

## ADA LAB PROGRAM 2

**AIM:** write a program to obtain the topological ordering of vertices in a given digraph.

### SOURCE CODE

```
#include <stdio.h>

const int MAX = 10;

void fnTopological(int a[MAX][MAX], int n);

int main(void)
{
    int a[MAX][MAX],n;
    int i,j;

    printf("Topological Sorting Algorithm -\n");
    printf("\nEnter the number of vertices : ");
    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]);

    fnTopological(a,n);
    printf("\n");
    return 0;
}

void fnTopological(int a[MAX][MAX], int n)
{
    int in[MAX], out[MAX], stack[MAX], top=-1;
    int i,j,k=0;
```

```
for (i=0;i<n;i++)
{
    in[i] = 0;
    for (j=0; j<n; j++)
        if (a[j][i] == 1)
            in[i]++;
}
```

```
while(1)
{
    for (i=0;i<n;i++)
    {
        if (in[i] == 0)
        {
            stack[++top] = i;
            in[i] = -1;
        }
    }
}
```

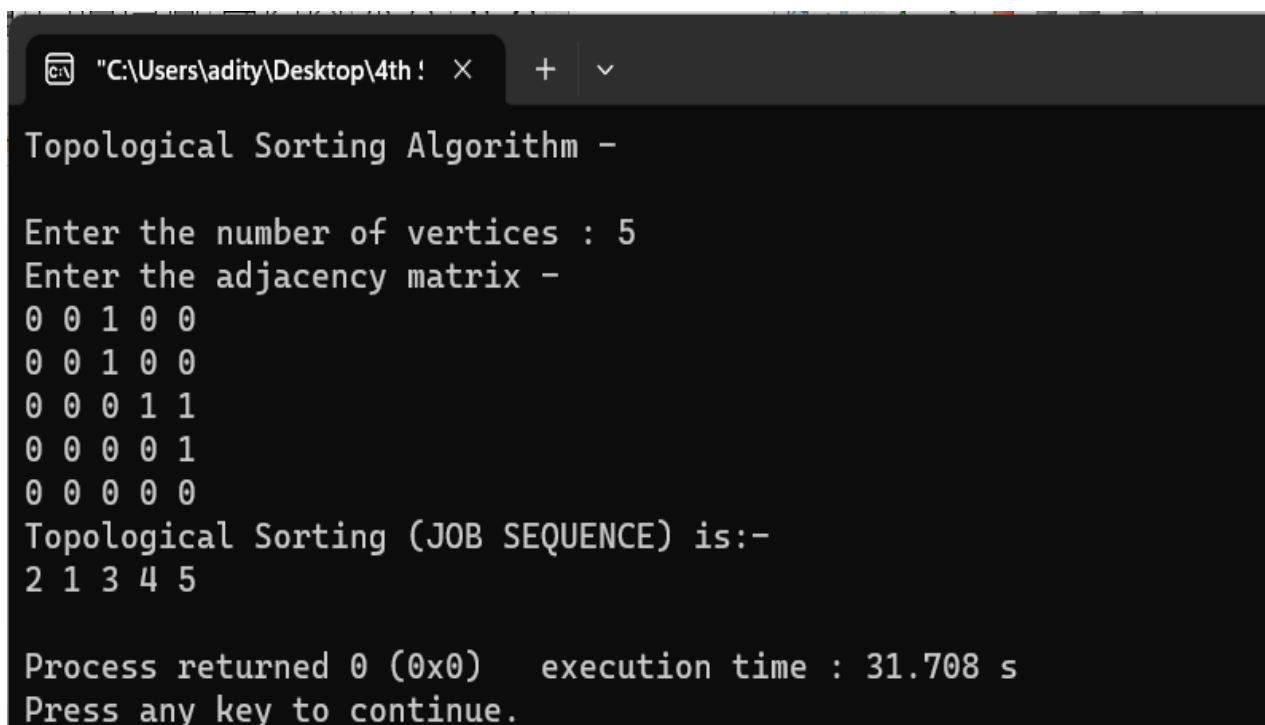
```
if (top == -1)
    break;
```

```
out[k] = stack[top--];
```

```
for (i=0;i<n;i++)
{
    if (a[out[k]][i] == 1)
        in[i]--;
}
k++;
}
```

```
printf("Topological Sorting (JOB SEQUENCE) is:- \n");  
for (i=0;i<k;i++)  
    printf("%d ",out[i] + 1);  
}
```

## OUTPUT SCREENSHOT



The screenshot shows a Windows command prompt window with the following text:

```
"C:\Users\adity\Desktop\4th !" × + v  
Topological Sorting Algorithm -  
Enter the number of vertices : 5  
Enter the adjacency matrix -  
0 0 1 0 0  
0 0 1 0 0  
0 0 0 1 1  
0 0 0 0 1  
0 0 0 0 0  
Topological Sorting (JOB SEQUENCE) is:-  
2 1 3 4 5  
  
Process returned 0 (0x0)   execution time : 31.708 s  
Press any key to continue.
```