NAME – HARSH RAJA

FACULTY NUMBER- 20DPEL206

ENROLLMENT NO.- GM4262

●Write a C program for the following:

●Question 1-To find the smallest and largest of four numbers.

●1st program

LINK OF SOURCE FILE :- https://onlinegdb.com/71QfE4Xiq

```c
#include<stdio.h>
int
main ()
{
  int smallest, largest, A, B, C, D;
  printf ("Enter any four numbers:");
  scanf ("%d%d%d%d", &A, &B, &C, &D);
  smallest = A;
  largest = A;
  if (smallest > B)     //checking between 1st and 2nd number
    smallest = B;
  else if (largest < B)
    largest = B;
  if (smallest > C)     //checking between 1st and 3rd number
    smallest = C;
  else if (largest < C)
    largest = C;
  if (smallest > D)     //chrecking between 1st and 4th number
    smallest = D;
  else if (largest < D)
    largest = D;
  printf ("Largest number from the given four numbers is:%d\n", largest);
  printf ("Smallest number from the given four number is:%d\n", smallest);
  return 0;
}

```

input

```
Enter any four numbers:1 2 3 4
Largest number from the given four numbers is:4
Smallest number from the given four number is:1


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

●Question 2-To calculate the roots of a quadratic equation.

●2nd program

LINK OF SOURCE FILE :- https://onlinegdb.com/E43WQHlSd

```c
#include <stdio.h>
int main() {
 double a, b, c, discriminant, root1, root2, realPart, imagPart;
 printf("Enter coefficients a, b and c: ");
 scanf("%lf %lf %lf", &a, &b, &c);
 discriminant = b * b - 4 * a * c;
 // condition for real and different roots
 if (discriminant > 0) {
 root1 = (-b + sqrt(discriminant)) / (2 * a);
 root2 = (-b - sqrt(discriminant)) / (2 * a);
 printf("root1 = %.2lf and root2 = %.2lf", root1, root2);
 }
  // condition for real and equal roots
 else if (discriminant == 0) {
 root1 = root2 = -b / (2 * a);
 printf("root1 = root2 = %.2lf;", root1);
 }
 // if roots are not real
 else {
 realPart = -b / (2 * a);
 imagPart = sqrt(-discriminant) / (2 * a);
 printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", realPart, imagPart, realPart,
imagPart);
 }
 return 0;
 }
```

input

```
Enter coefficients a, b and c: 1 1 -2
root1 = 1.00 and root2 = -2.00

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

●***Question3-To enter a character and then determine whether it is a vowel or not using switch-case.***

●***3rd program***

LINK OF SOURCE CODE:- https://onlinegdb.com/KG5LubjoP

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

  printf ("Enter a character: ");
  scanf ("%c", &ch);

  //condition to check character is alphabet or not
  if ((ch >= 'A' && ch <= 'Z') || (ch >= 'a' && ch <= 'z'))
    {
      //checking for a VOWEL or a CONSONANT
      switch (ch)
    {
    case 'A':
    case 'E':
    case 'I':
    case 'O':
    case 'U':
    case 'a':
    case 'e':
    case 'i':
    case 'o':
    case 'u':
      printf ("%c is a VOWEL.\n", ch);
      break;
    default:
      printf ("%c is a CONSONANT.\n", ch);
    }
    }
  else
    {
      printf ("%c is not an alphabet.\n", ch);
    }
  return 0;}
```

input

```
Enter a character: a
a is a VOWEL.


...Program finished with exit code 0
```

- ***Question 4-To calculate factorial of a given number using do-while loop.***
- ***4th program***

LINK OF SOURCE FILE :- https://onlinegdb.com/lH3dRG6XDR

```c
#include<stdio.h>
int
main ()
{
  int n, i = 1, f = 1;
  printf ("\n Enter The Number:");
  scanf ("%d", &n);

  //FUNCTION TO CALCULATE FACTORIAL OF A NUMBER USING DO-WHILE LOOP
  do
    {
      f = f * i;
      i++;
    }
  while (i <= n);

  printf ("\n The Factorial of %d is %d", n, f);
return 0;
}
```

input

```
Enter The Number:3

The Factorial of 3 is 6
```

- ***Question*** **5- To display the square and cube of first n natural *numbers.***
- ***5th program***

LINK OF SOURCE CODE:- https://onlinegdb.com/haO7sfeEc

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

 /* Print column names */
 printf("\n Enter the value of n: ");//here n is the no.of "n" natural numbers
 scanf("%d",&n);
 printf("\t\tSquare\t\tCube\n");
 for(x=0; x<=n; x++)
 printf("\t\t%d\t\t%d\n", x*x, x*x*x);
return 0;
}
```

input

```
Enter the value of n: 2
                Square          Cube
                0               0
                1               1
                4               8
```

•***Question*** **6-To print the sum of all odd numbers from 1 to 100 using do-while.**

•***6th program***

LINK OF SOURCE CODE :- https://onlinegdb.com/EgfmwxVQk

```c
#include<stdio.h>
void main()
{
    int i=1,k=0;
    do
    {
        if((i%2)!=0)
        {
            k=k+i;
        }
        else;
        i+=1;

    }while (i<=100);
    printf("Sum of all odd numbers form 1 to 100 is %d",k);
}
```

input

```
Sum of all odd numbers form 1 to 100 is 2500

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

•Question7-To calculate sum of cubes of first n numbers using for loop. {i.e.$1^3+2^3+3^3+.....+n^3$}

•7th program

LINK OF SOURCE CODE:- https://onlinegdb.com/BoQEp4dTQ

```c
#include<stdio.h>
#include<math.h>
int
main ()
{
  int n, i;
  int sum = 0;
  printf ("Enter the value of n: ");    //here n is the value of total no.s whose sum of cubes is to be calculated
  scanf ("%d", &n);
  sum = pow (((n * (n + 1)) / 2), 2);
  printf ("Sum of the series : ");
  for (i = 1; i <= n; i++)
    {
      if (i != n)
    printf ("%d^3 + ", i);
      else
    printf ("%d^3 = %d ", i, sum);
    }
  return 0;
}
```

input

```
Enter the value of n: 5
Sum of the series : 1^3 + 2^3 + 3^3 + 4^3 + 5^3 = 225

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

•***Question 8-To calculate sum of squares of first n even numbers using while {i.e. $2^2 + 4^2 + 6^2 + \ldots\ldots\ldots\ldots\ldots\ldots + n^2$}***

•***8th program***

LINK OF SOURCE CODE :- https://onlinegdb.com/URxSqUmWP

```c
#include<stdio.h>
int
main ()
{
  int n, sum = 0, i = 2;

  printf ("Enter the value of n: ");
  scanf ("%d", &n);

  while (i <= n)
    {
      sum += (i * i);
      i += 2;
    }

  printf ("Sum of squares of first %d even numbers = %d", n, sum);

  return 0;
}
```

input

```
Enter the value of n: 5
Sum of squares of first 5 even numbers = 20

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