Problem Solving & Coding – Level I
[Data Structure Foundations]
(Linear List)

Solve the following problems using computer with help of Python/C++/Java/C# language as means of communication.

Problem 1: Sequence of Numbers

Create a function named *getSeq* that reads integers from user until user enters 0 and returns those numbers. Include a main program to test your function.

Problem 2: Longest Words

Create a function named *longestWords* that takes an array of words as input and returns a list containing all the longest words. The order of the elements in the returned list must match the order of the elements in the original list. Include a main program to test your function.

Input: ["list", "vector", "map", "set", "array", "words", "string"]
Output: ["vector", "string"]

Problem 3: Tokenization

Create a function named *tokenize* that takes a string representing a mathematical expression with integers as its only parameter and breaks it into a list of tokens. Each token should be a parenthesis, an operator, or a number. Return the list of tokens as the function's result. You may assume that the string passed to your function always contains a valid mathematical expression consisting of parentheses, operators and integers. Include a main program to test your function.

Input: 2+12*(123+23-4)/72
Output: ["2", "+", "12", "(", "123", "+", "23", "-", "4", ")", "/", "72"]

Problem 4: Tail of File

Create a function named *tail* that takes filename and number of lines k as input and returns the list of last k lines in the file. Include a main program to test your function.