DAA LAB ASSIGNMENT -3

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

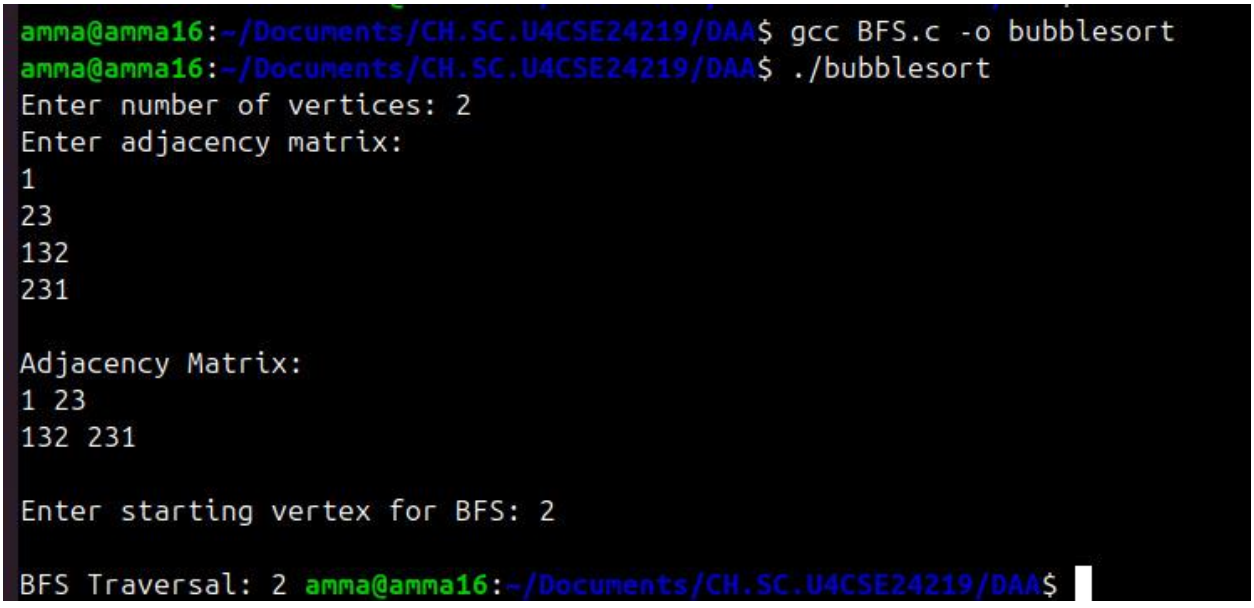
Code:

```
#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:



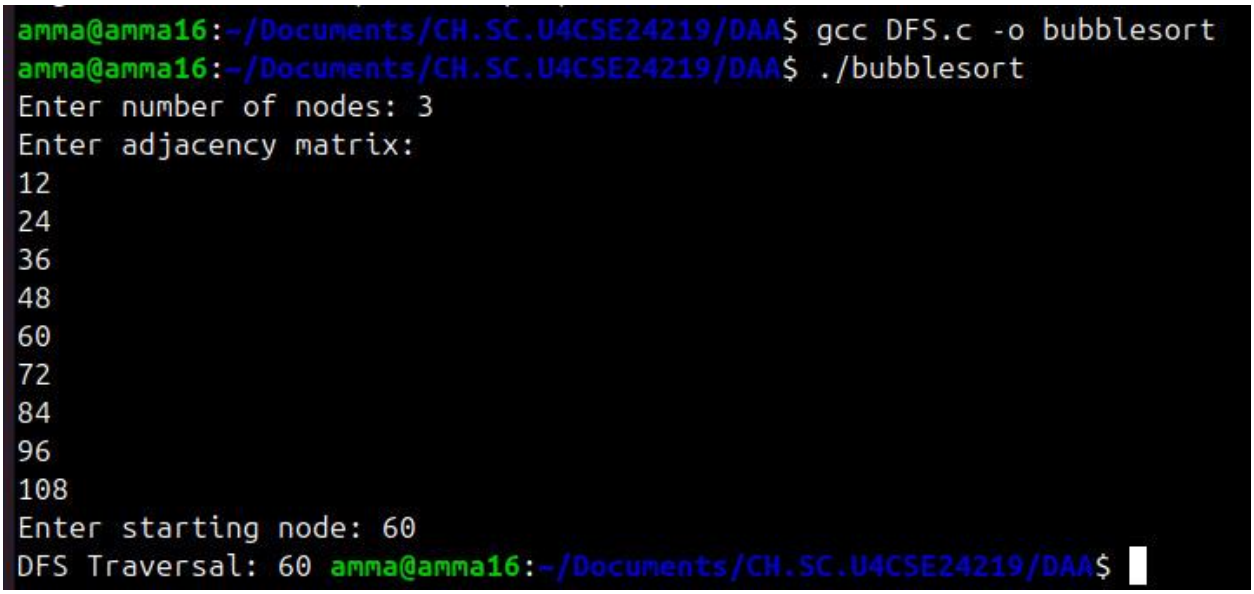
2)DEPTH FIRST SEARCH(D.F.S)

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:



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