
C PROGRAMMING LAB ASSIGNMENT

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BRANCH: ENGINEERING PHYSICS(1ST YEAR)

```
-----------------------------------------------LAB-3-------------------------------------------------------
/*QUESTION-1*/
#include<stdio.h>
int main()
{
    float i,j,k;
    int choice;
    printf("Enter three numbers:\n");
    scanf("%f%f%f",&i,&j,&k);
    float min=((i<j&&i<k)?i:(j<k?j:k));
    float max=((i>j&&i>k)?i:(j>k?j:k));
    float avg=(i+j+k)/3;
    float sum=(i+j+k);
    printf("Press 1 for reading numbers, 2 for their sum, 3 for average,4 for minimum and 5 for maximum\n");
    scanf("%d",&choice);
    switch(choice)
    {
        case(1):
        printf("The numbers you entered are:%f %f and %f\n",i,j,k);
        break;
        case(2):
        printf("The sum of the numbers is: %.2f\n",sum);
        break;
        case(3):
        printf("The average of the numbers is: %.2f\n",avg);
        break;
        case(4):
        printf("The minimum of the numbers is: %f\n",min);
        break;
        case(5):
        printf("The maximum of the numbers is: %f\n",max);
        break;
        default:
        printf("You did not enter a value from 1 to 5\n");
        }
    return 0;
}
```

```
OUTPUT:
Enter three numbers:
4 8 2
Press 1 for reading numbers, 2 for their sum, 3 for average,4 for minimum and 5 for maximum
3
The average of the numbers is: 4.67
```

```
/*QUESTION-2*/
#include<stdio.h>
int main()
{
    int unit;
    float bill;
    printf("Enter the units consumed:\n");
    scanf("%d",&unit);
    if(unit<=150)
        bill=3*unit;
    else if(unit>150&&unit<=350)
        bill=100+3.75*(unit-150);
    else if(unit>350&&unit<=450)
        bill=250+4*(unit-350);
    else if(unit>450&&unit<600)
        bill=300+4.25*(unit-450);
    else if(unit>600)
        bill=400+5*(unit-600);
    else
        printf("You did not enter a valid number of units\n");
    printf("The amount of bill is %.2f",bill);
    return 0;
}
```

```
OUTPUT:
Enter the units consumed:
120
The amount of bill is 360.00
```

```c
/*QUESTION-3*/
#include<stdio.h>
int main()
{
    int i;
    printf("Enter a number from 1 to 12:\n");
    scanf("%d",&i);
    if(i==1)
    printf("The month is:January\n");
    else if(i==2)
    printf("The month is:February\n");
    else if(i==3)
    printf("The month is:March\n");
    else if(i==4)
    printf("The month is:April\n");
    else if(i==5)
    printf("The month is:May\n");
    else if(i==6)
    printf("The month is:June\n");
    else if(i==7)
    printf("The month is:July\n");
    else if(i==8)
    printf("The month is:August\n");
    else if(i==9)
    printf("The month is:September\n");
    else if(i==10)
    printf("The month is:October\n");
    else if(i==11)
    printf("The month is:November\n");
    else if(i==12)
    printf("The month is:December\n");
    else
    printf("You did not enter a number between 1 and 12\n");
    return 0;
}
```

OUTPUT:

```
Enter a number from 1 to 12:
6
The month is:June
```

```
/*QUESTION-4*/
#include<stdio.h>
int main()
{
    int i,nod=0;
    printf("enter a number:\n");
    scanf("%d",&i);
    while(i!=0)
    {
        i=i/10;
        nod++;
    }
    printf("The number of digits is:%d\n",nod);
    return 0;
}
```

OUTPUT:

```
enter a number:
724351
The number of digits is:6
```

```
/*QUESTION-5*/
#include<stdio.h>
int main()
{
    int i,j;
    for(i=0;i<5;i++)
    {
        for(j=0;j<9;j++)
        {
            if(i==0)
            {
                if(j==8)
```

```
                {
                    printf("*\n");
                    break;
                }
                else if(j%2==0)
                    printf("*");
                else
                    printf(" ");
            }
            else if(i==4)
            {
                if(j==8)
                {
                    printf("*\n");
                    break;
                }
                else if(j%2==0)
                    printf("*");
                else
                    printf(" ");

            }
            else
            {
                if(j==0)
                printf("*");
                else if(j==8)
                printf("*\n");
                else
                printf(" ");
            }
        }
    }
}
```

OUTPUT:

```
* * * * *
```

```
*       *
*       *
*       *
* * * * *
```

```
/*QUESTION-6*/
#include <stdio.h>
int main()
{
    int i,j;
    for(i=1;i<6;i++)
    {
        for(j=1;j<6;j++)
        {
            if(i==j)
                printf("$ ");
            else if(i==1||i==5||j==1||j==5)
            {
                printf("* ");
            }
            else
            {
                printf("  ");
            }
        }
        printf("\n");
    }

    return 0;
}
```

OUTPUT:

```
$ * * * *
* $     *
*   $   *
*     $ *
* * * * $
```

```
/*QUESTION-7*/
#include<stdio.h>
int main()
{
    int i,j;
    for(i=0;i<9;i++)
    {
        for(j=0;j<5;j++)
        {
            if(i>4&&(8-i)<=j)
            {
                printf("* ");
                break;
            }
            else if(i>=j)
                printf("* ");
            else("  ");
        }
        printf("\n");
    }
    return 0;
}
```

OUTPUT:

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

```
/*QUESTION-8*/
#include <stdio.h>
```

```
int main()
{
    int num;
    int arr_dgt[5];
    printf("Enter a five(5) digit number :");
    scanf("%d",&num);
    int index=4;
    while(num>0)
    {
        arr_dgt[index]=num%10;
        num=num/10;
        index=index-1;
    }
    for(int i=0;i<5;i++)
    {
        for(int j=i;j<5;j++)
            printf("%d",arr_dgt[j]);
        for(int k=1;k<=i;k++)
            printf(" ");
        printf("\t\t");
        for(int j=0;j<=i;j++)printf("%d",arr_dgt[j]);
            printf("\n");
    }
}

OUTPUT:
Enter a five(5) digit number :12345
12345           1
2345            12
345             123
45              1234
5               12345
-----------------------------------------------------------------------------------------------------------
-----------------------------------------------LAB-4---------------------------------------------------------
-----------------------------------------------------------------------------------------------------------
/*QUESTION-1*/
#include<stdio.h>
```

```
int main()
{
    int size1,size2,i,temp,p=0;
    printf("Enter size of array 1 and array 2:\n");
    scanf("%d%d",&size1,&size2);
    int arr1[100],arr2[100],k=0;
    printf("Enter array1 elements:\n");
    for(i=0;i<size1;i++)
    scanf("%d",&arr1[i]);
    printf("Enter Array2 elements:\n");
    for(i=0;i<size2;i++)
    scanf("%d",&arr2[i]);
    for(i=size1;i<size1+size2;i++)
    {
        arr1[i]=arr2[k];
        k++;
    }
    printf("The merged array is: ");
    for(i=0;i<size1+size2;i++)
    printf("%d ",arr1[i]);
    printf("\n");
    int q=size1+size2-1;
    while(p<q)
    {
        temp=arr1[p];
        arr1[p]=arr1[q];
        arr1[q]=temp;
        p++;
        q--;
    }
    printf("Reversed order: ");
    for(i=0;i<size1+size2;i++)
    printf("%d ",arr1[i]);
    return 0;
}
```

OUTPUT:

```
Enter size of array 1 and array 2:
5 6
Enter array1 elements:
1 2 3 4 5
Enter Array2 elements:
6 7 8 9 10 11
The merged array is: 1 2 3 4 5 6 7 8 9 10 11
Reversed order: 11 10 9 8 7 6 5 4 3 2 1
```

```
/*QUESTION-2*/
#include<stdio.h>
int main()
{
    int a,b,p,q,i,j,choice;
    int matrix1[10][10],matrix2[10][10],add[10][10],transpose1[10][10],transpose2[10][10],sum=0,sub=0;
    printf("Enter the number of rows and columns of matrix1\n");
    scanf("%d%d",&a,&b);
    printf("Enter the elements of matrix1\n");
    for(i=0;i<a;i++)
    {
        for(j=0;j<b;j++)
        scanf("%d",&matrix1[i][j]);
    }
    printf("Enter the number of rows and columns of matrix2\n");
    scanf("%d%d",&p,&q);
    printf("Enter the elements of matrix2:\n");
    for(i=0;i<p;i++)
    {
        for(j=0;j<q;j++)
        scanf("%d",&matrix2[i][j]);
    }
    printf("Enter option: 1 for addition, 2 for subtraction, 3 for transpose\n");
    scanf("%d",&choice);
    switch(choice)
    {
        case 1:
        if(a!=p||b!=q)
```

```
    printf("The matrices can not be added\n");
    else
        {
            for(i=0;i<a;i++)
            {
                for(j=0;j<b;j++)
                {
                    sum=sum+matrix1[i][j]+matrix2[i][j];
                    add[i][j]=sum;
                    sum=0;
                }
            }

            for(i=0;i<a;i++)
            {
                for(j=0;j<q;j++)
                printf("%d\t",add[i][j]);
                printf("\n");
            }
            break;
        }
case 2:
    if(a!=p||b!=q)
    printf("The matrices can not be subtracted\n");
    else
        {
            for(i=0;i<a;i++)
            {
                for(j=0;j<b;j++)
                {
                    sub=sub+matrix1[i][j]-matrix2[i][j];
                    add[i][j]=sub;
                    sub=0;
                }
            }
        }
        for(i=0;i<a;i++)
```

```
            {
                for(j=0;j<q;j++)
                printf("%d\t",add[i][j]);
                printf("\n");
            }
    case 3:
        {for (i=0;i<a;++i)
        for (j=0;j<b;++j) {
            transpose1[j][i] = matrix1[i][j];
        }
        for (i=0;i<p;++i)
        for (j=0;j<q;++j) {
            transpose2[j][i] = matrix2[i][j];
        }
    printf("Transpose of the matrix1:\n");
    for (i=0;i<b;++i)
        for (j=0;j<a;++j) {
            printf("%d  ",transpose1[i][j]);
            if(j==a-1)
                printf("\n");
        }
        printf("Transpose of the matrix2:\n");
    for (i=0;i<q;++i)
        for (j=0;j<p;++j) {
            printf("%d  ",transpose2[i][j]);
            if(j==a-1)
                printf("\n");
        }
    return 0;
    }
    }
}

OUTPUT:
Enter the number of rows and columns of matrix1
2 4
Enter the elements of matrix1
```

```
1 2 3 4
5 6 7 8
Enter the number of rows and columns of matrix2
2 4
Enter the elements of matrix2:
5 6 4 7
3 1 2 6
Enter option: 1 for addition, 2 for subtraction, 3 for transpose
1
6       8       7       11
8       7       9       14
```

```
/*QUESTION-3*/
#include<stdio.h>
int main()
{
    int arr[10][10];
    int r,c,i,j,sum=0;
    printf("Enter matrix row and column size:\n");
    scanf("%d%d",&r,&c);
    if(r!=c)
        printf("Does not posses a principal diagonal\n");
    else
    {
        printf("Enter array elements:\n");
        for(i=0;i<r;i++)
        {
            for(j=0;j<c;j++)
            scanf("%d",&arr[i][j]);
        }
        for(i=0;i<r;i++)
        {
            for(j=0;j<c;j++)
            if(i>j)
            sum=sum+arr[i][j];
        }
        printf("Sum of elemnets below the principal diagonal are: %d\n",sum);
```

```
    }
    return 0;
}

OUTPUT:
Enter matrix row and column size:
3 3
Enter array elements:
1 2 3
4 5 6
7 8 9
Sum of elemnets below the principal diagonal are: 19
-----------------------------------------------------------------------------------------------------
/*QUESTION-4*/
#include<stdio.h>
#include<stdlib.h>
int main()
{
    float MARKS[20][5];
    for(int i=0;i<20;i++)
    for(int j=0;j<5;j++)
    {
        printf("Enter the marks obtained by student %d:\n",i+1);
        printf("Marks for Subject%d:\n",j+1);
        scanf("%d",&MARKS[i][j]);
    }
    printf("\n");
    float sum=0;//Average marks for subjects
    for(int j=0;j<5;j++)
    for(int i=0;i<20;i++)
    {
        sum=sum+MARKS[j][i];
        if(i==19)
        {
            sum=sum/20;
            printf("The average marks for subject%d is:%f\n",j+1,sum);
            sum=0;
```

```
        }
    }
    printf("\n");
    //Average marks for students
    float s_sum=0;float arr[20];
    for(int i=0;i<20;i++)
    for(int j=0;j<5;j++)
    {
        s_sum=s_sum+MARKS[i][j];
        if(j==4)
        {
            arr[i]=s_sum;
            s_sum=s_sum/5;
            printf("Average marks of student%d is: %f\n",i+1,s_sum);
            s_sum=0;
        }
    }
    printf("\n");
    //Students who scored below 50
    int count=0;
    for(int i=0;i<20;i++)
    {
        if(arr[i]/5<50)
            count++;
    }
    printf("Number of students who got below 50 on average: %d\n",count);
    printf("\n");
    //score obtained by every student
    for(int i=0;i<20;i++)
        printf("Score obtained by student%d is:%f\n",i+1,arr[i]);
    return 0;
}

OUTPUT:
Enter the marks obtained by student 1:
Marks for Subject1:
52
```

```
Enter the marks obtained by student 1:
Marks for Subject2:
28
Enter the marks obtained by student 1:
Marks for Subject3:
45
Enter the marks obtained by student 1:
Marks for Subject4:
51
Enter the marks obtained by student 1:
Marks for Subject5:
100
Enter the marks obtained by student 2:
Marks for Subject1:
75
Enter the marks obtained by student 2:
Marks for Subject2:
59
Enter the marks obtained by student 2:
Marks for Subject3:
29
Enter the marks obtained by student 2:
Marks for Subject4:
63
Enter the marks obtained by student 2:
Marks for Subject5:
85
Enter the marks obtained by student 3:
Marks for Subject1:
46
Enter the marks obtained by student 3:
Marks for Subject2:
76
Enter the marks obtained by student 3:
Marks for Subject3:
72
Enter the marks obtained by student 3:
```

```
Marks for Subject4:
98
Enter the marks obtained by student 3:
Marks for Subject5:
72
Enter the marks obtained by student 4:
Marks for Subject1:
52
Enter the marks obtained by student 4:
Marks for Subject2:
36
Enter the marks obtained by student 4:
Marks for Subject3:
73
Enter the marks obtained by student 4:
Marks for Subject4:
68
Enter the marks obtained by student 4:
Marks for Subject5:
47
Enter the marks obtained by student 5:
Marks for Subject1:
92
Enter the marks obtained by student 5:
Marks for Subject2:
35
Enter the marks obtained by student 5:
Marks for Subject3:
43
Enter the marks obtained by student 5:
Marks for Subject4:
74
Enter the marks obtained by student 5:
Marks for Subject5:
33
Enter the marks obtained by student 6:
Marks for Subject1:
```

```
63
Enter the marks obtained by student 6:
Marks for Subject2:
62
Enter the marks obtained by student 6:
Marks for Subject3:
97
Enter the marks obtained by student 6:
Marks for Subject4:
19
Enter the marks obtained by student 6:
Marks for Subject5:
16
Enter the marks obtained by student 7:
Marks for Subject1:
58
Enter the marks obtained by student 7:
Marks for Subject2:
47
Enter the marks obtained by student 7:
Marks for Subject3:
22
Enter the marks obtained by student 7:
Marks for Subject4:
29
Enter the marks obtained by student 7:
Marks for Subject5:
80
Enter the marks obtained by student 8:
Marks for Subject1:
33
Enter the marks obtained by student 8:
Marks for Subject2:
28
Enter the marks obtained by student 8:
Marks for Subject3:
30
```

```
Enter the marks obtained by student 8:
Marks for Subject4:
36
Enter the marks obtained by student 8:
Marks for Subject5:
95
Enter the marks obtained by student 9:
Marks for Subject1:
94
Enter the marks obtained by student 9:
Marks for Subject2:
62
Enter the marks obtained by student 9:
Marks for Subject3:
13
Enter the marks obtained by student 9:
Marks for Subject4:
14
Enter the marks obtained by student 9:
Marks for Subject5:
44
Enter the marks obtained by student 10:
Marks for Subject1:
85
Enter the marks obtained by student 10:
Marks for Subject2:
32
Enter the marks obtained by student 10:
Marks for Subject3:
72
Enter the marks obtained by student 10:
Marks for Subject4:
94
Enter the marks obtained by student 10:
Marks for Subject5:
39
Enter the marks obtained by student 11:
```

```
Marks for Subject1:
88
Enter the marks obtained by student 11:
Marks for Subject2:
25
Enter the marks obtained by student 11:
Marks for Subject3:
93
Enter the marks obtained by student 11:
Marks for Subject4:
98
Enter the marks obtained by student 11:
Marks for Subject5:
68
Enter the marks obtained by student 12:
Marks for Subject1:
90
Enter the marks obtained by student 12:
Marks for Subject2:
94
Enter the marks obtained by student 12:
Marks for Subject3:
32
Enter the marks obtained by student 12:
Marks for Subject4:
90
Enter the marks obtained by student 12:
Marks for Subject5:
69
Enter the marks obtained by student 13:
Marks for Subject1:
87
Enter the marks obtained by student 13:
Marks for Subject2:
76
Enter the marks obtained by student 13:
Marks for Subject3:
```

```
61
Enter the marks obtained by student 13:
Marks for Subject4:
53
Enter the marks obtained by student 13:
Marks for Subject5:
29
Enter the marks obtained by student 14:
Marks for Subject1:
57
Enter the marks obtained by student 14:
Marks for Subject2:
51
Enter the marks obtained by student 14:
Marks for Subject3:
43
Enter the marks obtained by student 14:
Marks for Subject4:
15
Enter the marks obtained by student 14:
Marks for Subject5:
69
Enter the marks obtained by student 15:
Marks for Subject1:
97
Enter the marks obtained by student 15:
Marks for Subject2:
56
Enter the marks obtained by student 15:
Marks for Subject3:
61
Enter the marks obtained by student 15:
Marks for Subject4:
80
Enter the marks obtained by student 15:
Marks for Subject5:
81
```

```
Enter the marks obtained by student 16:
Marks for Subject1:
61
Enter the marks obtained by student 16:
Marks for Subject2:
77
Enter the marks obtained by student 16:
Marks for Subject3:
62
Enter the marks obtained by student 16:
Marks for Subject4:
14
Enter the marks obtained by student 16:
Marks for Subject5:
49
Enter the marks obtained by student 17:
Marks for Subject1:
20
Enter the marks obtained by student 17:
Marks for Subject2:
34
Enter the marks obtained by student 17:
Marks for Subject3:
65
Enter the marks obtained by student 17:
Marks for Subject4:
75
Enter the marks obtained by student 17:
Marks for Subject5:
47
Enter the marks obtained by student 18:
Marks for Subject1:
61
Enter the marks obtained by student 18:
Marks for Subject2:
27
Enter the marks obtained by student 18:
```

```
Marks for Subject3:
97
Enter the marks obtained by student 18:
Marks for Subject4:
82
Enter the marks obtained by student 18:
Marks for Subject5:
39
Enter the marks obtained by student 19:
Marks for Subject1:
35
Enter the marks obtained by student 19:
Marks for Subject2:
50
Enter the marks obtained by student 19:
Marks for Subject3:
67
Enter the marks obtained by student 19:
Marks for Subject4:
84
Enter the marks obtained by student 19:
Marks for Subject5:
58
Enter the marks obtained by student 20:
Marks for Subject1:
39
Enter the marks obtained by student 20:
Marks for Subject2:
19
Enter the marks obtained by student 20:
Marks for Subject3:
23
Enter the marks obtained by student 20:
Marks for Subject4:
80
Enter the marks obtained by student 20:
Marks for Subject5:
```

82

```
The average marks for subject1 is:61.349998
The average marks for subject2 is:61.400002
The average marks for subject3 is:58.700001
The average marks for subject4 is:52.299999
The average marks for subject5 is:49.599998

Average marks of student1 is: 55.200001
Average marks of student2 is: 62.200001
Average marks of student3 is: 72.800003
Average marks of student4 is: 55.200001
Average marks of student5 is: 55.400002
Average marks of student6 is: 51.400002
Average marks of student7 is: 47.200001
Average marks of student8 is: 44.400002
Average marks of student9 is: 45.400002
Average marks of student10 is: 64.400002
Average marks of student11 is: 74.400002
Average marks of student12 is: 75.000000
Average marks of student13 is: 61.200001
Average marks of student14 is: 47.000000
Average marks of student15 is: 75.000000
Average marks of student16 is: 52.599998
Average marks of student17 is: 48.200001
Average marks of student18 is: 61.200001
Average marks of student19 is: 58.799999
Average marks of student20 is: 48.599998

Number of students who got below 50 on average: 6

Score obtained by student1 is:276.000000
Score obtained by student2 is:311.000000
Score obtained by student3 is:364.000000
Score obtained by student4 is:276.000000
Score obtained by student5 is:277.000000
Score obtained by student6 is:257.000000
```

```
Score obtained by student7 is:236.000000
Score obtained by student8 is:222.000000
Score obtained by student9 is:227.000000
Score obtained by student10 is:322.000000
Score obtained by student11 is:372.000000
Score obtained by student12 is:375.000000
Score obtained by student13 is:306.000000
Score obtained by student14 is:235.000000
Score obtained by student15 is:375.000000
Score obtained by student16 is:263.000000
Score obtained by student17 is:241.000000
Score obtained by student18 is:306.000000
Score obtained by student19 is:294.000000
Score obtained by student20 is:243.000000
```

```
/*QUESTION-5*/
#include<stdio.h>
#include<string.h>
int main()
{
    char s1[100],s2[100];
    printf("Enter string1:\n");
    scanf("%s",s1);
    printf("Enter string2:\n");
    scanf("%s",s2);
    int n;
    printf("How many characters you want to concatenate:\n");
    scanf("%d",&n);
    int i=0;
    int l=strlen(s1);
    while(i<n)
    {
        *(s1+l+i)=*(s2+i);
        i++;
    }
    s1[l+i]='\0';
    printf("The string after concatenation is: %s\n",s1);
```

```
    return 0;
}

OUTPUT:
Enter string1:
HELLO
Enter string2:
WORLD
How many characters you want to concatenate:
3
The string after concatenation is: HELLOWOR
--------------------------------------------------------------------------------------------------------
/*QUESTION-6*/
#include<stdio.h>
#include<string.h>
int main()
{
    int nod=0,ucc=0,lcc=0,nos=0;
    char s[100];
    printf("Enter a string :\n");
    scanf("%s",s);
    for(int i=0;i<strlen(s);i++)
    {
        if(s[i]>='0'&&s[i]<='9')
            nod++;
        else if(s[i]>='a'&&s[i]<='z')
            lcc++;
        else if(s[i]>='A'&&s[i]<='Z')
            ucc++;
        else
            nos++;
    }
    printf("No of digits: %d\n",nod);
    printf("No of lower case: %d\n",lcc);
    printf("No of upper case: %d\n",ucc);
    printf("No of special character: %d\n",nos);
    return 0;
```

```
}

OUTPUT:
Enter a string :
HeLLO1235!@#
No of digits: 4
No of lower case: 1
No of upper case: 4
No of special character: 3
-----------------------------------------------------------------------------------------------------------
/*QUESTION-7*/
#include<stdio.h>
#include<string.h>
int main()
{
        char a[10];
        char b[10];
        char c[10];
        int r=0,i=0,p;
        int t=0;
        int x,g,s,n,o;
        puts("Enter First String:");
        gets(a);
        puts("Enter Second String:");
        gets(b);
        printf("Enter the index where you want to insert the string:\n");
        scanf("%d",&p);
        r=strlen(a);
        n=strlen(b);
        i=0;
        while(i<=r)
        {
                c[i]=a[i];
                i++;
        }
        s=n+r;
        o=p+n;
```

```
        for(i=p;i<s;i++)
        {
                x = c[i];
                if(t<n)
                {
                        a[i]=b[t];
                        t=t+1;
                }
                a[o]=x;
                o=o+1;
        }
    printf("%s",a);
    return 0;
}
```

```
OUTPUT:
Enter First String:
HELLO
Enter Second String:
WORLD
Enter the index where you want to insert the string:
3
HELWORLDLO
```

```
/*QUESTION-8*/
#include<stdio.h>
#include<string.h>
#include<ctype.h>
int main()
{
    char str[100],copy[100];
    printf("Enter a string:\n");
    scanf("%s",str);
    int n;
    printf("Enter no of character you want to copy:\n");
    scanf("%d",&n);
    for(int i=0;i<n;i++)
```

```
    {
        copy[i]=toupper(str[strlen(str)-n+i]);
    }
    copy[n]='\0';
    printf("%s",copy);
    return 0;
}
```

OUTPUT:

```
Enter a string:
helloworld
Enter no of character you want to copy:
5
WORLD
```

---LAB-5---

```
/*QUESTION-1*/
#include<stdio.h>
int is_prime(int );
int main()
{
    int i;
    printf("Enter any number:\n");
    scanf("%d",&i);
    int r=is_prime(i);
    printf("The function returned: %d\n",r);
    return 0;
}
int is_prime(int a)
{
    int k;
    for(k=2;k<=a;k++)
    {
        if(a%k==0)
        break;
    }
```

```
    if(k==a)
        return 1;
    else
        return 0;
}

OUTPUT:
Enter any number:
35
The function returned: 0
```

```
/*QUESTION-2*/
#include<stdio.h>
void _leap_year(int);
int main()
{
    int year;
    printf("Enter a year:\n");
    scanf("%d",&year);
    _leap_year(year);
    return 0;
}
void _leap_year(int year)
{
    if(year%100!=0&&year%4==0)
    printf("Leap Year\n");
    else if(year%400==0)
    printf("Leap Year\n");
    else
    printf("Not a leap year\n");
}

OUTPUT:
Enter a year:
2015
Not a leap year
```

```c
/*QUESTION-3*/
#include<stdio.h>
int rev(int);
int main()
{
    int i,r;
    printf("Enter an integer:\n");
    scanf("%d",&i);
    int j=rev(i);
    printf("Reverse number:%d\n",j);
    return 0;
}
int r,sum=0;
int rev(int i)
{
    if(i)
    {
        r=i%10;
        sum=sum*10+r;
        rev(i/10);
    }
    else
    return sum;
}
```

```
OUTPUT:
Enter an integer:
52468
Reverse number:86425
```

```c
/*QUESTION 4*/
#include<stdio.h>
int swap(int*,int*);//call by reference
int main()
{
    int a=10,b=20;
    printf("Values before swap are a=%d and b=%d\n",a,b);
```

```
    swap(&a,&b);
    printf("The values after swap are a=%d,b=%d\n",a,b);
    return 0;
}
int swap(int*c,int*d)
{
    int t;
    t=*c;
    *c=*d;
    *d=t;
}
```

OUTPUT:
Values before swap are a=30 and b=20
The values after swap are a=20,b=30

```
/*QUESTION-5*/
#include<stdio.h>
void swap(int,int);//call by value
int main()
{
    int a=10,b=20;
    printf("The value of a and b before swapping are a=%d, b=%d\n",a,b);
    swap(a,b);
    return 0;
}
void swap(int a,int b)
{
    int t;
    t=a;
    a=b;
    b=t;
    printf("The values of a and b after swap is a=%d, b=%d",a,b);
}
```

OUTPUT:
The value of a and b before swapping are a=10, b=20

```
The values of a and b after swap is a=20, b=10
--------------------------------------------------------------------------------------------------------------
/*QUESTION 6-1*/
#include<stdio.h>
#include<stdlib.h>
int factorial(int);//using recursion
int main()
{
    int i;
    printf("Enter a number:\n");
    scanf("%d",&i);
    if(i<0)
    {
        printf("You entered a negative number\n");
        exit(0);
    }
    int fact=factorial(i);
    printf("The value of factorial of the number is: %d\n",fact);
    return 0;
}
int factorial(int i)
{
    if(i==0)
        return ;
    else if(i==1)
        return 1;
    else
        return i*factorial(i-1);
}

OUTPUT:
Enter a number:
5
The value of factorial of the number is: 120
--------------------------------------------------------------------------------------------------------------
-------
/*QUESTION 6-2*/
```

```c
#include<stdio.h>
#include<stdlib.h>
int factorial(int);//without recursion
int main()
{
    int i;
    printf("Enter a number:\n");
    scanf("%d",&i);
    if(i<0)
    {
        printf("You entered a negative number\n");
        exit(0);
    }
    int fact=factorial(i);
    printf("The factorial of the number you entered is: %d",fact);
    return 0;
}
int factorial(int i)//using while loop
{
    int a=i;
    while(i>1)
    {
        a=a*(i-1);
        i--;
    }
    return a;
}
```

```
OUTPUT:
Enter a number:
5
The factorial of the number you entered is: 120
```

```c
/*QUESTION 7-1*/
#include<stdio.h>
int fibonacci(int);//using recursion
int main()
```

```
{
    int i,j,k=0;
    printf("Enter the no of terms you want to print:\n");
    scanf("%d",&i);
    printf("The terms of the fibonacci series are:\n");
    for(j=0;j<i;j++)
    {
        printf("%d ",fibonacci(k));
        k++;
    }
    return 0;
}
int fibonacci(int n)
{
    if(n==0||n==1)
        return n;
    else
        return fibonacci(n-1)+fibonacci(n-2);
}
```

OUTPUT:

```
Enter the no of terms you want to print:
15
The terms of the fibonacci series are:
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377
```

```
/*QUESTION 7-2*/
#include<stdio.h>
int fibonacci(int);//without recursion
int main()
{
    int n;
    printf("Enter number of terms you want to print:\n");
    scanf("%d",&n);
    fibonacci(n);
    return 0;
}
```

```
int fibonacci(int n)
{
    int i;
    int a=0,b=1,result;
    for(i=0;i<n;i++)
    {
        printf("%d ",a);
        result=a+b;
        a=b;
        b=result;
    }
}
```

OUTPUT:

```
Enter number of terms you want to print:
10
0 1 1 2 3 5 8 13 21 34
```

```
/*QUESTION-8*/
#include<stdio.h>
#include<math.h>
int factorial(int);
int main()
{
    int i,n=1;
    float x;
    printf("Enter the value of x:\n");
    scanf("%f",&x);
    float result=0;
    for(i=0;i<4;i++)
    {
        if(n%2!=0)
        result=result+pow(x,2*n-1)/factorial(2*n-1);
        else
        result=result-pow(x,2*n-1)/factorial(2*n-1);
        n++;
    }
```

```
    printf("The result is: %f",result);
    return 0;
}
int factorial(int a)
{
    if(a==1)
    return 1;
    else
    return a*factorial(a-1);
}
```

OUTPUT:

```
Enter the value of x:
1
The result is: 0.841468
```

---LAB-6---

```
/*QUESTION-1*/
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
void decide(char *p)
{
    char arr[10]={'a','e','i','o','u','A','E','I','O','U'};
    int i;
    for(i=0;i<10;i++)
    {
        if(*p==*(arr+i))
        {
            printf("It is a vowel\n");
            break;
        }
    }
    if(i==10)
        printf("It is a consonant\n");
}
```

```
int main()
{
    char c;char *p;
    p=&c;
    printf("Enter a character:\n");
    scanf("%c",p);
    int i=*p;
    if((i>=97&&i<=122)||(i>=65&&i<=90))
        decide(p);
    else
    {
        printf("You haven't entered a valid character\n");
        return 0;
    }
}
```

OUTPUT:

```
Enter a character:
A
It is a vowel
```

```
/*QUESTION-2*/
#include<stdio.h>
#include<string.h>
#include<ctype.h>
int main()
{
    char str[]="gOOd mORning";
    int k;
    for(int i=0;i<strlen(str);i++)
    {
        k=*(str+i);
        if(k>=97&&k<=122)
            *(str+i)=toupper(*(str+i));
        else
            *(str+i)=tolower(*(str+i));
    }
```

```
    printf("%s\n",str);
}

OUTPUT:
GooD MorNING
-----------------------------------------------------------------------------------------------------------
/*QUESTION-3*/
#include<stdio.h>
#include<string.h>
int main()
{
    char *s="Oxford University Press";
    char s_new[10];
    int i,j;
    for(i=strlen(s)-5,j=0;i<strlen(s);i++,j++)
    {
            s_new[j]=*(s+i);
    }
    printf("%s\n",s_new);
    return 0;
}

OUTPUT:
Press
-----------------------------------------------------------------------------------------------------------
/*QUESTION-4*/
#include<stdio.h>
int main()
{
    int arr[100],n,value;
    printf("Enter the index(0 to 99) where you want to insert a value:\n");
    scanf("%d",&n);
    printf("Enter the value you want to insert:\n");
    printf("The value at the index you entered is:\n");
    scanf("%d",&value);
    *(arr+n)=value;
    printf("%d\n",*(arr+n));
```

```
    return 0;
}
```

```
OUTPUT:
Enter the index(0 to 99) where you want to insert a value:
2
Enter the value you want to insert:
50
The value at the index you entered is:
50
```

```
/*QUESTION-5*/
#include<stdio.h>
#include<string.h>
void reverse_string(char *name)
{
    char r_name[100];
    int i=0;
    while(*(name+i)!='\0')
    {
        r_name[i]=*(name+strlen(name)-1-i);
        i++;
    }
    r_name[strlen(name)]='\0';
    printf("%s",r_name);
}
int main()
{
    char name[100];
    printf("Enter a string:\n");
    scanf("%s",name);
    reverse_string(name);
    return 0;
}
```

```
OUTPUT:
Enter a string:
```

```
GoodMorning
gninroMdooG
```

```
/*QUESTION-6*/
#include<stdio.h>
void compare(int* arr1,int* arr2,int n1,int n2)
{
    int k=(n2>n1?n1:n2);
    int i;
    for(i=0;i<k;i++)
    {
        if(*(arr1+i)==*(arr2+i))
            continue;
        else
            {
                printf("The two arrays are not same\n");
                break;
            }
    }
    if(i==k&&n1==n2)
        printf("The two arrays are the same\n");
    else if(i==k)
        printf("The two arrays are same upto %d elements\n",k);
}
int main()
{
    int arr1[100],arr2[100];
    int n1,n2,i;
    printf("Enter number of elements in array 1:\n");
    scanf("%d",&n1);
    printf("Enter elemnts of array 1:\n");
    for(i=0;i<n1;i++)
    scanf("%d",&arr1[i]);
    printf("Enter number of elements in array 2:\n");
    scanf("%d",&n2);
    printf("Enter elemnts of array 2:\n");
    for(i=0;i<n2;i++)
```

```
    scanf("%d",&arr2[i]);
    compare(arr1,arr2,n1,n2);
    return 0;
}

OUTPUT:
Enter number of elements in array 1:
10
Enter elemnts of array 1:
1 2 3 4 5 6 7 8 9 10
Enter number of elements in array 2:
6
Enter elemnts of array 2:
1 2 3 4 5 6
The two arrays are same upto 6 elements
-----------------------------------------------------------------------------------------------------------
/*QUESTION-7*/
#include<stdio.h>
#include<string.h>
char* modify_string(char *s,char ch)
{
    char p[100];
    int i,j=0,k=0;
    for(i=0;i<strlen(s);i++)
    {
        if(*(s+i)==ch)
            continue;
        else
        {
            *(p+j)=*(s+i);
            j++;
        }
    }
    *(p+j)='\0';
    strcpy(s,p);
    return s;
}
```

```
int main()
{
    char ch;
    char s[100];
    printf("Enter a string:\n");
    scanf("%s",&s);
    fflush(stdin);
    printf("Enter a character:\n");
    scanf("%c",&ch);
    char* s1=modify_string(s,ch);
    printf("The corrected string is:\n");
    printf("%s\n",s1);
    return 0;
}
```

```
OUTPUT:
Enter a string:
Sayantan
Enter a character:
a
The corrected string is:
Syntn
```

```
/*QUESTION-8*/
#include<stdio.h>
int main()
{
    int m,n;
    printf("Enter the value of row and column:\n");
    scanf("%d%d",&m,&n);
    int arr1[m][n],arr2[m][n],arr[m][n];
    printf("Enter elements for matrix1:\n");
    for(int i=0;i<m;i++)
    for(int j=0;j<n;j++)
    scanf("%d",&arr1[i][j]);
    printf("Enter the elements of matrix2:\n");
    for(int i=0;i<m;i++)
```

```
    for(int j=0;j<n;j++)
    scanf("%d",&arr2[i][j]);
    for(int i=0;i<m;i++)
    for(int j=0;j<n;j++)
    *(*(arr+i)+j)=*(*(arr1+i)+j)+*(*(arr2+i)+j);
    printf("The sum of the two matrix is:\n");
    for(int i=0;i<m;i++)
    for(int j=0;j<n;j++)
    {
        printf("%d ",*(*(arr+i)+j));
        if(j==n-1)
        printf("\n");
    }
    return 0;
}

OUTPUT:
Enter the value of row and column:
3 4
Enter elements for matrix1:
1 2 3 4
5 6 7 8
9 8 5 6
Enter the elements of matrix2:
3 5 6 7
1 5 2 6
2 4 8 9
The sum of the two matrix is:
4 7 9 11
6 11 9 14
11 12 13 15
-------------------------------------------------------------------------------------------------------
----------------------------------------LAB-7------------------------------------------------------------
-------------------------------------------------------------------------------------------------------
/*QUESTION-1*/
#include<stdio.h>
struct emp{
```

```
    char name[20];
    int age;
    float salary;
    int contact;
    int pin;
};
int main()
{
    struct emp e;
    printf("Enter the name, age, salary, contact number, pin of the employee:\n");
    scanf("%s%d%f%d%d",e.name,&e.age,&e.salary,&e.contact,&e.pin);
    printf("The details you entered are:\n");
    printf("Name:%s Age:%d Salary:%f Contact:%d pin:%d\n",e.name,e.age,e.salary,e.contact,e.pin);
    return 0;
}

OUTPUT:
Enter the name, age, salary, contact number, pin of the employee:
AayanRoy 25     50000   546312  214565
The details you entered are:
Name:AayanRoy Age:25 Salary:50000.000000 Contact:546312 pin:214565
--------------------------------------------------------------------------------------------------------
/*QUESTION-2*/
#include<stdio.h>
struct faculty{
    char name[20];
    int age;
    float salary;
    int contact;
};
int main()
{
    struct faculty f[100];
    int n,i;
    printf("Enter the number of faculty in your department:\n");
    scanf("%d",&n);
    for(i=0;i<n;i++)
```

```
    {
        printf("Enter the details of faculty%d: Name, Age, Salary, Contact\n",i+1);
        scanf("%s%d%f%d",f[i].name,&f[i].age,&f[i].salary,&f[i].contact);
        fflush(stdin);
    }
    printf("The details you entered are:\n");
    for(i=0;i<n;i++)
    {
        printf("Employee %d:\n",i+1);
        printf("Name:%s Age%d Salary:%f Contact:%d\n",f[i].name,f[i].age,f[i].salary,f[i].contact);
    }
    return 0;
}
```

OUTPUT:

```
Enter the number of faculty in your department:
5
Enter the details of faculty1: Name, Age, Salary, Contact
SubirSaha 40 70000 845624
Enter the details of faculty2: Name, Age, Salary, Contact
SumanMishra 50 80000 856123
Enter the details of faculty3: Name, Age, Salary, Contact
AntaraSanyal 45 75000 823156
Enter the details of faculty4: Name, Age, Salary, Contact
MohitRoy 52 85000 754612
Enter the details of faculty5: Name, Age, Salary, Contact
SunilSinha 49 78000 789452
The details you entered are:
Employee 1:
Name:SubirSaha Age40 Salary:70000.000000 Contact:845624
Employee 2:
Name:SumanMishra Age50 Salary:80000.000000 Contact:85612
Employee 3:
Name:AntaraSanyal Age45 Salary:75000.000000 Contact:823156
Employee 4:
Name:MohitRoy Age52 Salary:85000.000000 Contact:754612
Employee 5:
```

```
Name:SunilSinha Age49 Salary:78000.000000 Contact:789452
--------------------------------------------------------------------------------------------------------------
/*QUESTION-3*/
#include<stdio.h>
#include<stdlib.h>
struct hotel{
    char name[20];
    char address[30];
    char grade;
    int no_rooms;
    float charges;
};
void display_by_grade(char gr,struct hotel h[])
{
    int i;
    if(gr!='A'&&'B'&&'C')
        printf("INVALID choice of Grade");
    for(i=0;i<6;i++)
    {
        if(h[i].grade==gr)
        {
            printf("Name: %s\n",h[i].name);
            printf("Address: %s\n",h[i].address);
            printf("Grade: %c\n",h[i].grade);
            printf("No of rooms: %d\n",h[i].no_rooms);
            printf("Charges: %.2f\n",h[i].charges);
            printf("\n");
        }
        else
            continue;
    }
}
void display_by_price(float sp_charge,struct hotel h[])
{
    int i;
    if(sp_charge<400)
    {
```

```
        printf("No HOTEL availabe\n");
    }
    for(i=0;i<6;i++)
    {
        if(h[i].charges<=sp_charge)
        {
            printf("Name: %s\n",h[i].name);
            printf("Address: %s\n",h[i].address);
            printf("Grade: %c\n",h[i].grade);
            printf("No of rooms: %d\n",h[i].no_rooms);
            printf("Charges: %.2f\n",h[i].charges);
            printf("\n");
        }
        else
            continue;
    }
}
int main()
{
    struct hotel h[6]={{"SeaSide","Digha",'A',15,550},
    {"SeaHawk","NewDigha",'A',20,1000},
    {"LeeResort","LeeRoad",'B',25,500},
    {"LeeBanquet","Exide",'B',30,450},
    {"TheHHI","Kolkata",'A',16,1200},
    {"ExideApartment","Kolkata",'C',35,400}};
    float sp_charge;
    char gr;
    printf("Enter the grade of hotel you want(A,B or C):\n");
    scanf("%c",&gr);
    display_by_grade(gr,h);
    printf("Enter your desired price:\n");
    scanf("%f",&sp_charge);
    display_by_price(sp_charge,h);
    return 0;
}
```

OUTPUT:

```
Enter the grade of hotel you want(A,B or C):
A
Name: SeaSide
Address: Digha
Grade: A
No of rooms: 15
Charges: 550.00

Name: SeaHawk
Address: NewDigha
Grade: A
No of rooms: 20
Charges: 1000.00

Name: TheHHI
Address: Kolkata
Grade: A
No of rooms: 16
Charges: 1200.00

Enter your desired price:
500
Name: LeeResort
Address: LeeRoad
Grade: B
No of rooms: 25
Charges: 500.00

Name: LeeBanquet
Address: Exide
Grade: B
No of rooms: 30
Charges: 450.00

Name: ExideApartment
Address: Kolkata
Grade: C
```

```
No of rooms: 35
Charges: 400.00
-----------------------------------------------------------------------------------------------------
/*QUESTION-4*/
/*The size of sructure variable and union variable having exactly the same members differ because members of
union variables share their memory loaction whereas the members of stucture variables have different(contiguous)
memory location.The size of a union is equal to the size of its largest member(in this case it is 8) whereas the
size of structure is equal to 24 bytes due to structure padding.*/
#include<stdio.h>
struct abc{
    int a;
    char c;
    float f;
    double d;
};
union pqr{
    int b;
    char d;
    float g;
    double e;
};
int main()
{
    printf("The size of structure is %d bytes\n",sizeof(struct abc));
    printf("The size of union is %d bytes\n",sizeof(union pqr));
    return 0;
}

OUTPUT:
The size of structure is 24 bytes
The size of union is 8 bytes
-----------------------------------------------------------------------------------------------------
/*QUESTION-5*/
#include<stdio.h>
#include<stdlib.h>
struct time{
    int hr;int min;int second;
```

```
};
int main()
{
    struct time start_time;
    struct time end_time;
    printf("Enter the hr min and second of start time:\n");
    scanf("%d%d%d",&start_time.hr,&start_time.min,&start_time.second);
    printf("Enter the hr min and second of end time:\n");
    scanf("%d%d%d",&end_time.hr,&end_time.min,&end_time.second);
    if(start_time.second>60||start_time.min>60||end_time.second>60||end_time.min>60)
    {
        printf("Wrong entry\n");
        exit(0);
    }
    if(start_time.hr>end_time.hr||(start_time.hr==end_time.hr&&start_time.min>end_time.min)
       ||(start_time.hr==end_time.hr&&start_time.min==end_time.min&&start_time.second>end_time.second))
    {
        printf("INVALID");
        exit(0);
    }
    while(start_time.hr!=end_time.hr||start_time.min!=end_time.min||start_time.second!=end_time.second)
    {
        if(start_time.second==60)
        {
            start_time.min++;
            start_time.second=0;
        }
        if(start_time.min==60)
        {
            start_time.hr++;
            start_time.min=0;
        }
        start_time.second++;
        printf("GoodDay\n");
        if(start_time.hr==end_time.hr&&start_time.min==end_time.min&&start_time.second==end_time.second)
        break;
    }
```

```
    return 0;
}

OUTPUT:
Enter the hr min and second of start time:
01 02 10
Enter the hr min and second of end time:
01 02 25
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
GoodDay
```

```
/*QUESTION-6*/
#include<stdio.h>
#include<stdlib.h>
struct point{
    int x;int y;
};
int main()
{
    struct point p;
    printf("Enter the coordinates of a point:\n");
    scanf("%d%d",&p.x,&p.y);
    if(p.x>0&&p.y>0)
    printf("1st Quadrant\n");
```

```
    else if(p.x>0&&p.y<0)
    printf("4th Quadrant\n");
    else if(p.x<0&&p.y>0)
    printf("2nd Quadrant\n");
    else if(p.x<0&&p.y<0)
    printf("3rd Quadrant");
    else
    printf("INVALID INPUT\n");
    return 0;
}
```

OUTPUT:

```
Enter the coordinates of a point:
3 4
1st Quadrant
```

```
/*QUESTION-7*/
#include<stdio.h>
#include<math.h>
#define PI 3.14
struct circle{float radius;};
struct rectangle{float a;float b;};
struct triangle{float x;float y;float z;};
union shape{struct circle c;struct rectangle r;struct triangle t;};
float c_area(float radius)
{
    return PI*(radius*radius);
}
float r_area(float a,float b)
{
    return a*b;
}
float t_area(float x,float y,float z)
{
    float s=(x+y+z)/2;
    return sqrt(s*(s-x)*(s-y)*(s-z));
}
```

```
int main()
{
    int choice;float area;
    union shape s;
    printf("Enter a number( Circle:1 Rectangle:2 Triangle:3 )\n");
    scanf("%d",&choice);
    switch(choice)
    {
        case 1:
            printf("Enter the radius of the circle:\n");
            scanf("%f",&s.c.radius);
            area=c_area(s.c.radius);break;
        case 2:
            printf("Enter two sides of rectangle:\n");
            scanf("%f%f",&s.r.a,&s.r.b);
            area=r_area(s.r.a,s.r.b);break;
        case 3:
            printf("Enter the sides of triangle:\n");
            scanf("%f%f%f",&s.t.x,&s.t.y,&s.t.z);
            area=t_area(s.t.x,s.t.y,s.t.z);break;
    }
    printf("The area of your desired shape is:%.2f\n",area);
    return 0;
}

OUTPUT:
Enter a number( Circle:1 Rectangle:2 Triangle:3 )
1
Enter the radius of the circle:
5.3
The area of your desired shape is:88.20
--------------------------------------------------------------------------------------------------------
/*QUESTION-8*/
#include<stdio.h>
struct name{char first[20];char middle[20]; char last[20];};
struct address{char area[20];char city[20];char state[20];};
struct emp{
```

```
    int id;
    struct name n;
    struct address a;
    int age;
    float salary;
    char designation[20];
};
int main()
{
    struct emp employee[10];
    for(int i=0;i<10;i++)
    {
        printf("Enter the details of employee %d:\n",i+1);
        printf("Enter first, middle and last name:\n");
        scanf("%s%s%s",employee[i].n.first,employee[i].n.middle,employee[i].n.last);
        fflush(stdin);
        printf("Enter Id:\n");
        scanf("%d",&employee[i].id);
        fflush(stdin);
        printf("Enter area, city and state:\n");
        scanf("%s%s%s",employee[i].a.area,employee[i].a.city,employee[i].a.state);
        fflush(stdin);
        printf("Enter salary:\n");
        scanf("%f",&employee[i].salary);
        fflush(stdin);
        printf("Enter designation:\n");
        scanf("%s",employee[i].designation);
    }
    printf("Here is what you have entered:\n");
    for(int i=0;i<10;i++)
    {
        printf("Employee %d:\n",i+1);
        printf("Name: %s %s %s\n",employee[i].n.first,employee[i].n.middle,employee[i].n.last);
        printf("Id: %d\n",employee[i].id);
        printf("Address: %s %s %s\n",employee[i].a.area,employee[i].a.city,employee[i].a.state);
        printf("Salary: %f\n",employee[i].salary);
        printf("Designation: %s\n",employee[i].designation);
```

```
        printf("\n");
    }
    return 0;
}
```

```
OUTPUT:
Enter the details of employee 1:
Enter first, middle and last name:
SUNIL KR MITRA
Enter Id:
101
Enter area, city and state:
LEEROAD KOLKATA WESTBENGAL
Enter salary:
50000
Enter designation:
ENGINEER
Enter the details of employee 2:
Enter first, middle and last name:
SUSHIL K SAHA
Enter Id:
102
Enter area, city and state:
LEEROAD KOLKATA WESTBENGAL
Enter salary:
60000
Enter designation:
TECHNICIAN
Enter the details of employee 3:
Enter first, middle and last name:
SUMAN K CHAKRABARTY
Enter Id:
103
Enter area, city and state:
EXIDE KOLKATA WESTBENGAL
Enter salary:
70000
```

```
Enter designation:
ENGINEER
Enter the details of employee 4:
Enter first, middle and last name:
SAURABH KUMAR BHARTI
Enter Id:
104
Enter area, city and state:
EXIDE KOLKATA WESTBENGAL
Enter salary:
60000
Enter designation:
ENGINEER
Enter the details of employee 5:
Enter first, middle and last name:
SOURAV K SANYAL
Enter Id:
105
Enter area, city and state:
ESPLANADE KOLKATA WESTBENGAL
Enter salary:
40000
Enter designation:
CLERK
Enter the details of employee 6:
Enter first, middle and last name:
ASHISH K SANYAL
Enter Id:
106
Enter area, city and state:
PARKSTREET KOLKATA WESTBENGAL
Enter salary:
50000
Enter designation:
CLERK
Enter the details of employee 7:
Enter first, middle and last name:
```

```
AMAN S MITRA
Enter Id:
107
Enter area, city and state:
EXIDE KOLKATA WESTBENGAL
Enter salary:
70000
Enter designation:
MANAGER
Enter the details of employee 8:
Enter first, middle and last name:
AVAY S MANNA
Enter Id:
108
Enter area, city and state:
EXIDE KOLKATA WESTBENGAL
Enter salary:
45000
Enter designation:
CLERK
Enter the details of employee 9:
Enter first, middle and last name:
AJAY A SAHU
Enter Id:
109
Enter area, city and state:
PTS KOLKATA WESTBENGAL
Enter salary:
90000
Enter designation:
ENGINEER
Enter the details of employee 10:
Enter first, middle and last name:
ANEEK M ROY
Enter Id:
110
Enter area, city and state:
```

```
EXIDE KOLKATA WESTBENGAL
Enter salary:
100000
Enter designation:
ENGINEER
Here is what you have entered:
Employee 1:
Name: SUNIL KR MITRA
Id: 101
Address: LEEROAD KOLKATA WESTBENGAL
Salary: 50000.000000
Designation: ENGINEER

Employee 2:
Name: SUSHIL K SAHA
Id: 102
Address: LEEROAD KOLKATA WESTBENGAL
Salary: 60000.000000
Designation: TECHNICIAN

Employee 3:
Name: SUMAN K CHAKRABARTY
Id: 103
Address: EXIDE KOLKATA WESTBENGAL
Salary: 70000.000000
Designation: ENGINEER

Employee 4:
Name: SAURABH KUMAR BHARTI
Id: 104
Address: EXIDE KOLKATA WESTBENGAL
Salary: 60000.000000
Designation: ENGINEER

Employee 5:
Name: SOURAV K SANYAL
Id: 105
```

Address: ESPLANADE KOLKATA WESTBENGAL
Salary: 40000.000000
Designation: CLERK

Employee 6:
Name: ASHISH K SANYAL
Id: 106
Address: PARKSTREET KOLKATA WESTBENGAL
Salary: 50000.000000
Designation: CLERK

Employee 7:
Name: AMAN S MITRA
Id: 107
Address: EXIDE KOLKATA WESTBENGAL
Salary: 70000.000000
Designation: MANAGER

Employee 8:
Name: AVAY S MANNA
Id: 108
Address: EXIDE KOLKATA WESTBENGAL
Salary: 45000.000000
Designation: CLERK

Employee 9:
Name: AJAY A SAHU
Id: 109
Address: PTS KOLKATA WESTBENGAL
Salary: 90000.000000
Designation: ENGINEER

Employee 10:
Name: ANEEK M ROY
Id: 110
Address: EXIDE KOLKATA WESTBENGAL
Salary: 100000.000000

Designation: ENGINEER

---LAB-8---

```
/*QUESTION-1*/
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
int main()
{
    FILE* fp;
    fp=fopen("NAMES.txt","r");
    if(fp==NULL)
    {
        printf("cannot open target file\n");
        exit(0);
    }
    char names[100][100];
    int index=-1;
    while(1)
    {
        char name[100];
        char *ch=fgets(name,150,fp);
        if(ch==NULL)break;
        index++;
        strcpy(names[index],name);
    }
    printf("Names as read backwards from the file:\n");
    for(int i=index;i>=0;i--)
        printf("%s\n",names[i]);
    return 0;
}
```

OUTPUT:

```
Names as read backwards from the file:
SURAJ SHARMA
```

SAURABH ROY

SUMAN SAHA

AJAY ROY

AAKASH MISHRA

AAMAN SHARMA

```
/*QUESTION-2*/
#include<stdio.h>
#include<stdlib.h>
int main()
{
    FILE* fp;
    fp=fopen("binary.bin","rb");
    if(fp==NULL)
    {
        printf("Cannot open target file\n");
        exit(0);
    }
    char ch;
    while(1)
    {
        ch=fgetc(fp);
        if(ch==EOF)
        break;
        printf("%c",ch);
    }
    fclose(fp);
    return 0;
}
```

OUTPUT:

```
Name:Armaan Saha Salary:50000 ID:10210
Name:Suman Mallik Salary:45000 ID:10211
```

```
Name:Rahul Mishra Salary:30000 ID:10212
Name:Saurabh Sinha Salary:35000 ID:10213
Name:Aman Basak salary:48000 ID:10214
-----------------------------------------------------------------------------------------------------------
/*QUESTION-3*/
/*The file text.txt contains:
The Poetry of earth is never dead:
        When all the birds are faint with the hot sun,
And hide in cooling trees, a voice will run
        From hedge to hedge about the new-mown mead;
That is the Grasshopper’s—he takes the lead
        In summer luxury,—he has never done
With his delights; for when tired out with fun
        He rests at ease beneath some pleasant weed.
The poetry of earth is ceasing never:
        On a lone winter evening, when the frost
Has wrought a silence, from the stove there shrills
        The Cricket’s song, in warmth increasing ever,
And seems to one in drowsiness half lost,
        The Grasshopper’s among some grassy hills.
*/
#include<stdio.h>
#include<stdlib.h>
int main()
{
    FILE* fp;
    fp=fopen("text.txt","r");
    int not=0,nos=0,noc=0,nol=0,n=0;
    char ch;
    while(1)
    {
        ch=fgetc(fp);
        n++;
        if(ch==EOF)break;
        else if(ch=='\n')
            nol++;
        else if(ch=='\t')
```

```
            not++;
        else if(ch==' ')
            nos++;
        else
            noc++;
    }
    printf("The number of characters is: %d\n",n-1);
    printf("The number of alpabets and special character is: %d\n",noc);
    printf("No of tabs:%d\n",not);
    printf("No of lines:%d\n",nol);
    printf("No of spaces: %d\n",nos);
    return 0;
}
```

```
OUTPUT:
The number of characters is: 622
The number of alpabets and special character is: 507
No of tabs:7
No of lines:13
No of spaces: 95
```

```
/*QUESTION-4*/
#include<stdio.h>
#include<stdlib.h>
int main()
{
    FILE* fp;
    fp=fopen("sample.txt","w");
    if(fp==NULL)
    {
        printf("Cannot open target file\n");
        exit(1);
    }
    char s[1000];
    printf("Enter what you want to write to the file:\n");
    gets(s);
    fputs(s,fp);
```

```
    fclose(fp);
    fp=fopen("sample.txt","r");
    if(fp==NULL)
    {
        printf("Cannot open target file\n");
        exit(2);
    }
    char ch;
    printf("Here is what you have written to the file:\n");
    while(1)
    {
        ch=fgetc(fp);
        if(ch==EOF)break;
        printf("%c",ch);
    }
    fclose(fp);
    return 0;
}

OUTPUT:
Enter what you want to write to the file:
HELLO WORLD
Here is what you have written to the file:
HELLO WORLD
--------------------------------------------------------------------------------------------------------------
/*QUESTION-5*/
#include<stdio.h>
#include<stdlib.h>
struct emp{
    char name[50];int age;
};
int main()
{
    FILE* fpt;
    FILE* fpb;
    fpt=fopen("Employee.txt","r");//opening text file for reading
    if(fpt==NULL)
```

```
    {
        printf("Cannot open file\n");
        exit(0);
    }
    fpb=fopen("Employee_binary1.DAT","wb");//opening binary file for writing to it
    if(fpb==NULL)
    {
        printf("Cannot open file\n");
        exit(0);
    }
    //copying the content of text to binary
    while(1)
    {
        struct emp e;
        if(feof(fpt))break;
        fscanf(fpt,"%s %d",e.name,&e.age);
        fwrite(&e,sizeof(e),1,fpb);
    }
    //closing both the files after copying successfully
    fclose(fpt);
    fclose(fpb);
    //declaring the structure
    struct emp e;
    fpb=fopen("Employee_binary1.DAT","rb");//opening for displaying its content
    while(fread(&e,sizeof(e),1,fpb)==1)
        printf("%s %d\n",e.name,e.age);
    fclose(fpb);
    return 0;
}

OUTPUT:
SumanManna 20
SaurabhSinha 21
SurajMishra 22
AmaanRoy 25
ArmaanSaha 26
SayanRoy 27
```

SrijanSingh 28

```
/*QUESTION-6*/
#include<stdio.h>
#include<ctype.h>
#include<stdlib.h>
int main()
{
    FILE *fp,*ftemp;
    char ch,c;
    fp=fopen("case.txt","r");
    if(fp==NULL)
        exit(EXIT_FAILURE);
    ftemp=fopen("case_t.txt","w");
    if(ftemp==NULL)
        exit(EXIT_FAILURE);
    while(1)
    {
        ch=fgetc(fp);
        if(ch==EOF)break;
        ch=toupper(ch);
        fputc(ch,ftemp);
    }
    fclose(fp);fclose(ftemp);
    ftemp=fopen("case_t.txt","r");
    fp=fopen("case.txt","w");
    if(fp==NULL)exit(EXIT_FAILURE);
    else
    {
        while(1)
        {
            ch=fgetc(ftemp);
            if(ch==EOF)break;
            fputc(ch,fp);
        }
        fclose(fp);
        fclose(ftemp);
```

```
        printf("The lowercase alphabets have been successfully changed to uppercase\n");
        remove("case_t.txt");
    }
    return 0;
}

OUTPUT:
The lowercase alphabets have been successfully changed to uppercase
--------------------------------------------------------------------------------------------------------
/*QUESTION-7*/
#include<stdio.h>
#include<stdlib.h>
int main()
{
    FILE* fp;int i,n,sum=0;
    fp=fopen("integers.txt","w");
    if(fp==NULL)
    {
        printf("Cannot open target file\n");
        exit(0);
    }
    printf("How many integers do you want to enter:\n");
    scanf("%d",&n);
    for(int j=0;j<n;j++)
    {
        printf("Enter integer number%d:\n",j+1);
        scanf("%d",&i);
        sum=sum+i;
        fprintf(fp,"%d ",i);
    }
    fclose(fp);
    if(fp==NULL)
    {
        printf("Cannot open target file\n");
        exit(0);
    }
    fp=fopen("integers.txt","a");
```

```
    fprintf(fp," %d",sum);
    fclose(fp);
    printf("The sum of the numbers was appended successfully\n");
    return 0;
}

OUTPUT:
How many integers do you want to enter:
5
Enter integer number1:
1
Enter integer number2:
2
Enter integer number3:
3
Enter integer number4:
4
Enter integer number5:
5
The sum of the numbers was appended successfully
-----------------------------------------------------------------------------------------------------
/*QUESTION-8*/
#include <stdio.h>
#include <stdlib.h>
typedef struct
{
    char name[100];
    int age;
}emp;
int main()
{
    FILE *fp;
    fp = fopen("Employee_binary1.DAT", "rb");
    if(fp==NULL)
    {
        printf("Cannot open file\n");
        exit(0);
```

```
    }
    int count = 0;
    while(1)
    {
        emp e;
        fread(&e,sizeof(e),1,fp);
        if(feof(fp))
        break;
        count++;
    }
    printf("Number of Records = %d", count);
}
```

OUTPUT:

```
Number of Records = 7
```
