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CSE-F

//Write a C program depth first search (DFS) using array.

```
#include <stdio.h>
#include <stdlib.h>
int source,V,E,time,visited[200],G[200][200];
void DFS(int i)
{
    int j;
    visited[i]=1;
    printf(" %d->",i+1);
    for(j=0;j<V;j++)
    {
        if(G[i][j]==1&&visited[j]==0)
            DFS(j);
    }
}
int main()
{
    int i,j,v1,v2;
    printf("\t\t\tGraphs\n");
    printf("Enter the no of edges:");
    scanf("%d",&E);
    printf("Enter the no of vertices:");
    scanf("%d",&V);
    for(i=0;i<V;i++)
    {
        for(j=0;j<V;j++)
            G[i][j]=0;
    }
    /* creating edges :P */
    for(i=0;i<E;i++)
    {
        printf("Enter the edges (format: V1 V2) : ");
        scanf("%d%d",&v1,&v2);
        G[v1-1][v2-1]=1;
    }
}
```

```

for(i=0;i<V;i++)
{
    for(j=0;j<V;j++)
        printf(" %d ",G[i][j]);
    printf("\n");
}
printf("Enter the source: ");
scanf("%d",&source);
    DFS(source-1);
return 0;
}

```

//Write a C program breath first search (BFS) using array.

```

#include<stdio.h>
int G[120][120],q[120],visited[120],n,front = 1, rear = 0 ;
void bfs(int v)
{
    int i;
    visited[v] = 1;
    for(i=1;i<=n;i++)
        if(G[v][i] && !visited[i])
            q[++rear]=i;
        if(front <= rear)
            bfs(q[front++]);
}

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

    printf("\n Enter the number of vertices:");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        q[i]=0;
        visited[i]=0;
    }
    printf("\n Enter graph data in matrix form:\n");
}

```

```
for(i=1;i<=n;i++)
    for(j=1;j<=n;j++)
        scanf("%d",&G[i][j]);
printf("\n Enter the starting vertex:");
scanf("%d",&v);
bfs(v);
printf("\n The nodes which are reachable are:\n");
for(i=1;i<=n;i++)
    if(visited[i])
        printf("%d\t",i);
    else
        printf("\n %d is not reachable",i);

return 0;
}
```