

DAA LAB ASSIGNMENT-3

1) BREADTH FIRST SEARCH (B.F.S)

Code:

```
#include <stdio.h>

#define MAX 100

int graph[MAX][MAX];

int visited[MAX];

int queue[MAX];

int front = -1, rear = -1;

int n;

void enqueue(int v) {

    if (front == -1)

        front = 0;

    queue[++rear] = v;

}

int dequeue() {

    return queue[front++];

}

void displayMatrix() {

    printf("\nAdjacency Matrix:\n");

    for (int i = 0; i < n; i++) {
```

```
    for (int j = 0; j < n; j++) {
        printf("%d ", graph[i][j]);
    }
    printf("\n");
}
```

```
void bfs(int start) {
    enqueue(start);
    visited[start] = 1;
    printf("\nBFS Traversal: ");
    while (front <= rear) {
        int node = dequeue();
        printf("%d ", node);
        for (int i = 0; i < n; i++) {
            if (graph[node][i] == 1 && !visited[i]) {
                enqueue(i);
                visited[i] = 1;
            }
        }
    }
}

int main() {
    int start;
    printf("Enter number of vertices: ");
    scanf("%d", &n);
```

```

printf("Enter adjacency matrix:\n");

for (int i = 0; i < n; i++)
    for (int j = 0; j < n; j++)
        scanf("%d", &graph[i][j]);

displayMatrix();

printf("\nEnter starting vertex for BFS: ");

scanf("%d", &start);

bfs(start);

return 0;
}

```

OUTPUT:

```

amma@amma16:~/Documents/CH.SC.U4CSE24219/DAA$ gcc BFS.c -o bubblesort
amma@amma16:~/Documents/CH.SC.U4CSE24219/DAA$ ./bubblesort
Enter number of vertices: 2
Enter adjacency matrix:
1
23
132
231

Adjacency Matrix:
1 23
132 231

Enter starting vertex for BFS: 2

BFS Traversal: 2 amma@amma16:~/Documents/CH.SC.U4CSE24219/DAA$ █

```

2)DEPTH FIRST SEARCH(D.F.S)

Code:

```
#include <stdio.h>

#define MAX 100

int visited[MAX];

int graph[MAX][MAX];

int n;

void dfs(int node) {

    visited[node] = 1;

    printf("%d ", node);

    for (int i = 0; i < n; i++) {

        if (graph[node][i] == 1 && !visited[i]) {

            dfs(i);

        }

    }

}

int main() {

    int start;

    printf("Enter number of nodes: ");

    scanf("%d", &n);

    printf("Enter adjacency matrix:\n");

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

        for (int j = 0; j < n; j++)

            scanf("%d", &graph[i][j]);
```

```
printf("Enter starting node: ");  
scanf("%d", &start);  
printf("DFS Traversal: ");  
dfs(start);  
return 0;  
}
```

OUTPUT:

```
amma@amma16:~/Documents/CH.SC.U4CSE24219/DAA$ gcc DFS.c -o bubblesort  
amma@amma16:~/Documents/CH.SC.U4CSE24219/DAA$ ./bubblesort  
Enter number of nodes: 3  
Enter adjacency matrix:  
12  
24  
36  
48  
60  
72  
84  
96  
108  
Enter starting node: 60  
DFS Traversal: 60 amma@amma16:~/Documents/CH.SC.U4CSE24219/DAA$ █
```

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