



THE UNIVERSITY
OF LAHORE
**ISLAMABAD
CAMPUS**

DATA STRUCTURE AND ALOGRITHUM

Lab Report

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Experiment # 1

ADJANCY MATRIX

Objective

To understand the implementation of adjancy matrix.

Software Tool

1.

DEV C++

1 Theory

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

2 Task

2.1 Procedure: Task 1

```
#include<iostream>
#include<iomanip>

using namespace std;

// A function to print the adjacency matrix.
void PrintMat(int mat[][20] , int n)
{
    int i , j;

    cout<<"\n\n"<<setw(4)<<" ";
    for(i = 0; i < n; i++)
        cout<<setw(3)<<" ("<<i+1<<" ) ";
    cout<<"\n\n";
```

```

C:\Users\SAMI\Documents\graph.exe
Enter the number of vertexes: 5
Enter 1 if the vertex 1 is adjacent to 2, otherwise 0: 0
Enter 1 if the vertex 1 is adjacent to 3, otherwise 0: 1
Enter 1 if the vertex 1 is adjacent to 4, otherwise 0: 0
Enter 1 if the vertex 1 is adjacent to 5, otherwise 0: 1
Enter 1 if the vertex 2 is adjacent to 3, otherwise 0: 0
Enter 1 if the vertex 2 is adjacent to 4, otherwise 0: 0
Enter 1 if the vertex 2 is adjacent to 5, otherwise 0: 1
Enter 1 if the vertex 3 is adjacent to 4, otherwise 0: 1
Enter 1 if the vertex 3 is adjacent to 5, otherwise 0: 1
Enter 1 if the vertex 4 is adjacent to 5, otherwise 0: 1

(1) (2) (3) (4) (5)
(1) 0 0 1 0 1
(2) 0 0 0 0 1
(3) 1 0 0 1 1
(4) 0 0 1 0 1
(5) 1 1 1 1 0

.....
Process exited after 19.56 seconds with return value 0
Press any key to continue . . .

```

Figure 1: Time Independent Feature Set

```

// Print 1 if the corresponding vertexes are connected otherwise 0
for(i = 0; i < n; i++)
{
    cout<<setw(3)<<" ("<<i+1<<" )";
    for(j = 0; j < n; j++)
    {
        cout<<setw(4)<<mat[i][j];

    }
    cout<<"\n\n";
}

int main()
{
    int i, j, v;

    cout<<"Enter the number of vertexes: ";
    cin>>v;

    int mat[20][20];

    cout<<"\n";
    // Take input of the adjacency of each pair of vertexes.
    for(i = 0; i < v; i++)

```

```

    {
        for(j = i; j < v; j++)
        {
            if(i != j)
            {
                cout<<"Enter 1 if the vertex "<<i+1<<" is
                cin>>mat[i][j];

                mat[j][i] = mat[i][j];
            }
            else
                mat[i][j] = 0;
        }
    }

    PrintMat(mat, v);
}

```

3 Conclusion

in this lab we perform adjancy matrix that which vertex connected to which vertex and dispaly them in matrix form