COSC 2007: Data Structure II

Assignment#3

Exercise1

Write the details algorithm and convert into java code for the solution of the following problem

In this assignment, you are given a following table. You implement the table as an ADT by following methods.

1- Array based implementation
2- Reference based implementation
3- Binary search tree-based implementation

You implement following TABLE ADT operations

a) Insert a new item into a table
b) Delete the item with a given search key from a table
c) Retrieve the item with a given search key from a table

City	Country	Population
Athens	Greece	2,500,000
Barcelona	Spain	1,800,000
Cairo	Egypt	9,500,000
London	England	9,400,000
New York	U.S.A.	7,300,000
Paris	France	2,200,000
Rome	Italy	2,800,000
Toronto	Canada	3,200,000
Venice	Italy	300,000

Methods/Functions: You can design insert( ), delete( ) and retrieve( ) methods to describe table as an ADT.

Output: You should display the output for all methods.

Exercise 2

Write the details algorithm and convert into java code for the solution of Dijkstra's Algorithm

(*Implement Dijkstra's algorithm using an adjacency matrix*) The text implements Dijkstra's algorithm using lists for adjacent edges. Implement the algorithm using an adjacency matrix for weighted graphs.

Strategies to be used:

- Dijkstra's Algorithm

Methods/Functions: You can define any number of methods as you like but use the adjacency matrix concept.

Input: The input graph should be more than 6 vertices.

Output: The output should be the shortest path

What to submit: The submissions are Exercise1 and Exercise2.

How to submit an Assignment: You can prepare a document either text file or pdf file. Course name, Student name, and student number should be written at the top of a report. You can submit assignment through Assignment#3 from your Moodle account. You have to submit java source files too.

Submission Due: The submission due is March 16, 2024.

Submission Report Format:

Assignment1

<Course Name>

<Student Name>

<Student Number>

Exercise No

<Type the question here>

Algorithm/ Pseudocode

Code

Output

Conclusion

Note: Also submit Java source code