LAB 9

Objective(s):

To understand programming with Structure.

1. **Write a program to read RollNo, Name, Address, Age & marks in physics, C, math in 1 st semester of three students in BCT and display the student details with average marks achieved.**

```
/*Write a program to read RollNo, Name, Address, Age
& marks in physics,
C, math in 1st semester of three students in BCT and
display the student
details with average marks achieved.*/


#include<stdio.h>
#include<conio.h>
struct stdinf
{
int roll;
char name[20];
int age;
char add[50];
    struct mark
    {
    float p,c,ma;

    }m;

};
int main()
{
    int i;
    float av;

    struct stdinf st[3];
    for(i=0;i<3;i++)
    {
        printf("\nEnter name: ");
        scanf(" %[^\n]s",&st[i].name);
        printf("Enter roll no: ");
        scanf(" %d",&st[i].roll);
        printf("Enter age: ");
        scanf("%d",&st[i].age);
        printf("Enter address: ");
        scanf(" %[^\n]s",&st[i].add);
```

```
        printf("Enter marks in physics: ");
        scanf(" %f",&st[i].m.p);
        printf("Enter marks in C: ");
        scanf(" %f",&st[i].m.c);
        printf("Enter marks in maths: ");
        scanf(" %f",&st[i].m.ma);
        printf("\n");
    }
    for(i=0;i<3;i++)
    {
        printf("\nName: %s",st[i].name);
        printf("\nAddress: %s",st[i].add);
        printf("\nAge: %d",st[i].age);
        printf("\nRoll no: %d",st[i].roll);
        av=(st[i].m.ma+st[i].m.p+st[i].m.c)/3;
        printf("\nAverage marks:\t%f",av);
        printf("\n*********************************\n"
);
    }
    getch();
    return 0;
}
```

2. Create a structure named company which has name, address, phone and noOfEmployee as member variables. Read name of company, its address, phone and noOfEmployee. Finally display these members' value.

```
/*Create a structure named company which has name,
address, phone and
noOfEmployee as member variables. Read name of
company, its address,
phone and noOfEmployee. Finally display these
members' value.
*/


#include<stdio.h>
#include<conio.h>
struct company
{
    char name[50];
    char address[50];
   long long int phone;
```

```
    int noOfEmployee;

};
int main()
{
    struct company c;
    printf("Enter company name: ");
    scanf("%[^\n]s",&c.name);
    printf("\nEnter the address:\t");
    scanf(" %[^\n]s",&c.address);
    printf("\nEnter phone number:\t");
    scanf("%lld",&c.phone);
    printf("\nEnter no of Emplyees:\t");
    scanf("%d",&c.noOfEmployee);
    printf("\n\n");
    printf("Company name: %s",c.name);
    printf("\nAddress: %s",c.address);
    printf("\nPhone number: %lld",c.phone);
    printf("\nNo of Employee:
    %d",c.noOfEmployee); getch();
    return 0;
}
```

3. Write a program to enter two Cartesian coordinate points and display the distance between them.

```
/*Write a program to enter two Cartesian coordinate
points and display the
distance between them.*/
#include<stdio.h>
#include<conio.h>
#include<math.h>
struct coordinate
{
    int x[2];
};  int y[2];
int main()
{
    float d;
    struct coordinate p;
    printf("Enter the coordinate of first point

(x1,y1): ");
```

```
    scanf("%d%d",&p.x[1],&p.y[1]);
     printf("Enter the coordinate of second point
(x2,y2): ");
    scanf("%d%d",&p.x[2],&p.y[2]);

    d=sqrt(pow((p.x[2]-p.x[1]),2)+pow((p.y[2]-
p.y[1]),2));
    printf("\nDistance between the point =
    %f",d); getch();
    return 0;

}
```

4. Write a function which accepts structure as argument and returns structure to the calling program.

```
/*Write a function which accepts structure as
argument and returns structure
to the calling program*/

#include<stdio.h>
#include<conio.h>
#include<string.h>
struct stdinf
{
    char name[20];
};  int roll;
struct stdinf change (struct stdinf);
int main()
{
    struct stdinf s;
    strcpy(s.name,"ram");
    s.roll=10;
    printf("Before changing:\n");
    printf("name= %s",s.name);
    printf("\nroll = %d",s.roll);
    s=change (s);
    printf("\n\n\nAfter changing:\n");
    printf("name= %s",s.name);
    printf("\nroll = %d",s.roll);
    getch();
    return 0;
```

```
}
struct stdinf change (struct stdinf t)
{
    strcpy(t.name,"hari");
    t.roll = 67;
    return t;
}
```

5. Pass the structures defined in Question 1 into a function and read the structure member and display the values from the function (use structure pointer).

```
/*Pass the structures defined in Question 1 into a
function and read the
structure member and display the values from the
function (use structure
pointer).*/

#include<stdio.h>
#include<conio.h>
struct stdinf
{
int roll;
char name[20];
int age;
char add[50];
    struct mark
    {
    float p,c,ma;
    }m;

};
void display (struct stdinf*);
int main()
{
    int i;
    struct stdinf st[3];
    for(i=0;i<3;i++)
    {
        printf("\nEnter name: ");
        scanf(" %[^\n]s",&st[i].name);
        printf("Enter roll no: ");
        scanf(" %d",&st[i].roll);
        printf("Enter age: ");
```

```
        scanf("%d",&st[i].age);
        printf("Enter address: "); scanf("
        %[^\n]s",&st[i].add); printf("Enter
        marks in physics: "); scanf("
        %f",&st[i].m.p); printf("Enter
        marks in C: "); scanf("
        %f",&st[i].m.c); printf("Enter
        marks in maths: "); scanf("
        %f",&st[i].m.ma); printf("\n");
    }
    display(&st);

    getch();
    return 0;
}
void display(struct stdinf *t)
{
    float av;
    int i;
    for(i=0;i<3;i++)
    {
        printf("\nName: %s",(t+i)->name);
        printf("\nAddress: %s",(t+i)->add);
        printf("\nAge: %d",(t+i)->age);
        printf("\nRoll no: %d",(t+i)->roll);
        av=((t+i)->m.ma+(t+i)->m.p+(t+i)->m.c)/3;
        printf("\nAverage marks:\t%f",av);
        printf("\n*********************************\n"
);  }
}
```

6. Define a structure "complex" (typedef) to read two complex numbers and perform addition, subtraction of these two complex numbers and display the result.

```
/*Define a structure "complex" (typedef) to read two

complex numbers and
```

```
perform addition, subtraction of these two complex
numbers and display the
result.
*/

#include<stdio.h>
#include<conio.h>

typedef struct

{ float real,imag;
}complex;
int main()
{
    complex n1,n2,s,d;
    printf("Enter a and b where a+ib is first complex
number:\t");
    scanf("%f%f",&n1.real,&n1.imag);
    printf("Enter c and d where c+id is second
complex number:\t");
    scanf(" %f%f",&n2.real,&n2.imag);
    s.real=n1.real+n2.real;
    s.imag=n1.imag+n2.imag; d.real=n1.real-
    n2.real; d.imag=n1.imag-n2.imag;
    printf("\n\nSum= %f +
    (%fi)",s.real,s.imag);
    printf("\n\nDifference= %f +
(%fi)",d.real,d.imag);
    getch();
    return
    0;
}
```

7. Write a program to read RollNo, Name, Address, Age & average-marks of 12 students in the BCT class and display the details from function.

```
/*Write a program to read RollNo, Name, Address, Age
& average-marks of
12 students in the BCT class and display the details

from function.*/
```

```
#include<stdio.h>
#include<conio.h>
struct stdinfo
{
    int roll;
    char name[20];
    char add[50];
    int age;
    float avg;

};
void display(struct stdinfo[]);
int main()
{
    int i;
    struct stdinfo st[12];
    for(i=0;i<12;i++)
    {
        printf("\nEnter name: ");
        scanf(" %[^\n]s",&st[i].name);
        printf("Enter roll no: ");
        scanf(" %d",&st[i].roll);
        printf("Enter age: ");
        scanf("%d",&st[i].age);
        printf("Enter address: ");
        scanf(" %[^\n]s",&st[i].add);
        printf("Enter average marks: ");
        scanf(" %f",&st[i].avg);
    }
    display(st);
    getch();
    return 0;

}
void display(struct stdinfo t[])
{
    int i;
    {for(i=0;i<12;i++)
        printf("\nName: %s",t[i].name);
        printf("\nAddress: %s",t[i].add);
        printf("\nAge: %d",t[i].age);
        printf("\nRoll no: %d",t[i].roll);
        printf("\nAverage marks:\t%f",t[i].avg);
```

```
printf("\n*********************************\n");
    }
}
```

8. Write a program to show programming examples with union and enumerations.

```
/*Write a program to show programming examples with
union and
enumerations.*/

#include<stdio.h>
#include<conio.h>
 enum days {sun=1,mon,tue,wed,thru,fri,sat};
typedef enum days days;
int main()
{
    int n;
    days d;
    printf("Enter day as sun=1 , mon=2 ,
tue=3.......sat=7:\t");
    scanf("%d",&d);
    if(d==sat)
    {
        printf("\nHoliday");
    }
    else
    {
        printf("\nWorking day");
    }
    getch();
    return 0;

}
```