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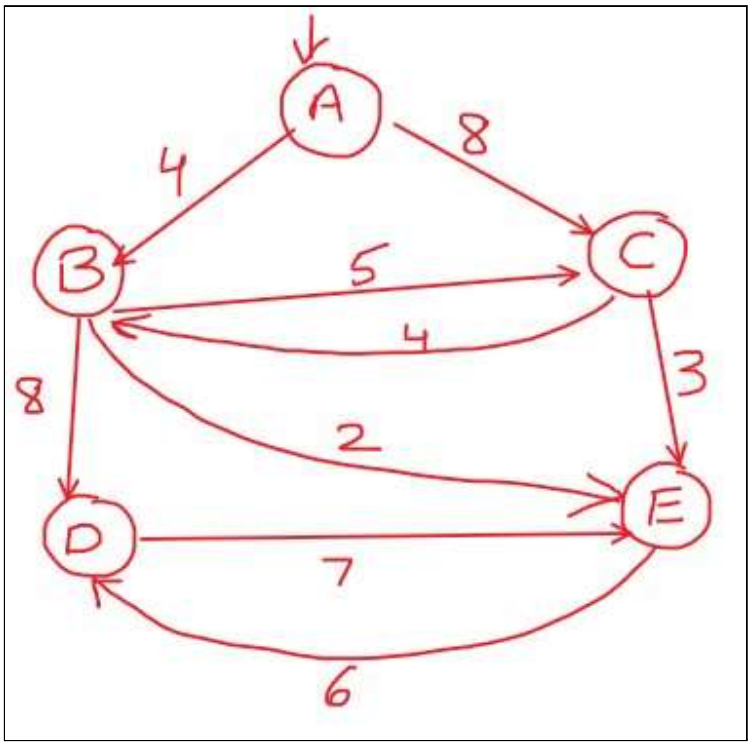
SECMPNB

EXPERIMENT 5

Aim: Write a program to find **Single Source Shortest Path** for a directed graph using **Greedy** Technique

Problem statement:
Write a program to solve the Single Source shortest path problem using Dijkstras algorithm.

Input: Graph as a cost adjacency matrix for the below graph, with source as node A.



Output:
Display the final cost of travelling to all the other nodes.
Also display the path to each node from A.

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(Paste your code and output below)
Code:

```
#include<stdio.h>
#include<conio.h> #define INF 1000 void
dijk(int s,int n,int cost[10][10],int dist[10])
{       int i,u,count,v,visited[10],min;
        for(i=1;i<=n;i++)
        {
                visited[i]=0,dist[i]=cost[s][i];
        } count=2;
        while(count<=n
        )
        { min=99;
                for(v=1;v<=n;v++
                )
        { if(dist[v]<min && !visited[v])
                        {min=dist[v],u=v; }
                } visited[u]=1;
                count++;
                for(v=1;v<=n;v++
                )
                {       if(dist[u]+cost[u][v]<dist[v] && !visited[v])
                        {
                                dist[v]=dist[u]+cost[u][v];
                        }
                }
        }
}
int main()
{
        int v,n,s,cost[10][10],i,dist[10],j;
        printf("Enter no. of nodes: ");
        scanf("%d",&n); printf("Enter
        Adjacency matrix: \n");
        for(i=1;i<=n;i++)
        {       for(j=1;j<=n;j++)
                { scanf("%d",&cost[i][j]);
                        if(cost[i][j]==0)
                         cost[i][j]=INF;
                }
        }
        printf("Enter Starting Node: \n");
        scanf("%d",&s);
```

```
        dijk(s,n,cost,dist);
        printf("Shortest path: \n");
        for(v=1;v<=n;v++)
        {       if(v!=s)
          {     printf("%c->%c=%d\n",64+s,64+v,dist[v]);
          }
        }
        getch();
        return 0;
}
```

Output: