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**ISLAMABAD  
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## **DATA STRUCTURE (CS13217)**

### **Lab Report**

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# Experiment # 1

## Implementing Tower of Hanoi Problem

### Objective

To understand and implement the Graph adjacency matrix.

### Software Tool

1.

dev c++

## 1 Theory

This algorithm takes the input of the number of vertex 2. For each pair of vertex ask user whether they are connect or not. 3 Print the adjacency matrix and last 4 Exit

.

## 2 Task

### 2.1 procedure: Task 1

```
#include<iostream>
#include<iomanip>
using namespace std;
void print_array(int arr[][20],int a)
{
    int c;
    int d;
    cout<<"\n\n"<<setw(4)<<" ";
    for (c=0;c<a;c++)
    {
        cout<<setw(3)<<" ("<<c+1<<" )";
```

```

        cout<<"\n\n";
    }
    for ( c=0;c<a; c++)
    {
        cout<<setw(3)<<" ("<<c+1<<" )";
        for ( d=0;d<a; d++)
        {
            cout<<setw(4)<<arr [ c ] [ d ];

        }
        cout<<"\n\n";
    }
}
int main()
{
    int a,b,k;
    cout<<"enter _number_of_vertices";
    cin>>k;
    int arr [ 20 ] [ 20 ];
    cout<<"\n";
    for ( a=0;a<k; a++)
    {
        for ( b=a; b<k; b++)
        {
            if ( a!=b)
            {
                cout<<"enter _if _the _vertex _"<<a+1<<" is _";
                cin>>arr [ a ] [ b ];
                arr [ b ] [ a ]=arr [ a ] [ b ];

            }
            else
                arr [ a ] [ b ]=0;
        }
    }
    print_array ( arr , k)
}

```

### 3 Conclusion

In this lab we perform adjacency matrix that which vertex connected to which vertex and display in matrix form.