Ethical Hacking and Vulnerability Assessment

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Practical 9

OBJECTIVE

- Attack graph implementation and generating attack paths

INTRODUCTION

An attack graph is a succinct representation of all paths through a system that end in a state where an intruder has successfully achieved his goal. An attack path is the identification of one or more vulnerabilities that can be exploited by attackers to gain access to specific assets and move between them in a network, thus, forming an exploitable path between the assets.

Here I have implemented attack graph in c++ language.

CODE:

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

int n,e,st,en;
map<int,string> mp;
vector<int> attack_graph[100];
vector<vector<int>> paths;
bool vis[100];
void find_path(int v,vector<int> &p){
    if(v==en){
        p.push_back(v);
        paths.push_back(p);
        p.pop_back();
        return;
    }
    p.push_back(v);
    vis[v] = true;
    for(auto &x:attack_graph[v]){
        if(!vis[x]){
            find_path(x,p);
        }
    }
    vis[v] = false;
    p.pop_back();
}
```

```
int main(){
    printf("Enter number of nodes : ");scanf("%d",&n);
    for(int i=0;i<n;i++){
        string s;
        printf("Node %d : ",i);
        cin>>s;
        mp[i] = s;
    }
    printf("\nEnter number of edges : ");scanf("%d",&e);
    printf("Enter %d conncetions : \n",e);
    for(int i=0;i<e;i++){
        int s,d;
        printf("Edge %d : ",i+1);
        scanf("%d%d",&s,&d);
        attack_graph[s].push_back(d);
    }

    printf("\n ++ For Attack Path ++\n");
    printf("Enter source and destination node : ");
    scanf("%d%d",&st,&en);
    printf("\n");
    vector<int> p;
    memset(vis,false,sizeof(vis));
    find_path(st,p);
    if(paths.size()==0) printf("NO path found!!\n");
    else{
        for(auto &x:paths){
            for(auto &y:x){
                cout<<mp[y]<<" ";
            }
            printf("\n");
        }

        printf(" Total %d paths found",paths.size());
    }
    return 0;
}
```

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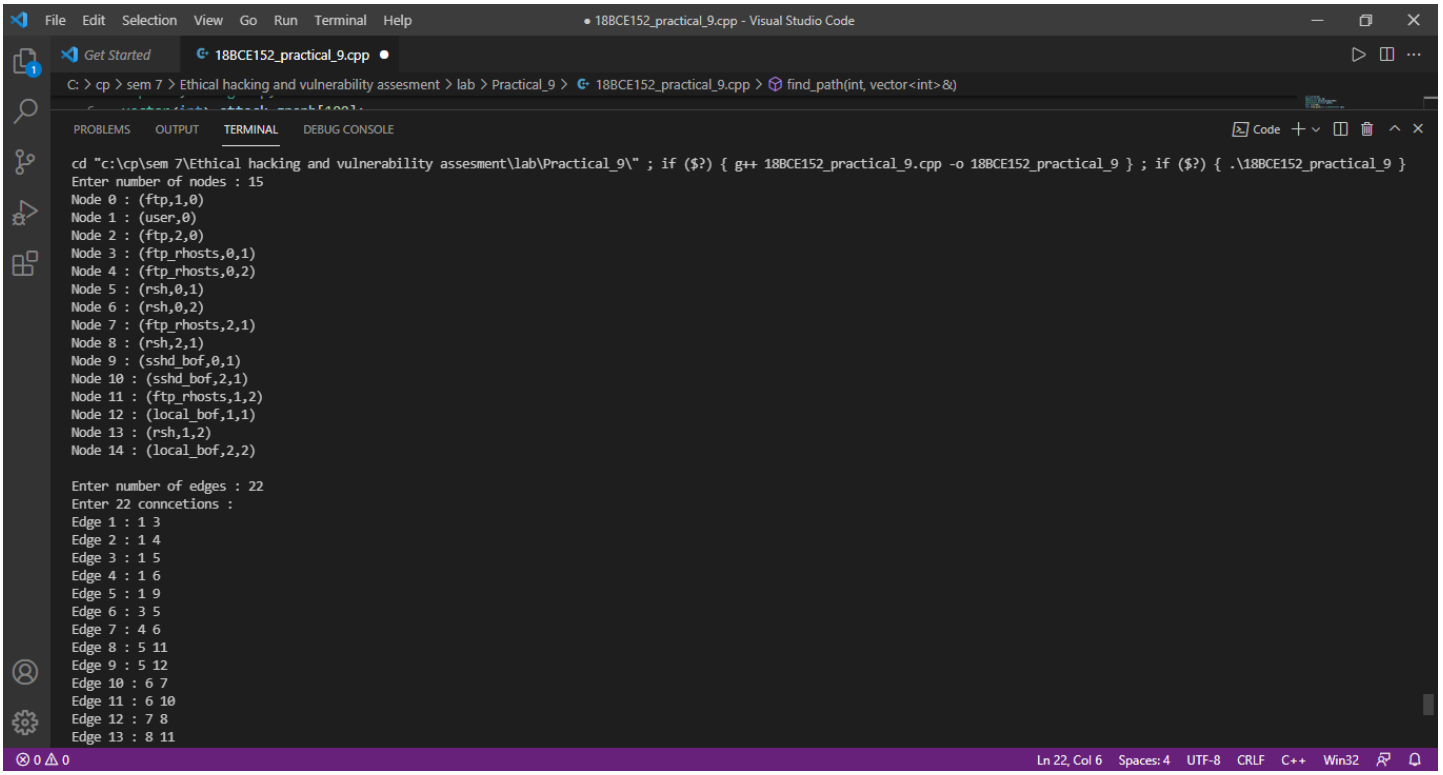

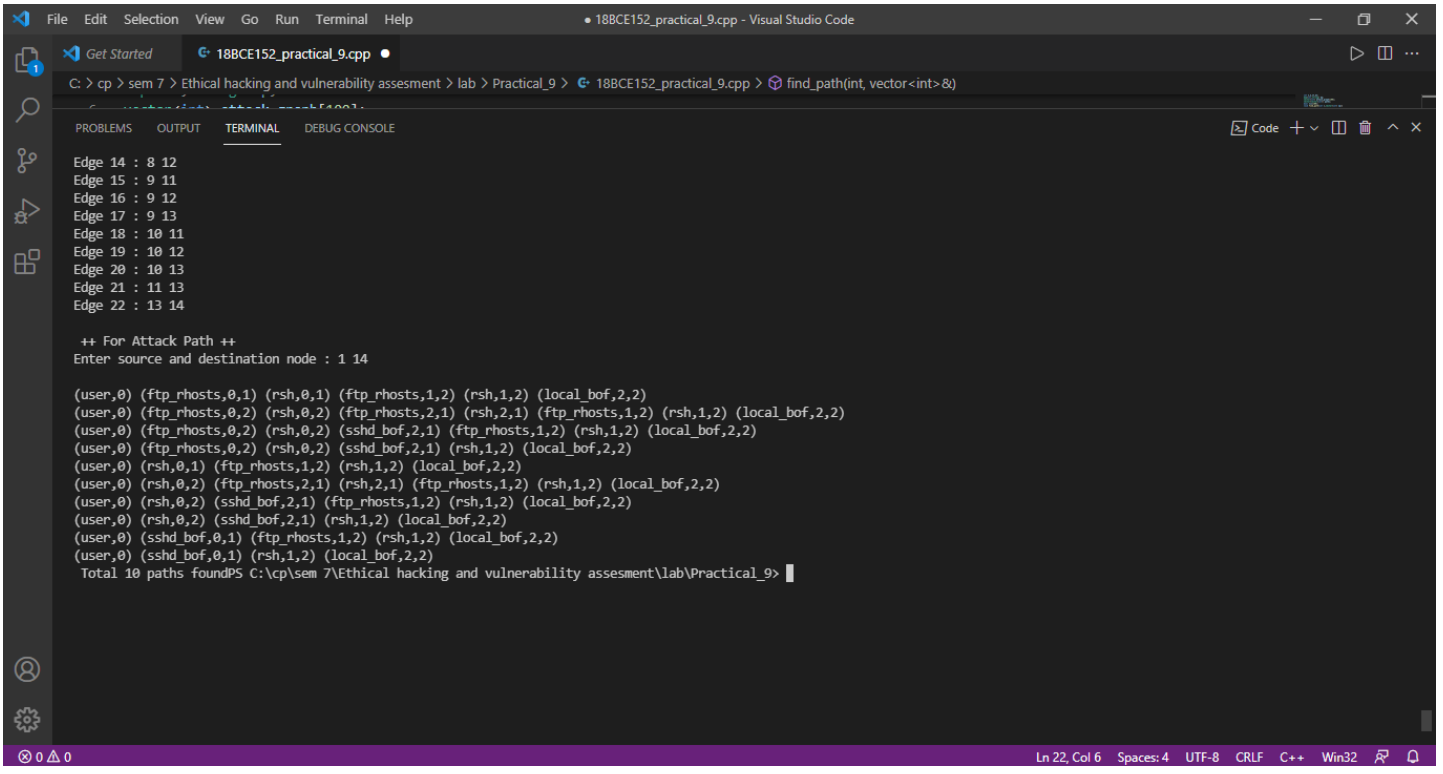

CONCLUSION

In this practical we gain knowledge about attack graph and attack paths. Also learn implementation of attack graph.