DSE 2144– Advanced Programming Language Lab

Week 2 – Date: 16th August 2024

1. Write a program that uses a 'while' loop along with a found flag to search through a list of powers of 2. Your program should identify the value corresponding to 2 raised to the fifth power (32).
2. Write a program to calculate the distance covered by a robot after a series of movements on a plane. A robot starts at the origin point (0,0) in a 2D plane. It can move in four directions: UP, DOWN, LEFT, and RIGHT. The robot's movements are defined as follows:
    a. UP - 5
    b. DOWN - 3
    c. LEFT - 3
    d. RIGHT - 2

    The number following each direction indicates the number of steps taken in that direction.

    Implement a program that:
    a. Tracks the robot's position after the given sequence of movements.
    b. Calculates the distance between the robot's final position and the origin (0,0).
    c. If the calculated distance is a floating-point number, round it to the nearest integer.

    Constraints:
    a. You are not allowed to use any external packages or libraries.
    b. Only basic Python functionalities should be used.

3. Write a python program that can accept two strings as input and print the string with maximum length in console. If two strings have the same length, then the program should print all strings in one line.
4. Write a program that computes the net amount in a bank account based on a series of transactions provided as input.

    Instructions:
    a. Your program should accept a transaction log as input, where each transaction is either a deposit or a withdrawal.
    b. The transaction log format is as follows:
    c. D 100 indicates a deposit of 100 units.
    d. W 200 indicates a withdrawal of 200 units.
    e. The program should calculate the net amount in the bank account after processing all transactions.
5. Write a python program to implement the binary search which searches an item in a sorted list. (Do not use any Packages)
6. Write a Python 3 program that demonstrates how to calculate the summation of all possible combinations of elements in a list of tuples. Use nested for loops to iterate through the tuples and generate the combinations.
7. Write a Python3 program that demonstrates how to convert a tuple into a list, where each element in the list is the succeeding element of the original tuple.