```
#include <stdio.h>

void bfs(int a[20][20], int n, int src, int t[20][2], int s[])
{
   int f = 0, r = 0, q[20], u, v, k = 0, i;

   for (i = 0; i < n; i++)
      s[i] = 0;

   q[r] = src;
   s[src] = 1;

   while (f <= r)
   {
      u = q[f++];

      for (v = 0; v < n; v++)
      {
         if (a[u][v] == 1 && s[v] == 0)
         {
            s[v] = 1;
            q[++r] = v;
            t[k][0] = u;
            t[k][1] = v;
            k++;
         }
      }
   }
}

int main()
```

```
{
    int n, a[20][20], src, t[20][2], s[20];
    int i, j, flag = 0;

    printf("Enter the number of nodes: ");
    scanf("%d", &n);

    printf("Enter the adjacency matrix:\n");
    for (i = 0; i < n; i++)
    {
        for (j = 0; j < n; j++)
            scanf("%d", &a[i][j]);
    }

    printf("Enter the source vertex (0 to %d): ", n - 1);
    scanf("%d", &src);

    bfs(a, n, src, t, s);

    for (i = 0; i < n; i++)
    {
        if (s[i] == 0)
        {
            printf("Vertex %d is not reachable\n", i);
            flag = 1;
        }
        else
        {
            printf("Vertex %d is reachable\n", i);
        }
    }
```

```
    if (flag == 1)
    {
        printf("Some nodes are not visited\n");
    }
    else
    {
        printf("The BFS traversal edges are:\n");
        for (i = 0; i < n - 1; i++)
            printf("%d %d\n", t[i][0], t[i][1]);
    }

    return 0;
}
```

```
Enter the number of nodes: 10
Enter the adjacency matrix:
0 1 1 1 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 1 1 0
0 0 0 0 0 0 0 0 0 1
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0
Enter the source vertex (0 to 9): 0
```

```
Vertex 0 is reachable
Vertex 1 is reachable
Vertex 2 is reachable
Vertex 3 is reachable
Vertex 4 is reachable
Vertex 5 is reachable
Vertex 6 is reachable
Vertex 7 is reachable
Vertex 8 is reachable
Vertex 9 is reachable
The BFS traversal edges are:
0 1
0 2
0 3
1 4S
2 5
3 6
4 7
6 8
7 9
```