

1. Graph code in c

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main.c

Run

Output

Clear

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 #define MAX_VERTICES 100
5
6 // Structure to represent a graph
7 typedef struct {
8     int adjMatrix[MAX_VERTICES][MAX_VERTICES];
9     int numVertices;
10 } Graph;
11
12 // Function to initialize a graph
13 void initGraph(Graph* g, int vertices) {
14     g->numVertices = vertices;
15     for (int i = 0; i < vertices; i++) {
16         for (int j = 0; j < vertices; j++) {
17             g->adjMatrix[i][j] = 0; //
18                                     Initialize all edges as 0 (no
19                                     edge)
20         }
21     }
22 }
23
24 // Function to add an edge to the graph
25 void addEdge(Graph* g, int src, int dest) {
26     if (src >= g->numVertices || dest >= g
27         ->numVertices || src < 0 || dest < 0) {
28         printf("Invalid edge!\n");
29         return;
30     }
31     g->adjMatrix[src][dest] = 1;
32     g->adjMatrix[dest][src] = 1; // Because the
33     graph is undirected
34 }
35
36 // Function to print the graph's adjacency
37 matrix
38 void printGraph(Graph* g) {
39     for (int i = 0; i < g->numVertices; i++) {
40         for (int j = 0; j < g->numVertices; j
41             ++){
42             printf("%d ", g->adjMatrix[i][j]);
43         }
44         printf("\n");
45     }
46 }
47
48 int main() {
49     Graph g;
50     int vertices = 4; // Number of vertices in
51     the graph
52
53     initGraph(&g, vertices);
54
55     // Add some edges
56     addEdge(&g, 0, 1);
57     addEdge(&g, 0, 2);
58     addEdge(&g, 1, 2);
59     addEdge(&g, 1, 3);
60
61     // Print the graph
62     printf("Adjacency Matrix of the Graph:\n");
63     printGraph(&g);
64
65     return 0;
66 }
```

```
/tmp/zMFFgULw3W.o
Adjacency Matrix of the Graph:
0 1 1 0
1 0 1 1
1 1 0 0
0 1 0 0

=== Code Execution Successful ===
```