Assignment 6

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2017641
PCS 302(Data Structures with C)
Section: AI & DS

Q1 – Write a C program to enter a directed graph and print the elements of graph where nodes are represented using array of pointers.
Ans:

```
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//2017641

#include <stdio.h>
#include <stdlib.h>

typedef struct node
{
   int info;
   struct node *next;
}node;

void insert(node *a[],int);
void display(node *a[],int);

int main()
{
   int i,j,nodes;
   printf("Enter the number of nodes : " );
   scanf("%d",&nodes);
   node *a[nodes];
   for (int i=0;i<nodes;i++)
      a[i]= NULL;
   insert(a,nodes);
   display(a,nodes);
}

 void insert(node *a[],int nodes)
 {
    int i,j,ent,num;
    node *p=NULL;
    for(int i=0;i<nodes;i++)
    {
       node *last=NULL;
       printf("\nEnter the number of entries of %d node : ",i+1);
       scanf("%d",&ent);
       for(j=0;j<ent;j++)
       {
          printf("Enter the %d entry of %d : ",j+1,i+1);
          scanf("%d",&num);
          p=(node*)malloc(sizeof(node));
          p->info=num;
          p->next=NULL;
          if(a[i]==NULL)
            a[i]=p;
```

```
        else
          last->next=p;
        last=p;
      }
   }
}

void display(node *a[],int nodes)
{
   node *ptr=NULL;
   int i,j;
   for(int i=0;i<nodes;i++)
   {
      ptr=a[i];
      printf("The entries of %d are : ",i+1);
      while(ptr!=NULL)
      {
        printf("(%d)   ",ptr->info);
        ptr=ptr->next;
      }
      printf("\n");
   }
}
```

```
Enter the number of nodes : 4

Enter the number of entries of 1 node : 3
Enter the 1 entry of 1 : 1
Enter the 2 entry of 1 : 2
Enter the 3 entry of 1 : 3

Enter the number of entries of 2 node : 5
Enter the 1 entry of 2 : 1
Enter the 2 entry of 2 : 2
Enter the 3 entry of 2 : 3
Enter the 4 entry of 2 : 4
Enter the 5 entry of 2 : 5

Enter the number of entries of 3 node : 5
Enter the 1 entry of 3 : 5
Enter the 2 entry of 3 : 6
Enter the 3 entry of 3 : 7
Enter the 4 entry of 3 : 8
Enter the 5 entry of 3 : 9

Enter the number of entries of 4 node : 2
Enter the 1 entry of 4 : 1
Enter the 2 entry of 4 : 2

The entries of 1 are : (1)   (2)   (3)
The entries of 2 are : (1)   (2)   (3)   (4)   (5)
The entries of 3 are : (5)   (6)   (7)   (8)   (9)
The entries of 4 are : (1)   (2)

Process returned 0 (0x0)   execution time : 16.297 s
Press any key to continue.
```