

Practice Questions

To become Interview Ready

Lecture 7 to 10

Control Flow Statements

Loops

User Defined Functions

Question 1

```
In [ ]: You are given a dataset of student grades
and need to determine the grade distribution.

Question: Write a Python function
grade_distribution(grades) that takes
a list of integers representing
student grades (0-100). Use a loop to count the
number of grades in each grade category:
'A' (90-100), 'B' (80-89), 'C' (70-79),
'D' (60-69), and 'e' (below 60).
Use if-elif-else statements within
the loop to categorize the grades.
Return a dictionary with the counts of each grade category.
```

```
In [1]: def grade_distribution(grades):  
    for grade in grades:  
        if 90<= grade <=100:  
            print("you have got A grade")  
        elif 80<= grade <=89:  
            print("you have got B grade")  
        elif 70<= grade <=79:  
            print("you have got C grade")  
        elif 60<= grade <=69:  
            print("you have got D grade")  
        else:  
            print("you have got E grade")  
    return
```

```
In [2]: grades = [85,92,88,74,63,95,70,58,82,67,99,73]  
grade_distribution(grades)
```

```
you have got B grade  
you have got A grade  
you have got B grade  
you have got C grade  
you have got D grade  
you have got A grade  
you have got C grade  
you have got E grade  
you have got B grade  
you have got D grade  
you have got A grade  
you have got C grade
```

Question 2

```
In [ ]: You're creating a number guessing game where the  
computer generates a random number  
between 1 and 100, and the player has to guess it.
```

Write Python code to generate a random number between 1 and 100. Use control flow statements and loops to allow the player to guess the number and provide feedback (too high, too low, or correct). Define a user-defined function to encapsulate the game logic and call this function to play the game.

```
In [20]: import random

def number_guessing_game():
    secret_number = random.randint(1 , 100)
    print(secret_number)

    print("Welcome to the number guessing game")
    print("I have choosen the number between 1 to 100. Can you guess it ?")

    attempts = 0
    guess = None

    while guess != secret_number:

        guess = int(input("Enter your guess"))
        attempts+= attempts+1

        if guess < secret_number:
            print("Too low, try again")
        elif guess > secret_number :
            print("too high, try again")
        else:
            print("congratuations, you have guessed the correct number")
            print("the number of attempts in guessing the correct number is",
```

```
In [21]: number_guessing_game()
```

```
74
Welcome to the number guessing game
I have choosen the number between 1 to 100. Can you guess it ?
Enter your guess78
too high, try again
Enter your guess62
Too low, try again
Enter your guess98
too high, try again
Enter your guess74
congratuations, you have guessed the correct number
the number of attempts in guessing the correct number is 4
```

Question 3

In []: You're tasked with creating a program to calculate the sum of squares of the first n natural numbers, where n is entered by the user.

Write Python code to prompt the user to enter a positive integer n. Use a loop to calculate the sum of squares of the first n natural numbers. Define a user-defined function to encapsulate the sum of squares calculation logic and call this function with the user's input.

```
In [22]: def sum_of_squares(n):
        """Calculate the sum of squares of the first n natural numbers."""
        total = 0
        for i in range(1, n + 1):
            total += i ** 2
        return total

    def main():
        # Prompt the user to enter a positive integer n
        n = int(input("Enter a positive integer: "))

        # Calculate the sum of squares
        result = sum_of_squares(n)
        print(f"The sum of squares of the first {n} natural numbers is: {result}")

    # Call the main function to execute the program
    main()
```

Enter a positive integer: 5
The sum of squares of the first 5 natural numbers is: 55

In []: