CSP214 TASKs #8

Tasks 8.1 : Implement and analyze the comparative time complexity of the following Pattern Matching Algorithms:

1) Naive String Matching Algorithm
2) Knuth-Morris-Pratt Algorithm
3) Robin-Karp Algorithm

Form each of the implemented algorithm display value of the following relevant feasible parameters: the valid and invalid shifts, spurious hit, Prefix Function and any other relevant parameters related to respective algorithm.

Task 8.2 : Write a program to find a shortest path from a given source S vertex to each vertex V of a given graph G(V,E). Assume that the graph contains edge weight that may be negative. Determine all the paths with its path cost. You may take random weighted graph.

Note:

1. Make and use a function to generate graph dynamically and randomly for the given Tasks.
2. Create the program profile and analyze the running time. Compile your code for doing the performance evaluation by using gprof.
3. Write your program using modules and multi-file programming approach i.e. your program file divided into multiple files and programs into modules.