9a) Write a program to traverse a graph using the BFS method.

Code:

```
#include <stdio.h>
 int n, i, j, visited[10], queue[10], front = -1, rear = -1;
int adj[10][10];


void bfs(int v)
{
    for (i = 1; i <= n; i++)
        if (adj[v][i] && !visited[i])
            queue[++rear] = i;
    if (front <= rear)
    {
        visited[queue[front]] = 1;
        bfs(queue[front++]);
    }
}


void main()
{
    int v;
    printf("Enter the number of vertices: ");
    scanf("%d", &n);
    for (i = 1; i <= n; i++)
    {
        queue[i] = 0;
        visited[i] = 0;
    }
    printf("Enter graph data in matrix form:    \n");
    for (i = 1; i <= n; i++)
```

```
        for (j = 1; j <= n; j++)
            scanf("%d", &adj[i][j]);
    printf("Enter the starting vertex: ");
    scanf("%d", &v);
    bfs(v);
    printf("The node which are reachable are:    \n");
    for (i = 1; i <= n; i++)
        if (visited[i])
            printf("%d\t", i);
        else
            printf("BFS is not possible. Not all nodes are reachable");

}
```

Output:

```
Enter the number of vertices: 4
Enter graph data in matrix form:
0 1 1 0
1 0 0 1
1 0 01
0 1 1 0
0
Enter the starting vertex: 2
The node which are reachable are:
1       2       3       4
```