Lab Sheet 1

Review exercises in C programming

1. Write a program to find the average expenditure of a company for each month of each year, each year and average over the range of years specified. Use arrays to construct a table, display the table of expenditure and find the sum and average.

```c
#include<stdio.h>
#include<windows.h>
int main()
{
    printf("Enter no of years to be added:\t");
    int no_of_years;
    scanf("%d",&no_of_years);
    no_of_years;
    float finance[no_of_years+1][14];
    int i,j;
    float temp;
    for(i=0;i<no_of_years;i++)
    {
        printf("Enter year:\t");
        scanf("%f",&finance[i][0]);
        temp=0;
        for(j=0;j<12;j++)
        {
            switch(j)
            {
            case(0):
                printf("january:\t");
                break;
            case(1):
                printf("february:\t");
                break;
            case(2):
                printf("March:\t");
                break;
            case(3):
                printf("April:\t");
                break;
            case(4):
```

```c
                printf("may:\t");
                break;
            case(5):
                printf("June:\t");
                break;
            case(6):
                printf("July:\t");
                break;
            case(7):
                printf("August:\t");
                break;
            case(8):
                printf("September:\t");
                break;
            case(9):
                printf("October:\t");
                break;
            case(10):
                printf("November:\t");
                break;
            case(11):
                printf("December:\t");

            }
             scanf("%f",&finance[i][j+1]);


             temp=temp+finance[i][j+1];
             if(j==11)
             {
                 finance[i][j+2]=(temp/12);
             }
        }
    printf("\n");
    system("cls");
}
temp=0;

for(i=1;i<=12;i++)
{
    for(j=0;j<no_of_years;j++)
    {
        temp=temp+finance[j][i];
    }
    finance[no_of_years][i]=temp/no_of_years;
```

```c
            temp=0;
        }
        system("cls");

printf("Year\tjan\tfeb\tmar\tapril\tmay\tjune\tjuly\t
aug\tsep\toct\tnov\tdec\tavg\n");
        for(i=0;i<=no_of_years;i++)
        {
            if(i==no_of_years)
            {
                printf("Avg-->");
            }
            for(j=0;j<=13;j++)
            {
            if(((i==no_of_years)&&(j==0))||
(i==no_of_years)&&(j==13))
                {
                    printf("\t");
                    continue;
                }
                if(j==0)
                {
                } printf("%0.0f\t",finance[i][j]);

                else

                {
                } printf("%0.1f\t",finance[i][j]);


            }
            printf("\n");

        }

}
```

2.   Write a program to find the position of the character 'C' in the sentence "idea without execution is worthless" using pointer and string.

```c
#include<stdio.h>
#include<string.h>
int main()
```

```c
{
    char sent[] ="idea without execution is
worthless";
    int i=0;
    while(*(sent+i)!='\0')
    {

        if((*(sent+i)=='c')!=1)
            i=i+1;

        else break;
    }
    printf("\n'c' letter is in %d position",++i);
}
```

3. Store and retrieve the name of the students and obtained marks in c programming in 1st semester using structure.

```c
#include<stdio.h>
#include<windows.h>
struct data
{
    char name[10];

}; int marks;
int main()
{
    int NoOfStudents=3;
    int i;
    struct data std[NoOfStudents];
    for(i=0;i<NoOfStudents;i++)
    {
        printf("Enter name for student %d:\t",i+1);
        scanf("%[^\n]s",&std[i].name);
        printf("Enter marks for C:\t");
        scanf("%d",&std[i].marks);
    }
    system("cls");
    for(i=0;i<NoOfStudents;i++)
    {
```

```c
        printf("Name: %s\n",std[i].name);
        printf("Marks in C: %d\n",std[i].marks);
    }


}
```

4.   Write a program to read name, rollno, address, and phone number of each student in your class using structure. Store the information in file so that you can recover the information later. While recovering the information from the file sort the information alphabetically according to the name.

```c
#include<stdio.h>
#include<string.h>
#include<windows.h>
#define NoOfStudents 2
typedef struct
{
    char name [20];
    int roll;
    char address[30];
    long long int number;
} std;
void sort(std *temp);
int main ()
{
    std bct[NoOfStudents];
    FILE *f;
    f=fopen("data.txt","w");
    int i;
    for(i=0;i<NoOfStudents;i++)
    {
        printf("Enter your name:\t"); scanf(" %
        [^\n]s",bct[i].name); printf("\nEnter
        your address:\t"); scanf(" %
        [^\n]s",bct[i].address);
        printf("\nEnter your roll number:\t");
        scanf("%d",&bct[i].roll);
        printf("\nEnter your phone number:\t");
        scanf("%lld",&bct[i].number);
    }
```

```c
        fwrite(bct,sizeof(bct),1,f);
    fclose(f);
    f=fopen("data.txt","r");
    fread(&bct,sizeof(bct),1,f);
    fclose(f);
    sort(bct);
    system("cls");
    for (i=0;i<NoOfStudents;i++)
    {
        printf("%s\n",bct[i].name);
        printf("%s\n",bct[i].address);
        printf("%d\n",bct[i].roll);
        printf("%lld\n\n",bct[i].number);

    }



}

void sort(std *temp)
{
    std t;

    for (int i=0;i<NoOfStudents-1;i++)
    {
        for (int j=i+1;j<NoOfStudents;j++)
        {
            if(strcmp(temp[i].name,temp[j].name)>0)
            {
                t=temp[i];
                temp[i]=temp[j];
                temp[j]=t;

            }
        }
    }
}
```