Design and Analysis of Algorithms – 20ISL57A

Program 3 - Implement and analyze topological sorting in a given directed graph.

```
#include<stdio.h>
void ts(int a[20][20], int n)
{
   int t[10],vis[10],stack[10],i,j,indeg[10],top=0,ele,k=1;
   for(i=1;i<=n;i++)
   {
        t[i]=0;
        vis[i]=0;
        indeg[i]=0;
   }
   for(i=1;i<=n;i++)
   {
        for(j=1;j<=n;j++)
        {
           if(a[i][j]==1)
           {
                indeg[j]=indeg[j]+1;
           }
        }
   }
   printf("Indegree Array:");
   for(i=1;i<=n;i++)
        printf("%d ",indeg[i]);
   for(i=1;i<=n;i++)
   {
        if(indeg[i]==0)
        {
           stack[++top]=i;
           vis[i]=1;
        }
   }
   while(top>0)
   {
```

```
        ele=stack[top--];
        t[k++]=ele;
        for(j=1;j<=n;j++)
        {
           if(a[ele][j]==1 && vis[j]==0)
           {
                indeg[j]=indeg[j]-1;
                if(indeg[j]==0)
                {
                   stack[++top]=j;
                   vis[j]=1;
                }
           }
        }
   }
   printf("\nTopological Ordering is:");
   for(i=1;i<=n;i++)
        printf("%d",t[i]);
}
int main()
{
   int n,a[20][20],i,j;
   printf("Enter the number of nodes\n");
   scanf("%d",&n);
   printf("Enter Adjacency matric\n");
   for(i=1;i<=n;i++)
   {
        for(j=1;j<=n;j++)
        {
           scanf("%d",&a[i][j]);
        }
   }
   ts(a,n);
}
```