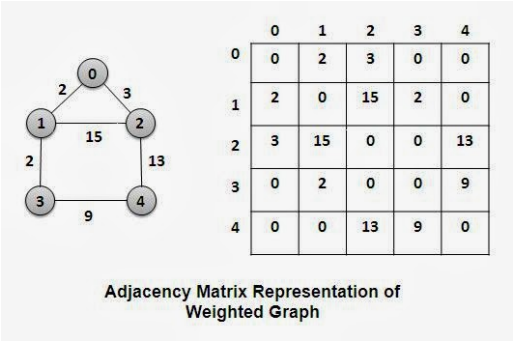
CS333 –Analysis of Algorithms
Spring 2018-Homework 1

In this assignment you are going to implement Prim's and Kruskal's Algorithm in JAVA to find the minimum cost spanning tree in a given undirected weighted graph.

We will use the adjacency matrix of weighted graph to represent the graph as follows:



	0	1	2	3	4
0	0	2	3	0	0
1	2	0	15	2	0
2	3	15	0	0	13
3	0	2	0	0	9
4	0	0	13	9	0

Adjacency Matrix Representation of Weighted Graph

The value in (i,j) position in this square matrix indicates the cost of the edge that connects Node i and Node j.

A template code named Graph.java is given to you to use for this implementation. You should write two **methods** "**public static void** Prim()" and "**public static void** Kruskal()" to complete the given template code and print the results. Consider that in your implementation you must at least achieve O(n^2) for Prim's Algorithm and O(n^3) for Kruskal's Algorithm (n is the number of nodes).Your code will be tested with different graphs(inputs), Two different graphs are given in the template code that you may test your program with.

IMPORTANT:

Submission: Upload a single file named **Graph.java** on LMS. **Submissions with different names will be disregarded!**

Warning: This homework is an individual assignment. DO NOT GIVE/TAKE YOUR JAVA CODE TO/FROM OTHERS. Your Java programs are checked and compared against each other using automated tools.

The code that does not compile (i.e. that has "red-colored" errors) will receive 0 points.

Also:

- Name your Java file exactly as requested. For example, if you are asked for a class file named **Graph.java**, you should not submit a file named **Graphs.java**
- Make sure that your program runs and gives the **expected output**
- **Do not create your files within a package, i.e., your code should NOT include a statement at top that reads as *package ...;***
- The first lines of your code must include your name, surname, student number, and department as a **comment**. An example comment is as follows:
  / John Smith S0001 Department of Industrial Engineering */*
- Submit **.java files** only. Do NOT submit .rar, .zip, .doc, .class, etc. files.

For your questions please contact us by email with the subject **''CS333-HW1''** and DO NOT keep your questions close to the due time.

Good Luck,