Exercises

1.- Consider the weighted graph with vertices V = {1, 2, 3, 4, 5} and weighting matrix:

$$\begin{bmatrix} \infty & 4 & 1 & \infty & 9 \\ \infty & \infty & \infty & \infty & \infty \\ \infty & 2 & \infty & 3 & \infty \\ \infty & \infty & \infty & \infty & 4 \\ 5 & \infty & 5 & \infty & \infty \end{bmatrix}$$

a) Compute the weight of the shortest path between every pair of vertices using Floyd-Warshall's method.
b) Using the matrices obtained form Floyd-Warshall's method, identify the shortest path from vertex 1 to 5. (Sol. 1-3-4-5, weight 8)
c) Compute the shortest path from vertex 4 to 2 and its weight, with the restriction of not containing the vertex 3 as internal. (Sol. 4-5-1-2, weight 13)

Exercises

2.- Use Dijkstra's algorithm to find a shortest path and its weight between the vertices a and z in the weighted graph displayed in Figure 3.

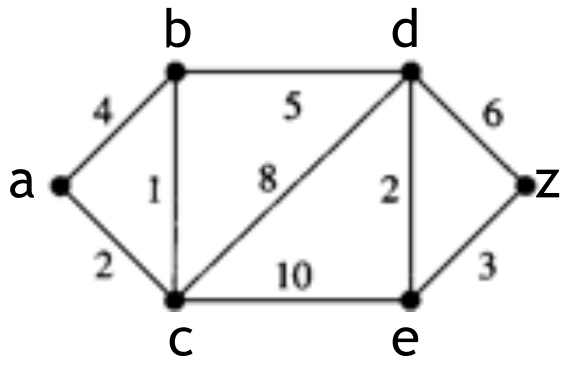

FIGURE 3

Sol. : A shortest path from a to z is a , c, b, d, e, z, with length 13.