

# Number Guessing Game



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Title: Number Guessing Game

Start Date: 2024/03/12

Duration: 10 day

End Date: 2024/13/12



## NUMBER GUESSING GAME

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# **Chapter 1: Introduction**

## **1.1 Overview**

The Enhanced Number Guessing Game is an interactive Python-based game that challenges players to guess a randomly generated number within a specific range. It includes multiple difficulty levels and provides hints to enhance user engagement and enjoyment.

## **1.2 Purpose of the Game**

The primary objective of this game is to provide a fun and engaging experience while improving logical thinking and decision-making skills. With the introduction of levels and scoring, the game appeals to players of all ages and skill levels.

## **1.3 Features**

- ❖ Difficulty Levels: Easy, Medium, and Hard modes for varied challenges.
- ❖ Hint System: Provides hints (e.g., even/odd) to guide the player.
- ❖ Scoring Mechanism: Rewards players with points for correct guesses.
- ❖ Input Validation: Ensures players enter valid numbers within the specified range.
- ❖ Replayability: Generates new random numbers after every round.

# Chapter 2: Designing and Development

## 2.1 System Design

The system is designed as a command-line application to maintain simplicity and accessibility. The flow includes user input, random number generation, feedback based on the guess, and scoring. The game ends when the player runs out of attempts.

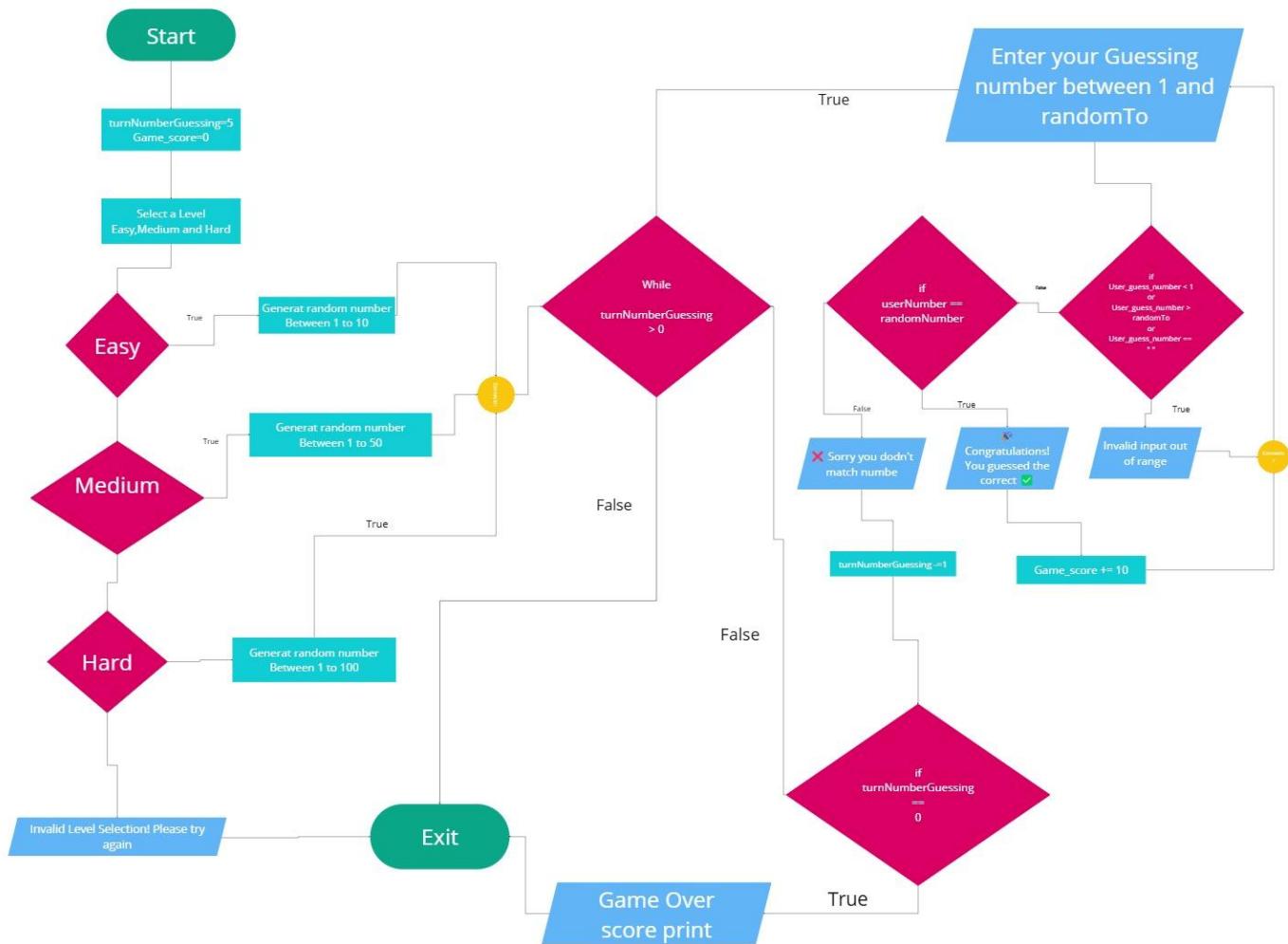


Fig: flow chart of Number Guessing Game

## **2.2 Difficulty Levels**

Three levels of difficulty are included:

- Easy: Numbers range from 1 to 10 with 5 attempts.
- Medium: Numbers range from 1 to 50 with 5 attempts.
- Hard: Numbers range from 1 to 100 with 5 attempts.

Players select the level at the start of the game, adjusting the range and difficulty accordingly.

## **2.3 Technology Stack**

- I. Programming Language: Python 3
- II. Libraries Used: random For generating random numbers.

## **2.4 Challenges and Solutions**

1. Challenge: Adding multiple difficulty levels.

Solution: Introduced a level selection mechanism to dynamically adjust the range.

2. Challenge: Providing helpful hints without making the game too easy.

Solution: Added simple hints like 'even' or 'odd' for incorrect guesses.

3. Challenge: Encouraging replayability.

Solution: Automatically generates a new random number after a correct guess.

# **Chapter 3: Testing, Conclusion, and References**

## **3.1 Testing**

Testing Process:

Unit Testing: Verified functions for random number generation, input validation, and hint system.

Functional Testing: Ensured smooth gameplay across all difficulty levels.

Edge Case Testing: Handled invalid inputs, extreme values, and empty entries.

Results: The game performed well, with all major features functioning as intended.

## **3.2 Conclusion**

The Enhanced Number Guessing Game demonstrates the power of Python in creating interactive and engaging applications. By combining fun gameplay mechanics with practical programming concepts, this project highlights the potential of Python for educational and entertainment purposes.

## **3.3 Tools and Resources Used**

Development Tools:

- Python 3: Programming language.
- IDE: Any text editor (e.g., VS Code, Notepad++).

-Libraries and Modules:

- random: For random number generation.

-Smartdraw : Create flow chart using this tools

## **3.4 References**

- Python Documentation: <https://docs.python.org/3/>
- Random Library: <https://docs.python.org/3/library/random.html>
- <https://app.smartdraw.com/>

## Appendix A

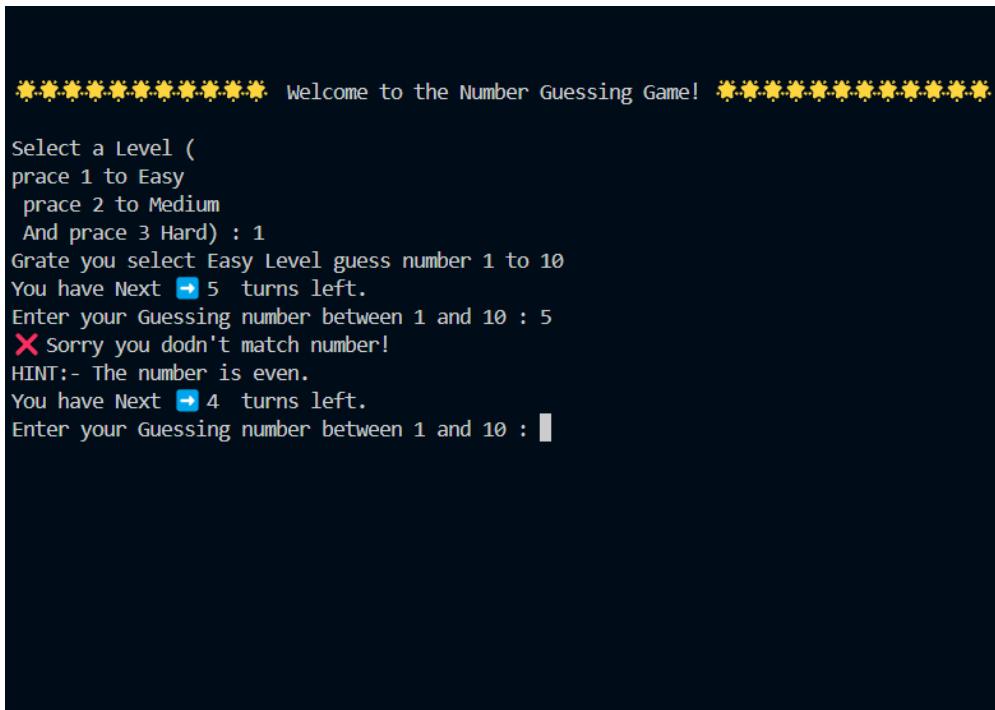
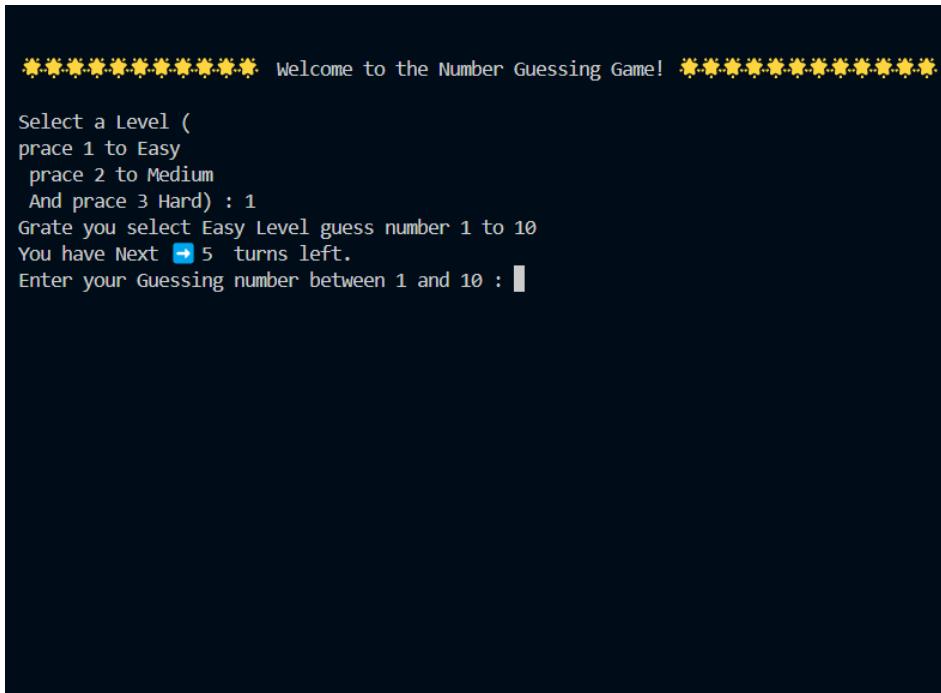
```
1
2 import random
3
4
5 Tabnine | Edit | Test | Explain | Document | Ask
6 def random_number_generated(ranFrom,ranTo):
7     randomNumber= random.randint(ranFrom,ranTo)
8     return randomNumber
9
10 Tabnine | Edit | Test | Explain | Document | Ask
11 def Number_GuessingFunction(userNumber, randomNumber):
12     if userNumber == randomNumber:
13         return True
14     else:
15         return False
16
17 Tabnine | Edit | Test | Explain | Document | Ask
18 def Number_guessing_game_level(ranFrom,ranTo):
19     randomNumber= random_number_generated(ranFrom,ranTo)
20     return randomNumber,ranTo
21
22
23 # def Number_Guessing_score(signal,score):
24 #     if signal:
25 #         score+=1
26 #     return score
27
28 turnNumberGuessing=5
29 Game_score=0
```

```

25
26 print("\n\n\n***** Welcome to the Number Guessing Game! *****\n")
27
28 Tabnine | Edit | Test | Explain | Document | Ask
29 def Levelselection():
30     ## Easy prace 1, Medium prace 2, and Hard prace 3
31     try :
32         user_select_lavel=int(input("Select a Level (\nprace 1 to Easy\n prace 2 to Medium\n And prace 3 Hard) : "))
33     except ValueError:
34         print(" ♦♦ Invalid input! Please enter a number. ♦♦")
35         exit()
36
37     if user_select_lavel == 1:
38         print("Grate you select Easy Level guess number 1 to 10")
39         actual_random,ranTo= Number_guessing_game_level(1,10)
40     elif user_select_lavel == 2:
41         print("Grate you select Medium Level guess number 1 to 50")
42         actual_random,ranTo= Number_guessing_game_level(1,50)
43     elif user_select_lavel == 3:
44         print("Grate you select Hard Level guess number 1 to 100")
45         actual_random,ranTo= Number_guessing_game_level(1,100)
46     else:
47         print("♦♦ Invalid Level Selection! Please try again. ♦♦")
48         exit()
49
50     return actual_random,ranTo
51
52
53
54
55 while turnNumberGuessing > 0:
56     try:
57
58         User_guess_number = int(input(f"Enter your Guessing number between {1} and {ranTo} : "))
59
60
61         if User_guess_number < 1 or User_guess_number > ranTo or User_guess_number == '':
62             print(f" ✗ please enter a number between {1} and {ranTo} ! ")
63             continue
64
65         if Number_GuessingFunction(User_guess_number, actual_random):
66             print(" 🎉 Congratulations! You guessed the correct ✅ number! 🎉 ")
67             Game_score+=10
68             actual_random=random_number_generated(1,ranTo)
69             continue
70         else:
71             print(" ✗ Sorry you didn't match number!")
72             print(f"HINT:- The number is {'even' if actual_random % 2 == 0 else 'odd'} .")
73
74
75         turnNumberGuessing -= 1
76         if turnNumberGuessing == 0:
77             print("♦♦ ☺ Time's up! You lost the game! ♦♦")
78             print("\nGame over! 💀🔥 \n")
79             print(f"\nScore: {Game_score}\n")
80             print("The correct number was ", actual_random)
81
82             exit()
83             print("You have Next ➡ ", turnNumberGuessing, " turns left.")
84
85     except ValueError:
86         print("♦♦ Invalid input! Please enter a number. try again ✋ ♦♦")
87         break

```

## Appendix B



\*\*\*\*\* Welcome to the Number Guessing Game! \*\*\*\*\*

```
Select a Level ( 
prace 1 to Easy
prace 2 to Medium
And prace 3 Hard) : 1
Grate you select Easy Level guess number 1 to 10
You have Next → 5 turns left.
Enter your Guessing number between 1 and 10 : 5
✗ Sorry you didn't match number!
HINT:- The number is even.
You have Next → 4 turns left.
Enter your Guessing number between 1 and 10 : 2
🎉 Congratulations! You guessed the correct ✓ number! 🎉 🎉
Enter your Guessing number between 1 and 10 : 
```

\*\*\*\*\* Welcome to the Number Guessing Game! \*\*\*\*\*

```
Select a Level ( 
prace 1 to Easy
prace 2 to Medium
And prace 3 Hard) : 1
Grate you select Easy Level guess number 1 to 10
You have Next → 5 turns left.
Enter your Guessing number between 1 and 10 : 5
✗ Sorry you didn't match number!
HINT:- The number is even.
You have Next → 4 turns left.
Enter your Guessing number between 1 and 10 : 2
🎉 Congratulations! You guessed the correct ✓ number! 🎉 🎉
Enter your Guessing number between 1 and 10 : 13
✗ please enter a number between 1 and 10 !
Enter your Guessing number between 1 and 10 : 
```

\*\*\*\*\* Welcome to the Number Guessing Game! \*\*\*\*\*

Select a Level (

prace 1 to Easy

prace 2 to Medium

And prace 3 Hard) : 1

Grate you select Easy Level guess number 1 to 10

You have Next → 5 turns left.

Enter your Guessing number between 1 and 10 : 5

✗ Sorry you dodn't match number!

HINT:- The number is even.

You have Next → 4 turns left.

Enter your Guessing number between 1 and 10 : 2

🎉 Congratulations! You guessed the correct ✓ number! 🎉 😊

Enter your Guessing number between 1 and 10 : 13

✗ please enter a number between 1 and 10 !

Enter your Guessing number between 1 and 10 : 10

✗ Sorry you dodn't match number!

HINT:- The number is odd.

You have Next → 3 turns left.

Enter your Guessing number between 1 and 10 : 3

✗ Sorry you dodn't match number!

HINT:- The number is odd.

You have Next → 2 turns left.

Enter your Guessing number between 1 and 10 : 5

✗ Sorry you dodn't match number!

HINT:- The number is odd.

You have Next → 1 turns left.

Enter your Guessing number between 1 and 10 : 7

🎉 Congratulations! You guessed the correct ✓ number! 🎉 😊

Enter your Guessing number between 1 and 10 : 7

prace 1 to Easy  
prace 2 to Medium  
And prace 3 Hard) : 1  
Grate you select Easy Level guess number 1 to 10  
You have Next → 5 turns left.  
Enter your Guessing number between 1 and 10 : 5  
✗ Sorry you dodn't match number!  
HINT:- The number is even.  
You have Next → 4 turns left.  
Enter your Guessing number between 1 and 10 : 2  
🎉 Congratulations! You guessed the correct ✓ number! 🎉 🎉  
Enter your Guessing number between 1 and 10 : 13  
✗ please enter a number between 1 and 10 !  
Enter your Guessing number between 1 and 10 : 7  
🎉 Congratulations! You guessed the correct ✓ number! 🎉 🎉  
Enter your Guessing number between 1 and 10 : 8  
🎉 Congratulations! You guessed the correct ✓ number! 🎉 🎉  
Enter your Guessing number between 1 and 10 : 9  
✗ Sorry you dodn't match number!  
HINT:- The number is even.  
You have Next → 3 turns left.  
Enter your Guessing number between 1 and 10 : 2  
🎉 Congratulations! You guessed the correct ✓ number! 🎉 🎉  
Enter your Guessing number between 1 and 10 : 8  
✗ Sorry you dodn't match number!  
HINT:- The number is odd.  
You have Next → 2 turns left.  
Enter your Guessing number between 1 and 10 : 4  
✗ Sorry you dodn't match number!  
HINT:- The number is odd.  
You have Next → 1 turns left.  
Enter your Guessing number between 1 and 10 : 4  
✗ Sorry you dodn't match number!  
HINT:- The number is odd.  
⌚ Time's up! You lost the game! ⌚

💀 Game over! 💀

Score: 40