Experiment No. 7 (DFS)

Program:

```c
#include<stdio.h>
#include<stdlib.h>
// Adjacency Matrix
int source, V, E, time, visited[20], G[20][20];
void DFS(int i) {
        int j;
        visited[i] = 1;
        printf(" %d->",i+1);
        for(j=0; j<V; j++) {
              if (G[i][j] == 1 & visited[j] == 0) {
                        DFS(j);
              }
        }
}
int main() {
           int i, j, v1, v2;
           printf("\t\t\tGraphs\n");
           printf("Enter the number of edges: ");
           scanf("%d",&E);
           printf("Enter the number of vertices: ");
           scanf("%d",&V);
           for(i=0; i<V; i++) {
                  for(j=0; j<V; j++) {
                         G[i][j] = 0;
                  }
           }
           // Creating Edges
           for(i=0; i<E; i++) {
                  printf("Enter the edges (format: V1 V2) : ");
                  scanf("%d %d",&v1,&v2);
                  G[v1-1][v2-1] = 1;
           }
           for (i=0; i<V; i++) {
                   for(j=0; j<V; j++) {
                          printf("\t %d ",G[i][j]);
                   }
                   printf("\n");
           }
           printf("Enter the source: ");
           scanf("%d",&source);
           DFS(source-1);
           return 0;
}
```

Output:

```
dl07@itadmin:~$ gedit exp9.c
dl07@itadmin:~$ gcc exp9.c
dl07@itadmin:~$ ./a.out
                    Graphs
Enter the number of edges: 8
Enter the number of vertices: 9
Enter the edges (format: V1 V2) : 1 2
Enter the edges (format: V1 V2) : 8 3
Enter the edges (format: V1 V2) : 7 5
Enter the edges (format: V1 V2) : 1 4
Enter the edges (format: V1 V2) : 6 8
Enter the edges (format: V1 V2) : 1 6
Enter the edges (format: V1 V2) : 7 2
Enter the edges (format: V1 V2) : 1 0
        0       1       0       1       0       1       0       0       0
        0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0
        0       0       0       0       0       0       0       1       0
        0       1       0       0       1       0       0       0       0
        0       0       1       0       0       0       0       0       0
        0       0       0       0       0       0       0       0       0
Enter the source: 7
 7-> 2-> 5->dl07@itadmin:~$
```