Practical-2

1. Create a structure Student in C with student name, student roll number and student address as its data members. Create the variable of type student and print the values.

Aim: To create structure to store different datatypes and displaying it.

Theory: In this practical we get to know that we can store different datatypes in structures.

Program/Code:

```c
#include <stdio.h>

struct student
{
    char student_name[100];
    int student_rollno;
    char student_address[100];
};

void print_info(struct student s1)
{
    printf("Name of student is= %s \n",s1.student_name);
    printf("Roll no of student = %d \n",s1.student_rollno);
    printf("The address of student is = %s \n",s1.student_address);
}

void main()
{
    struct student s;
    printf("Enter the name of the student=\n");
```

```c
    scanf("%s",s.student_name);

    printf("Enter the roll no of student=\n");

    scanf("%d",&s.student_rollno);

    printf("Enter the address of the student=\n");

    scanf("%s",s.student_address);

    print_info(s);

}
```

Output:


```
PS C:\Users\breez\OneDrive - pdpu.ac.in\PDEU STUDY\Sem 3\DSA Lab\Practise-2>
ab\Practise-2\" ; if ($?) { gcc Problem_1.c -o Problem_1 } ; if ($?) { .\Prob
Enter the name of the student=
Panav
Enter the roll no of student=
128
Enter the address of the student=
PDEU
Name of student is= Panav
Roll no of student = 128
The address of student is = PDEU
```

Time Complexity:

O(1)

2. Modify the above program to implement arrays of structure. Create an array of 5 students and print their values.

Aim: To show the implementation of arrays of structure.

Theory: In this practical we get to know that we can create and pass array of structures.

Program/Code:

```c
#include <stdio.h>

struct student

{

    char student_name[100];
```

```c
    int student_rollno;
    char student_address[100];
};

void print_info(struct student s1[])
{
    for(int i=0;i<5;i++)
    {
        printf("Name of student is= %s \n",s1[i].student_name);
        printf("Roll no of student = %d \n",s1[i].student_rollno);
        printf("The address of student is = %s \n",s1[i].student_address);
    }
}

void main()
{
    struct student s[5];
    printf("Enter the details for 5 student\n");
    for(int i=0;i<5;i++)
    {
        printf("Enter the name of the student=\n");
        scanf("%s",s[i].student_name);
        printf("Enter the roll no of student=\n");
        scanf("%d",&s[i].student_rollno);
        printf("Enter the address of the student=\n");
        scanf("%s",s[i].student_address);
```

```
    }
  print_info(s);
}
```

Output:

```
PS C:\Users\breez\OneDrive - pdpu.ac.in\PDEU STUDY\Sem 3\DSA Lab\Practise-2>
Enter the details for 5 student
Enter the name of the student=
Panav
Enter the roll no of student=
128
Enter the address of the student=
PDEU
Enter the name of the student=
Shreyas
Enter the roll no of student=
083
Enter the address of the student=
PDEU
Enter the name of the student=
Ansh
Enter the roll no of student=
122
Enter the address of the student=
PDEU
Enter the name of the student=
Jyot
Enter the roll no of student=
157
Enter the address of the student=
PDEU
Enter the name of the student=
Niraj
Enter the roll no of student=
113
Enter the address of the student=
PDEU
Name of student is= Panav
Roll no of student = 128
The address of student is = PDEU
Name of student is= Shreyas
Roll no of student = 83
The address of student is = PDEU
Name of student is= Ansh
Roll no of student = 122
The address of student is = PDEU
Name of student is= Jyot
Roll no of student = 157
The address of student is = PDEU
Name of student is= Niraj
Roll no of student = 113
The address of student is = PDEU
```

Time Complexity:

O(n) here n=5

3. Create a structure Organization with organization name and organization ID as its data members. Next, create another structure Employee that is nested in structure Organization with employee ID, employee salary and employee name as its data members. Write a program in such a way that there are two organizations and each of these contains two employees.

Aim: To show nested structure.

Theory: In this practical we called and created nested array of structures for our desired output.

Program/Code:

```
#include <stdio.h>

struct organisation
{
    char Organization_name[100];
    int Organization_id;
    struct employee
    {
        int employee_id;
        char employee_name[100];
        int employee_salary;
    }e[2];
};


void print_info(struct organisation o[])
```

```c
{
    for(int i=0;i<2;i++)
    {
        for (int j=0;j<2;j++)
        {
            printf("\n%s works in organization %s with id %d and his id is %d and his salary is %d",o[i].e[j].employee_name,o[i].Organization_name,o[i].Organization_id,o[i].e[j].employee_id,o[i].e[j].employee_salary);
        }
    }
}

void main()
{
    struct organisation o[2];
    for(int i=0;i<2;i++)
    {
        printf("Enter the name of Organization =\n");
        scanf("%s",o[i].Organization_name);
        printf("Enter the id of Organization =\n");
        scanf("%d",&o[i].Organization_id);
        printf("Enter the details of the employee for the above organization=\n");
        for(int j=0;j<2;j++)
        {
            printf("Enter the name of employee in the organization %s=",o[i].Organization_name);
```

```
        scanf("%s",o[i].e[j].employee_name);

        printf("Enter the id of employee in the organization
%s=",o[i].Organization_name);

        scanf("%d",&o[i].e[j].employee_id);

        printf("Enter the salary of employee in the organization
%s=",o[i].Organization_name);

        scanf("%d",&o[i].e[j].employee_salary);

    }

  }

  print_info(o);

}
```

Output:


```
ab\Practise-2\" ; if ($?) { gcc Problem_3.c -o Problem_3 } ; if ($?) { .\Problem_3 }
Enter the name of Organization =
PDEU
Enter the id of Organization =
2025
Enter the details of the employee for the above organization=
Enter the name of employee in the organization PDEU=Dr.Yogesh
Enter the id of employee in the organization PDEU=25
Enter the salary of employee in the organization PDEU=100000
Enter the name of employee in the organization PDEU=Dr.Niyati
Enter the id of employee in the organization PDEU=25
Enter the salary of employee in the organization PDEU=100000
Enter the name of Organization =
ONGC
Enter the id of Organization =
2026
Enter the details of the employee for the above organization=
Enter the name of employee in the organization ONGC=Mr.Panav
Enter the id of employee in the organization ONGC=25
Enter the salary of employee in the organization ONGC=80000
Enter the name of employee in the organization ONGC=Mr.Shreyas
Enter the id of employee in the organization ONGC=26
Enter the salary of employee in the organization ONGC=90000

Dr.Yogesh works in organization PDEU with id 2025 and his/her id is 25 and his salary is 100000
Dr.Niyati works in organization PDEU with id 2025 and his/her id is 25 and his salary is 100000
Mr.Panav works in organization ONGC with id 2026 and his/her id is 25 and his salary is 80000
Mr.Shreyas works in organization ONGC with id 2026 and his/her id is 26 and his salary is 90000
PS C:\Users\breez\OneDrive - pdpu.ac.in\PDEU STUDY\Sem 3\DSA Lab\Practise-2>
```

Time Complexity:

O(1)

Link for all the code : https://github.com/PanavPatel06/DSA-Lab