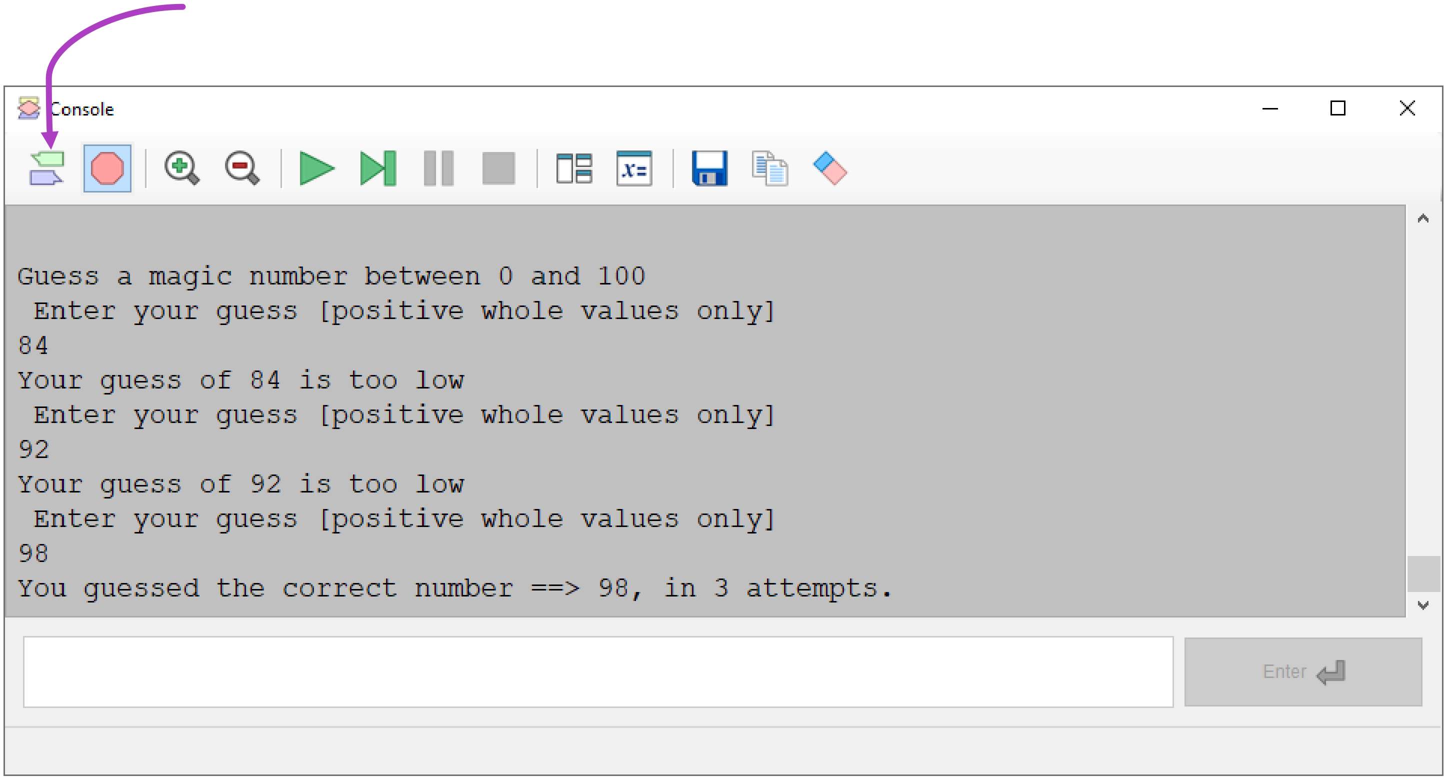
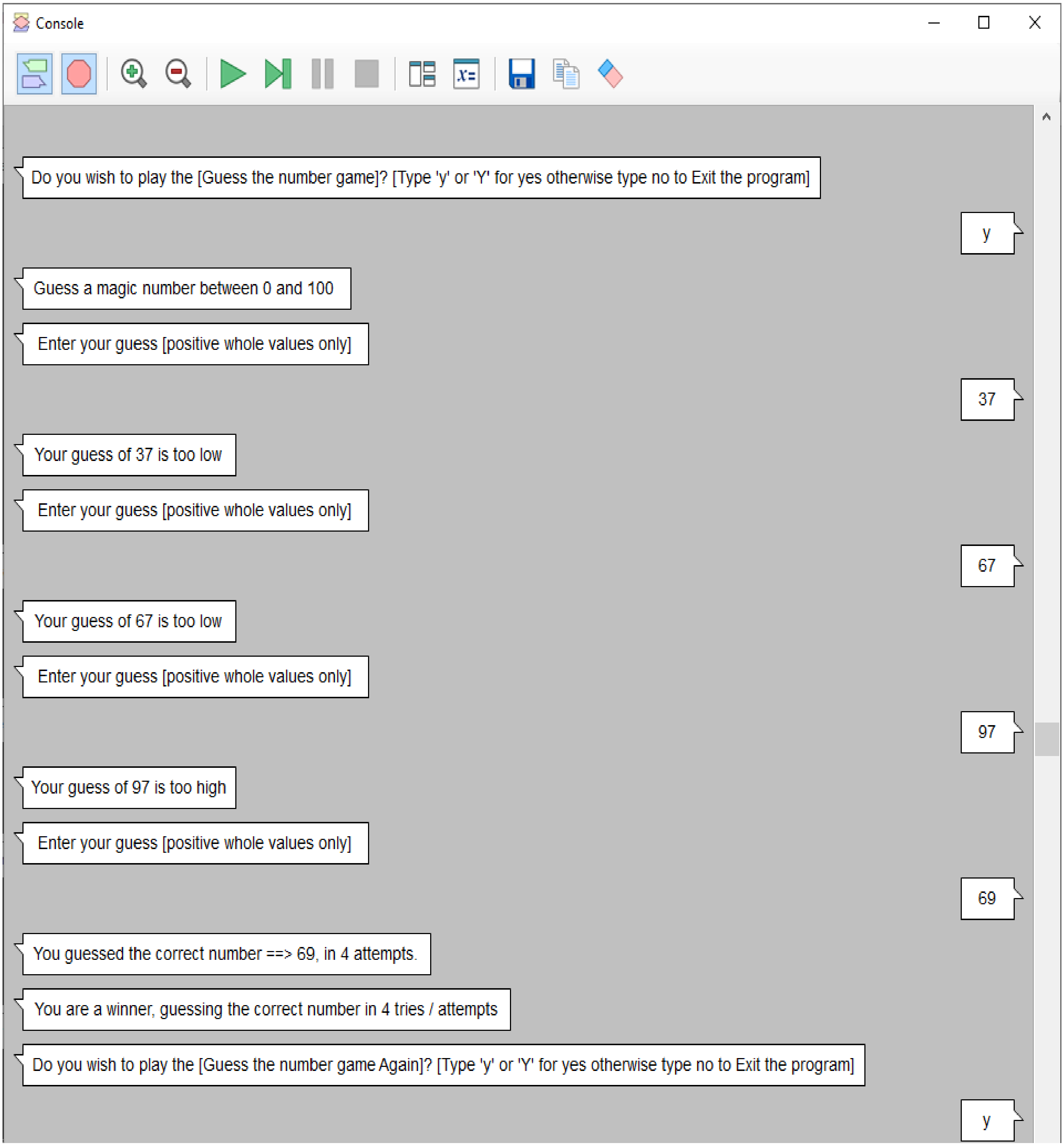
CLICK CHAT BUBBLE ICON TO CONVERT TO TEXT VIEW



```
Guess a magic number between 0 and 100
 Enter your guess [positive whole values only]
84
Your guess of 84 is too low
 Enter your guess [positive whole values only]
92
Your guess of 92 is too low
 Enter your guess [positive whole values only]
98
You guessed the correct number ==> 98, in 3 attempts.
```

6. □ Revise the program again to indicate if the user guesses the correct number in 1 to 4 guesses, they are a winner; Otherwise, they need to play the game again.
   a. □ 1st use an if statement to determine if they are a winner
   b. □ Next, add an outer loop (while loop) to enable the user to play the game again
      i. HINT: The outer loop must be added above where the variable used to keep tract of number of attempts. “Do you wish to play the guess the number game again [type ‘y’ or ‘Y’ for yes otherwise type no to end the game]
      ii. Just before you end the program type “THANKS FOR PLAYING THE GUESS THE NUMBER GAME – HAVE A NICE DAY”

REVISION #02 – FLOWGORITHM OUTPUT - Determine if player is a winner and enable user to play game again



```
Do you wish to play the [Guess the number game]? [Type 'y' or 'Y' for yes otherwise type no to Exit the program]
                                                                                                   y
Guess a magic number between 0 and 100
Enter your guess [positive whole values only]
                                                                                                   37
Your guess of 37 is too low
Enter your guess [positive whole values only]
                                                                                                   67
Your guess of 67 is too low
Enter your guess [positive whole values only]
                                                                                                   97
Your guess of 97 is too high
Enter your guess [positive whole values only]
                                                                                                   69
You guessed the correct number ==> 69, in 4 attempts.
You are a winner, guessing the correct number in 4 tries / attempts
Do you wish to play the [Guess the number game Again]? [Type 'y' or 'Y' for yes otherwise type no to Exit the program]
                                                                                                   y
```

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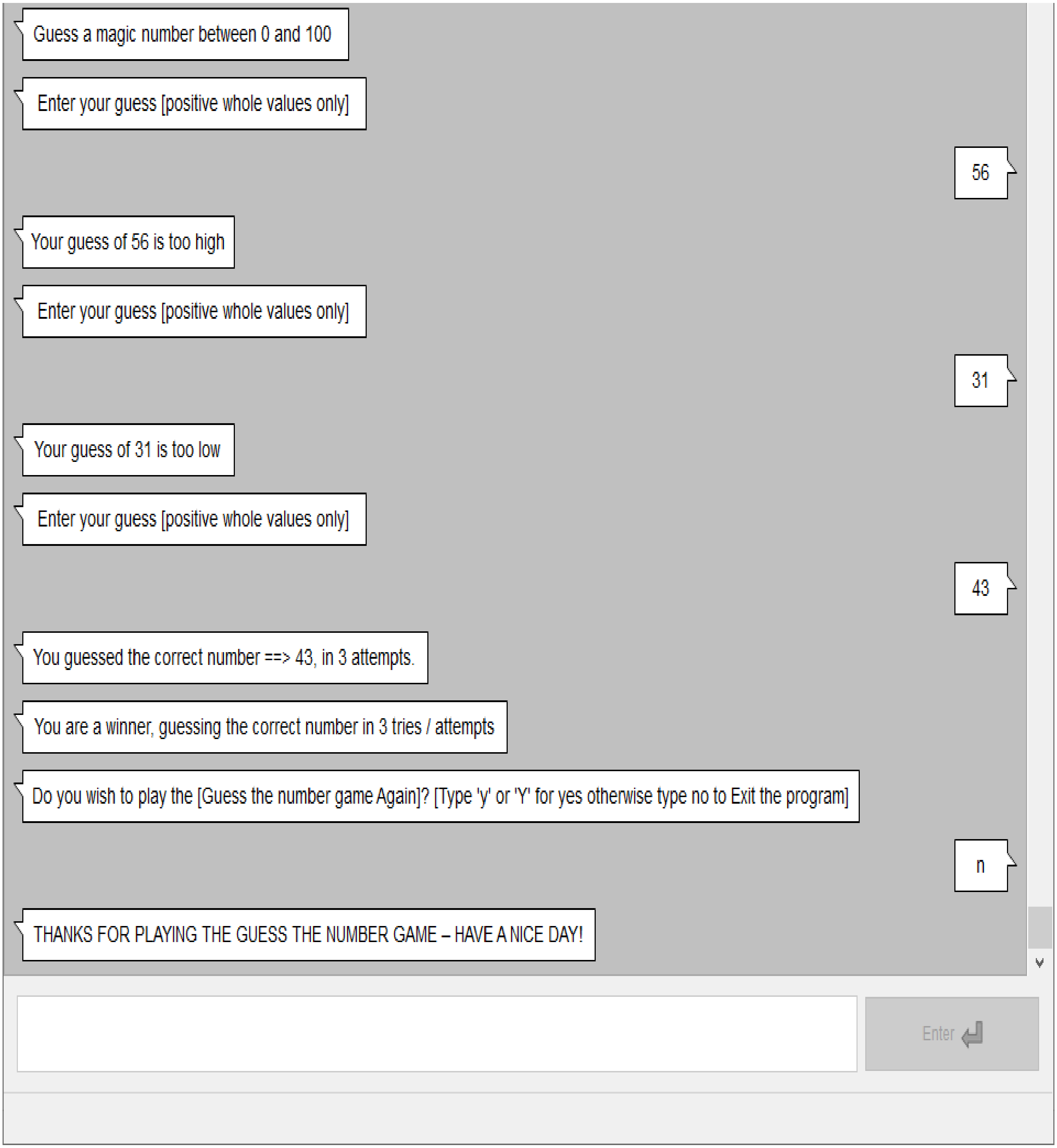

```
Guess a magic number between 0 and 100
Enter your guess [positive whole values only]
                                                                56
Your guess of 56 is too high
Enter your guess [positive whole values only]
                                                                31
Your guess of 31 is too low
Enter your guess [positive whole values only]
                                                                43
You guessed the correct number ==> 43, in 3 attempts.
You are a winner, guessing the correct number in 3 tries / attempts
Do you wish to play the [Guess the number game Again]? [Type 'y' or 'Y' for yes otherwise type no to Exit the program]
                                                                n
THANKS FOR PLAYING THE GUESS THE NUMBER GAME – HAVE A NICE DAY!
```

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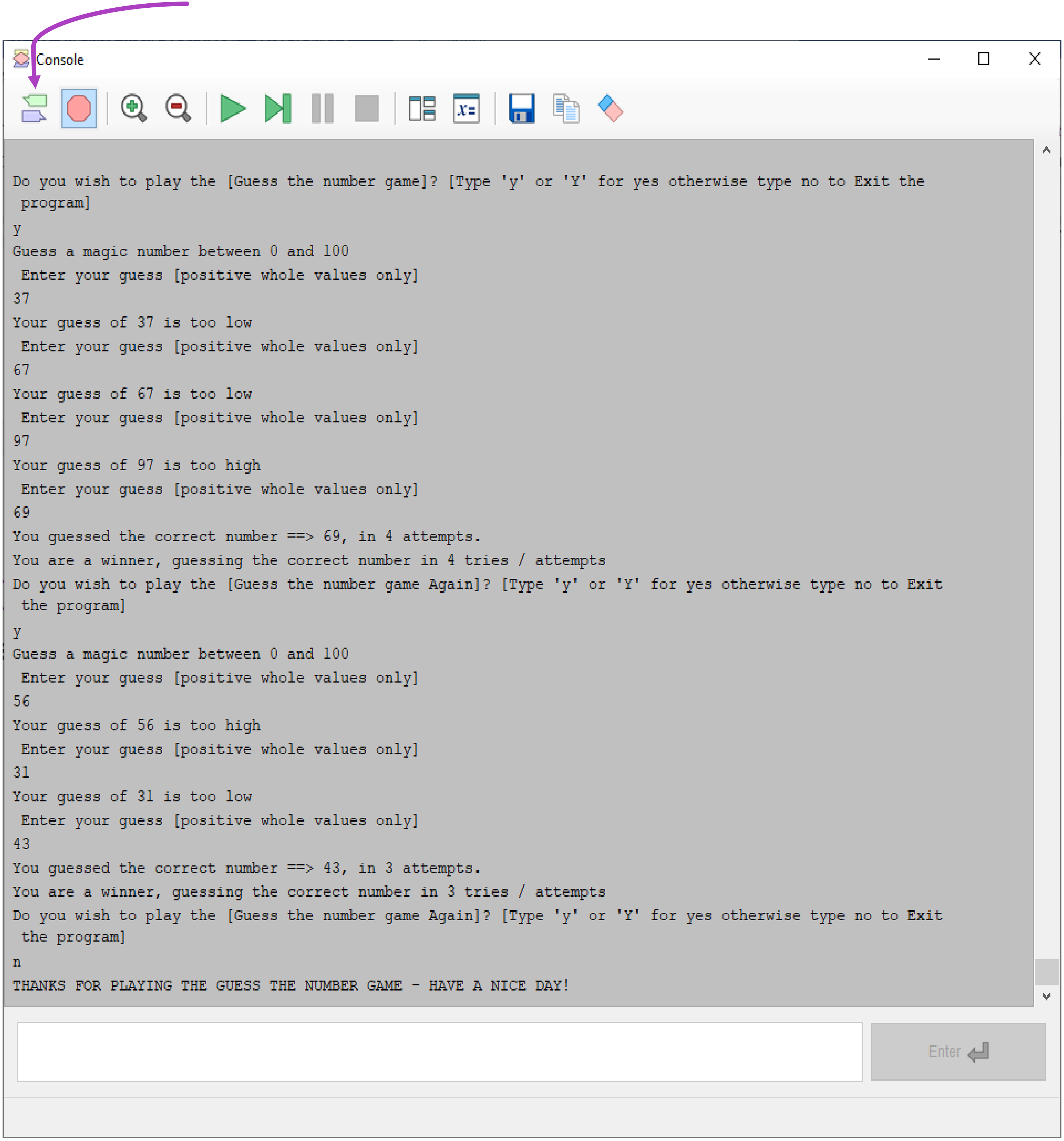
REVISION #02 – FLOWGORITHM OUTPUT WITH CHAT BUBBLE OFF

Viewing with chat bubble off:



```
Do you wish to play the [Guess the number game]? [Type 'y' or 'Y' for yes otherwise type no to Exit the
 program]
y
Guess a magic number between 0 and 100
 Enter your guess [positive whole values only]
37
Your guess of 37 is too low
 Enter your guess [positive whole values only]
67
Your guess of 67 is too low
 Enter your guess [positive whole values only]
97
Your guess of 97 is too high
 Enter your guess [positive whole values only]
69
You guessed the correct number ==> 69, in 4 attempts.
You are a winner, guessing the correct number in 4 tries / attempts
Do you wish to play the [Guess the number game Again]? [Type 'y' or 'Y' for yes otherwise type no to Exit
 the program]
y
Guess a magic number between 0 and 100
 Enter your guess [positive whole values only]
56
Your guess of 56 is too high
 Enter your guess [positive whole values only]
31
Your guess of 31 is too low
 Enter your guess [positive whole values only]
43
You guessed the correct number ==> 43, in 3 attempts.
You are a winner, guessing the correct number in 3 tries / attempts
Do you wish to play the [Guess the number game Again]? [Type 'y' or 'Y' for yes otherwise type no to Exit
 the program]
n
THANKS FOR PLAYING THE GUESS THE NUMBER GAME - HAVE A NICE DAY!
```

SAVE FLOWGORITHM OUTPUT

7. □ Save the output as:

lastname_firstName_A5_Random_Number_Guessing_Game_Revised_Flow_Output.txt

RESAVE FLOWGORITHM CODE/FLOWCHART

8. □Re-Save the program as:

lastname_firstName_A5_Random_Number_Guessing_GAME_Revised.fprg

PART 2: Convert to Python

1. □ **Convert the revised flowgorithm program to Python**
2. □ **Run / Execute the program**
3. □ **You will need to change any str functions in python to format or f’ string in order to display the results correctly i.e.**
   format(guess, "d") and format(count, "d")

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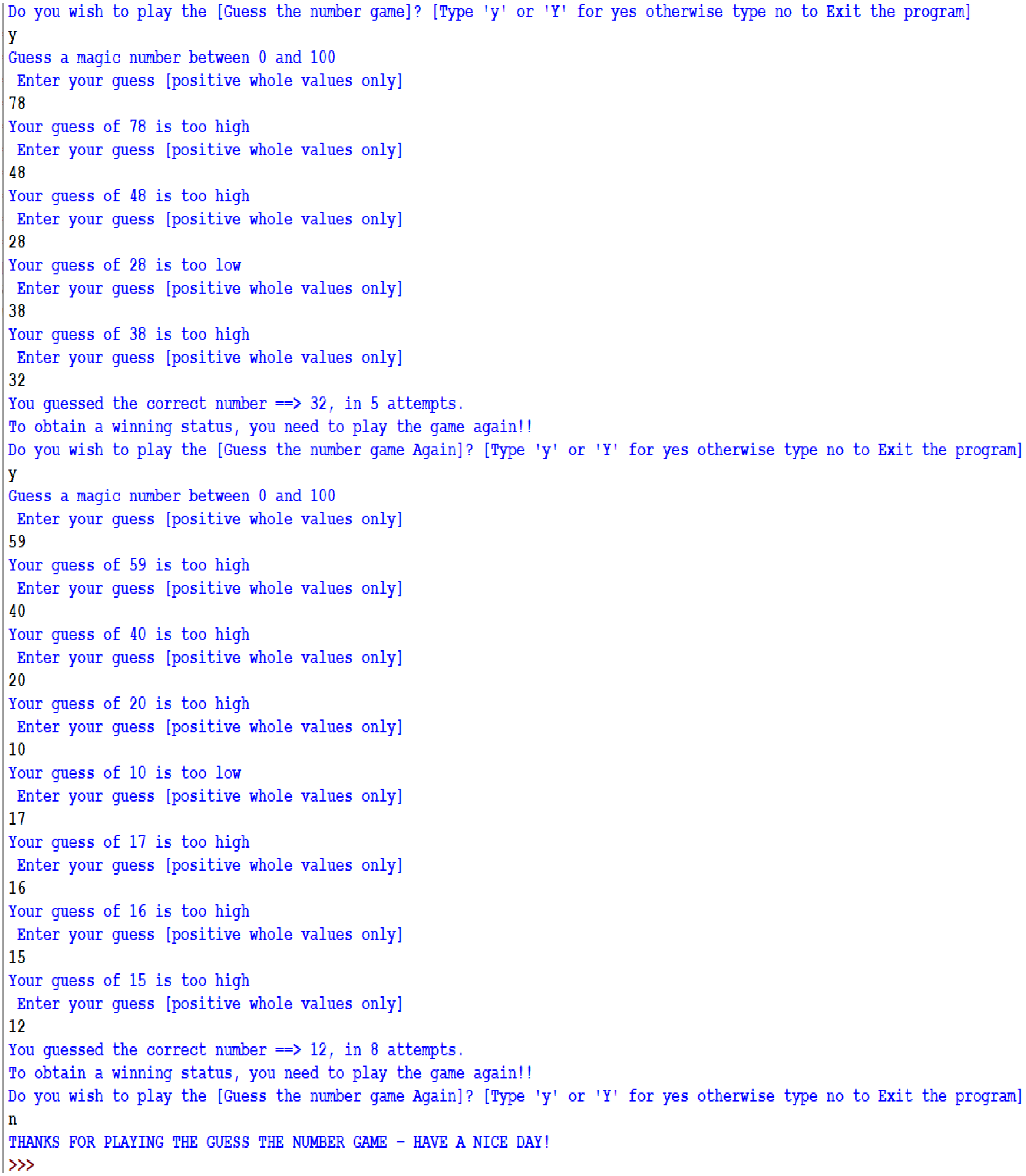
OUTPUT WILL RESEMBLE THE FOLLOWING:



```
Do you wish to play the [Guess the number game]? [Type 'y' or 'Y' for yes otherwise type no to Exit the program]
y
Guess a magic number between 0 and 100
 Enter your guess [positive whole values only]
78
Your guess of 78 is too high
 Enter your guess [positive whole values only]
48
Your guess of 48 is too high
 Enter your guess [positive whole values only]
28
Your guess of 28 is too low
 Enter your guess [positive whole values only]
38
Your guess of 38 is too high
 Enter your guess [positive whole values only]
32
You guessed the correct number ==> 32, in 5 attempts.
To obtain a winning status, you need to play the game again!!
Do you wish to play the [Guess the number game Again]? [Type 'y' or 'Y' for yes otherwise type no to Exit the program]
y
Guess a magic number between 0 and 100
 Enter your guess [positive whole values only]
59
Your guess of 59 is too high
 Enter your guess [positive whole values only]
40
Your guess of 40 is too high
 Enter your guess [positive whole values only]
20
Your guess of 20 is too high
 Enter your guess [positive whole values only]
10
Your guess of 10 is too low
 Enter your guess [positive whole values only]
17
Your guess of 17 is too high
 Enter your guess [positive whole values only]
16
Your guess of 16 is too high
 Enter your guess [positive whole values only]
15
Your guess of 15 is too high
 Enter your guess [positive whole values only]
12
You guessed the correct number ==> 12, in 8 attempts.
To obtain a winning status, you need to play the game again!!
Do you wish to play the [Guess the number game Again]? [Type 'y' or 'Y' for yes otherwise type no to Exit the program]
n
THANKS FOR PLAYING THE GUESS THE NUMBER GAME - HAVE A NICE DAY!
>>>
```

4. □ **When you resave the file, it will have the same name as the flowgorithm version. The extension or suffix will be different. as show:**

   lastname_firstName_A5_Random_Number_Guessing_Game_Revised.py

5. □ **Save the output from the Python execution as:**

lastname_firstName_A5_Random_Number_Guessing_Game_Revised_Output.txt

□ Submit the following 4 files inside the drop box:

lastname_firstName_A5_Random_Number_Guessing_Game_Revised.fprg (worth 3 points)

lastname_firstName_A5_Random_Number_Guessing_Game_Revised_Flow_Output.txt (2 points)

lastname_firstName_A5_Random_Number_Guessing_Game_Revised.py

(worth 6 points)

lastname_firstName_A5_Random_Number_Guessing_Game_Revised_Output.txt

(worth 4 points)