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//Created By Ritwik Chandra Pandey
//On 5th Nov' 2021
//Graph Traversal: DFS implementation
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#include<stdio.h>
#include<stdlib.h>
struct node {
    struct node *next;
    int vertex;
};
typedef struct node * GNODE;
GNODE graph[20];
int visited[20];
int n;

void DFS(int i) {
    GNODE p;
    printf("%d\n",i);

    p = graph[i];
    visited[i] = 1;
    while(p!=NULL){
        i = p->vertex;
        if(visited[i]!=1){
            DFS(i);
        }
        p = p->next;
    }

}

void main() {
    int N,E,i,s,d,v;
    GNODE q,p;
    printf("Enter the number of vertices : ");
    scanf("%d",&N);
```

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printf("Enter the number of edges : ");
scanf("%d",&E);
for(i=1;i<=E;i++) {
    printf("Enter source : ");
    scanf("%d",&s);
    printf("Enter destination : ");
    scanf("%d",&d);
    q=(GNODE)malloc(sizeof(struct node));
    q->vertex=d;
    q->next=NULL;
    if(graph[s]==NULL)
        graph[s]=q;
    else {
        p=graph[s];
        while(p->next!=NULL)
            p=p->next;
        p->next=q;
    }
}
for(i=0;i<n;i++)
    visited[i]=0;
printf("Enter Start Vertex for DFS : ");
scanf("%d",&v);
printf("DFS of graph : \n");

DFS(v);
}

```