PART-1

1.write c program to read radius of circle and to find area and circumferance.

```
#include<stdio.h>
Int main ()
{
fioat r,area,circum;
printf("\n enter radius of circle");
scanf("%d",& r);
area=3.14*r*r;
circum=2*3.14*r;
printf("\n area of circle=%f",area);
printf("\n circumferance of circle=%f",circum);
return 0;
}
```

2. write a C program to read three numbers and find the biggest of three

```
#include<stdio.h>

int main()

{
   int num1,num2,num3;

   printf("\nEnter value of num1, num2 and num3:");

  scanf("%d %d %d",&num1,&num2,&num3);

  if((num1>num2)&&(num1>num3))

     printf("\n Number1 is greatest");

  else if((num2>num3)&&(num2>num1))

     printf("\n Number2 is greatest");

  else

     printf("\n Number3 is greatest");

  return 0;
}
```

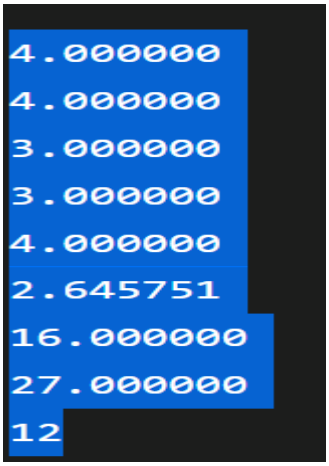
Out_Put:

```
Enter value of num1, num2 and num3: 15, 200,101
 Number  2 is greatest
```

3.c programm to demonstrate library functions in math.h

```
#include<stdio.h>
#include <math.h>
int main(){
printf("\n%f",ceil(3.6));
printf("\n%f",ceil(3.3));
printf("\n%f",floor(3.6));
printf("\n%f",floor(3.2));
printf("\n%f",sqrt(16));
printf("\n%f",sqrt(7));
printf("\n%f",pow(2,4));
printf("\n%f",pow(3,3));
printf("\n%d",abs(-12));
 return 0;
}
```

Out_put:



4. To check prime number or not.

```
#include <stdio.h>

Main () {
  int n, i, c = 0;
  printf ("Enter any number n:");
  scanf ("%d", &n);
 for (i = 1; i <= n; i++)
{
     if (n % i == 0)
{
        c++;
     }
  }

  if (c == 2)
 {
  printf("n is a Prime number");
  }
  else {
  printf("n is not a Prime number");
  }
  return 0;
  }
```

Out_ Put:

```
Enter any number n: 7
7 is Prime
```

5.Write c program to generate N primes

```
#include<stdio.h>
int main()
{
   int n,i,fact,j;
   printf("Enter the Number");
   scanf("%d",&n);
   printf("Prime Numbers are: \n");
   for(i=1; i<=n; i++)
   {
      fact=0;
      for(j=1; j<=n; j++)
      {
         if(i%j==0)
            fact++;
      }
      if(fact==2)
         printf("%d " ,i);
   }
   return 0;
}
```

Out_put:

1.enter the number:10

Prime numbers are :2,3,5,7

2.enter the number:15

Prime numbers are :2,3,5,7,11,13

6.C program to read number ,find sum of digits,reverse the number &check it for palindrome:

```
#include<stdio.h>
int main()
{
int n,r,sum=0,temp;
printf("enter the number=");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=(sum*10)+r;
n=n/10;
}
if(temp==sum)
printf("number is palindrome number ");
else
printf("not palindrome");
return 0;
```

Out_put:

enter the number=151

palindrome number

7. write c program to read percentage of marks and to display appropriate message(Demonstration of else-if ladder)

```
#include <stdio.h>
int main()
{
   int phy, chem, bio, math, comp;
   float per;


   printf("Enter five subjects marks: ");
   scanf("%d%d%d%d%d", &phy, &chem, &bio, &math, &comp);


 per = (phy + chem + bio + math + comp) / 5.0;

   printf("Percentage = %.2f\n", per);


   if(per >= 90)
   {
      printf("Grade A");
   }
   else if(per >= 80)
   {
      printf("Grade B");
   }
   else if(per >= 70)
   {
      printf("Grade C");
   }
   else if(per >= 60)
   {
      printf("Grade D");
   }
   else if(per >= 40)
   {
      printf("Grade E");
   }
   else
   {
      printf("FAIL");
    }

return 0;
}
```

Out_put:

```
Enter 5 subject marks:72  80  70  60  65
Percentage=69.40
Grade D

Enter 5 subject marks:86  85  70  72  60
Percentage=74.60
Grade C
```

Out_put:

```
Enter 5 subject marks:72  80  70  60  65
Percentage=69.40
Grade D

Enter 5 subject marks:86  85  70  72  60
Percentage=74.60
Grade C
```

8.wirte C program to find quadratic equation(with Switch Case)

```
#include <stdio.h>
#include <math.h>
int main()
{
   float a, b, c;
   float root1, root2, imaginary;
   float discriminant;

   printf("Enter values of a, b, c of quadratic equation (aX^2 + bX + c): ");
   scanf("%f%f%f", &a, &b, &c);
   discriminant = (b * b) - (4 * a * c);
   switch(discriminant > 0)
   {
      case 1:
         root1 = (-b + sqrt(discriminant)) / (2 * a);
         root2 = (-b - sqrt(discriminant)) / (2 * a);

         printf("Two distinct and real roots exists: %.2f and %.2f",
                root1, root2);
         break;
       case 0:
                switch(discriminant < 0)
         {
            case 1:
                                root1 = root2 = -b / (2 * a);
                                imaginary = sqrt(-discriminant) / (2 * a);

        printf("Two distinct complex roots exists: %.2f + i%.2f and %.2f -     i%.2f",
                        root1, imaginary, root2, imaginary);
                break;

            case 0:
                                root1 = root2 = -b / (2 * a);

                printf("Two equal and real roots exists: %.2f and %.2f", root1, root2);

                break
 }
   }
 return 0;
}
```

Out_put:

Enter three numbers a,b,c of quadratic equation ax^2+bx+c:

1 -8 15

Two dstinct real roots exists :3.00 and 5.00

9.C program to read marks scored by n students and find the average of marks[Demostration of single dimensional array]:

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int i,n,marks[50],sum=0;
float avg;
printf("Enter the number of student \n");
scanf("%d",&n);
 for(i=0;i<n;i++)
{
printf("Enter the marks \n",i+1);
 scanf("%d",&marks[i]);
sum=sum+marks[i];
}
 printf("Given marks: ");
for(i=0;i<n;i++)
 {
printf("%d ",marks[i]);
}
 avg=sum/(float)n;
printf("\nAverage = %0.2f",avg);
return 0;
 }
```

OUT_PUT:

Enter number of students:2
Given marks 80 90
Average=70

Enter number of students :3
Given marks 75 68 65
Average = 6

10.Write C Program to perform Addition and Subtraction of Matrices

```
#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++)


{
                        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;
         }
```

PART 2

1.Write a c program to find the length of a string without using built in function

```
#include <stdio.h>
main()
{
   char string[50];
   int i, length = 0;
   printf("Enter a string \n");
   gets(string);
      for (i = 0; string[i] != '\0'; i++)
   {
      length++;
   }
   printf("The length of a string is the number of characters in it \n");
   printf("So, the length of %s = %d\n", string, length);
return 0;
}
```

Out_Put:

```
1.Enter string : Hell
        Length of String is : 5
2.Enter String: Athani
          Length of String is:6
```

2. Write C Program to Demonstrate String Functions

String Function Programs On puts,gets

```
#include<stdio.h>
int main()
{
char name[30];
printf("Enter name: ");
gets(name);
puts(name);
}
```

Out_Put:

1.Enter Name:Poonam
2.Enter Name:Deepa

String Function program on strcpy

```
#include <stdio.h>
#include <string.h>
int main ()
{
char str1[12] = "Hello";
char str2[12] = "World";
char str3[12];
int  len ;
/* copy str1 into str3 */
strcpy(str3, str1);
}
```

Out_Put

String is=Hello

String Function on string str len

```
#include <stdio.h>
#include <string.h>
int main ()
{
char str1[12] = "Hello";
char str2[12] = "World";
char str3[12];
int  len ;
len = strlen(str1);
printf("strlen(str1) :  %d\n", len );
}
```

Out_Put:

String_length=5

string function strrev

```
#include<stdio.h>
#include <string.h>
int main()
{
char str[20];
printf("Enter string: ");
gets(str);
printf("String is: %s",str);
printf("\nReverse String is: %s",strrev(str));
}
```

Out_Put:

Enter string:Athani

Reversed String is:inahtA

string function strcmp function

```
#include<stdio.h>
#include <string.h>
int main()
{
char str1[10],str2[10];
gets(str1);
gets(str2);
if(strcmp(str1,str2)==0)
printf("Strings :equal");
else
printf("Strings: not equal");
}
```

Out_Put:

1) Str1=Hello
   Str2=world
   String are not equal

2) Str1=Google
   Str2= Google
   Strings are equal

string function Strupr()

```
#include<stdio.h>
#include <string.h>
int main()
{
char str[20];
gets(str);
printf("String is: %s",str);
printf("\nUpper String is: %s",strupr(str));
}
```

Out_Put:

```
Str1 is =Hello
Upper Str1 is =HELLO
```

string function Strlwr():

```
#include<stdio.h>
#include <string.h>
int main()
{
char str[20];
gets(str);
printf("String is: %s",str);
printf("\nUpper String is: %s",strlwr(str));
}
```

Out_Put:

```
Str1 is = HELLO

Lower Str1 is =hello
```

3. Write a C program to demonstrate pointers in C

```
#include<stdio.h>
int main()
{
int *p;
int var=10;
p=&var;
printf (“value of variable var is :%d”,var);
printf(“/n address of variable var is :%d”,*p);
printf(“/n address of  variable var is :%p”,&var);
printf(“/n address of  variable var is :%p”,p);
printf(“/n address of  pointer p  is :%p”,&p);
return 0;
}
```

Out_Put:

```
Value of Variable: 10
 Value of Variable: 10
Address of   Variable var:0x7fd49df7c8
Address of   Pointers :0x7fd49df7c0
```

4 .Write C program to check a number for prime by defining isprime ()

```
#include <stdio.h>
#include <conio.h>
Int isprime(int num);
void main()
{
        int num,res=0;
        clrscr();
        printf("\nENTER A NUMBER: ");
        scanf("%d",&num);
        res=isprime(num);
        if(res==0)
                printf("\n%d IS A PRIME NUMBER",num);
        else
                printf("\n%d IS NOT A PRIME NUMBER",num);
        getch();
}
int prime(int n)
{
        int  i;
        for(i=2;i<=n/2;i++)
        {
                if(n%i!=0)
                        continue;
                else
                        return 1;
        }
        return 0;
}
```

Out_Put:

1.Enter a number:3

3 is a prime

2.Enter a number:6

6 is not a prime

5. Write a C program to read , display and to find the trace of a square matrix

```
# include<stdio.h>
main( )
{
int a[10][10], m,i,j, sum;
printf ("\n Enter order of the square matrix :") ;
scanf ("%d", &m);
printf ("\n Enter the matrix \n");
for( i=0; i<m;i++)
for ( j=0; j<m; j++)
scanf ("%d", &a[i ][ j ]);
/* loop to find trace of the matrix */
sum = 0;
for ( i=0; i<m; i++)
sum = sum + a[i ][ i ];
printf ("\n trace of the matrix = %d", sum);
}
```

Output:

```
Enter order of the square matrix :3

Enter the matrix
3 2 -1
4 1 8
6 4 2

trace of the matrix = 6

...Program finished with exit code 0
Press ENTER to exit console.
```

6.Write a C program to read a string and to find the numbers of alphabets, digits,vowels,consonants,spaces and special characters.

```
#include<stdio.h>
void main()
{
   char str[200];
   int i,vowels=0,consonants=0,digits=0,spaces=0,specialCharacters=0;
   printf("Enter a string\n");
   gets(str);
   for(i=0;str[i]!='\0';i++)
   {
      if(str[i]=='a' || str[i]=='e' || str[i]=='i' ||str[i]=='o' || str[i]=='u' || str[i]=='A'
||str[i]=='E' || str[i]=='I' || str[i]=='O' ||str[i]=='U')
      {
         vowels++;
      }
      else if((str[i]>='a'&& str[i]<='z') || (str[i]>='A'&& str[i]<='Z'))
      {
         consonants++;
      }
      else if(str[i]>='0' && str[i]<='9')
      {
         digits++;
      }
      else if (str[i]==' ')
      {
         spaces++;
      }
      else
      {
         specialCharacters++;
      }
   }
   printf("\nVowels = %d",vowels);
   printf("\nConsonants = %d",consonants);
   printf("\nDigits = %d",digits);
   printf("\nWhite spaces = %d",spaces);
   printf("\nSpecial characters = %d",specialCharacters);

}
```

Out_Put:

Enter a string :KleSSMS@#1 2 3
Vowels:1
Consonants:6
Digits:3
Spaces=2
Special Characters=2

7. Write C Program to Reverse a String using Pointer

```
#include <stdio.h>
#include <conio.h>
void main()
{
        char *s;
        int len, i;
        clrscr();
        printf("\nENTER A STRING: ");
        gets(s);
        len=strlen(s);
        printf("\nTHE REVERSE OF THE STRING IS:");
        for(i=len;i>=0;i--)
        printf("%c",*(s+i));
        getch();
}
```

Out-put:
Enter a String:Kle college
Reverse of String is:egellocelk

08.Write C Program to Swap Two Numbers using Pointers

```
#include <stdio.h>
 int main()
{
   int x, y, *a, *b, temp;
    printf("Enter the value of x and y\n");
    scanf("%d%d", &x, &y);
     printf("Before Swapping\nx = %d\ny = %d\n", x, y);
     a = &x;
     b = &y;
    temp = *b;
    *b = *a;
    *a = temp;
printf("After Swapping\nx = %d\ny = %d\n", x, y);
 return 0;
}
```

Out_put:

```
Enter value of  x&y  = 4,5
Before  swapping: x=4, y=5
After swapping :    x=5, y=4
```

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

```
#include<stdio.h>
 #include<string.h>
Struct student
{
Char name[10];
int rollnumber;
int age;
};
Int main()
{
Struct student st[5];
Printf("Enter a records of 5 students\n");
for(i=0;i<5;i++)
{
Printf("Enter a rollnumber of a student");
Scanf("%d",&st[i].rollnumber);
Printf("Enter a name of the student ");
Scanf("%s",&st[i].name);
Printf("Enter a age of the  student");
Scanf("%d",&st[i].age);
}
Printf("student information list");
for(i=0;i<5;i++)
Printf("\n%d\t%\s\t%d",st[i].rollnumber,st[i].name,st[i].age);
Return 0;
}
```

Out-put:

Student information list:

9 arpita 19

4 ankita 25

14 pradeep 18

34 kiran 23

59 roopa 12

10.Write a c program to demonstrate the differance between structure and union

```
#include<stdio.h>
#include<string.h>
union unuionemp
{
char name[32];
float salary;
int workerno;
} uemp;
struct structemp
{
char name[32];
float salary;
int workerno;
} semp;
int main()
{
Printf("size of union is=%dbytes",sizeof(uemp));
Printf("\n size of structure=%dbytes",sizeof(semp));
Return 0;
}
```

Out put :

Size of union is=32bytes

Size of structure =38bytes