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**Topic: Depth First Search**

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**#include<stdio.h>**

**#include<stdlib.h>**

**#define max 100**

**int adj[max][max], n;**

**int top = -1;**

**int s1[max];**

**int s2[max];**

**void push(int v)**

**{**

**if(top == (max-1))**

**{**

**printf("\nStack Overflow\n");**

**return;**

**}**

**top=top+1;**

**s2[top] = v;**

**}**

**int pop()**

**{**

**int v;**

**if(top == -1)**

**{**

**printf("\nStack Underflow\n");**

**exit(1);**

**}**

**else**

**{**

**v = s2[top];**

**top=top-1;**

**return v;**

**}**

**}**

**int check\_stack( )**

**{**

**if(top == -1)**

**return 1;**

**else**

**return 0;**

**}**

**void create\_graph()**

**{**

**int i,max\_edges,orig,dest;**

**printf("\nEnter the number of nodes : ");**

**scanf("%d",&n);**

**max\_edges=n\*(n-1);**

**for(i=1;i<=max\_edges;i++)**

**{**

**printf("\nEnter edge %d( -1 -1 to quit ) : ",i);**

**scanf("%d %d",&orig,&dest);**

**if( (orig == -1) && (dest == -1) )**

**break;**

**if( orig >= n || dest > n || orig<0 || dest<0)**

**{**

**printf("\nInvalid edge!\n");**

**i--;**

**}**

**else**

**{**

**adj[orig][dest] = 1;**

**adj[dest][orig] = 1;**

**}**

**}**

**}**

**void dfs(int v)**

**{**

**int i;**

**push(v);**

**while(!check\_stack())**

**{**

**v = pop();**

**if(s1[v]==1)**

**{**

**printf("%d ",v);**

**s1[v]=2;**

**}**

**for(i=n; i>=0; i--)**

**{**

**if(adj[v][i]==1 && s1[i]==1)**

**push(i);**

**}**

**}**

**}**

**void dfs\_traversal()**

**{**

**int v;**

**for(v=0; v<=n; v++)**

**s1[v]=1;**

**printf("\nEnter starting node for Depth First Search : ");**

**scanf("%d",&v);**

**dfs(v);**

**printf("\n");**

**}**

**int main()**

**{**

**create\_graph();**

**dfs\_traversal();**

**}**