C-Programming Lab Sheet
I Year / I Part
Faculty: Computer/Electrical/Civil

<u>Labsheet#8</u>

<u>Objectives:</u>
1. To familiarized with declaration and initialization of structure.
2. To understand the concept of structure within structure and array of structure.
3. To understand the relationship between structure and pointer.
4. To demonstrate the passing of structure to a function by value and by pointer.
5. To familiarized with union.

<u>Objectives #1</u>
1.1 Program to demonstrate the declaration and initialization of structure.

```c
#include<stdio.h>
#include<conio.h>
void main(){
        struct book{
                char name[20];
                float price;
                int pages;
        };
struct book b1={"C Programming",250.0,800};
printf("\n %s\t%f\t%d",b1.name,b1.price,b1.pages);
getch();
}
```

<u>Assignment 1.1.</u> Note the output of the above program and modify the above program to enter name, price and pages of book to store in structure variable b1 and copy the contents variable b1 into structure variable b2 and display the contents.

<u>Objectives #2</u>
2.1

```c
#include<stdio.h>
#include<conio.h>
struct date{
        int day;
        int month;
        int year;
};
void main(){
struct student{
        char name;
        int rollno;
        float mark;
        struct date dob;
};
struct student s;
```

```
s.name='K';
s,rollno=101;
s.mark=84.0;
s.dob.day=23;   /*nested structure initialization */
s.dob.month=11;
s.dob.year=1980;
printf("Name=%c \t rollno=%d\t and mark=%d",s.name,s.rollno.s.mark);
printf("\n Date of birth is %d/%d/%d", s.dob.day, s.day.month, s.dob.year);
getch();
}
```

Assignment 2.1: Note the output of the above program and modify the program to input name, rollno, mark and date of birth of five students and print the name of the students whose mark is fall under the average.

Assignment 2.2: Define structure to store name, roll no and marks of student. Write a program to store the information of 20 students and find the following

- order the roll no in the sequence of deceasing marks.
- print the name of the students whose mark is highest.

Use array of structure.

Objective #3

3.1 A program to read a set of values from keyboard using a pointer strcutre operator and to display the contents of the structure onto the screen.

```
#include<stdio.h>
#include<conio.h>
void main(){
struct sample{
int x, int y, int z;
};
struct sample *p;
printf(Enter value for x and y?\n);
scanf("%d%d",&p->x,&p->y);
p->z=p->x+p->y;
printf("the sum is %d",p->z);
}
```

Assignment 3.1: Document the output of the above program and make the comments.

Objective #4

4.1 Program to demonstrate passing the structure to a function by address.

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

display(struct book *b);
struct book{
char name[30];
char name[20];
int pages;
};
```

```
void main(){
        struct book b={"Programming in c","Ravichandran",820};
        display(&b);
        getch();
}
display(struct book *b){
        printf("\n%s %s %d",b->name,b->author, b->pages);
}
```

Assignment 4.1: Note the output of the above program and modify the above program to enter name, author and pages of the book and pass these to a user defined function by value and display.
Assignment 4.2: Write a program to enter two complex number and pass this number to function **multy**, perform multiplication and display the result.

Objective #5
```
#include<stdio.h>
#include<conio.h>
void main(){
union value{
        int x;
        float y;
};
value v;
v.x=10; v.y=20.0;
printf("The value of union member x and y are %d \t %f",v.x,v.y);
printf("\nThe total memory occupied by the union is %d",sizeof(v));
getch();
}
```

Assignment 5.1: Note down the output and, in the above program, replace the keyword union by struct. Now run the program and note down the output. Discuss the difference between them.