

BFS.c - Code::Blocks 25.03

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```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #define MAX 20
4
5 struct Node {
6     int vertex;
7     struct Node* next;
8 };
9
10 struct Node* adj[MAX];
11 int visited[MAX];
12
13 void addEdge(int u, int v) {
14     struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
15     newNode->vertex = v;
16     newNode->next = adj[u];
17     adj[u] = newNode;
18
19     newNode = (struct Node*)malloc(sizeof(struct Node));
20     newNode->vertex = u;
21     newNode->next = adj[v];
22     adj[v] = newNode;
23 }
24
25 int queue[MAX], front = 0, rear = 0;
26
27 void enqueue(int v) {
28     queue[rear++] = v;
29 }
30
31 int dequeue() {
32     return queue[front++];
33 }
34
35 void BFS(int start) {
36     for (int i = 0; i < MAX; i++)
37         visited[i] = 0;
38
39     enqueue(start);
40     visited[start] = 1;
41
42     printf("BFS Traversal: ");
43
44     while (front < rear) {
```

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```
42 printf("BFS Traversal: ");
43
44 while (front < rear) {
45     int node = dequeue();
46     printf("%d ", node);
47
48     struct Node* temp = adj[node];
49     while (temp != NULL) {
50         if (!visited[temp->vertex]) {
51             visited[temp->vertex] = 1;
52             enqueue(temp->vertex);
53         }
54         temp = temp->next;
55     }
56 }
57 printf("\n");
58
59
60 int main() {
61     int n, e, u, v, start;
62
63     printf("Enter number of vertices: ");
64     scanf("%d", &n);
65
66     printf("Enter number of edges: ");
67     scanf("%d", &e);
68
69     for (int i = 0; i < n; i++)
70         adj[i] = NULL;
71
72     printf("Enter edges (u v):\n");
73     for (int i = 0; i < e; i++) {
74         scanf("%d %d", &u, &v);
75         addEdge(u, v);
76     }
77
78     printf("Enter start vertex: ");
79     scanf("%d", &start);
80
81     BFS(start);
82
83     return 0;
84 }
85
```

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C:\Users\BMSCECSE-L4\Desktop\BFS.c

C/C++ Windows (CR+LF) WINDOWS-1252 Line 41, Col 1, Pos 761 Insert Read/Write default

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```
C:\Users\BMSCECSE-L4\Desktop  +  -  X
Enter number of vertices: 6
Enter number of edges: 8
Enter edges (u v):
1 3
1 2
2 6
3 6
3 4
4 6
5 6
4 5
Enter start vertex: 1
BFS Traversal: 1 2 3 6 4 5

Process returned 0 (0x0)   execution time : 50.020 s
Press any key to continue.
```