DSA LAB – 11

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Question 1:

Code:

```
#include<bits/stdc++.h>
using namespace std;

//define number of vertices of graph
#define vertex 7

int main () {
   // create a 2D array of size (vetex * vertex)
   // This array is adjacency matrix representation of graph
   int graph[vertex][vertex] = {
      {0,28,0,0,0,10,0},
      {28,0,16,0,0,0,14},
      {0,16,0,12,0,0,0},
      {0,0,12,22,0,18},
      {0,0,0,22,0,25,24},
      {10,0,0,0,25,0,0},
      {0,14,0,18,24,0,0}
   };
   // number of edge declaration
   int line = 0;
   // an array declaration to keep checking on if a vertex is visited or not
   int node_visited[vertex];
   // the array is bool type all elements declared to false
   for(int i = 0; i < vertex; i++){
      node_visited[i]=false;
   }
   // the element becomes true if the vertex is visited
   node_visited[0] = true;

   int row, column;
   cout << "------------------\n";
   cout << "Edge\t : Weight\n";
   cout << "------------------\n";
   while (line < vertex - 1){
      int minimum = INT_MAX;
      row = 0, column = 0;
      for (int i = 0; i < vertex; i++){
         if (node_visited[i]){
            for (int j = 0; j < vertex; j++){
               if (!node_visited[j] && graph[i][j]){
                  if (minimum > graph[i][j]) {
                     minimum = graph[i][j];
                     row = i;
                     column = j;
                  }
               }
            }
         }
      }
      cout << row <<  " ---> " << column << " :  " << graph[row][column] << endl;
      node_visited[column] = true;
      line++;
   }
   cout << "------------------\n";
   return 0;
}
```

Input & Output:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\DELL\OneDrive\Desktop\Labs> cd "c:\Users\DELL\OneDrive\Desktop\Labs\DSA LAB\LAB 11\" ; if ($?) { g++ 1.cpp -o 1 } ; if ($?) { .\1 }
------------------
Edge     : Weight
------------------
0 ---> 5 :  10
5 ---> 4 :  25
4 ---> 3 :  22
3 ---> 2 :  12
2 ---> 1 :  16
1 ---> 6 :  14
------------------
PS C:\Users\DELL\OneDrive\Desktop\Labs\DSA LAB\LAB 11>
```