Experiment 13-14

Objective(s): To implement greedy and dynamic programming algorithms for solving tree vertex splitting and matrix chain multiplication problems.

Brief Theory:

Tree Vertex Splitting (TVS) Problem: Given a directed and weighted tree T(V, E, W) and a tolerance limit, the TVS problem is to find the subset X (with minimum cardinality) of V such that each vertex of X will be split to fulfil the tolerance limit.

Matrix Chain Multiplication (MCM) Problem: Given a chain of matrices (A_1, A_2, …, A_n) where A_i has the dimension $p_{i-1} \times p_i$, the MCM problem is to fully parenthesize the their product so that the total scalar multiplication is minimum.

Task: 1) Write a program to solve the TVS problem

Task: 2) Write a program to solve the MCM problem

Apparatus and components required: Computer with C or C++ Compiler and Linux platform.

Experimental/numerical procedure: Coding, compilation, editing, run and debugging.

Observation table and calculations based on observations: Not Applicable.