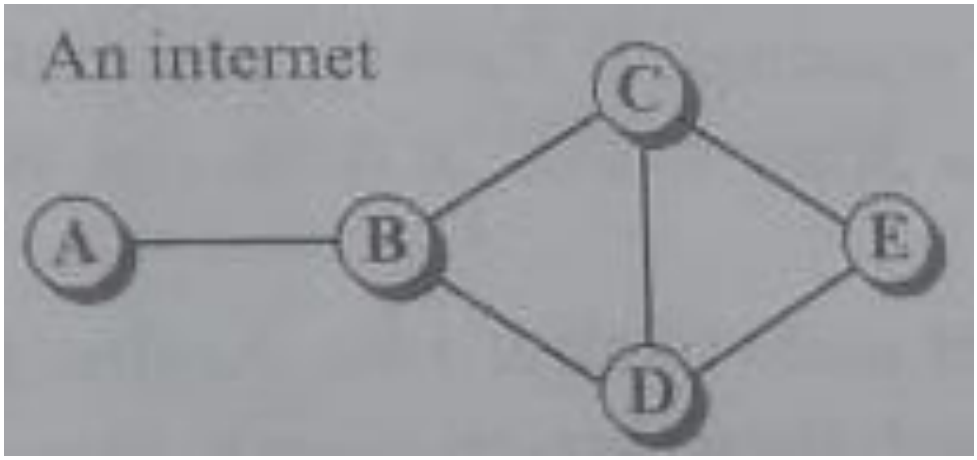
Bijay REGMI (210913032)

WEEK - 2




```
#include<stdio.h>
#include<stdlib.h>
#include<ctype.h>

#define INFINITY 999

int n;
int c[100][100];

void inputMatrix(){
          printf("\nEnter the adjacency matrix : \n");
   int i,j;
   for(i=0; i<n; i++){
      for(j=0; j<n; j++){
         scanf("%d",&c[i][j]);
      }
   }
}

void displayMatrix(){
   int i,j;
   printf("\nAdjacent Matrix : \n");

   for(i=0; i<n; i++){
      for(j=0; j<n; j++){
         printf("       %d",c[i][j]);
```

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    }
    printf("\n");
  }
}

void PVR(int startnode,int destnode, int exception){

        int distance[100],pred[100];
        int visited[100],count,mindistance,nextnode,i,j;

        // //initialize pred[],distance[] and visited[]
        for(i=0;i<n;i++)
        {
                distance[i]=c[startnode][i];
                pred[i]=startnode;
                visited[i]=0;
        }
        distance[startnode]=0;
        visited[startnode]=1;
        count=1;
        while(count<n-1)
        {
                mindistance=999;
                //nextnode gives the node at minimum distance
                for(i=0;i<n;i++){
                        if(distance[i]<mindistance&&!visited[i])
                        {
                                mindistance=distance[i];
                                nextnode=i;
                        }
                }
                //check if a better path exists through nextnode
                visited[nextnode]=1;
                for(i=0;i<n;i++){
                        if(!visited[i]){
                                if(mindistance+c[nextnode][i]<distance[i])
                                {
                                        distance[i]=mindistance+c[nextnode][i];
                                        pred[i]=nextnode;
                                }
                        }
                }
                count++;
        }
        int e;
        //print the path and distance of each node
        for(i=startnode;i<=destnode;i++){
```

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                // If exception is there
                if(i!=startnode && i!=exception)
                {
                        printf("\nPath to %c   :   %c", i+65, i+65);
                        j=i;
                        while(j!=startnode)
                        {
                                j=pred[j];
                                printf("<-%c",j+65);
                        }
                }
        }
        printf("\n");
}

int main(){
   int source,destn,exception;
   char s,d,e;

   printf("Enter the number of nodes : ");
   scanf("%d",&n);

   inputMatrix();
   displayMatrix();

   printf("\nEnter the source Node : ");
   scanf(" %c",&s);
   printf("\nEnter the destination Node : ");
   scanf(" %c",&d);

   source = ((int)toupper(s))-65;
        destn = ((int)toupper(d))-65;

   // Path Vector Routing
   PVR(source, destn, -1);


   printf("\n\nEnter the Node not to be visited : ");
   scanf(" %c",&e);
        exception= ((int)toupper(e))-65;

   // Deleting row and column
   int i;
   for(i=0;i<n;i++){
      c[i][exception] = 999;
      c[exception][i] = 999;
   }
```

```
    // Path Vector Routing
    PVR(source, destn, exception);

    return 0;
}
```