**POSTSESSION TASK QUESTIONS**

Date : 01-03-2024

Python Questions:

1. Write a Python function to determine whether a given string is a palindrome or not. Palindromes are strings that read the same backward as forward, ignoring spaces, punctuation, and capitalization.

def is\_palindrome(s):

s = ''.join(char.lower() for char in s if char.isalnum())

return s == s[::-1]

string = "A man, a plan, a canal, Panama!"

print(is\_palindrome(string)) # Output: True

1. Create a Python function that takes a list as input and returns a new list containing only the unique elements from the original list, preserving their order.

def unique\_elements(input\_list):

unique\_list = []

for item in input\_list:

if item not in unique\_list:

unique\_list.append(item)

return unique\_list

original\_list = [1, 2, 3, 3, 4, 5, 5, 6]

print(unique\_elements(original\_list)) # Output: [1, 2, 3, 4, 5, 6]

1. Write a Python function to calculate the factorial of a non-negative integer input. Ensure that your function can handle large inputs efficiently.

def factorial(n):

if n < 0:

return "Factorial is not defined for negative numbers."

elif n == 0 or n == 1:

return 1

else:

result = 1

for i in range(2, n + 1):

result \*= i

return result

number = 5

print(factorial(number)) # Output: 120

1. Implement the FizzBuzz problem in Python. Write a program that prints the numbers from 1 to 100. But for multiples of three, print "Fizz" instead of the number, and for the multiples of five, print "Buzz". For numbers that are multiples of both three and five, print "FizzBuzz".

def fizz\_buzz():

for i in range(1, 101):

if i % 3 == 0 and i % 5 == 0:

print("FizzBuzz")

elif i % 3 == 0:

print("Fizz")

elif i % 5 == 0:

print("Buzz")

else:

print(i)

fizz\_buzz()

SQL Questions:

1. Given an Employee table with columns (id, name, salary, department\_id), write an SQL query to find the employees with the highest salary in each department.

SELECT e.\*

FROM Employee e

INNER JOIN (

SELECT department\_id, MAX(salary) AS max\_salary

FROM Employee

GROUP BY department\_id

) max\_salaries ON e.department\_id = max\_salaries.department\_id

AND e.salary = max\_salaries.max\_salary;

1. Suppose you have an Orders table with columns (order\_id, customer\_id, order\_date, total\_amount). Write an SQL query to calculate the total amount of orders placed by each customer.

SELECT customer\_id, SUM(total\_amount) AS total\_orders\_amount

FROM Orders

GROUP BY customer\_id;

1. Consider two tables, Employees and Departments, with columns as follows:\

Employees: (emp\_id, emp\_name, dept\_id)

Departments: (dept\_id, dept\_name)

Write an SQL query to fetch the names of employees along with their department names.

SELECT e.emp\_name, d.dept\_name

FROM Employees e

INNER JOIN Departments d ON e.dept\_id = d.dept\_id;