Assignment 2

Problem 1:

You are given an undirected graph $G = (V, E)$, where elements of the vertex set V are $1, 2, 3, 4$, and 5. The graph is fully connected. The adjacency matrix, and the cost matrices are:

$$A = \begin{bmatrix} 0 & 1 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{bmatrix}$$

$$C = \begin{bmatrix} \infty & 3 & 4 & 5 & 6 \\ 3 & \infty & 1 & 4 & 2 \\ 4 & 1 & \infty & 5 & 7 \\ 5 & 4 & 5 & \infty & 3 \\ 6 & 2 & 7 & 3 & \infty \end{bmatrix}$$

Find the list of edges in the minimum-spanning-tree (MST). Also find the cost of the MST.

Use Prim's algorithm to develop a code to find MST in **any high-level language** you want. You can use either C, or C++, or Java, etc. You can use the pseudo-code given in the handout on *Graph Algorithms*. You are also permitted to use another source (or book) to code this algorithm. However, mention the source of your code. Test your code against the given problem.

You should submit:

- A hard copy of your code. *Soft copies are not acceptable.*

- Test result (printed output) when you use the above graph.