TITLE

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SECTION – C

UNIVERSITY ROLL NUMBER – 202401100400169

SUBJECT – INTRODUCTION TO AI (MSE)

AI BASED NUMBER GUESSING GAME

INTRODUCTION

The Number Guessing Game is an interactive Python program that engages users by challenging them to guess a randomly generated number within a fixed number of attempts. This report provides an overview of the program, its functionalities, implementation, and potential enhancements.

OBJECTIVE

The primary aim of the Number Guessing Game is:

1. To familiarize users with fundamental programming concepts in Python, such as loops, conditionals, and input/output operations.
2. To provide an engaging way to practice programming and logical thinking.

FEATURES

1. Random Number Generation: The program generates a random number between 1 and 100 using the random module.
2. User Interaction: Players are prompted to guess the number and are provided with feedback ("Too Low!" or "Too High!") after each guess.
3. Hint System: If a user fails to guess correctly within 5 attempts, the program provides a hint to assist the user.
4. Score Tracking: All guesses are stored in a list to track the user's attempts.
5. Victory or Failure: Users either guess the number within 10 attempts or are informed of their failure after 10 attempts.

METHODOLOGY

1. The program begins by displaying an introduction message and generating a random number.
2. The user is prompted to enter their guesses iteratively for up to 10 attempts.
3. Feedback is provided for each guess:
    - If the guess is lower than the target, the message "Too Low!" is displayed.
    - If the guess is higher than the target, the message "Too High!" is displayed.
    - If the guess is correct, the user is congratulated, and the game ends.
4. After 5 attempts, a hint is given to aid the player. The hint specifies a number by which the target number is divisible.

5. After 10 attempts, the program evaluates the player's performance and displays a summary of their guesses.

CODE EXPLANATION

The program is implemented using Python and utilizes the following key concepts:

1. Random Module: Used to generate the target number (random.randint).
2. Loops: A for loop is employed to limit the number of guesses.
3. Conditionals: if-elif-else statements are used to compare the user's guess with the target number.
4. Lists: A list is used to store all guesses for review.

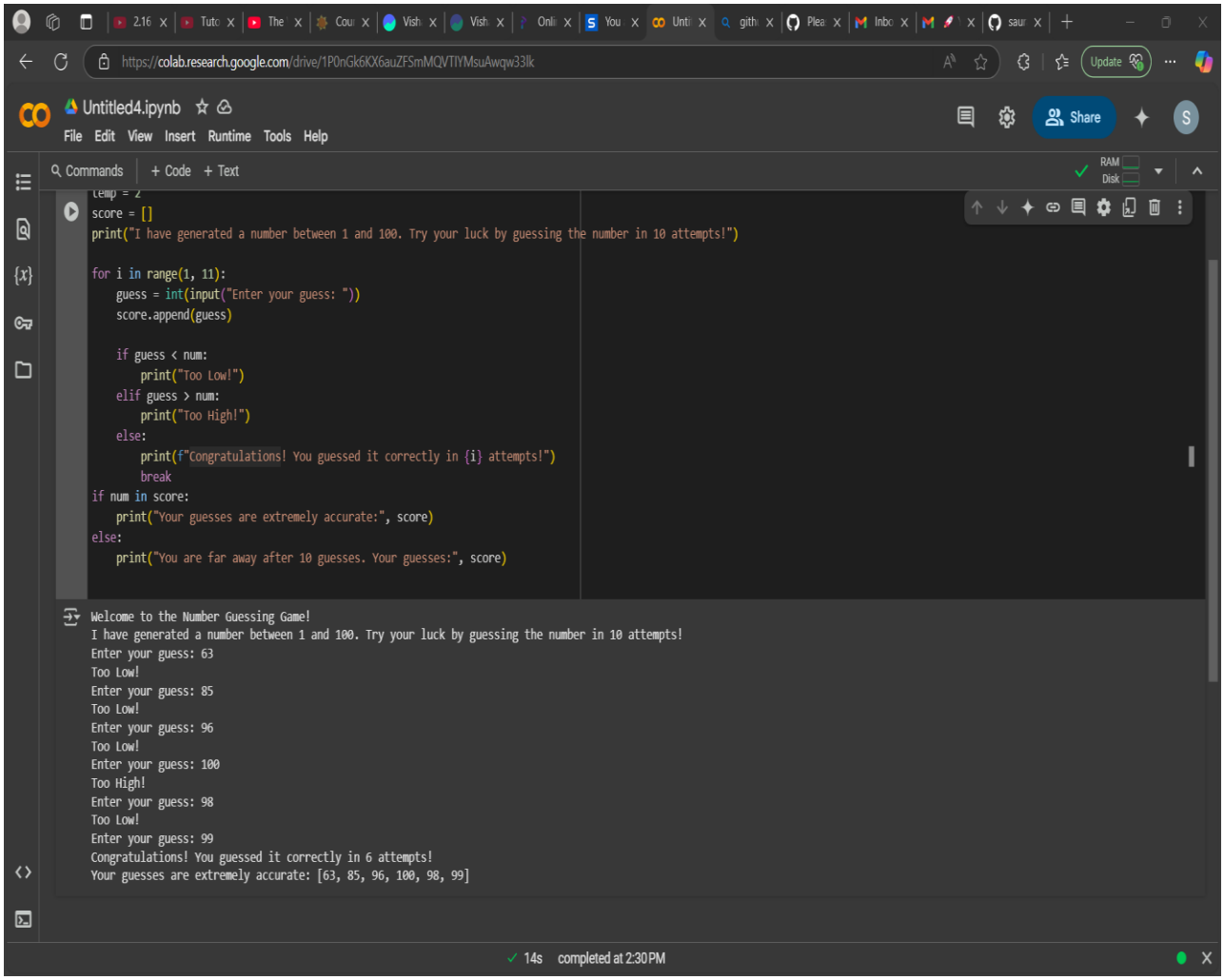
CODE TYPED

```
import random  # Importing the random module to generate a random number

# Introduction message to the game

print("Welcome to the Number Guessing Game!")


# Generate a random number between 1 and 100

num = random.randint(1, 100)


# Variable to assist in hint generation

temp = 2
```

```
# List to store the user's guesses
score = []

# Inform the user about the game
print("I have generated a number between 1 and 100. Try your luck by guessing the number in 10 attempts!")

# Loop for 10 attempts
for i in range(1, 11):
    # Prompt the user to enter their guess
    guess = int(input("Enter your guess: "))
    # Append the guess to the score list
    score.append(guess)

    # Check if the guess is too low
    if guess < num:
        print("Too Low!")
    # Check if the guess is too high
    elif guess > num:
```

```
        print("Too High!")
    # If the guess is correct
    else:
        print(f"Congratulations! You guessed it correctly in {i} attempts!")
        break  # End the loop if the user guesses correctly

# Check if the user's guesses contain the correct number
if num in score:
    print("Your guesses are extremely accurate:", score)
# If the user couldn't guess the number in 10 attempts
else:
    print("You are far away after 10 guesses. Your guesses:", score)
```

OUTPUT SCREENSHOT


Untitled4.ipynb
File Edit View Insert Runtime Tools Help
Share
Commands + Code + Text
RAM
Disk
temp = 2
score = []
print("I have generated a number between 1 and 100. Try your luck by guessing the number in 10 attempts!")
for i in range(1, 11):
guess = int(input("Enter your guess: "))
score.append(guess)
if guess < num:
print("Too Low!")
elif guess > num:
print("Too High!")
else:
print(f"Congratulations! You guessed it correctly in {i} attempts!")
break
if num in score:
print("Your guesses are extremely accurate:", score)
else:
print("You are far away after 10 guesses. Your guesses:", score)
Welcome to the Number Guessing Game!
I have generated a number between 1 and 100. Try your luck by guessing the number in 10 attempts!
Enter your guess: 63
Too Low!
Enter your guess: 85
Too Low!
Enter your guess: 96
Too Low!
Enter your guess: 100
Too High!
Enter your guess: 98
Too Low!
Enter your guess: 99
Congratulations! You guessed it correctly in 6 attempts!
Your guesses are extremely accurate: [63, 85, 96, 100, 98, 99]
14s completed at 2:30 PM