1. Program to read radius of a circle and to find area and Circumference.

```c
#include<stdio.h>
int main()
{
    float r, area, circ;

    printf("\nPlease Enter Radius of a Circle : ");
    scanf("%f", &r);

    area = 3.142 * r * r;
    circ = 2 * 3.142* r;

    printf("\n\nArea of Circle = %f",area);
    printf("\n\nCircumference of Circle = %f",circ);
    return 0;

}
```

Output:

2. Program to read three numbers and find the biggest of three.

```c
#include<stdio.h>
int main()
{
    int a,b,c;
    printf("\nEnter Three Numbers : ");
    scanf("%d%d%d", &a, &b, &c);

    if(a>b)
    {
        if(a>c)
        {
            printf("\n%d is Maximum",a);
        }
        else
        {
            printf("\n%d is Maximum",c);
        }
    }
    else
    {
        if(b>c)
        {
            printf("\n%d is Maximum",b);
        }
        else
        {
```

```
                printf("\n%d is Maximum",c);
        }
    }
    return 0;
}
```

Output:

3. Program to demonstrate library functions in math.h

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

    double res;

    res = sqrt(16.00);
    printf("\n\nSqrt = %f",res);


    res = pow(2,4);
    printf("\n\nPow(2,4) = %f",res);


    res = ceil(2.3);
    printf("\n\nLargest Value near to 2.3 =  %f",res);


    res = floor(2.3);
    printf("\n\nSmallest Value near to 2.3 =  %f",res);

    res = log10(12);
    printf("\n\nCommon Log of 12 =  %f",res);


    res = sin(90);
    printf("\n\nSine of radian angle 90 =  %f",res);
    return 0;
}
```

Output:

4. Program to generate the factorial of a given number

```c
#include<stdio.h>
int main()
{
    int n,fact,i;

    printf("\nEnter a Number : ");
    scanf("%d", &n);

    fact = 1;
    for(i=1; i<=n; i++)
    {
        fact = fact * i;
    }

    printf("\nFactorial of %d = %d",n,fact);
    return 0;
}
```

Output:

5. Program to generate n fibonacii sequence

```c
#include<stdio.h>
int main()
{
    int n,f1,f2,f3,i;

    printf("\nEnter a Number : ");
    scanf("%d", &n);

    f1 = 0;
    f2 = 1;
    i = 1;
    n = n - 2;

    printf("\nFibonacci Terms : %d\t%d\t",f1,f2);

    while(i<=n)
    {
        f3 = f1 + f2;
        printf("%d\t",f3);
        f1 = f2;
        f2 = f3;
        i++;
    }
    return 0;
}
```

Output:

6. Program to read a number, find the sum of the digits, reverse the number and check it for palindrome.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
    int num,temp,rem,sum, rev;

    printf("\nEnter a Number : ");
    scanf("%d", &num);

    sum = 0;
    temp = num;
    rev = 0;

    while(temp>0)
    {
        rem = temp % 10;
        sum = sum + rem;
        rev = rev * 10 + rem;
        temp = temp / 10;
    }
    printf("\n\nSum of Digits = %d",sum);

    if(rev == num)
    {
        printf("\n\n%d is Palindrome\n",num);
```

```
    }
    else
    {
        printf("\n\n%d is Not Palindrome\n",num);
    }
    getch();
    return 0;
}
```

Output:

7. Program to read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers.

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

    int n,sum = 0;

    read:
        printf("\n\nEnter a Number : ");
        scanf("%d",&n);

    if(n != 999)
    {
        if(n >= 0)
        {
            sum = sum + n;
        }
        goto read;
    }

    printf("\n\nSum of Positive Numbers = %d",sum);
    return 0;
}
```

Output:

8. Program to read percentage of marks and to display appropriate message (demonstration of switch Case statement).

```
#include<stdio.h>
#include<conio.h>
int main()
{

    int m1,m2,m3,m4,m5,m6;
    int perc;

    printf("\n\nEnter Six Subject Marks : ");
    scanf("%d%d%d%d%d%d",&m1,&m2,&m3,&m4,&m5,&m6);

    perc = (m1+m2+m3+m4+m5+m6)*100/600;
    printf("\n\nPercentage = %d",perc);

    switch(perc)
    {
        case 70 ... 100: printf("\n\nYour Grade = First
Class with Distinction");
                         break;


        case 60 ... 69: printf("\n\nYour Grade = First
Class");
                         break;
```

```
        case 50 ... 59: printf("\n\nYour Grade = Second
Class");
                        break;


        case 35 ... 49: printf("\n\nYour Grade = Pass");
                        break;


        default: printf("\n\n*****FAIL********");
    }
    getch();
    return 0;
}
```

Output:

9. Program to find the roots of quadratic equation (Demonstration of else-if ladder).

```c
#include<stdio.h>
#include<math.h>
int main()
{
    float a,b,c,r1,r2,rr,ir,disc;

    printf("\nEnter Coefficients a, b, c : ");
    scanf("%f%f%f",&a, &b, &c);

    disc = b*b - 4*a*c;

    if(disc > 0)
    {
        r1 = (-b + sqrt(disc))/(2*a);
        r2 = (-b - sqrt(disc))/(2*a);
        printf("\n\nRoots are Real and Distinct : ");
        printf("\nr1 = %f\nr2 = %f",r1,r2);
    }
    else if(disc == 0)
    {
        r1 = -b/2*a;
        r2 = -b/2*a;
        printf("\n\nRoots are equal");
        printf("\nr1 = r2 = %f",r2);
    }
```

```
    else
    {
        printf("\n\nRoots are not equal but Imaginary ");
        rr = -b /(2*a);
        ir = sqrt(-disc)/(2*a);
        printf("\n%f i + %f",ir,rr);
    }
    return 0;
}
```

Output:

10. Program to read marks scored by a student and find the average of marks.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
    int m1,m2,m3,m4,m5,m6;
    float total,average;

    printf("\nEnter six subject Marks : ");
    scanf("%d%d%d%d%d%d",&m1,&m2,&m3,&m4,&m5,&m6);

    total = m1 + m2 + m3 + m4 + m5 + m6;
    average = total*100/600;

    printf("\nAverage of Marks : %f",average);

    getch();
    return 0;
}
```

Output:

11. Program to remove Duplicate Element in a single dimensional Array.

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

    int a[20], i, j, k, size;

    printf("\nEnter the number of elements(Size) of an array : ");
    scanf("%d", &size);

    printf("\nEnter %d elements of an array: ", size);

    for(i = 0; i < size; i++)
    {
        printf("\nEnter %d Element : ",i+1);
        scanf("%d", &a[i]);
    }
    for(i=0; i<size; i++)
    {
        for (j=i+1; j<size; j++)
        {
            if (a[i] == a[j])
            {
                for(k=j; k<size-1; k++)
                {
```

```
                        a[k] = a[k+1];
                    }
                    size--;
                    j--;
                }
            }
        }
    printf("\nArray Elements after duplicate Deletion :
");
    for (i=0; i<size; i++)
    {
        printf ("%d\t", a[i]);
    }
    getch();
    return 0;
}
```

Output

PART B

1. Program to Swap Two Numbers.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
    int a, b, temp;

    printf("\nEnter a & b Value : ");
    scanf("%d%d", &a, &b);

    printf("\n\nBefore Swap a = %d,  b = %d",a,b);

    temp = a;
    a = b;
    b = temp;

    printf("\n\nAfter Swap a = %d,  b = %d",a,b);

     getch();
    return 0;
}
```

Output:

2. Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.

```c
#include<stdio.h>
#include<conio.h>
#include<string.h>
int main()
{
    char str[100];
    char ch;
    int alp=0,dig=0,vow=0,con=0,spa=0,spl=0, i;

    printf("\n\nEnter a String : ");
    fflush(stdin);
    gets(str);

    i = 0;
    while(str[i] != '\0')
    {
        if((str[i] >= 'A' && str[i] <= 'Z') || (str[i] >=
'a' && str[i] <= 'z') )
        {
             alp++;
             switch(str[i])
            {
                case 'A':
                case 'E':
                case 'I':
```

```c
                case 'O':
                case 'U':
                case 'a':
                case 'e':
                case 'i':
                case 'o':
                case 'u': vow++;
                      break;
                default:con++;
            }
        }
        else if(str[i] >= '0' && str[i] <= '9')
        {
            dig++;
        }
        else if(str[i] == ' ')
        {
            spa++;
        }
        else
        {
            switch(str[i])
            {
                case 32 ... 47:
                case 58 ... 64:
                case 91 ... 96:
                case 123 ... 126 : spl++;
                default : break;
```

```
            }
        }
        i++;
    }

    printf("\n\nAlphabets = %d",alp);
    printf("\n\nDigits = %d",dig);
    printf("\n\nVowels = %d",vow);
    printf("\n\nConsonants = %d",con);
    printf("\n\nSpaces = %d",spa);
    printf("\n\nSpecial Characters = %d",spl);

    getch();
    return 0;
}
```

Output:

OR

```c
#include<stdio.h>
#include<conio.h>
#include<string.h>
#include<ctype.h>
int main()
{
    char str[100];
    char ch;
    int alp=0,dig=0,vow=0,con=0,spa=0,spl=0, i;

    printf("\n\nEnter a String : ");
    fflush(stdin);
    gets(str);

    i = 0;
    while(str[i] != '\0')
    {
        if(isalpha(str[i]))
        {
            alp++;
            switch(str[i])
            {
                case 'A':
                case 'E':
                case 'I':
                case 'O':
```

```c
                case 'U':
                case 'a':
                case 'e':
                case 'i':
                case 'o':
                case 'u': vow++;
                        break;
                default:con++;
            }


        }
        else if(isdigit(str[i]))
        {
            dig++;
        }
        else if(isspace(str[i]))
        {
            spa++;
        }
        else
        {
            spl++;
        }


        i++;
    }


    printf("\n\nAlphabets = %d",alp);
```

```
    printf("\n\nDigits = %d",dig);

    printf("\n\nVowels = %d",vow);

    printf("\n\nConsonants = %d",con);

    printf("\n\nSpaces = %d",spa);

    printf("\n\nSpecial Characters = %d",spl);


    getch();
    return 0;
}
```

Output:

3 Program to Reverse a string without using built in function.

```c
#include<stdio.h>
int main()
{
    char str1[50],str2[50];
    int i,j;

    printf("\nEnter a String : ");
    fflush(stdin);
    gets(str1);

    i = 0;
    while(str1[i] != '\0')
    {
        i++;
    }

    i--;
    j = 0;
    while(i >= 0)
    {
        str2[j] = str1[i];
        i--;
        j++;
    }
```

```
    str2[j] = '\0';


    printf("\nReverse String : %s",str2);


    return 0;
}
```

Output:

4. Program to find the length of a string without using built in function.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
    char str1[50];
    int i,n;

    printf("\nEnter a String : ");
    fflush(stdin);
    gets(str1);


    i = 0;
    while(str1[i] != '\0')
    {
        i++;
    }

    printf("\nString Length = %d",i);

    getch();
    return 0;
}
```
Output:

5. Program to demonstrate string functions.

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

    char str1[100], str2[50], str3[100], *temp;
    int n1,n2, n;

    printf("\nEnter First String : ");
    fflush(stdin);
    gets(str1);

    printf("\nEnter Second String : ");
    fflush(stdin);
    gets(str2);

    n1 = strlen(str1);
    n2 = strlen(str2);

    printf("\nFirst String Length = %d",n1);
    printf("\nSecond String Length = %d",n2);

    strcpy(str3, str1);
    printf("\nCopied String : ");
    puts(str3);
```

```c
    temp = strcat(str1, str2);
    printf("\nAfter Concatenation : ");
    puts(temp);


    n = strcmp(str1, str2);
    if(n == 0)
    {
        printf("\nBoth Strings are equal");
    }
    else
    {
        printf("\nBoth Strings not are equal");
    }


    getch();
    return 0;
}
```

Output

7. Program to perform addition and subtraction of Matrices.

```c
#include<stdio.h>
#include<conio.h>
int main()
{
    int a[10][10],b[10][10],res[10][10];
    int row, col, i,j;

    printf("\nEnter Number of Rows : ");
    scanf("%d", &row);

    printf("\nEnter Number of Columns : ");
    scanf("%d", &col);

    printf("\nEnter First Matrix Elements : ");
    for(i=0; i<row; i++)
    {
        for(j=0; j<col; j++)
        {
            printf("\nEnter (%d * %d) Element : ",i,j);
            scanf("%d", &a[i][j]);
        }
    }

    printf("\nEnter Second Matrix Elements : ");
    for(i=0; i<row; i++)
    {
        for(j=0; j<col; j++)
```

```c
    {
        printf("\nEnter (%d * %d) Element : ",i,j);

        scanf("%d", &b[i][j]);

    }
}


printf("\nAddition Matrix : \n");
for(i=0; i<row; i++)
{
    for(j=0; j<col; j++)
    {
        res[i][j] = a[i][j] + b[i][j];
        printf("%d\t\t", res[i][j]);
    }
    printf("\n");
}


printf("\nSubtraction Matrix : \n");
for(i=0; i<row; i++)
{
    for(j=0; j<col; j++)
    {
        res[i][j] = a[i][j] - b[i][j];
        printf("%d\t\t", res[i][j]);
    }
    printf("\n");
}
```

```
    getch();
    return 0;
}
```

Output

9. Program to check a number for prime by defining isprime( ) function.

```c
#include<stdio.h>
int isPrime(int n);
int main()
{
    int n,flag;

    printf("\nEnter a Number : ");
    scanf("%d",&n);

    flag = isPrime(n);
    if(flag == 1)
    {
        printf("\n%d is not a Prime number",n);
    }
    else
    {
        printf("\n%d is a Prime number",n);
    }
    return 0;
}


int isPrime(int n)
{
    int i,flag=0;
    for(i=2; i<n; i++)
```

```
    {
        if(n%i == 0)
        {
            flag = 1;
            break;
        }
        else
        {
            flag = 0;
        }
    }
    return flag;
}
```

Output:

10. Program to demonstrate student structure to read & display records of n students.

```c
#include<stdio.h>
#include<string.h>
typedef struct student
{
    int id;
    char name[25];
}student;

int main()
{
    student s[100];
    int n,i;

    printf("\n\nEnter Number of Students : ");
    scanf("%d",&n);

    printf("\n\nEnter %d Student Details\n\n",n);
    for(i=0; i<n; i++)
    {
        printf("\nEnter %d Student ID : ",i+1);
        scanf("%d",&s[i].id);

        printf("\nEnter %d Student Name : ",i+1);
        fflush(stdin);
        gets(s[i].name);
        printf("\n*********************\n");
```

```
    }

    printf("\n*****STUDENT INFORMATION********\n");
    for(i=0; i<n; i++)
    {
        printf("\n\n%d STUDENT INFORMATION\n",i+1);
        printf("\n\nStudent ID : %d",s[i].id);
        printf("\n\nStudent Name : %s",s[i].name);
        printf("\n---------------------\n");
    }
    return 0;
}
```

Output:

11. Program to demonstrate the difference between structure & union.

```c
#include<stdio.h>
typedef struct student
{
    int id;
    char name[25];
}student;

typedef union employee
{
    int id;
    char name[25];
}employee;

int main()
{
    student s1;
    employee e1;
    int n1,n2;

    n1 = sizeof(s1);
    n2 = sizeof(e1);

    printf("\nSize of Student = %d",n1);
    printf("\nSize of Employee = %d",n2);
```

```
    return 0;
}
```

Output: