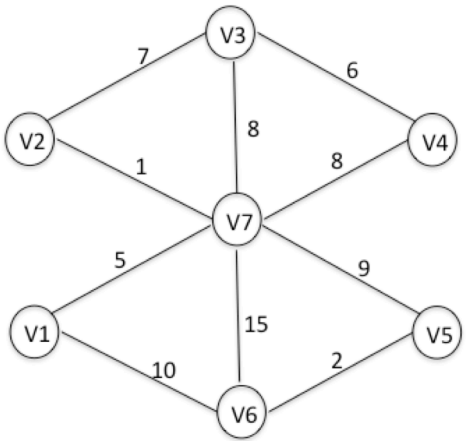
CS214 – Lab9 (Week11):
On Greedy Algorithms

Objective:

- To develop working knowledge of the concepts learned from Lectures
- To appreciate algorithm design with Greedy Algorithms
- To develop algorithmic thinking in programming simple algorithms

Activities:

Consider the graph below



1. List the sequence of vertices and edges added using the Prim's and Kruskal's algorithm to construct a minimum spanning tree. Choose v1 as the starting vertex in the Prim's algorithm.
2. List the sequence of vertices and edges added using Dijkstra's algorithm to determine the shortest paths from v2 to all other vertices.
3. Compare the three algorithms used in Activities 1&2 above. Program the steps you taken in applying the three algorithms and compare the actual run time.

Optional exercises

Given below are adjacency matrices for 2 graphs

(A)

0	5	6	∞
5	0	2	3
6	2	0	∞
∞	3	∞	0

(B)

0	32	17	∞	∞	∞
32	0	∞	45	∞	∞
17	∞	0	10	3	∞
∞	45	10	0	∞	25
∞	∞	3	∞	0	4
∞	∞	∞	25	4	0

1. List the sequence of vertices and edges added using the Prim's and Kruskal's algorithm to construct a minimum spanning tree.

2. List the sequence of vertices and edges added using Dijkstra's algorithm to determine the shortest paths from vertex 1 to all other vertices.