**Problem 4**

Topological sort can be found using following algorithm:

1) remove all the vertices in the graph that have 0 incoming edges

2) after removing all the edges of such vertices, count the incoming edges of the remaining vertices

3) repeat the above steps on the remaining vertices until no node is left

Since there can be multiple vertices with 0 incoming edges, hence it is our choice which vertex to remove first. Hence, such choices give rise to different topological sorts of a graph.

For the given graph, we get total 6 different sorts:

**a 🡪 b 🡪 c 🡪 d 🡪 e 🡪 f**

**a 🡪 b 🡪 d 🡪 e 🡪 c 🡪 f**

**a 🡪 b 🡪 d 🡪 c 🡪 e 🡪 f**

**a 🡪 d 🡪 b 🡪 e 🡪 c 🡪 f**

**a 🡪 d 🡪 e 🡪 b 🡪 c 🡪f**

**a 🡪 d 🡪 b 🡪 c 🡪e 🡪 f**