#include<stdio.h>

#include<time.h>

int array[20][20],queue[20],visited[20],n,i,j,f=0,r=-1;

void bfs(int v)

{

for(i=1;i<=n;i++)

if(array[v][i] && !visited[i])

queue[++r]=i;

if(f<=r)

{

visited[queue[f]]=1;

bfs(queue[f++]);

}

}

void main()

{

clock\_t start,end;

double time;

int v;

printf("\n Enter the number of vertices:");

scanf("%d",&n);

for(i=1;i<=n;i++)

{

queue[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",&array[i][j]);

printf("\n Enter the starting vertex:");

scanf("%d",&v);

start=clock();

bfs(v);

end=clock();

printf("\n The node which are reachable are:\n");

for(i=1;i<=n;i++)

if(visited[i])

printf("%d\t",i);

time=(double)(end-start)/CLOCKS\_PER\_SEC;

printf("\nTime taken by BFS is:%lf\n",time);

}

output:

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ gcc -o bfs bfs.c

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./bfs

Enter the number of vertices:4

Enter graph data in matrix form:

1 0 0 0

0 1 1 0

1 0 0 1

1 1 1 1

Enter the starting vertex:1

The node which are reachable are:

1

Time taken by BFS is:0.000011

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ gcc -o bfs bfs.c

[shilpa@shilpa-linux ADA\_LAB-PROG-main]$ ./bfs

Enter the number of vertices:4

Enter graph data in matrix form:

0 1 1 1

0 0 1 0

0 0 0 1

0 0 0 0

Enter the starting vertex:1

The node which are reachable are:

2 3 4

Time taken by BFS is:0.000018