DAA LAB-3

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1)BFS

CODE:

```
#include <stdio.h>
#define MAX 10
int graph[MAX][MAX], visited[MAX];
int queue[MAX], front = -1, rear = -1;

void bfs(int start, int n)
{
   int i;
   queue[++rear] = start;
   visited[start] = 1;
   while (front != rear)
   {
      int current = queue[++front];
      printf("%c ", current + 'A');
      for (i = 0; i < n; i++)
      {
         if (graph[current][i] == 1 && visited[i] == 0)
         {
            queue[++rear] = i;
            visited[i] = 1;
         }
      }
   }
}
```

```
int main()
{
    int n, i, j, start;
    printf("Enter number of nodes: ");
    scanf("%d", &n);
    printf("Enter adjacency matrix:\n");
    for (i = 0; i < n; i++)
    {
        for (j = 0; j < n; j++)
        {
            scanf("%d", &graph[i][j]);
        }
        visited[i] = 0;
    }
    printf("Enter starting node (0 for A, 1 for B, ...): ");
    scanf("%d", &start);
    printf("BFS Traversal: ");
    bfs(start, n);
    return 0;
}
```

OUTPUT:

```
amma@amma06:~$ gcc bfs.c -o bfs
amma@amma06:~$ ./bfs
Enter number of nodes: 4
Enter adjacency matrix:
0 1 1 0
1 0 0 1
1 0 0 1
0 1 1 0
Enter starting node (0 for A, 1 for B, ...): 0
BFS Traversal: A B C D
amma@amma06:~$
```

2)DFS

CODE:

```
#include <stdio.h>

#define MAX 10

int graph[MAX][MAX], visited[MAX];

void dfs(int node, int n)
{
   int i;
   visited[node] = 1;
   printf("%c ", node + 'A');   // Print node

   for (i = 0; i < n; i++)
   {
      if (graph[node][i] == 1 && visited[i] == 0)
      {
```

```
            dfs(i, n);
        }
    }
}

int main()
{
    int n, i, j, start;

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

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

    printf("Enter starting node (0 for A, 1 for B, ...): ");
    scanf("%d", &start);

    printf("DFS Traversal: ");
    dfs(start, n);

    return 0;
}
```

OUTPUT:

```
amma@amma06:~$ gcc dfs.c -o dfs
amma@amma06:~$ ./dfs
Enter number of nodes: 4
Enter adjacency matrix:
0 1 1 0
1 0 0 1
1 0 0 1
0 1 1 0
Enter starting node (0 for A, 1 for B, ...): 0
DFS Traversal: A B D C
amma@amma06:~$
```