

## Assignment No 1

### Code

#### BFS :

```
#include <iostream>
#include <vector>
#include <queue>
using namespace std;
int main(){

    int v=0, e=0;
    cout << "Enter Number of vertices: ";
    cin >> v;
    cout << "Enter Number of Edges: ";
    cin >> e;

    vector<vector<int>> adj(v);

    cout << "Enter edges (source destination):\n";
    for (int i = 0; i < e; i++) {
        int s, d;
        cin >> s >> d;
        adj[s].push_back(d);
        adj[d].push_back(s);
    }

    vector<bool> visited(v,false);

    queue<int> q;
    q.push(0);
    visited[0]=true;

    cout<<"BFS : ";

    while(!q.empty()){
        int curr=q.front();
        q.pop();
        cout<<curr<<" ";

        for(auto i:adj[curr]){
            if(!visited[i]){
```

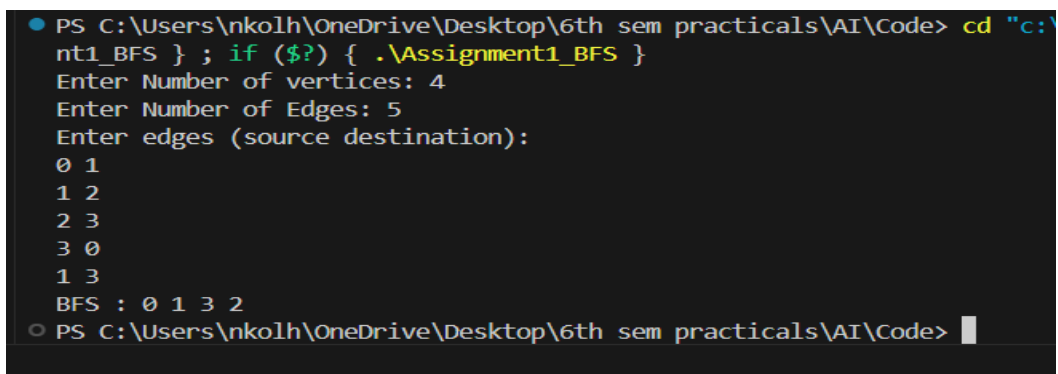
```

        visited[i]=true;
        q.push(i);
    }
}

return 0;
}

```

Output :-



```

PS C:\Users\nkolh\OneDrive\Desktop\6th sem practicals\AI\Code> cd "c:\
nt1_BFS } ; if ($?) { .\Assignment1_BFS }
Enter Number of vertices: 4
Enter Number of Edges: 5
Enter edges (source destination):
0 1
1 2
2 3
3 0
1 3
BFS : 0 1 3 2
PS C:\Users\nkolh\OneDrive\Desktop\6th sem practicals\AI\Code>

```

## DFS :

```

#include <iostream>
#include <vector>
#include <queue>
using namespace std;
void DFS(int node, vector<vector<int>> &adj, vector<bool> &visited) {
    cout << node << " ";
    visited[node] = true;

    for (int neighbor : adj[node]) {
        if (!visited[neighbor]) {
            DFS(neighbor, adj, visited);
        }
    }
}

int main(){

    int v=0, e=0;

```

```

cout << "Enter Number of vertices: ";
cin >> v;
cout << "Enter Number of Edges: ";
cin >> e;

vector<vector<int>> adj(v);

cout << "Enter edges (source destination):\n";
for (int i = 0; i < e; i++) {
    int s, d;
    cin >> s >> d;
    adj[s].push_back(d);
    adj[d].push_back(s);
}

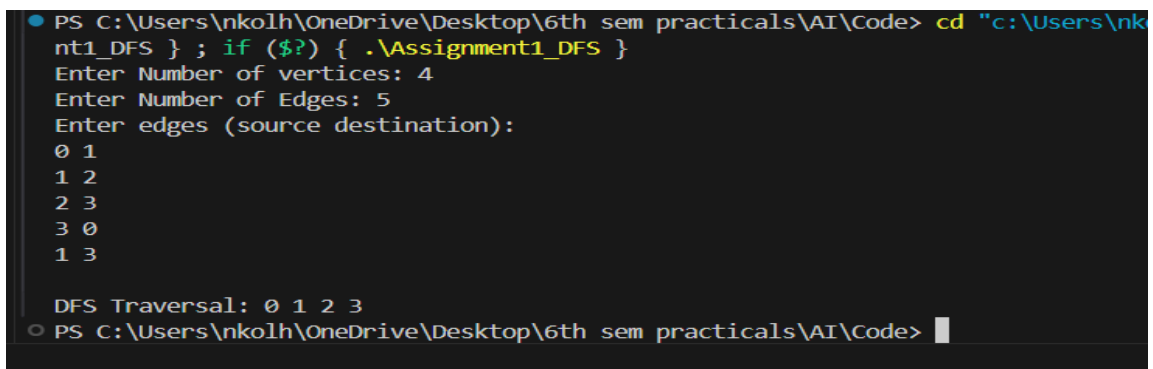
vector<bool> visited(v,false);

cout << "\nDFS Traversal: ";
DFS(0, adj, visited);

return 0;
}

```

Output :-



```

PS C:\Users\nkolh\OneDrive\Desktop\6th sem practicals\AI\Code> cd "c:\Users\nkolh\OneDrive\Desktop\6th sem practicals\AI\Code" & .\Assignment1_DFS.exe
Enter Number of vertices: 4
Enter Number of Edges: 5
Enter edges (source destination):
0 1
1 2
2 3
3 0
1 3

DFS Traversal: 0 1 2 3
PS C:\Users\nkolh\OneDrive\Desktop\6th sem practicals\AI\Code>

```