

Graphs

Exercise

Give the formal description of the directed graph below.



$G_9 = (V_9, E_9)$
 $V_9 = \{1, 2, 3, 4, 5, 6\}$
 $E_9 = \{(1, 2), (1, 5), (2, 1), (2, 4), (3, 1), (4, 5), (5, 6), (6, 1), (6, 3)\}$

Graph G_9

Indegree:

Outdegree:

1 is 2

1 is 2

2 is 1

2 is 2

3 is 1

3 is 0

4 is 2

4 is 0

5 is 1

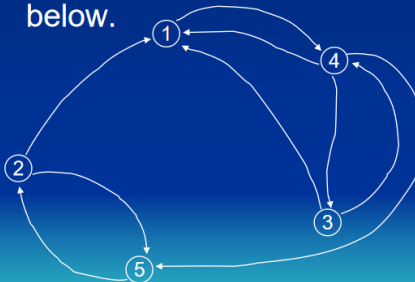
5 is 1

6 is 1

6 is 2

Exercise

Give the formal description of the directed graph below.



$G_{10} = (V_{10}, E_{10})$
 $V_{10} = \{1, 2, 3, 4, 5\}$
 $E_{10} = \{(1, 2), (2, 1), (2, 5), (3, 1), (3, 4), (4, 1), (4, 3), (4, 5), (5, 2)\}$

Graph G_{10}

Indegree:

Outdegree:

1 is 3

1 is 1

2 is 1

2 is 2

3 is 1

3 is 2

4 is 2

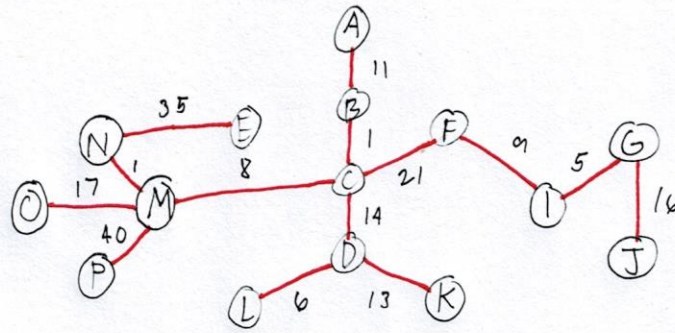
4 is 3

5 is 2

5 is 1

Kruskal's algorithm

$$\begin{aligned}
 w(B,C) &= 1 \\
 w(M,N) &= 1 \\
 w(G,I) &= 5 \\
 w(D,L) &= 6 \\
 w(C,M) &= 8 \\
 w(F,I) &= 9 \\
 w(A,B) &= 11 \\
 w(D,K) &= 13 \\
 w(C,D) &= 14 \\
 w(G,J) &= 16 \\
 w(M,O) &= 17 \\
 w(C,F) &= 21 \\
 w(E,N) &= 35 \\
 w(M,P) &= 40 \\
 \hline
 197
 \end{aligned}$$

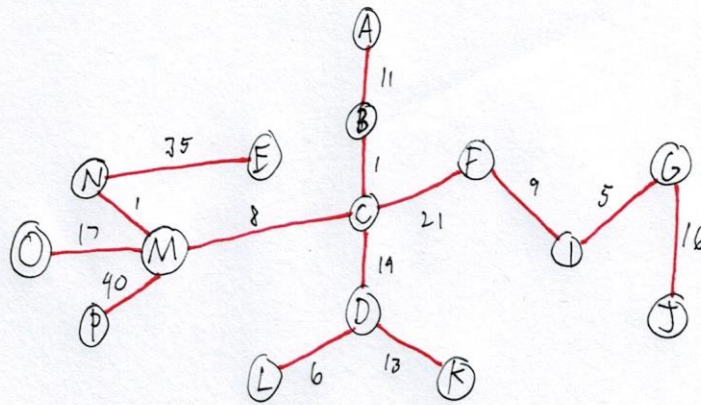


Graph G₂₉

Cost of the minimum spanning tree = 197

Prim's Algorithm

$$\begin{aligned}
 w(A,B) &= 11 \\
 w(B,C) &= 1 \\
 w(C,M) &= 8 \\
 w(M,N) &= 1 \\
 w(M,O) &= 17 \\
 w(E,N) &= 35 \\
 w(M,P) &= 40 \\
 w(C,D) &= 14 \\
 w(D,L) &= 6 \\
 w(D,K) &= 13 \\
 w(C,F) &= 21 \\
 w(F,I) &= 9 \\
 w(G,I) &= 5 \\
 w(G,J) &= 16 \\
 \hline
 197
 \end{aligned}$$



Graph G₂₉

Cost of the minimum spanning tree = 197