ASSIGNMENT:1

Write an algorithm and draw a flow chart of the following algorithm.

1. **Find a student average mark given mark1 and mark2.**

Step1:

Start

Step2:

Declare variables mark1 and mark2 and avg and final_result.

Step3:

Read the values of mark1 and mark2

Step4:

If (mark1) is less than 0

Display-mark1 must>=0

Step5:

If mark2 is less than 0

Display- mark2 must>=0

Step6:

Add mark1 and mark2 and assign the result value to final_result.

Final_result⟵mark1+mar2

Step7:

Divide the final_result value by 2 and assign the result value to avg.

avg←final_reult/2

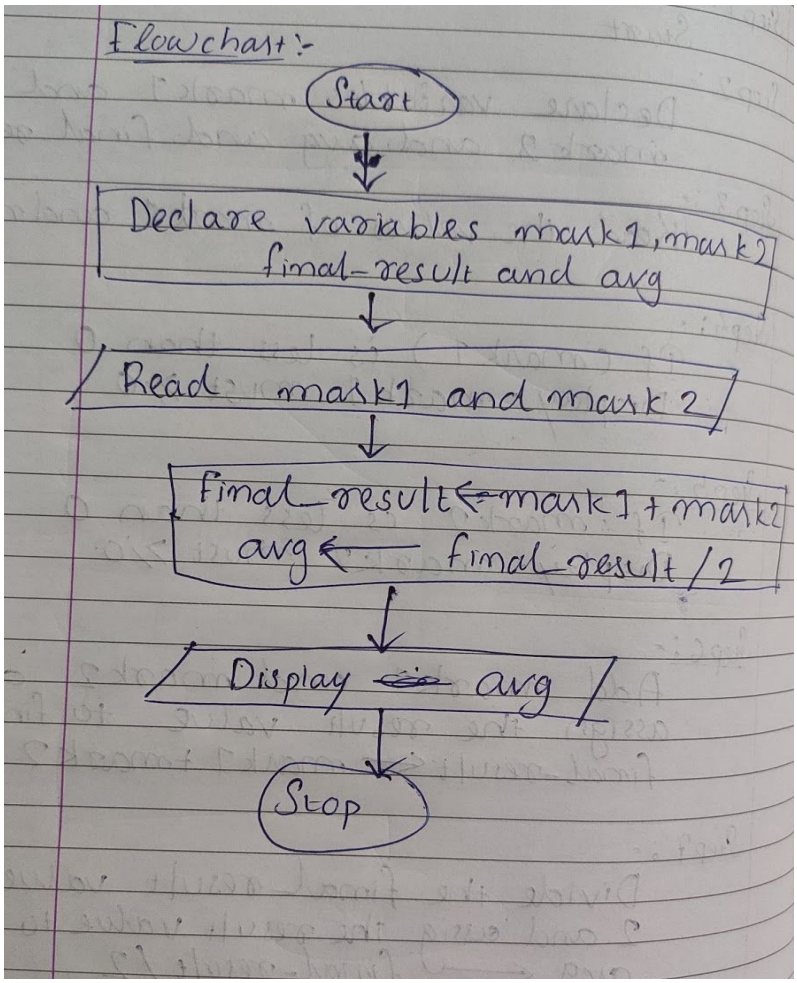
Step8:

Display

Average value of the mark is avg.

Step9;

Stop



2. Calculate the total fine charged by library for late return books. The charge is 0.20 INR for 1 day.

Step1:

Start

Step2:

Declare variables due_date, charge and fine.

Step3:

Initialize charge=0.20

Step4:

Read due_date

Step5:

If dur_date is less than 0

Display no of days can not be negative

Step6:

Multiply due_date with charge and assign the value in fine.

fine←due_date*cahrge

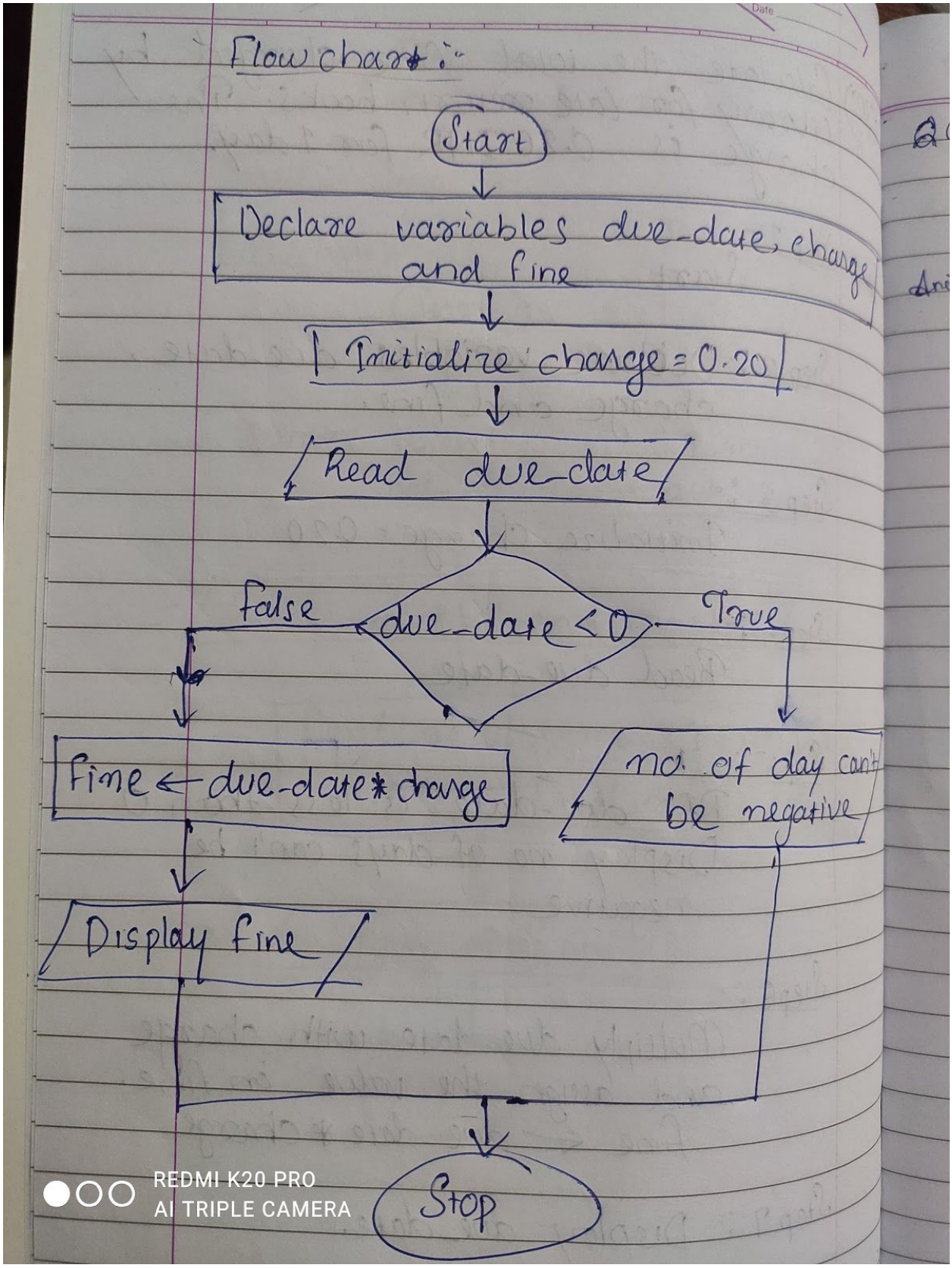
Step7:

Display due_date

Step8:

Stop

Flow chart :-



3. You had bought a nice shirt which cost RS 29.90 with 15% discount. Count the net price for the shirt.

Step1:

Start

Step2:

Declare variables cost, discount, price and discounted_cost.

Step3:

Initialize cost=29.90

discount=0.15

Step4:

Multiply cost with discount and assign the value in discounted_cost

discounted _cost←discounted_cost* cost

Step5:

Subtract discounted_cost from cost and assign the value to price.

Price←cost-discounted_cost

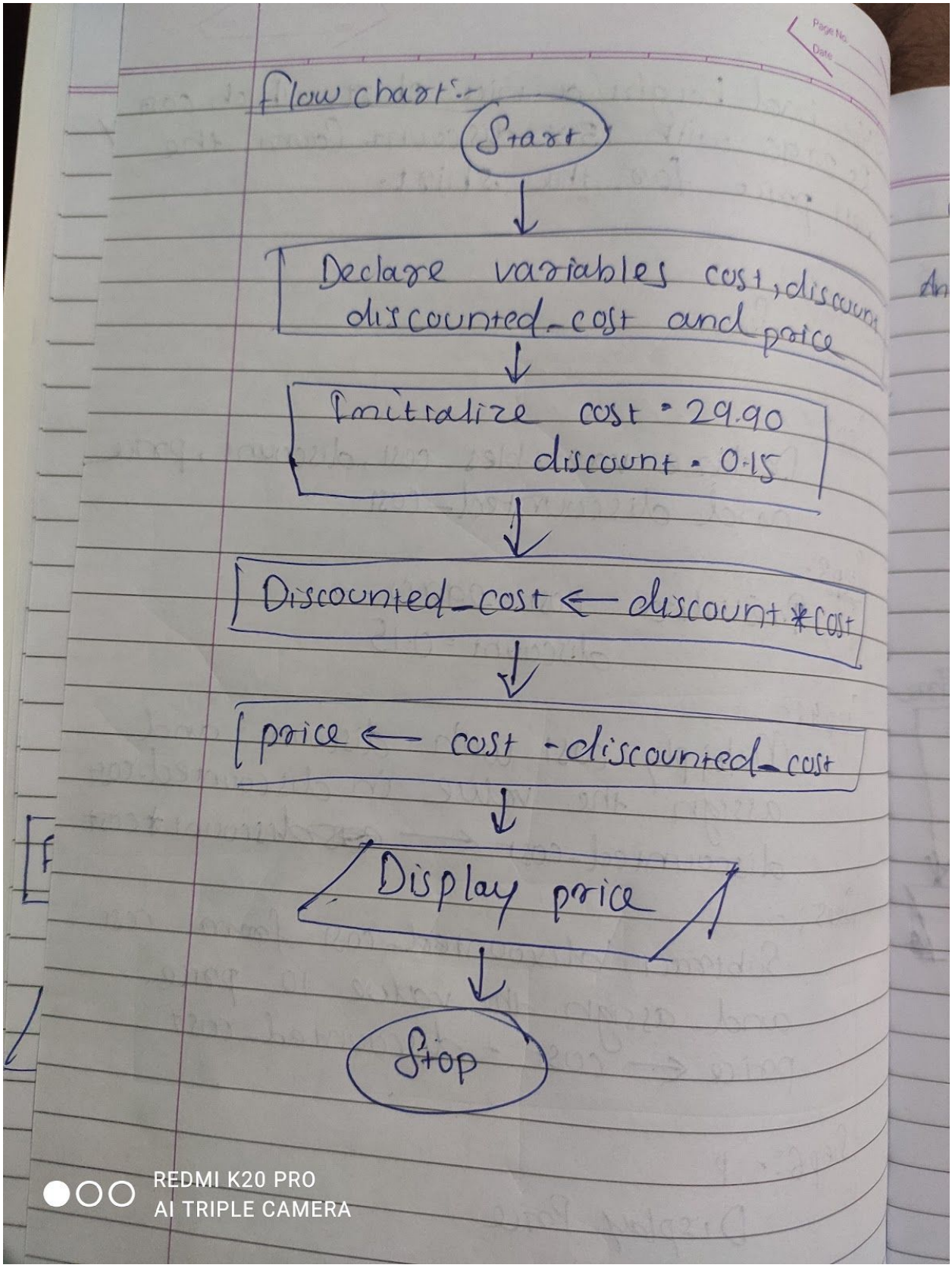
Step6:

Display price

Step7:

Stop

flow chart:-



4. Find the smallest among three different numbers.

Step1:

Start

Step2:

Declare variables

Step3:

Read variables a,b and c

Step4:

If a<b
If a<c

Display a is the smallest

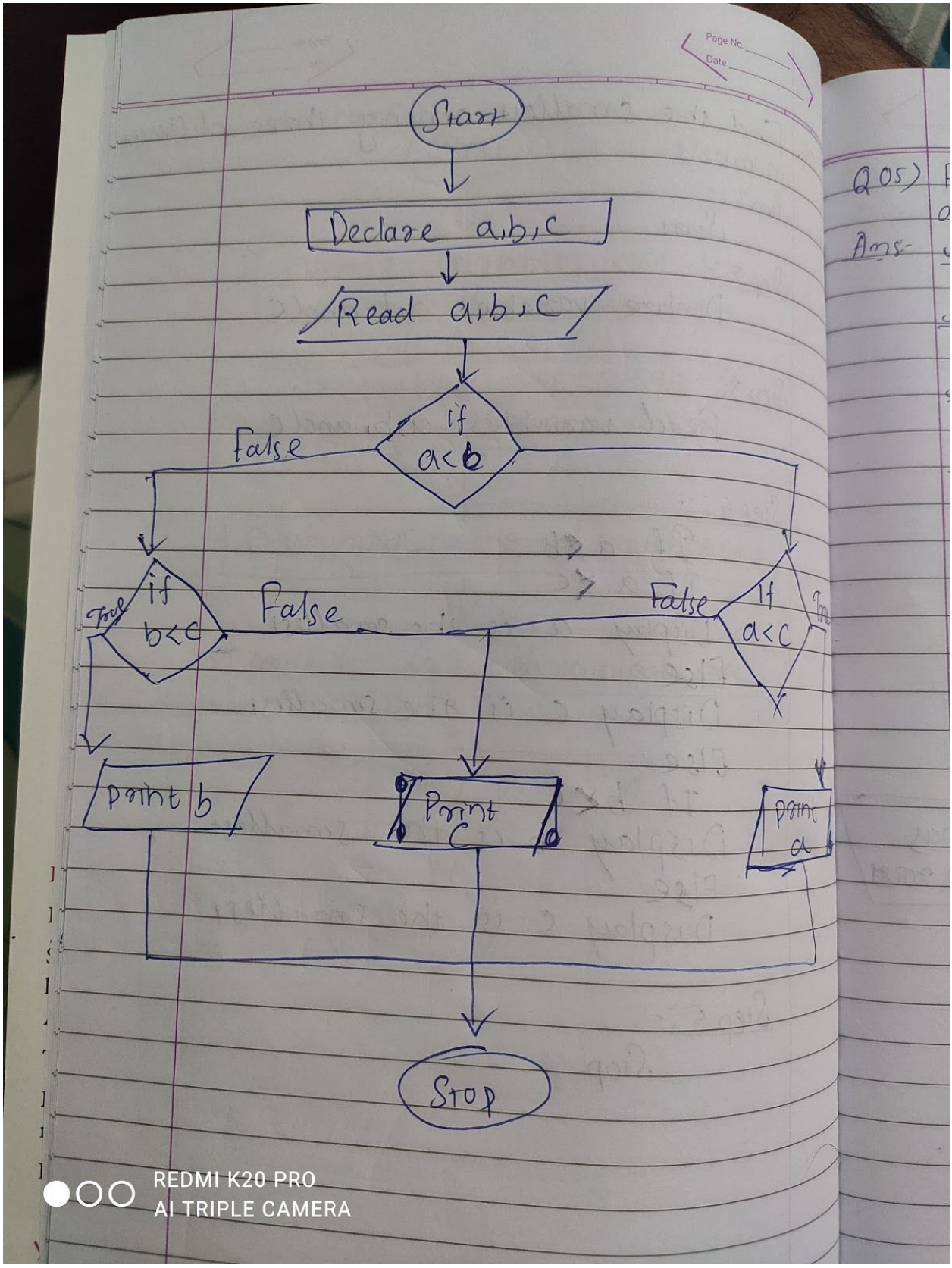
Else
If b<c

Display b is the smallest

Else
Display c is the smallest

Step5:

Stop


Start
Declare a,b,c
Read a,b,c
if a<b
False
if b<c
False
False
if a<c
print b
Print c
print a
Stop

5. Find the roots of a quadratic equation $ax^2+bx+c=0$

Step1:

Start

Step2:

Declare the variable coefficient a,b and c.

Step3:

Declare the variables d,x1,x2

Step4:

Read the coefficient a,b and c.

Step5:

Calculate $d=b^2-4ac$

Step6:

If d<0

Display roots are imaginary

Else

Calculate x1=(-b+sqrt(d))/4ac

x2=(-b-sqrt(d))/4ac

Step7:

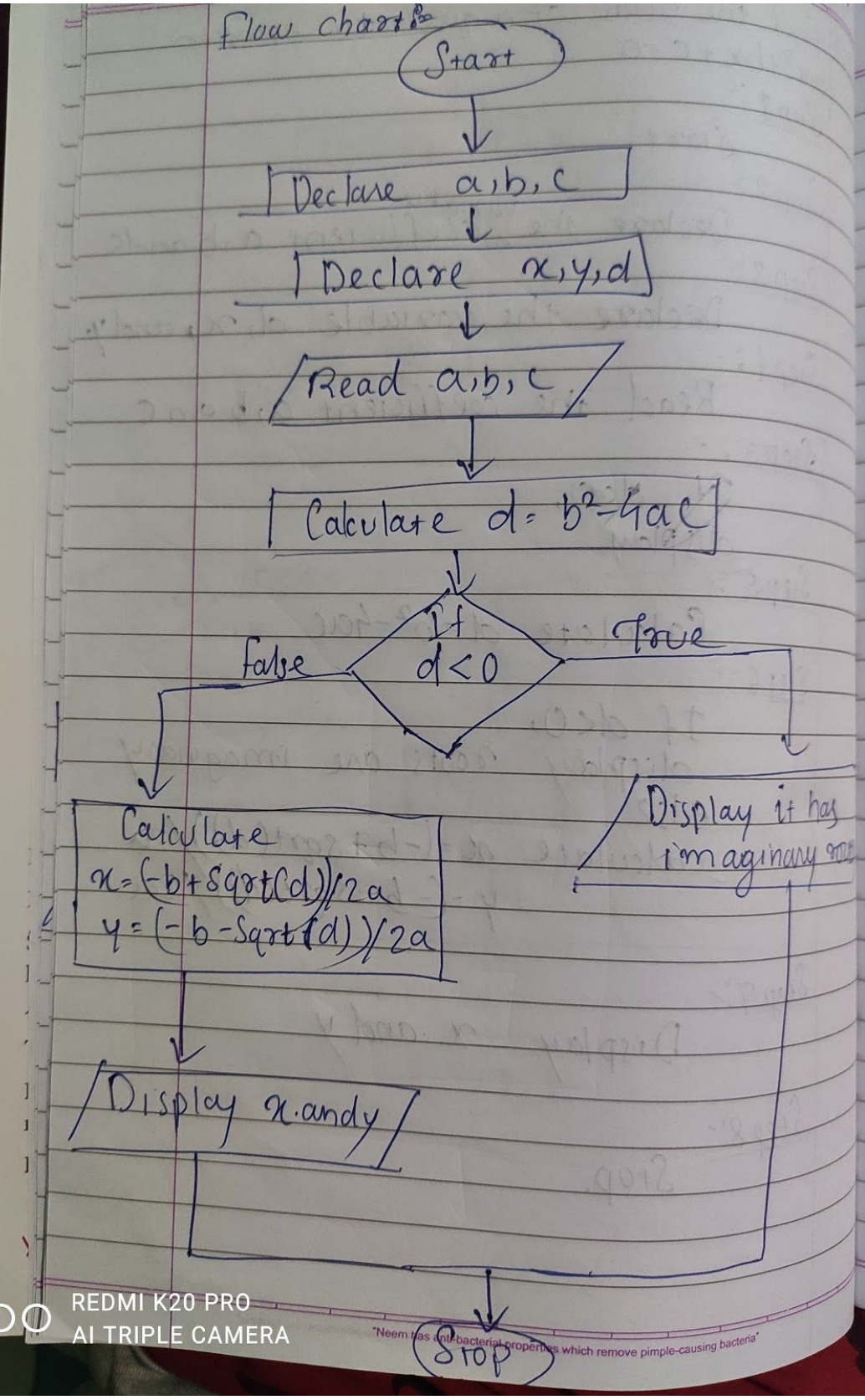
Display x1 and x2

Step8:

Stop

Q06)
Ans:

Flow chart:



6. Find the factorial of a given number

Step1:

Start

Step2:

Declare i,fact and n.

Step3:

Initialize i=1 and fact=1.

Step4:

Read n

Step5:

If n=0

goto step 8

Else if i<=n

goto step6

else

goto step8

Step6:

Calculate fact=fact*i

Step7:

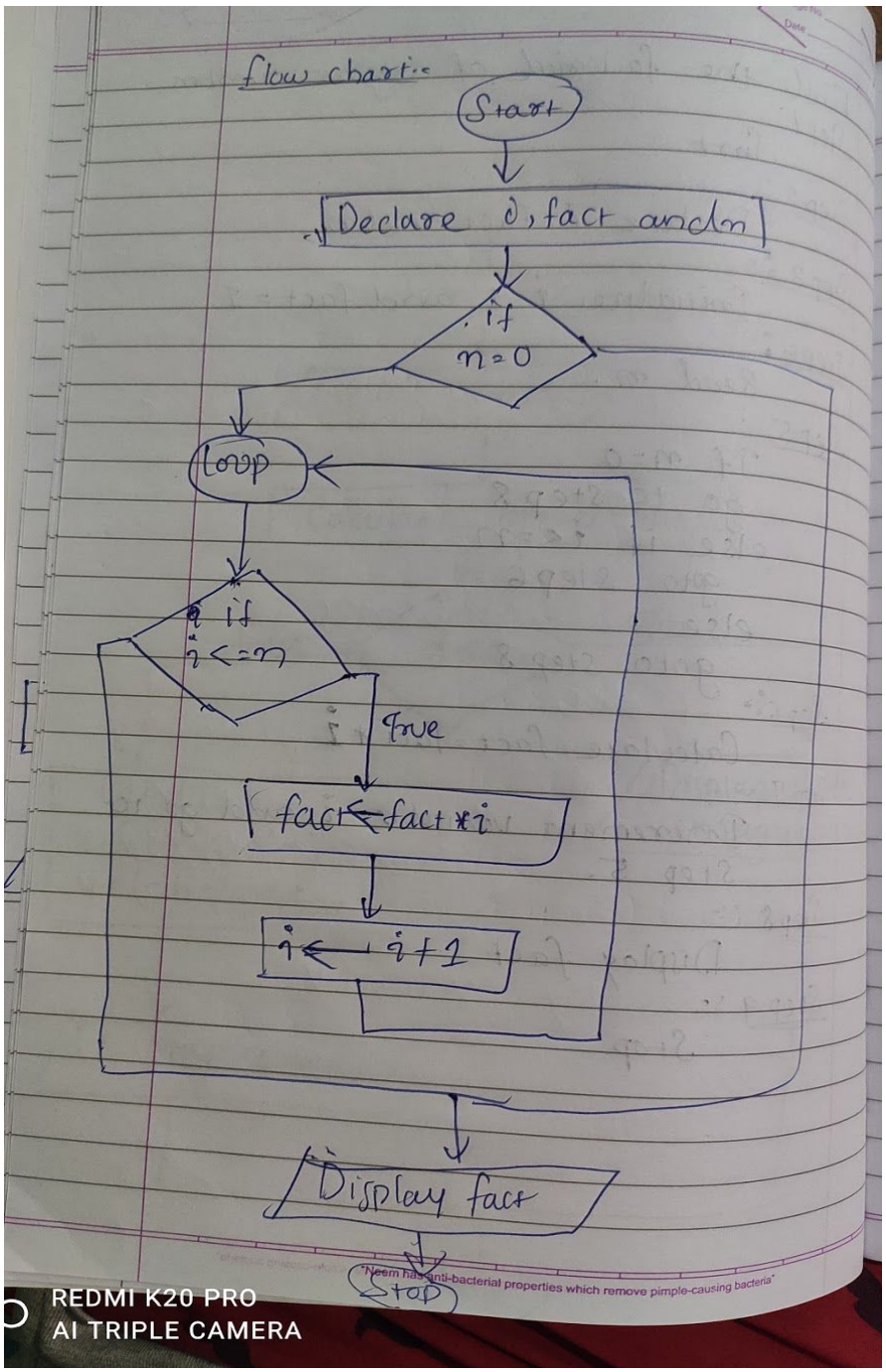
Increment variable i and go to step5.

Step8:

Display fact

Step9:

Stop



ASSIGNMENT:2

Write a C program for the following problem statements.

1. **Print “your name-SOA University”**

```
#include<stdio.h>

Int main()
  {
printf(“anwesh pani-SOA University”);
return 0;
}
```

2. **Print your name, mobile number and email id in different lines.**

```
 #include<stdio.h>

  void main()
        {
        printf(“anwesh pani”);
        printf(“\n 8658724262”);
        printf(“\n anweshpani1999@gmail.com”);
        }
```

3.Get int, float, char as input, then print the same.

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

int main()
{
   int n;;
   float f;
```

```
    char c;

      printf("enter a single charcter");
    scanf("%c",&c);

    printf("enter an integer");
    scanf("%d",&n);

    printf("enter a floating value");
    scanf("%f",&f);


    printf("the integer is:%d\nthe floating number is:%f\nthe
  charcter is:%c",n,f,c);

    return 0;
  }
```

4.Find the cube of a given number.

```
#include <stdio.h>

int main()
{
   int n,cube;
   printf("enter a number");
   scanf("%d",&n);

   cube=n*n*n;

   printf("your cube of %d is %d",n,cube);

   return 0;
```

```
    }
```

5. Find the sum of five given numbers.

```
#include <stdio.h>

int main()
{
   int a=1,b=2,c=3,d=4,e=5,sum;
   sum=a+b+c+d+e;

   printf("the sum of %d,%d,%d,%d,%d is sum=%d",a,b,c,d,e,sum);

   return 0;
}
```

6. Find the student average mark given mark1 and mark2.

```
#include <stdio.h>

int main()
{
   int mark1,mark2,avg=0;

   printf("enter student's mark1");
   scanf("%d",&mark1);

   printf("enter student's mark2");
   scanf("%d",&mark2);

   avg=(mark1+mark2)/2;

   printf("the average marks of the student is:%d",avg);
```

```
    return 0;
}
```

7. Calculate the fine recharged ny library for late return books. The charge is 0.20 INR for 1day.

```
#include <stdio.h>

int main()
{
    int no_days;
    float fine,charge=0.20;

    printf("enter the late return days");
    scanf("%d",&no_days);

    fine=no_days*charge;

    printf("the fine will be %f",fine);

    return 0;
}
```

8. You had brought a nice shirt which cost Rs29.90 exclusive of 15% discount. Find the discouter cost for shirt.

```
#include <stdio.h>

int main()
{
   float price,o_price=29.90,discount=0.15,d_price;

   printf("original price is %f",o_price);
   printf("\nit has a discounted price of 15");
```

```
   d_price=o_price*discount;
   price=o_price-d_price;

   printf("\nthe cost of your shirt is:%f",price);

    return 0;
}
```

9. Swap two numbers with third variable.

```
#include<stdio.h>
int main()
{
    int a=2,b=3,c=0;

    printf("the numbers before swap is a:%d\n b:%d",a,b);

    c=a;
    a=b;
    b=c;

    printf("\nthe value after swapping is a:%d\n b:%d",a,b);

    return 0;
}
```

10. Swap two numbers without third variable.

```
#include <stdio.h>

int main()
{
 int a=1,b=2;

 printf("the values before swapping a:%d \n b:%d",a,b);

 a=a+b;
 b=a-b;
 a=a-b;

 printf("\nthe values after swapping a:%d \n b:%d",a,b);
    return 0;
}
```

ASSIGNMENT:3

Write a c program for the following problem statements.

1. Display multiple variables.
Sample variables:
a+c,x+c,dx+x,a+x,s+b,ax+b,s+c,ax+c,ax+ux
Declaration:
int a=125,b=12345;
long ax=1234567890;
short s=4043;
float x=2.13459;
double dx=1.1415927;
char c='W';
unsigned long ux=2541567890;

```
#include <stdio.h>

int main()
{
    int a=125,b=12345;
    long ax=1234567890;
    short s=4043;
    float x=2.134590;
    double dx=1.1415927;
    char c='W';
    unsigned long ux=2541567890;

    printf("a=%d,c=%c and a+c=%d",a,c,a+c);
    printf("\n x=%f, c=%c and x+c=%f",x,c,x+c);
```

```
    printf("\ndx=%lf,x=%f and dx+x=%lf",dx,x,dx+x);
    printf("\n a=%d, x=%f and a+x=%f",a,x,a+x);
     printf("\ns=%hi, b=%d and s+b=%d",s,b,s+b);
      printf("\n ax=%ld, b=%d and ax+b=%ld",ax,b,ax+b);
       printf("\n s=%hi, c=%c and s+c=%hi",s,c,s+c);
        printf("\n ax=%ld, c=%c and ax+c=%ld",ax,c,ax+c);
         printf("\n ax=%ld, ux=%lu and ax+ux=%lu",ax,ux,ax+ux);

    return 0;
}
```

2.convert specified days into years,weeks and days.

```
#include <stdio.h>
        int main()
        {
      int year,week,days,n_week,n_days;

        printf("enter numbers of days");
        scanf("%d",&n_days);

        year=n_days/365;
        n_week=n_days%365;
        week=n_week/7;
        days=n_week%7;

        printf("the given number of days converted and gives:");

        printf("year: %d\n weeks: %d\n days: %d",year,week,days);
```

```
        return 0;
              }
```

3. Accept two item weights(floating point value) and number of purchase(floating point value) and calculate the average values of the item.

```
int main()
{
   float w1,w2,p1,p2,wp1,wp2,avg;

  printf("enter item1 weight and purchase");
  scanf("%f%f",&w1,&p1);

  wp1=w1*p1;

  printf("\ntotal value:%f",wp1);

  printf("\nenter item2 weight and purchase:");
  scanf("%f%f",&w2,&p2);

  wp2=w2*p2;

  printf("\ntotal value:%f",wp2);

  avg=(wp1+wp2)/2;

  printf("\nthe average value of your purchases is:%f",avg);

    return 0;
}
```

4. Create enumerated data type for 7 days and display their values in integer constant.

```
#include <stdio.h>
enum
week{monday,tuesday,wednessday,thursday,friday,saturday,sund
ay};

int main()
{
   enum week day;

    printf("%d 'monday'",monday);
    printf("\n%d 'tuesday'",tuesday);
    printf("\n%d 'wednessday",wednessday);
    printf("\n%d 'thursday",thursday);
    printf("\n%d 'friday",friday);
    printf("\n%d 'saturday",saturday);
    printf("\n%d 'sunday",sunday);

    return 0;

}
```

5. Convert centigrade to fahrenheit.

```
#include <stdio.h>

int main()
{
  float C,F;

  printf("enter the centigrate value:");
  scanf("%f",&C);

  F=(C*1.8)+32;

  printf("the fahrenheit value is:%f",F);

    return 0;
}
```

6. Take minutes as input and display the total number of hours and minutes.

```
#include <stdio.h>

int main()
{
    int M,H,nM;
```

```
    printf("enter number of minutes");
    scanf("%d",&nM);

    H=nM/60;
    M=nM%60;

    printf("given minutes converted to\n");
    printf("hours:%d\nminutes:%d",H,M);

    return 0;
}
```

7. Print the perimeter of a rectangle to take its height and width as input.

```
#include <stdio.h>

int main()
{
    float h,w,peri;

    printf("enter height and width of rectangle");
    scanf("%f%f",&h,&w);

    peri=2*(h+w);

    printf("\nthe perimeter of rectangle is:%f",peri);

    return 0;
```

```
}
```

8. By using +,/,%=,>=,! Operators.

```
#include <stdio.h>

int main()
{
 int a=2, b=3,c=4,result;

 printf("a=%d,b=%d and c=%d",a,b,c);

 result=a+b;

 printf("\na+b=%d",result);

 printf("\nc/a=%d",c/a);

 a%=b;
 printf("\nafter a mod b\n a=%d",a);

 result=(b>=c);
 printf("\nresult for(b>=c)is %d",result);

 result=!(a==b);

 printf("\nresult !(a==b) is %d",result);

    return 0;
}
```

9. By using &,|,>>,?:,|| operators.

```
#include <stdio.h>

int main()
{
    int a=4,b=3,c=356,store,i;

     printf("a=%d,b=%d,c=%d",a,b,c);
     printf("\na&b=%d",a&b);
     printf("\na/b=%d\n",a/b);

     for(i=1;i<=3;i++)
       {
           printf("\nRight shift %d in c value is:%d",i,c>>i);
       }

    store=((a>b)?(1):(0));
    printf("\n\n(a>b) value is:%d",store);

    store=((a<b)||(a<c));
    printf("\n(a<b)||(a<c) is %d",store);

    return 0;
}
```

10. Find the size of int, float, double and char.

```
#include <stdio.h>

int main()
{
    int a;
    float f;
    double d;
    char c;

       printf("\nsize of int a is:%d",sizeof(a));
       printf("\nsize of float f is:%d",sizeof(f));
       printf("\nsize of double d is:%d",sizeof(d));
       printf("\nsizeof char c is:%d",sizeof(c));

        return 0;
}
```

ASSIGNMENT:4

Write a C program for the following problem statements.

1. **Check whether a charter is a vowel or consonant(using if).**

```
#include<stdio.h>

int main()
 {
    char ch;
    printf("enter a charter from a to z");
    scanf("%c",&ch);

if((ch=='a')||(ch=='A')||(ch=='e')||(ch=='E')||(ch=='i')||(ch=='I')||(
ch=='o')||(ch=='O')||(ch=='u')||(ch=='U'))
    printf("it is vowel");
    else
    printf("it is consonant");
    return 0;
 }
```

2.find the roots of quadratic equation.

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

int main()
{
  float a,b,c,d,x1,x2;
```

```
  printf("enter the coefficient of quadratic equation:\n ");
  printf("a:");
  scanf("%f",&a);

  printf("\nb:");
  scanf("%f",&b);

  printf("\nc:");
  scanf("%f",&c);

  d=((b*b)-(4*a*c));

  if(d<0)
  printf("roots are imaginary");
  else
  {
  x1=(-b+sqrt(d))/(2*a);
  x2=(-b-sqrt(d))/(2*a);

  printf("the roots are x1:%f and x2:%f",x1,x2);
  }
    return 0;
}
```

3. Check leap year(using if. else)

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

```
int main()
{
  float a,b,c,d,x1,x2;

  printf("enter the coefficient of quadratic equation:\n ");
  printf("a:");
  scanf("%f",&a);

  printf("\nb:");
  scanf("%f",&b);

  printf("\nc:");
  scanf("%f",&c);

  d=((b*b)-(4*a*c));

  if(d<0)
  printf("roots are imaginary");
  else
  {
  x1=(-b+sqrt(d))/(2*a);
  x2=(-b-sqrt(d))/(2*a);

  printf("the roots are x1:%f and x2:%f",x1,x2);
  }
    return 0;
}
```

4. Check which number nearest to the value 100 among two given number. Return 0 if the two numbers are equal.(using nested if….else).

```
#include<stdio.h>

int main()
 {
    int a,b;
    printf("emter two numbers");
    scanf("%d%d",&a,&b);
    if(a>=100&&b>=100)
    {
       if((a-100)<(b-100))
       printf("%d is nearer to 100",a);
       else if((b-100)<(a-100))
       printf("%d is nearer to 100",b);
       else
       printf("both numbers are equal");
    }
   else if(a<=100&&b<=100)
    {
       if((100-a)<(100-b))
       printf("%d is nearer to 100",a);
       else if((100-b)<(100-a))
       printf("%d is nearer to 100",b);
       else
       printf("both numbers are equal");
    }
   else if(a>=100&&b<=100)
```

```
    {
        if((a-100)<(100-b))
        printf("%d is nearer to 100",a);
        else if((a-100)>(100-b))
        printf("%d is nearer to 100",b);
        else
        printf("both numbers are equal");
    }
    else if(a<=100&&b>=100)
    {
        if((100-a)<(b-100))
        printf("%d is nearer to 100",a);
        else if((100-a)>(b-100))
        printf("%d is nearer to 100",b);
        else
        printf("both numbers are equal");
    }
    else
    printf("invalid input");

    return 0;
}
```

6.calculate and print the electricity bill of a given customer. The customer id, name and unit consumed by user should be taken from keyboard and display the total amount to pay to the customer. The charge are as follows:

UNIT	CHARGE/UNIT
Upto 199	@1.20
200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

If bill exceeds Rs400 the a surcharge of 15% will be charged and the minimum bill should be of Rs 100/-(using else ladder)

```
#include <stdio.h>

int main()

{
   char cus_name;
   int cus_id;
   float unit,bill,surcharge;

   printf("enter the customer name first charcter:\n");
   scanf("%c",&cus_name);
   printf("enter the customer id:\n");
```

```
  scanf("%d",&cus_id);
  printf("enter the unit consumed:\n");
  scanf("%f",&unit);

   if(unit<=199)
   {
       bill=unit*1.20;
        if(bill<100)
    {
       printf("\nminimum bill value is:Rs100");
      printf("\nyour final bill is Rs.100");
      printf("\nthank you");
    }
       else
       printf("total bill charged is:Rs.%f",bill);
   }

 else if(unit>=200&&unit<400)
   {
       bill=unit*1.5;
        if(bill>400)
    {
       surcharge=bill*0.15;
       bill=bill+surcharge;
       printf("\nyour bill exceeds Rs.400\nthe surcharge
is:%f",surcharge);
       printf("\nfinal bill is:%f",bill);
        printf("\nthank you");
       }
```

```
 else
        printf("total bill charged is:Rs.%f",bill);
    }

 else if(unit>=400&&unit<600)
    {
        bill=unit*1.80;
         if(bill>400)
     {
        surcharge=bill*0.15;
        bill=bill+surcharge;
        printf("\nyour bill exceeds Rs.400\nthe surcharge
is:%f",surcharge);
        printf("\nfinal bill is:%f",bill);
         printf("\nthank you");
        }
        else
        printf("total bill charged is:Rs.%f",bill);
    }

 else if(unit>=600)
    {
        bill=unit*2.00;
         if(bill>400)
     {
        surcharge=bill*0.15;
        bill=bill+surcharge;
        printf("\nyour bill exceeds Rs.400\nthe surcharge
is:%f",surcharge);
        printf("\nfinal bill is:%f",bill);
```

```
        printf("\nthank you");
       }
       else
       printf("total bill charged is:Rs.%f",bill);
   }

 else
   {
   printf("invalid user input");
    }



       return 0;
}
```

7.The marks obtained by a student in 3 different subjects are input by user.
Your program should calculate the average of subjects. The student gets a grade as per following rules.(using if else ladder).

AVERAGE	GRADE
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

```
#include <stdio.h>
        int main()
        {
    int s1,s2,s3,average;
    printf("enter student's subject1 mark:\n");
    scanf("%d",&s1);

    printf("enter student's subject2 mark:\n");
    scanf("%d",&s2);

    printf("enter student's subject3 mark:\n");
    scanf("%d",&s3);

   average=(s1+s2+s3)/3;
   printf("student's average mark:%d\n",average);
```

```
 if(average>=90&&average<=100)
 {
    printf("GRADE:\n'A'");
 }

 else if(average>=800&&average<=89)
 {
    printf("GRADE:\n'B'");
 }

 else if(average>=70&&average<=79)
 {
    printf("GRADE:\n'C'");
 }

 else if(average>=60&&average<=69)
 {
    printf("GRADE:\n'D'");
 }

 else if(average>=0&&average<=59)
 {
    printf("GRADE:\n'F'");
 }
  else
  printf("invalid user input");

  return 0;
}
```

8. Print total number of days in a month using switch case.

```
#include <stdio.h>

int main()
{
    int a;
   printf("enter 1 for JANUARY\n ");
    printf("enter 2 for FEBRUARY\n ");
 printf("enter 3 for MARCH\n ");
 printf("enter 4 for APRRIL\n ");
 printf("enter 5 for MAY\n ");
 printf("enter 6 for JUNE\n ");
 printf("enter 7 for JULY\n ");
 printf("enter 8 for AUGUST\n ");
 printf("enter 9 for SEPTEMBER\n ");
 printf("enter 10 for OCTOBER\n ");
 printf("enter 11 for NOVEMBER\n ");
 printf("enter 12 for DECEMBER\n ");

 scanf("%d",&a);

 switch (a)
 {
    case 1:
    printf("JANUARY has 31 days");
    break;

    case 2:
    {
```

```
    int y;
    printf("enter the year:\n");
    scanf("%d",&y);
    if(y%4==0)
    {
    printf("its a leap year\n");
    printf("FEBRUARY has 29 days");
    }
    else
    printf("FEBRUARY has 28 days");
}
break;

case 3:
printf("MARCH has 31 days");
break;

case 4:
printf("APRRIL has 31 days");
break;

case 5:
printf("MAY has 31 days");
break;

case 6:
printf("JUNE has 31 days");
break;

case 7:
```

```
    printf("JULY has 31 days");
    break;

    case 8:
    printf("AUGUST has 31 days");
    break;

    case 9:
    printf("SEPTEMBER has 31 days");
    break;

    case 10:
    printf("OCTOBER has 31 days");
    break;

    case 11:
    printf("NOVEMBER has 31 days");
    break;

    case 12:
    printf("DECEMBER has 31 days");
    break;

    default:
    printf("INVALID USER INPUT");
    break;
    }

     return 0;
}
```

9. Create simple calculator using switch case.

```
#include <stdio.h>

int main()
{
  char ch;
  float a,b;

  printf("enter +,-,/,*\nto perform any one of these operations");
  scanf("%c",&ch);
  printf("\nenter two numbers");
  scanf("%f%f",&a,&b);

  switch (ch)
  {
     case '+':
     {
        float sum;
        sum=a+b;
        printf("the addition of %f and %f is %f",a,b,sum);
     }
     break;

     case '-':
     {
        float sub1,sub2;
        sub1=a-b;
        printf("\nsubtracting %f from %f is %f",b,a,sub1);
        sub2=b-a;
```

```
        printf("\nsubtracting %f from %f is %f",a,b,sub2);

    }
    break;

    case '*':
    {
        printf("multiplication of %f and %f is %f",a,b,a*b);
    }
    break;

    case '/':
    {
        printf("\ndivison of %f to %f is %f",b,a,a/b);

        printf("\ndivision of %f to %f is %f",a,b,b/a);

    }
    break;

    default:
    printf("INVALID USER INPUT");
    break;
  }

   return 0;
}
```

10. Prompts the user enter grade. Your program should display corresponding meaning of grade as per the following table(using switch case).

GRADE	MEANING
A	excellent
B	good
C	average
D	deficient
F	failing

```
#include <stdio.h>

int main()
{

 char grade;

 printf("enter the GRADE value to know meaning:");
  scanf("%c",&grade);

    switch (grade)
    {
        case 'a':
        printf("EXCELLENT");
        break;
```

```
case 'A':
    printf("EXCELLENT");
    break;

    case 'b':
    printf("GOOD");
    break;

    case 'B':
    printf("GOOD");
    break;

    case 'c':
    printf("AVERAGE");
    break;

    case 'C':
    printf("AVERAGE");
    break;

    case 'd':
    printf("DEFICIENT");
    break;

    case 'D':
    printf("DEFICIENT");
    break;
```

```
        case 'f':
        printf("FAILING");
        break;

        case 'F':
        printf("FAILING");
        break;

        default:
        printf("invalid user input");
        break;
    }

    return 0;
}
```

ASSIGNMENT:5

1. **Find the sum of the first 10 natural numbers. (using for loops)**

```
#include <stdio.h>

int main()
{
    int i,sum;
    for(i=1;i<=10;i++)
    {
        printf("%d ",i);
            sum=sum+i;

    }
    printf("\nthe sum of 10 natural numbers is %d",sum);

    return 0;
}
```

2. **Display the multiplication table for given integer.(using while loop)**

```
#include <stdio.h>

int main()
{
    int n,i=1,mul=1;
    printf("ENTER THE TABLE:");
    scanf("%d",&n);
    while(i<=12)
```

```
    {
        mul=n*i;
        printf("| %d*%d=%d |",n,i,mul);
        printf("\n");
        i++;
    }

    return 0;
}
```

3. Display the n terms of odd natural number and their sum. (using do while)

```
#include <stdio.h>

int main()
{
    int n,i=1,sum,oddn;
    printf("enter the number of terms:");
    scanf("%d",&n);

    do{
        oddn=2*i-1;
        printf("%d ",oddn);
        sum=sum+oddn;
        i++;
    }while(i<=(n+1)/2);
    printf("\nsum of odd number are %d",sum);
    return 0;
}
```

4. Display the pattern right angle triangle.(using for loop)

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

```
#include <stdio.h>

int main()
{
    int i,j,n;
    printf("enter a numner");
    scanf("%d",&n);
    for(i=0;i<+n;i++)
    {for(j=0;j<=i;j++)
        {
            printf("*");

        }
        printf("\n");
    }

    return 0;
}
```

5. Display the pattern like right angle triangle using while loops.

1
2 3
4 5 6
7 8 9 10

```
#include <stdio.h>

int main()
{
    int i=0,j=0,k=1,n;
    printf("enter a number");
    scanf("%d",&n);
    while(i<n)
    {for(j=0;j<i;j++)
        {
            printf("%d ",k++);

        }
        i++;
        printf("\n");
    }

    return 0;
}
```

6. Make such a pattern like a pyramid with number.(using do while loop).

```
   1
  23
 4 5 6
7 8 9 10
```

Ans:

```
#include <stdio.h>

int main()
{
    int r=1,sp,n,no,c,k=1;
    printf("enter the number of rows");
    scanf("%d",&no);
    n=no;

    do
    {
        for(sp=1;sp<=n;sp++)
        {
            printf(" ");

        }
          n--;
```

```
  for(c=1;c<=r;c++)
        {
            printf("%d ",k);
            k++;
        }
        printf("\n");
        r++;
    }while(r<=no);

    return 0;
}
```

7. Display pascal's triangle.(using for loop)

Ans:

```
#include <stdio.h>

int main()
{
    int row,sp,n,no,col;
    printf("enter the number of rows");
    scanf("%d",&no);

   for(row=0;row<no;row++)
    {
        for(sp=0;sp<(no-row);sp++)
        {
            printf(" ");

        }
```

```
        n=1;
        for(col=0;col<=row;col++)
        {
            printf(" %d",n);
            n=n*(row-col)/(col+1);
        }
        printf("\n");

    }

    return 0;
}
```

8. **Display first n terms of fibonacci series.(using for loop)**

   Ans:

```
#include <stdio.h>
int main() {
    int i, n, t1 = 0, t2 = 1, nextTerm;
    printf("Enter the number of terms: ");
    scanf("%d", &n);
    printf("Fibonacci Series: ");

    for (i = 1; i <= n; ++i) {
        printf("%d, ", t1);
        nextTerm = t1 + t2;
        t1 = t2;
        t2 = nextTerm;
    }

    return 0;
}
```

9. Check whether a given number is a perfect number or not. (using while loop)

ans:

```
#include <stdio.h>

int main()
{
   int n,i=1,p,no;
   printf("enter a number");
   scanf("%d",&no);
   n=no;
   while(i<n)
   {
    if(n%i==0)
    p=p+i;
    i++;
   }
   if(p==no)
   printf("%d is a perfect number",no);
   else
   printf("%d is not a perfect number",no);
    return 0;
}
```

10. Check whether a number is armstrong number for a given range.(using while loop)

```
#include <stdio.h>

int main()
{
    int n,p,s,no;
    printf("enter a number");
    scanf("%d",&no);
    n=no;
    while(n>0)
    {
        p=n%10;
        s=s+(p*p*p);
        n=n/10;
    }
    if(s==no)
    printf("%d is a perfect number",no);
    else
    printf("%d is not a perfect number",no);
    return 0;
}
```

11. Determine whether a number is a prime number or not.(using do while loop)

Ans:

```
#include <stdio.h>
int main()
{
    int i=1,n,count;
    printf("enter a number");
    scanf("%d",&n);
    do
    {
        if(n%i==0)
        count++;
        i++;
    }while(i<=n);
    if(count==2)
    printf("it is a prime number");
    else
    printf("%d is not a prime number",n);

    return 0;
}
```

12. Display number in reverse order. (using do while loop)

Ans:

```
#include <stdio.h>

int main()
{
    int n,revn,p;
```

```
    printf("enter the number");
    scanf("%d",&n);
    do{
        p=n%10;
        revn=revn*10+p;
        n=n/10;
    }while(n>0);

    printf("the reverse of the number is %d",revn);

    return 0;
}
```

13. Display the sum of the series. [9+99+999+9999+....]
Ans:

```
#include <stdio.h>
int main()
{
    int n,i=1,sum,no;
    printf("enter the number of terms");
    printf("\nfor series [9+99+999+9999+.....]");
    scanf("%d",&n);
    no=9;
    for(i=1;i<=n;i++)
    {
        sum=sum+ (no);
        no=no*10;
        no=no+9;
    }
```

```
    printf("the sum of the series is:%d",sum);
    return 0;
}
```

14. Find the sum of the series[1-X^2/2!+X^4/4!-.....]

Ans:

```
#include <stdio.h>
int main()
{
        float x,sum,j,d;
        int i=1,n;
        printf("Input the Value of x :");
        scanf("%f",&x);
        printf("Input the number of terms : ");
        scanf("%d",&n);
        sum =1; j = 1;
        while (i<n)
        {
          d = (2*i)*(2*i-1);
          j = -j*x*x/d;
          sum =sum+ j;
        i++;
        }
        printf("\nthe sum = %f",sum);

        return 0;
}
```

15. Find the sum of the series[x-x^3+x^5+.....](using do while loop)

Ans:

```
#include <stdio.h>
#include <math.h>
void main()
{
        int x,sum,ctr;
        int i,n,m,mm,nn;
        printf("Input the value of x :");
        scanf("%d",&x);
        printf("Input number of terms : ");
        scanf("%d",&n);
        sum =x; m=-1;
        printf("The values of the series: \n");
        printf("%d\n",x);
    for (i = 1; i < n; i++)
    {
        ctr = (2 * i + 1);
        mm = pow(x, ctr);
        nn = mm * m;
        printf("%d \n",nn);
        sum = sum + nn;
        m = m * (-1);
        }
        printf("\nThe sum = %d\n",sum);
}
```

ASSIGNMENT:6

COMMON TO ALL ALL STUDENTS:

WRITE A C PROGRAM FOR THE FOLLOWING PROBLEM STATEMENTS:

1. **CALCULATE THE SUM OF NUMBERS[10 NUMBERS MAX] & IF THE USER ENTERS A NEGATIVE NUMBER, THE LOOP TERMINATES.**

Ans:

```
#include <stdio.h>

int main()
{
    int i,n,sum=0;
    printf("enter the 10 number for addition");
    for(i=1;i<=10;i++)
    {
        scanf("%d",&n);#include <stdio.h>

int main()
{
    int i,n,sum=0;
    printf("enter the 10 number for addition");
    for(i=1;i<=10;i++)
    {
        scanf("%d",&n);
        if(n>0)
        sum=sum+n;
        else
        break;
    }
```

```
    printf("sum: %d",sum);
    return 0;
}
```

```
        if(n>0)
        sum=sum+n;
        else
        break;
    }
    printf("sum: %d",sum);
    return 0;
}
```

2. CALCULATE THE SUM NUMBERS [10 NUMBERS MAX] & IF THE USER ENTERS A NEGATIVE NUMBER, ITS NOT ADDED TO THE RESULT.

ANS:

```
        #include <stdio.h>

int main()
{
    int no,i,sum=0;

    for(i=1;i<=10;i++)
    {
        printf("enter number");
        scanf("%d",&no);

        if(no<0)
```

```
        continue;

        sum=sum+no;
    }
    printf("sum: %d",sum);
    return 0;
}
```

3. tak e input from the user until he/she enters zero. (using break)

Ans:

```
#include <stdio.h>

int main()
{
   int n,i=1,sum=0;

   while(i++)
   {
       printf("enter number");
       scanf("%d",&n);

       if(n==0)
       break;

   }
    return 0;
}
```

4. CHECK WHETHER A GIVEN NUMBER IS PRIME OR NOT.(USING BREAK)

ANS:

```
#include <stdio.h>

int main()
{
    int i,n,count;
    printf("enter a number");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        if(n<0)
         break;
        if(n%i==0)
        count++;

    }
    if(count==2)
    printf("%d is a prime number",n);
    else
    printf("%d is not a prime number",n);

    return 0;
}
```

5. Print sum of odd numbers between 0 and 10. (using continue)

Ans:

```
#include <stdio.h>

int main()
{
    int i,sum=0;
    for(i=0;i<10;i++)
    {
    if(i%2==0)
    continue;
    sum=sum+i;
    }
    printf("sum: %d",sum);
    return 0;
}
```

6. Check whether the given number is prime or not. (using continue)

Ans:

```
#include <stdio.h>

int main()
{
    int n,i, temp=0;
    printf("enter a whole number");
    scanf("%d",&n);

    for(i=2;i<=n/2;++i)
```

```
    {
        if(n%i==0)
        {
            temp=1;
            continue;
        }
    }
    if(n==1)
    {
        printf("1 is neither composite nor prime");

    }
    else
    {
        if(temp==0)
        printf("%d is a prime number",n);
        else
        printf("%d is not a prime number");
            }
    return 0;
}
```

7. Print all even numbers from 1 to 100. (using continue)

Ans:

```
#include <stdio.h>

int main()
{
    int i, sum;
    printf("even numbers in 1 to 100\n");
    for(i=1;i<=100;i++)
    {
        if(i%2!=0)
        continue;
        printf("%d\n",i);
    }

    return 0;
}
```

8. Print numbers from 1 to 10 using goto statement.

Ans:

```
#include <stdio.h>

int main()
{
   int n;
   label:
   printf("%d\n",n);
   n++;
   if(n<=10)
```

```
   goto label;
    return 0;
}
```

9. Program to calculate the sum and average of positive numbers, if the user enters a negative number, the sum and average are displayed.

Ans:

```
#include <stdio.h>
int main()
{
   const int no_input=100;
   int i;
   double no,avg,sum=0;
   for(i=1;i<=no_input;i++)
   {
      printf("%d.Enter a number: ",i);
      scanf("%lf",&no);
        if(no<0)
      {
          goto display;
      }
      sum=sum+no;
   }
   display:
   avg=sum/(i-1);
   printf("sum=%lf",sum);
   printf("\naverage=%lf",avg);
    return 0;
}
```

10. Check if a number is even or not.(using goto)

Ans:

```
#include <stdio.h>

int main()
{
   const int no_input=100;
   int i;
   double no,avg,sum=0;
   for(i=1;i<=no_input;i++)
   {
      printf("%d.Enter a number: ",i);
      scanf("%lf",&no);

      if(no<0)
      {
         goto display;
      }
      sum=sum+no;
   }
   display:
   avg=sum/(i-1);
   printf("sum=%lf",sum);
   printf("\naverage=%lf",avg);
    return 0;
}
```

ASSIGNMENT:7

Read n number of values in an array and display it in reverse order.

Ans:

```
#include <stdio.h>

int main()
{
  int a[50],i,n;
  printf("enter the size of array");
  scanf("%d",&n);

  printf("enter the elements of array");
  for(i=0;i<n;i++)
  {
     scanf("%d",&a[i]);
  }
  printf("the array in reverse order:");
  for(i=n-1;i>=0;i--)
  {
     printf("\n%d\t",a[i]);
  }
    return 0;
}
```

Find the sum of all elements of the array.

Ans:

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

```
int main()
{
  int a[50],i,n,sum=0;
  printf("enter the size of array");
  scanf("%d",&n);

  printf("enter the elements of array");
  for(i=0;i<n;i++)
  {
      scanf("%d",&a[i]);
  }
 for(i=0;i<n;i++)
 {
     sum=sum+a[i];
 }
 printf("sum of all the elements in array is: %d",sum);
    return 0;
}
```

Copy the elements of one array into another array.

Ans:

```
#include <stdio.h>

int main()
{
  int a[50],i,n,b[50];
  printf("enter the size of array");
```

```
 scanf("%d",&n);

 printf("enter the elements of array");
 for(i=0;i<n;i++)
 {
     scanf("%d",&a[i]);
 }
  printf("the elements in first array is:\n");
for(i=0;i<n;i++)
{

   b[i]=a[i];
}
for(i=0;i<n;i++)
{

    printf("%d\t",a[i]);
}
printf("\nthe elements in second array is:\n");
for(i=0;i<n;i++)
{

    printf("%d\t",b[i]);
}
   return 0;
}
```

Count the number of duplicate elements in an array.

Ans:

```
#include <stdio.h>

int main()
{
  int a[50],i,n,count=0;
  printf("enter the size of array");
  scanf("%d",&n);

  printf("enter the elements of array");
  for(i=0;i<n;i++)
  {
      scanf("%d",&a[i]);
  }
 for(i=0;i<n;i++)
 {
     if(a[i]==a[i+1])
     count++;
 }
 printf("duplicate elements are: %d",count);
 return 0;

}
```

Find the maximum and minimum element in an array.

Ans:

```
#include <stdio.h>

int main()
{
  int a[50],i,n,max,min;
  printf("enter the size of array");
  scanf("%d",&n);

  printf("enter the elements of array");
  for(i=0;i<n;i++)
  {
      scanf("%d",&a[i]);
  }
  max=a[0];
 for(i=0;i<n;i++)
 {
     if(a[i]>max)
     max=a[i];
 }
  min=a[0];
 for(i=0;i<n;i++)
 {
     if(a[i]<min)
     min=a[i];
 }
```

```
 printf("maximum value is: %d",max);
 printf("\nminimum value is: %d",min);


 return 0;

}
```

Separate odd even integers in separate arrays.

Ans:

```
#include <stdio.h>

int main()
{
  int a[50],i,j=0,k=0,n,odd[50],even[50];
  printf("enter the size of array");
  scanf("%d",&n);

  printf("enter the elements of array");
  for(i=0;i<n;i++)
  {
     scanf("%d",&a[i]);
  }

   for(i=0;i<n;i++)
  {
     if(a[i]%2==0)
     {
     even[j]=a[i];
```

```
      j++;
      }
      else
      {
      odd[k]=a[i];
      k++;
      }
  }
  printf("\neven:");
  for(i=0;i<j;i++)
  {
      printf("%d\t",even[i]);
        }
        printf("\nodd:");
  for(i=0;i<k;i++)
  {
          printf("%d\t",odd[i]);
  }


   return 0;

}
```

Insert new value in the array.

Ans:

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

```
{
 int arr1[100],i,n,p,x;
 printf("enter the size of array : ");
 scanf("%d", &n);
 for(i=0;i<n;i++){
 scanf("%d",&arr1[i]);
 }
  printf("The current list of the array :\n");
 for(i=0;i<n;i++)
 {
 printf("% 5d",arr1[i]);
 }
 printf("enter the new value: ");
 scanf("%d",&x);
 printf("enter the Position :");
 scanf("%d",&p);
 for(i=n;i>=p;i--)
 {
  arr1[i]= arr1[i-1];
 }
 arr1[p-1]=x;
  printf("\nnew array is:\n");
 for(i=0;i<=n;i++)
 {
 printf("% 5d",arr1[i]);
 }

 return 0;
```

}

Delete an element at desired position from an array.

Ans:

```
#include <stdio.h>
int main(){
int arr1[50],i,pos,n;
printf("Input the size of array : ");
scanf("%d", &n);
printf("Input %d elements in the array in ascending
order:\n",n);
for(i=0;i<n;i++){
printf("element - %d : ",i);
scanf("%d",&arr1[i]);
}
printf("\nInput the position where to delete: ");
scanf("%d",&pos);
i=0;
while(i!=pos-1)
i++;
while(i<n){
arr1[i]=arr1[i+1];
i++;
}
n--;
printf("\nThe new list is : ");
for(i=0;i<n;i++){
printf(" %d",arr1[i]);
}
```

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

Find the second largest elements in an array.

Ans

```
#include<stdio.h>

int main()
{
    int a[50];
    int n,i,large,s_large;

    printf("\n Enter number of elements: ");
    scanf("%d",&n);

    printf("\n Enter the elements: ");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }

    large=s_large=a[0];

    for(i=1;i<n;i++)
    {
        if(large<a[i])
        {
```

```
            s_large=large;
            large=a[i];
        }
        else if(s_large<a[i] && a[i]!=large)
        {
            s_large=a[i];
        }
    }

    printf("\n The Second Largest Element in the given Array:
%d", s_large);
   return 0;
}
```

Find the median of two sorted array.

Ans:

```
#include <stdio.h>
int max(int a, int b) {
 return ((a > b) ? a : b);
}
int min(int a, int b) {
 return ((a < b) ? a : b);
}
int median(int arr[], int size) {
 if (size % 2 == 0)
 return (arr[size/2] + arr[size/2-1])/2;
 else
 return arr[size/2];
```

```
}
int median2SortedArrays(int arr1[], int arr2[], int size) {
 int med1;
 int med2;
 if(size <= 0) return -1;
 if(size == 1) return (arr1[0] + arr2[0])/2;
 if (size == 2) return (max(arr1[0], arr2[0]) + min(arr1[1],
arr2[1])) / 2;
 med1 = median(arr1, size);
 med2 = median(arr2, size);
 if(med1 == med2) return med1;
 if (med1 < med2) {
 return median2SortedArrays(arr1 + size/2, arr2, size - size/2);
 }
 else {
 return median2SortedArrays(arr2 + size/2, arr1, size - size/2);
 }
}
int main() {
 int i,m,n;
 int arr1[] = {1, 5, 13, 24, 35};
 int arr2[] = {3, 8, 15, 17, 32};
 m = sizeof(arr1) / sizeof(arr1[0]);
 n = sizeof(arr2) / sizeof(arr2[0]);
printf("The given array - 1 is : ");
for(i = 0; i < m; i++){
printf("%d ", arr1[i]);
 }
```

```
printf("\n");
printf("The given array - 2 is : ");
for(i = 0; i < n; i++){
printf("%d ", arr2[i]);
 }
printf("\n");
 printf("\nThe Median of the 2 sorted arrays is:
%d",median2SortedArrays(arr1, arr2, n));
 printf("\n");
 return 0;
}
```

Multiplication of two square matrixes.

Ans:

```
#include<stdio.h>

int main(){
int a[10][10],b[10][10],mul[10][10],n,i,j,k;

printf("enter the size of square matrix");
scanf("%d",&n);

printf("enter the first matrix element=\n");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
scanf("%d",&a[i][j]);
```

```
}
}
printf("enter the second matrix element=\n");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
scanf("%d",&b[i][j]);
}
}

printf("multiply of the matrix=\n");
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
mul[i][j]=0;
for(k=0;k<n;k++)
{
mul[i][j]+=a[i][k]*b[k][j];
}
}
}

for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
```

```
printf("%d\t",mul[i][j]);
}
printf("\n");
}
return 0;
}
```

12. Find transpose of a given matrix.

```
#include <stdio.h>
int main(){
int arr1[50][50],brr1[50][50],i,j,r,c;
printf("\nInput the rows and columns of the matrix : ");
scanf("%d %d",&r,&c);
printf("Input elements in the first matrix :\n");
for(i=0;i<r;i++){
for(j=0;j<c;j++){
printf("element - [%d],[%d] : ",i,j);
scanf("%d",&arr1[i][j]);
}}
printf("\nThe matrix is :\n");
for(i=0;i<r;i++){
printf("\n");
for(j=0;j<c;j++)
printf("%d\t",arr1[i][j]);}
for(i=0;i<r;i++){
for(j=0;j<c;j++){
brr1[j][i]=arr1[i][j];}
}
```

```
printf("\n\nThe transpose of a matrix is : ");
for(i=0;i<c;i++){
printf("\n");
for(j=0;j<r;j++){
printf("%d\t",brr1[i][j]); }
}
printf("\n\n");
return 0;
}
```

13. Find the sum of left diagonals of a matrix.

```
#include <stdio.h>
int main() {
int i,j,arr1[50][50],sum=0,n,m=0;
printf("enter the size of the square matrix : ");
scanf("%d", &n);
m=n;
printf("enter elements in the matrix :\n");
for(i=0;i<n;i++){
for(j=0;j<n;j++){
scanf("%d",&arr1[i][j]);
}
}
printf("The matrix is :\n");
for(i=0;i<n;i++){
for(j=0;j<n ;j++)
printf("% 4d",arr1[i][j]);
printf("\n");
```

```
}
for(i=0;i<n;i++){
m=m-1;
for(j=0;j<n ;j++){
if (j==m) {
sum= sum+arr1[i][j];
}
}
}
printf("Addition of the left Diagonal elements is :%d\n",sum);
return 0;
}
```

14. Check whether a given matrix is an identity matrix.

```
#include <stdio.h>
int main(){
 int arr1[10][10];
 int r1,c1;
 int i, j, yn =1;
 printf("Input number of Rows for the matrix :");
 scanf("%d", &r1);
 printf("Input number of Columns for the matrix :");
 scanf("%d",&c1);
printf("Input elements in the first matrix :\n");
 for(i=0;i<r1;i++){
 for(j=0;j<c1;j++){
 printf("element - [%d],[%d] : ",i,j);
 scanf("%d",&arr1[i][j]);
 }
```

```
 }
printf("The matrix is :\n");
for(i=0;i<r1;i++){
 for(j=0;j<c1 ;j++)
 printf("% 4d",arr1[i][j]);
 printf("\n");
}
 for(i=0; i<r1; i++){
 for(j=0; j<c1; j++){
if(arr1[i][j] != 1 && arr1[j][i] !=0){
 yn = 0;
 break;
}
}
 }
 if(yn == 1 )
printf(" The matrix is an identity matrix.\n\n");
 else
printf(" The matrix is not an identity matrix.\n\n");
return 0;
```

15. Search an element in a row wise and column wise sorted matrix.

```
#include <stdio.h>
int searchElement(int arr2D[4][4], int n, int x){
 int i = 0, j = n-1;
 while ( i < n && j >= 0 ){
 if ( arr2D[i][j] == x ){
```

```
 printf("\nThe element Found at the position in the matrix is:
%d, %d", i, j);
 return 1;
 }
 if ( arr2D[i][j] < x )
 j--;
 else
 i++;
 }
 return 0;
}
int main(){
 int arr2D[4][4] = { {15, 23, 31, 39},
 {18, 26, 36, 43},
 {25, 28, 37, 48},
 {30, 34, 39, 50},
 };
int i,j,v;
v=37;
printf("The given array in matrix form is : \n");
for(i = 0; i < 4; i++){
for (j=0;j<4;j++){
printf("%d ", arr2D[i][j]);
 }
printf("\n");}
 printf("The given value for searching is: %d",v);
 searchElement(arr2D, 4, v);
 return 0;}
```

ASSIGNMENT:8

1. **Read from a terminal using scanf function and print using printf function.**

```
#include <stdio.h>

int main()
{
int x;
int args;

printf("Enter an integer: ");
if (( args = scanf("%d", &x)) == 0) {
printf("Error: not an integer\n");
} else {
printf("Read in %d\n", x);
}
return 0;
}
```

2. **Read a lines of text from a terminal using fgets function and print using puts function.**

```
#include<stdio.h>
int main(){
        char name[20];
    printf("Enter name: ");
    fgets(name,sizeof(name),stdin);
```

```
    printf("name: ");
    puts(name);
    return 0;
}
```

3. Convert

a. Upper case to Lower case
b. Lower case to Upper case
c. Toggle case
d. Sentence case

a. upper case to lower case:

```
#include <stdio.h>
#include <string.h>
int main(){
   char s[100];
   int i;

   printf("Enter a string : ");
   gets(s);

   for (i = 0; s[i]!='\0'; i++) {
      if(s[i] >= 'A' && s[i] <= 'Z') {
         s[i] = s[i] + 32;
      }
   }
```

```
   printf("\nString in Lower Case = %s", s);
   return 0;
}
```

b. lower case to upper case:

```
#include <stdio.h>
#include <string.h>
int main() {
   char s[100];
   int i;
   printf("Enter a string : ");
   gets(s);

   for (i = 0; s[i]!='\0'; i++) {
      if(s[i] >= 'a' && s[i] <= 'z') {
         s[i] = s[i] - 32;
      }
   }
   printf("\nString in Upper Case = %s", s);
   return 0;
}
```

c. toggle case:

```
#include <stdio.h>
#include <string.h>
int main(){
	char Str[100];
	int i;
	printf("Enter any string: ");
	gets(Str);
	for (i = 0; Str[i]!='\0'; i++){
		if(Str[i] >= 'a' && Str[i] <= 'z'){
			Str[i] = Str[i] - 32;
		}
		else if(Str[i] >= 'A' && Str[i] <= 'Z'){
			Str[i] = Str[i] + 32;
		}
	}

	printf("\n The Given String after toggle case = %s", Str);

return 0;
}
```

d. sentence case:

```
 #include <stdio.h>
#include <ctype.h>
int main(){
	char str[100];
	printf("Enter a string : ");
    gets(str);
```

```
    str[0] = toupper(str[0]);
    printf("The string is: %s.",str);
    return 0;
}
```

4. **Perform String Concatenation (With and Without String Handling Functions).**

a. Without using string handling function:

```
#include<stdio.h>

int main()
{
  char str1[25],str2[25];
  int i=0,j=0;
  printf("\nEnter First String:");
  gets(str1);
  printf("\nEnter Second String:");
  gets(str2);
  while(str1[i]!='\0')
  i++;
  while(str2[j]!='\0')
  {
    str1[i]=str2[j];
    j++;
    i++;
  }
  str1[i]='\0';
```

```
  printf("\nConcatenated String is %s",str1);
return 0;
}
```

b. With using string function:

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

int main()
{
    char a[100], b[100];

    printf("Enter the first string\n");
    gets(a);

    printf("Enter the second string\n");
    gets(b);

    strcat(a,b);

    printf("String obtained on concatenation is %s\n",a);

    return 0;

}
```

5. **Perform String Reversal (With and Without String Handling Functions).**

a. using string handling function:

```
#include <stdio.h>
#include <string.h>
int main()
{
   char s[100];

   printf("Enter a string to reverse\n");
   gets(s);

   strrev(s);

   printf("Reverse of the string: %s\n", s);

   return 0;
}
```

b. Without using string handling function:

```
#include <stdio.h>
int main()
{
   char s[1000], r[1000];
   int begin, end, count = 0;
```

```
   printf("Input a string\n");
   gets(s);



   while (s[count] != '\0')
      count++;

   end = count - 1;

   for (begin = 0; begin < count; begin++) {
      r[begin] = s[end];
      end--;
   }

   r[begin] = '\0';

   printf("%s\n", r);

   return 0;
}
```

6. Perform Substring Extraction (With and Without String Handling Functions).

a) using string handling function:

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

int main() {
   char string[50] = "Hello world";
   // Extract the first token
   char * token = strtok(string, " ");
   printf( " %s\n", token ); //printing the token
   return 0;
}
```

b) without using string handling function:

```
#include <stdio.h>
int findSubstring(char *str, char *substring);
int main()
{
    char str[40], substr[40];
    printf("Enter the string: ");
    gets(str);
    printf("Enter the substring: ");
    gets(substr);
    printf("findSubstring(): %d\n", findSubstring(str, substr));
    return 0;
}
int findSubstring(char *str, char *substr)
{
    /* write your code here */
    int i = 0, j = 0;
```

```
    while ((str[j] != '\0')||(substr[i] != '\0')) {
        if (substr[i] != str[j]) {
            j++;
            i = 0;
        }
        else {
            i++;
            j++;
        }
    }
    if (substr[i] == '\0')
        return 1;
    else
        return -1;
}
```

7. Copy one string into another and count the no of elements copied. (With and Without String Handling Functions).

a. With using string handling function:

```
#include<stdio.h>
#include<string.h>    // for using strcpy() function

int main(){
    char str1[100];
    char str2[100];
    int i;
```

```
    printf("Enter the string: ");
    gets(str2);
    strcpy(str1,str2);
    printf("\nThe copied string is: %s", str1);
    for(i=0; str2[i]!='\0'; i++)
        str1[i]=str2[i];
        str1[i]='\0';
    printf("\nNumber of characters = %d\n", i);
    return 0;
}
```

b. Without using string handling function:

```
#include<stdio.h>
//#define N 10

int main(){
char str1[80],str2[80];
int i;
printf("input a string:");
scanf("%s",str2);
for(i=0;str2[i]!='\0';i++)
str1[i]=str2[i]!='\0';i++)
str1[i]=str2[i];
str1[i]='\0';
printf("\n");
printf("original string:%s",str1);
printf("\nnumber of characters=%d\n",i);
```

```
return 0;
}
```

8.**Read a string and prints if it is a palindrome or not.**

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

int main(){
    char string1[20];
    int i, length;
    int flag = 0;

    printf("Enter a string:");
    scanf("%s", string1);

    length = strlen(string1);

    for(i=0;i < length ;i++){
        if(string1[i] != string1[length-i-1]){
            flag = 1;
            break;
   }
}

    if (flag) {
        printf("%s is not a palindrome", string1);
    }
    else {
        printf("%s is a palindrome", string1);
```

```
    }
    return 0;
}
```

9.**Read a line of text and count all occurrences of particular word.**

```
#include <stdio.h>
#include <string.h>
#include <ctype.h>

int main()
{
    char string[100], word[20], unit[20], c;
    int i = 0, j = 0, count = 0;

    printf("Enter string: ");
    i = 0;
    do
    {
        fflush(stdin);
        c = getchar();
        string[i++] = c;

    } while (c != '\n');
    string[i - 1] = '\0';
    printf("Enter the word you want to find: ");
    scanf("%s", word);
    for (i = 0; i < strlen(string); i++)
    {
```

```
        while (i < strlen(string) && !isspace(string[i]) &&
isalnum(string[i]))
        {
            unit[j++] = string[i++];
        }
        if (j != 0)
        {
            unit[j] = '\0';
            if (strcmp(unit, word) == 0)
            {
                count++;
            }
            j = 0;
        }
    }

    printf("The number of times the word '%s' found in '%s' is
'%d'.\n", word, string, count);
return 0;
}
```

10.**Read a string and rewrite it in the alphabetical order.**

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

int main()
{
char str[20], k;
```

```
int i, j;

printf("Enter a string: \n");
scanf("%[^\n]", str);
for(i=0; str[i] != '\0'; i++)
{
for(j=i+1; str[j] != '\0'; j++)
{
if(str[i] > str[j])
{
k= str[i];
str[i] = str[j];
str[j] = k;

}
}
}
printf("%s", str);
printf("\n");
return 0;

}
```

11.**Print the Words Ending with Letter S.**

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

char str[100];

int main()
{
    int i, t, j, len;

    printf("Enter a string : ");
    scanf("%[^\n]s", str);

    len = strlen(str);

    str[len] = ' ';

    for (t = 0, i = 0; i < strlen(str); i++)
    {
        if ((str[i] == ' ') && (str[i - 1] == 's'))
        {
            for (j = t; j < i; j++)
                printf("%c", str[j]);
            t = i + 1;
            printf("\n");
        }
        else
        {
```

```
            if (str[i] == ' ')
            {
                t = i + 1;
            }
        }
    }
return 0;
}
```

12**. Delete All Repeated Words in the line of text.**

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

int main()
{
        char str[100], word[100], twoD[10][30];
        int i = 0, j = 0, k = 0, len1 = 0, len2 = 0, l = 0;

        printf ("Enter the string\n");
        gets (str);


        for (i = 0; str[i] != '\0'; i++)
        {
                if (str[i] == ' ')
                {
                        twoD[k][j] = '\0';
```

```
            k ++;
            j = 0;
        }
        else
        {
            twoD[k][j] = str[i];
            j ++;
        }
}

twoD[k][j] = '\0';

j = 0;
for (i = 0; i < k; i++)
{
        int present = 0;
        for (l = 1; l < k + 1; l++)
        {
            if (twoD[l][j] == '\0' || l == i)
            {
                continue;
            }

            if (strcmp (twoD[i], twoD[l]) == 0) {
                twoD[l][j] = '\0';
                present = present + 1;
            }
        }

}
```

```
        j = 0;

        for (i = 0; i < k + 1; i++)
        {
                if (twoD[i][j] == '\0')
                        continue;
                else
                        printf ("%s ", twoD[i]);
        }

        printf ("\n");

        return 0;
}
```