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**Topic: Breadth First Search**

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**#include<stdio.h>**

**#include<stdlib.h>**

**#define max 100**

**int q[max], front = -1, rear = -1, n;**

**int adj[max][max];**

**int visited[max];**

**void push(int v)**

**{**

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

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

**else**

**{**

**if(front == -1)**

**{**

**front = 0;**

**}**

**++rear;**

**q[rear] = v ;**

**}**

**}**

**int pop()**

**{**

**int item;**

**if(front == -1 || front > rear)**

**{**

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

**exit(1);**

**}**

**item = q[front];**

**++front;**

**return item;**

**}**

**int isEmpty\_queue()**

**{**

**if(front == -1 || front > rear)**

**return 1;**

**else**

**return 0;**

**}**

**void create\_graph()**

**{**

**int count,max\_edge,orig,dest;**

**printf("Enter the number of vertices: ");**

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

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

**for(count=1; count<=max\_edge; count++)**

**{**

**printf("Enter edge %d( -1 -1 to quit ) : ",count);**

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

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

**break;**

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

**{**

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

**count--;**

**}**

**else**

**{**

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

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

**}**

**}**

**}**

**void bfs()**

**{**

**int v, i;**

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

**{**

**visited[v] = 0;**

**}**

**printf("Enter the start vertex for BFS: \n");**

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

**push(v);**

**while(!isEmpty\_queue())**

**{**

**v = pop( );**

**if(visited[v])**

**continue;**

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

**visited[v] = 1;**

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

**{**

**if(adj[v][i] == 1 && visited[i] == 0)**

**push(i);**

**}**

**}**

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

**}**

**int main()**

**{**

**create\_graph();**

**bfs();**

**return 0;**

**}**