

# ***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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