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#include <stdio.h>
#include <stdlib.h>

#define MAX_VERTICES 100

int graph[MAX_VERTICES][MAX_VERTICES];
int visited[MAX_VERTICES];
int queue[MAX_VERTICES];
int front = -1, rear = -1;

void initializeGraph(int vertices) {
    for (int i = 0; i < vertices; i++) {
        visited[i] = 0;
        for (int j = 0; j < vertices; j++) {
            graph[i][j] = 0;
        }
    }
}

void addEdge(int start, int end) {
    graph[start][end] = 1;
    graph[end][start] = 1;
}

void dfs(int vertex, int vertices) {
    printf("%d ", vertex);
    visited[vertex] = 1;

    for (int i = 0; i < vertices; i++) {
        if (graph[vertex][i] == 1 && !visited[i]) {
            dfs(i, vertices);
        }
    }
}

void bfs(int start, int vertices) {
    printf("%d ", start);
    visited[start] = 1;
    enqueue(start);
}

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while (!isEmpty()) {
    int current = dequeue();
    for (int i = 0; i < vertices; i++) {
        if (graph[current][i] == 1 && !visited[i]) {
            printf("%d ", i);
            visited[i] = 1;
            enqueue(i);
        }
    }
}
}

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void enqueue(int vertex) {
    if (rear == MAX_VERTICES - 1) {
        printf("Queue is full\n");
    } else {
        if (front == -1) {
            front = 0;
        }
        rear++;
        queue[rear] = vertex;
    }
}

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int dequeue() {
    int vertex;
    if (front == -1 || front > rear) {
        printf("Queue is empty\n");
        return -1;
    } else {
        vertex = queue[front];
        front++;
        return vertex;
    }
}

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int isEmpty() {
    return front == -1 || front > rear;
}

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int main() {

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int vertices, edges;
printf("Enter the number of vertices and edges: ");
scanf("%d %d", &vertices, &edges);

initializeGraph(vertices);

printf("Enter the edges (format: start end):\n");
for (int i = 0; i < edges; i++) {
    int start, end;
    scanf("%d %d", &start, &end);
    addEdge(start, end);
}

printf("DFS traversal: ");
dfs(0, vertices);

initializeGraph(vertices); // Reset visited array

printf("\nBFS traversal: ");
bfs(0, vertices);

return 0;
}

```

## Output

Enter the number of vertices and edges: 5 6

Enter the edges (format: start end):

0 1

0 2

1 3

1 4

2 4

3 4

DFS traversal: 0 1 3 4 2

BFS traversal: 0 1 2 3 4