VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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C PROGRAMMING LAB RECORD

Submitted by

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Under the Guidance of

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in partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

B.M.S. COLLEGE OF ENGINEERING

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B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I Kushal Kumar Potta, student of 2nd Semester, B.E, Department of Information Science and Engineering, B. M. S. College of Engineering, Bangalore, hereby declare that, this laboratory work for "C Programming" course has been carried out by us under the guidance of Prof. Rekha G S, Assistant Professor, Department of CSE, B. M. S. College of Engineering, Bangalore during the academic semester April-2021-June-2021

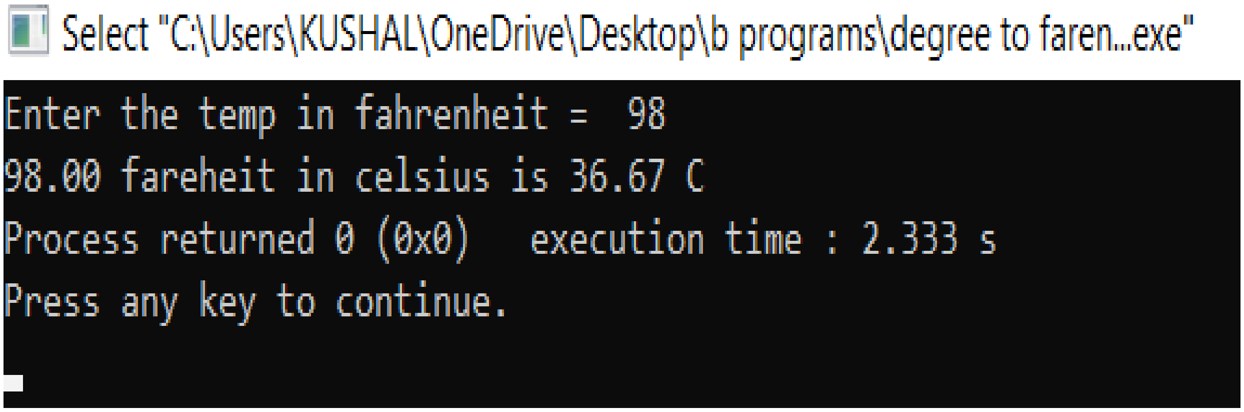
We also declare that to the best of our knowledge and belief, the development reported here is not from part of any other report by any other students.

KUSHAL KUMAR POTTA (1BM20IS071)

Q1. Develop a C program to convert degrees Fahrenheit into degrees Celsius.

```
#include<stdio.h>


int main()

{

   float farenheet,celc;


   printf("Enter the temp in fahrenheit =  ");

   scanf("%f",&farenheet);


   celc=(5.0/9)*(farenheet-32);


   printf("%.2f fareheit in celsius is %.2f C", farenheet, celc);


   return 0;


}
```

Output Q1 :



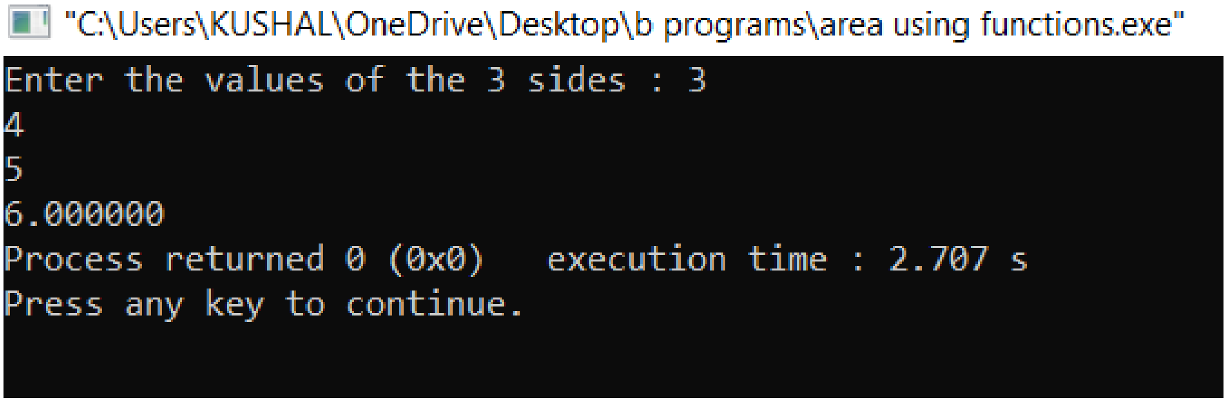
Select "C:\Users\KUSHAL\OneDrive\Desktop\b programs\degree to faren...exe"

```
Enter the temp in fahrenheit =  98
98.00 fareheit in celsius is 36.67 C
Process returned 0 (0x0)   execution time : 2.333 s
Press any key to continue.
```

Q2. Develop a C program to find the area of a triangle given its sides as input using functions.

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

   float a,b,c,area;

   printf("Enter the values of the 3 sides : ");
   scanf("%f%f%f",&a,&b,&c);
   func_area(a,b,c);

   return 0;
}
float func_area(float a,float b,float c)
{
   float s=(a+b+c)/2;
   float area=0;
   area=s*(s-a)+s*(s-b)+s*(s-c);
   printf("%f",sqrt(area));
   return 0;
}
```

Output Q2 :



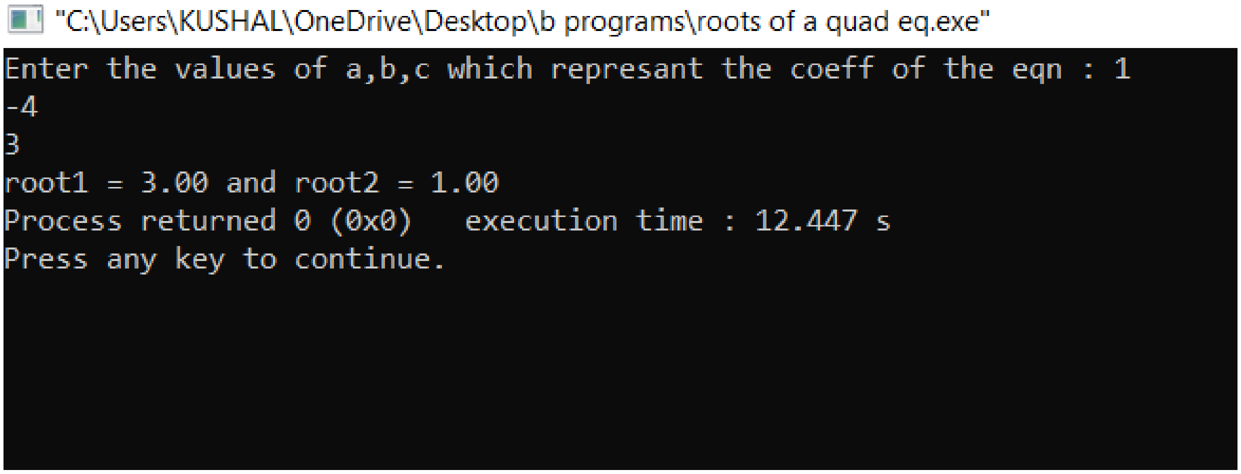
"C:\Users\KUSHAL\OneDrive\Desktop\b programs\area using functions.exe"

```
Enter the values of the 3 sides : 3
4
5
6.000000
Process returned 0 (0x0)   execution time : 2.707 s
Press any key to continue.
```

Q3. Develop a C program to find all possible roots of a quadratic equation.

```
#include<stdio.h>
#include<math.h>
float quad_eq(int,int,int);
int main()
{
    float D;
    int a,b,c;

    printf("Enter the values of a,b,c which represant the coeff of the eqn : ");
    scanf("%d%d%d",&a,&b,&c);

    quad_eq(a,b,c);

    return 0;

}
float quad_eq(int a,int b,int c)
{
    float root1,root2,i,D,realPart,imagPart;
    D=((b*b)-(4*a*c));

    if(D>0)
    {
        root1=(((-b)+sqrt(D))/(2*a));
        root2=(((-b)-sqrt(D))/(2*a));
        printf("root1 = %.2lf and root2 = %.2lf", root1, root2);


    }
    else if(D==0)
    {
        root1=root2=((-b)/(2*a));
        printf("root1 = root2 = %.2lf;", root1);



    }
    else if(D<0)
    {
        root1=((-b)/(2*a))+((i*sqrt(D))/(2*a));
        root2=((-b)/(2*a))-((i*sqrt(D))/(2*a));
        printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", realPart,
imagPart, realPart, imagPart);



    }


}
```

Output Q3:



"C:\Users\KUSHAL\OneDrive\Desktop\b programs\roots of a quad eq.exe"

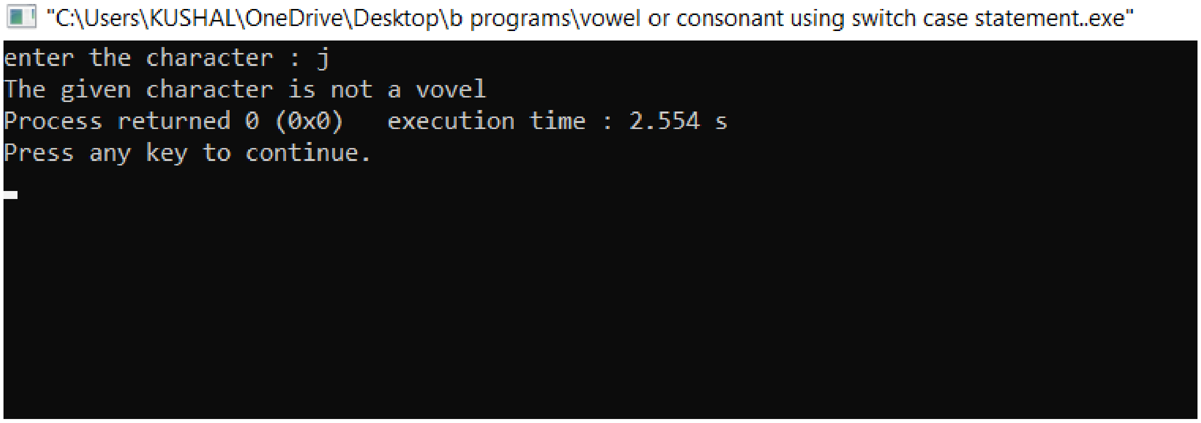
```
Enter the values of a,b,c which represant the coeff of the eqn : 1
-4
3
root1 = 3.00 and root2 = 1.00
Process returned 0 (0x0)   execution time : 12.447 s
Press any key to continue.
```

Q4. Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement.

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

    printf("enter the character : ");
    scanf("%c",&ch);

    switch(ch)
    {
        case 'a' :
            printf("The character is a vovel");
            break;
        case 'e' :
            printf("The character is a vovel");
            break;
        case 'i' :
            printf("The character is a vovel");
            break;
        case 'o' :
            printf("The character is a vovel");
            break;
        case 'u' :
            printf("The character is a vovel");
            break;
        case 'A' :
            printf("The character is a vovel");
            break;
        case 'E' :
            printf("The character is a vovel");
            break;
        case 'I' :
            printf("The character is a vovel");
            break;
        case 'O' :
            printf("The character is a vovel");
            break;
        case 'U' :
            printf("The character is a vovel");
            break;
        default:
            printf("The given character is not a vovel");
    }
    return 0;

}
```

Output Q4:

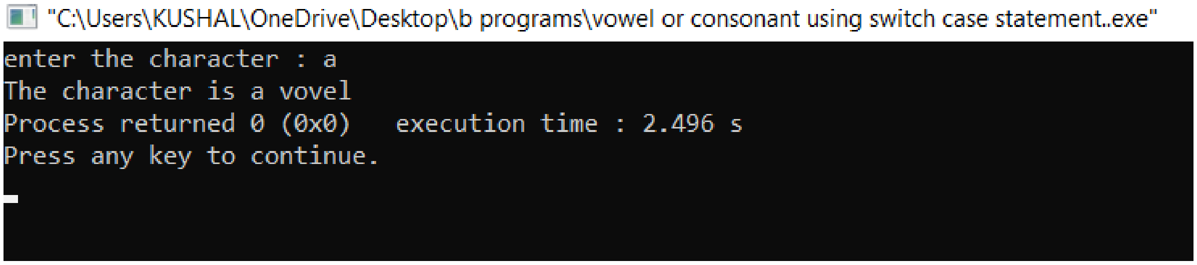
First output :



"C:\Users\KUSHAL\OneDrive\Desktop\b programs\vowel or consonant using switch case statement..exe"

```
enter the character : j
The given character is not a vovel
Process returned 0 (0x0)   execution time : 2.554 s
Press any key to continue.
```

Second Output :



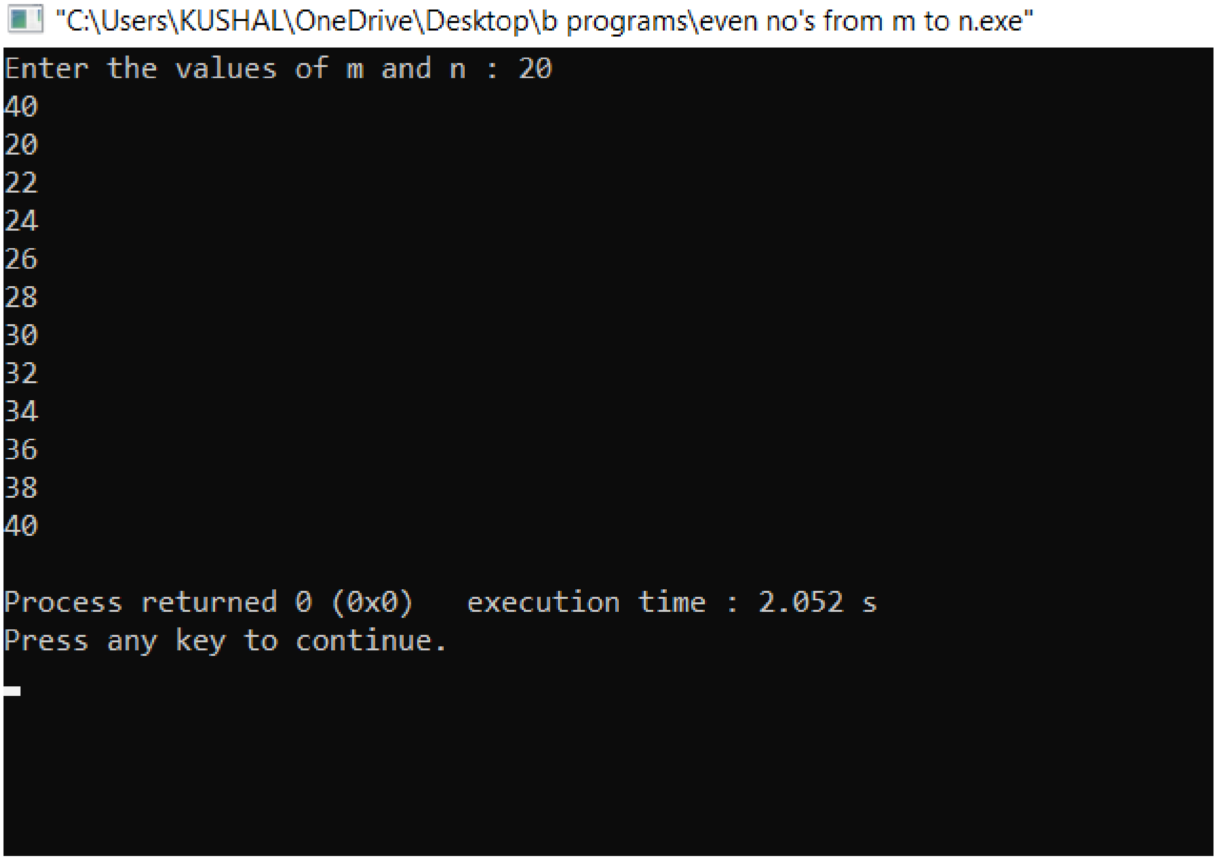
"C:\Users\KUSHAL\OneDrive\Desktop\b programs\vowel or consonant using switch case statement..exe"

```
enter the character : a
The character is a vovel
Process returned 0 (0x0)   execution time : 2.496 s
Press any key to continue.
```

Q5. Develop a C program to print even numbers from M to N.

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

   printf("Enter the values of m and n : ");
   scanf("%d%d",&m,&n);

   for(i=m;n>=i;i++)
   {
      if(i%2==0)
      {
         printf("%d\n",i);
      }
   }
   return 0;
}
```

Output Q5 :

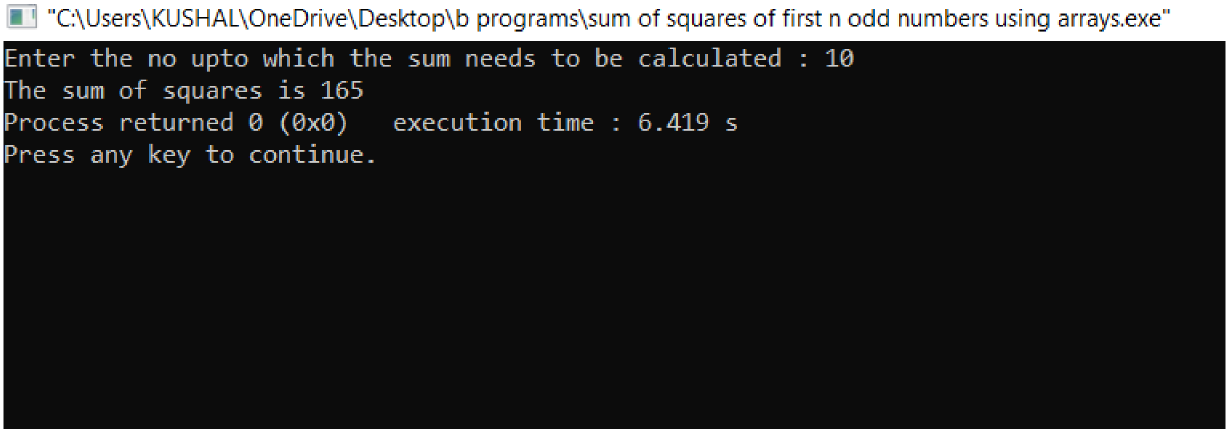

"C:\Users\KUSHAL\OneDrive\Desktop\b programs\even no's from m to n.exe"

```
Enter the values of m and n : 20
40
20
22
24
26
28
30
32
34
36
38
40

Process returned 0 (0x0)   execution time : 2.052 s
Press any key to continue.
```

Q6. Develop a program to calculate the sum of squares of first n odd numbers.

```
#include<stdio.h>
int main()
{
   int n,i,sum=0;
   printf("Enter the no upto which the sum needs to be calculated : ");
   scanf("%d",&n);

   for(i=1;i<=n;i++)
   {
      if(i%2!=0)
      {
      sum=sum+(i*i);
      }
   }
   printf("The sum of squares is %d ",sum);
   return 0;
}
```

Output Q6 :



"C:\Users\KUSHAL\OneDrive\Desktop\b programs\sum of squares of first n odd numbers using arrays.exe"

```
Enter the no upto which the sum needs to be calculated : 10
The sum of squares is 165
Process returned 0 (0x0)   execution time : 6.419 s
Press any key to continue.
```

Q7. Develop a program to perform addition of two Matrices.

```
#include<stdio.h>
int main()
{
    int i,j,m,n,k,l,a[10][10],b[10][10],c[10][10];

    printf("Enter the no of rows and coloumns in matrix 1 : \n");
    scanf("%d%d",&m,&n);

    //in this loop we are taking the element of the first matrix
    printf("Enter the elements of the first matrix row wise : \n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }

    printf("Enter the no of rows and coloumns in matrix 2 : \n");
    scanf("%d%d",&k,&l);

    //in this loop we are taking the element of the second matrix
```

```
printf("Enter the elements of the second matrix row wise");
for(i=0;i<k;i++)
{
   for(j=0;j<l;j++)
   {
      scanf("%d",&b[i][j]);
   }
}

//addition of the two matrices
if(m==k && n==l)
{
for(i=0;i<k;i++)
{
   for(j=0;i<l;j++)
   {
      c[i][j]=a[i][j]+b[i][j];
   }
}
}
else
{
   printf("The two matrix are not equal hence the addition is not possible");
}
```

```
    // The resultant matrix
    printf("%d is the resultant matrix : \n");
    for(i=0;i<k;i++)
    {
        for(j=0;i<l;j++)
        {
            printf("%d",c[i][j]);
        }
    }
    return 0;
}
```

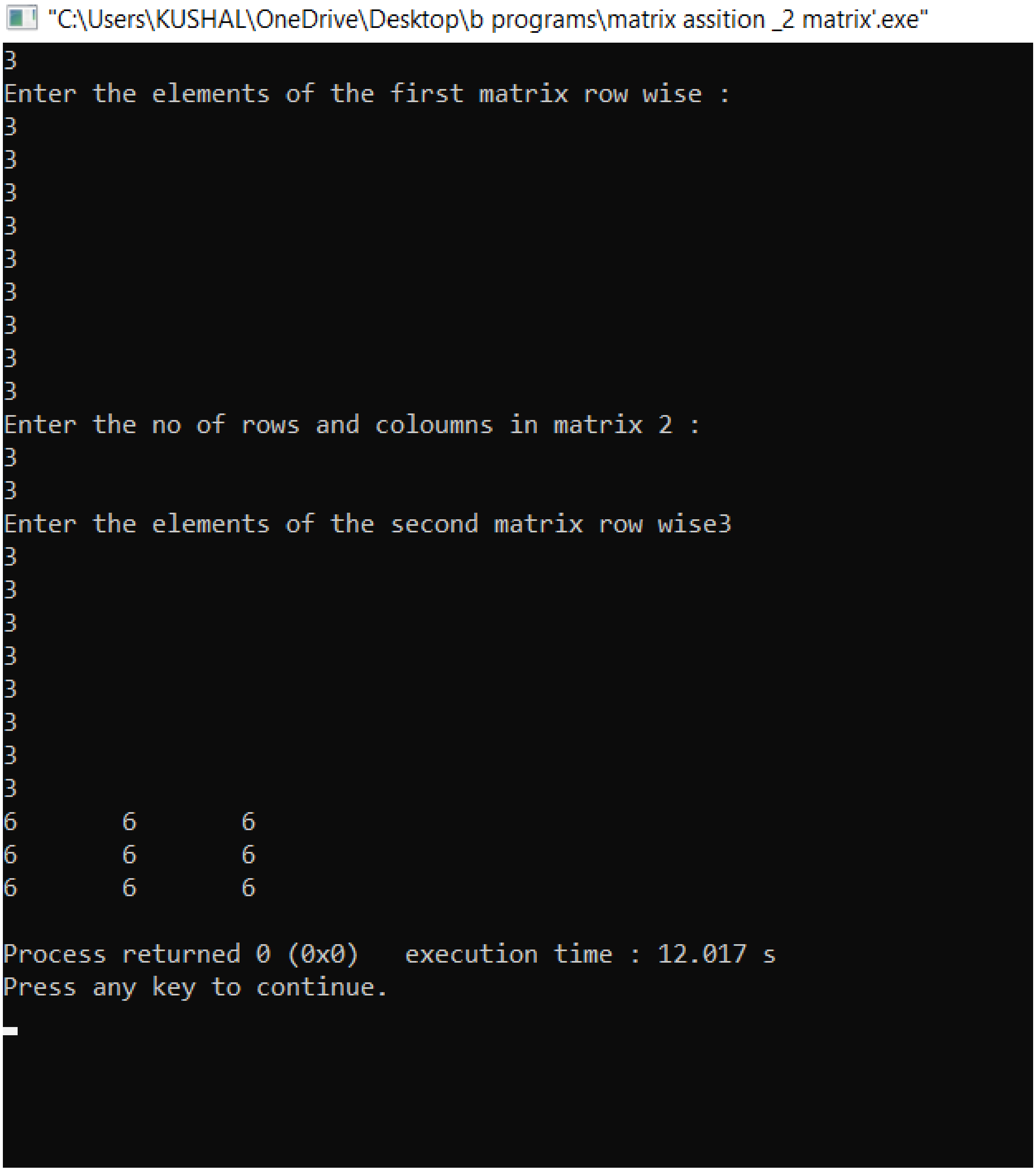
Output Q7 :

```
#include<stdio.h>
int main()
{
    int i,j,m,n,k,l,a[10][10],b[10][10],c[10][10];

    printf("Enter the no of rows and coloumns in matrix 1 : \n");
    scanf("%d%d",&m,&n);

    //in this loop we are taking the element of the first matrix
    printf("Enter the elements of the first matrix row wise : \n");
    for(i=0;i<m;i++)
    {
```

```
   for(j=0;j<n;j++)
   {
      scanf("% d",&a[i][j]);
   }
}

printf("Enter the no of rows and coloumns in matrix 2 : \n");
scanf("% d% d",&k,&l);

//in this loop we are taking the element of the second matrix
printf("Enter the elements of the second matrix row wise");
for(i=0;i<k;i++)
{
   for(j=0;j<l;j++)
   {
      scanf("% d",&b[i][j]);
   }
}

//addition of the two matrices
if(m==k && n==l)
{
for(i=0;i<k;i++)
{
   for(j=0;j<l;j++)
```

```
        {
            c[i][j]=a[i][j]+b[i][j];
        }
    }
    }
    else
    {
        printf("The two matrix are not equal hence the addition is not possible");
    }

    // The resultant matrix
    //printf("%d is the resultant matrix : \n");
    for(i=0;i<k;i++)
    {
        for(j=0;j<l;j++)
        {
            printf("%d\t",c[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

Output Q7 :



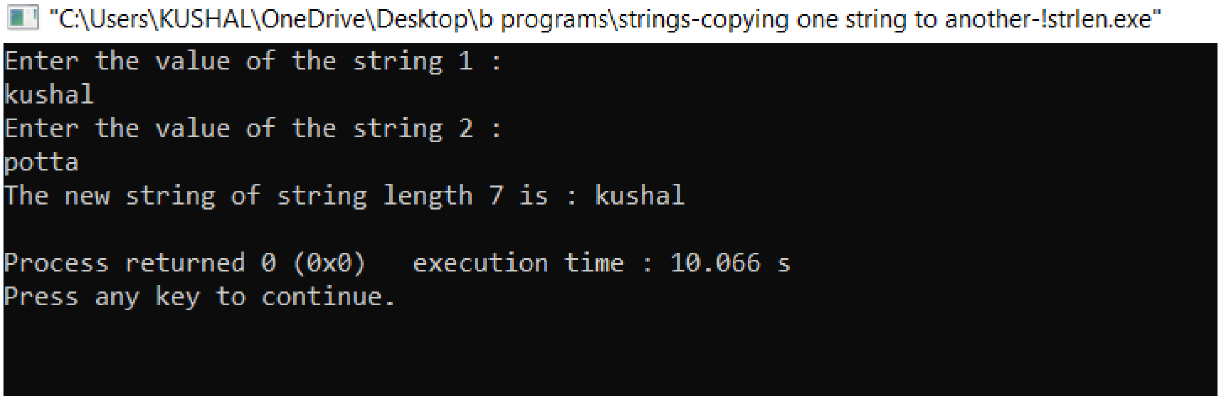
"C:\Users\KUSHAL\OneDrive\Desktop\b programs\matrix assition _2 matrix'.exe"

```
3
Enter the elements of the first matrix row wise :
3
3
3
3
3
3
3
3
3
Enter the no of rows and coloumns in matrix 2 :
3
3
Enter the elements of the second matrix row wise3
3
3
3
3
3
3
3
3
6       6       6
6       6       6
6       6       6

Process returned 0 (0x0)   execution time : 12.017 s
Press any key to continue.
```

Q8. Develop a C program to copy one string to another string and find its length without using built in functions.

```
#include<stdio.h>

int main()
{
    int length,i,j;
    char str1[20],str2[20];

    printf("Enter the value of the string 1 : \n");
    gets(str1);

    printf("Enter the value of the string 2 : \n");
    gets(str2);

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

    i=0;
    j=0;
    while(str1[i]!='\0')
    {
        str2[j]=str1[i];
        j++;
        i++;
    }
    str2[j]='\0';

    printf("The new string of string length %d is : ",length);
    puts(str2);

    return 0;

}
```

Output Q8 :



"C:\Users\KUSHAL\OneDrive\Desktop\b programs\strings-copying one string to another-!strlen.exe"

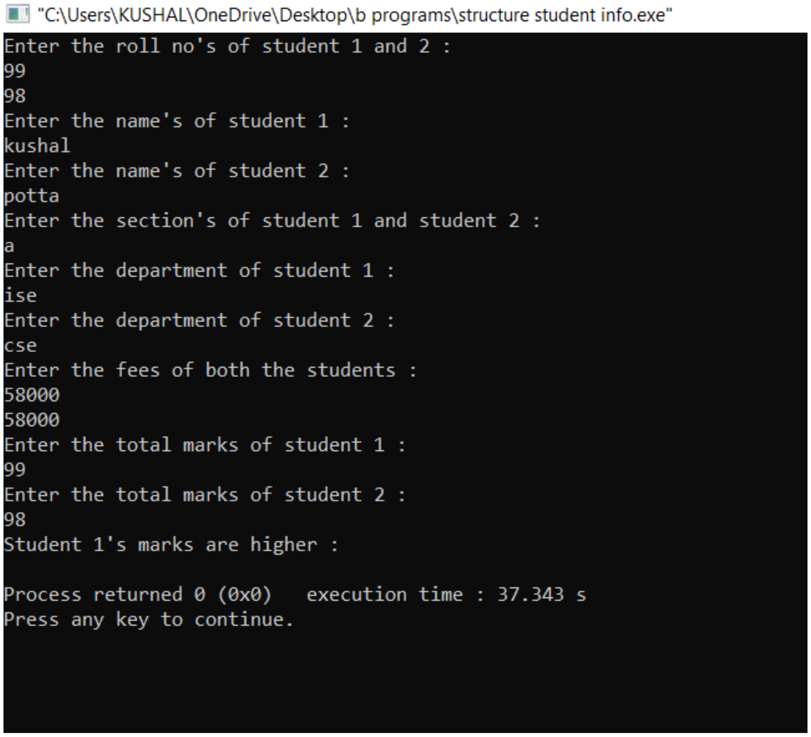
```
Enter the value of the string 1 :
kushal
Enter the value of the string 2 :
potta
The new string of string length 7 is : kushal

Process returned 0 (0x0)   execution time : 10.066 s
Press any key to continue.
```

Q9. Develop a C program to create student structure, read two student details(Student roll number, name, section, department, fees, and results i.e., total marks obtained) and print the student details who has scored the highest.

```
#include<stdio.h>


struct student
{
   int rollno;
   char name[20];
   char section;
   char department[20];
   int fees;
   float totalmarks;
};
int main()
{
   struct student stud1;
   struct student stud2;


   printf("Enter the roll no's of student 1 and 2 : \n");
   scanf("%d%d",&stud1.rollno,&stud2.rollno);


   printf("Enter the name's of student 1 : \n");
   scanf("%s",stud1.name);
```

```
printf("Enter the name's of student 2 : \n");
scanf("%s",stud2.name);

printf("Enter the section's of student 1 and student 2 : \n");
scanf("%c%c",&stud1.section,&stud2.section);

printf("Enter the department of student 1 : \n");
scanf("%s",stud1.department);

printf("Enter the department of student 2 : \n");
scanf("%s",stud2.department);

printf("Enter the fees of both the students : \n");
scanf("%d%d",&stud1.fees,&stud2.fees);

printf("Enter the total marks of student 1 : \n");
scanf("%f",&stud1.totalmarks);

printf("Enter the total marks of student 2 : \n");
scanf("%f",&stud2.totalmarks);

if(stud1.totalmarks>stud2.totalmarks)
{
    printf("Student 1's marks are higher : \n");
    }
    else if(stud1.totalmarks==stud2.totalmarks)
    {
        printf("Both are equal\n");
    }
    else if(stud1.totalmarks<stud2.totalmarks)
    {
        printf("Student 2's marks are higher\n");
    }

    return 0;
}
```

Output Q9 :

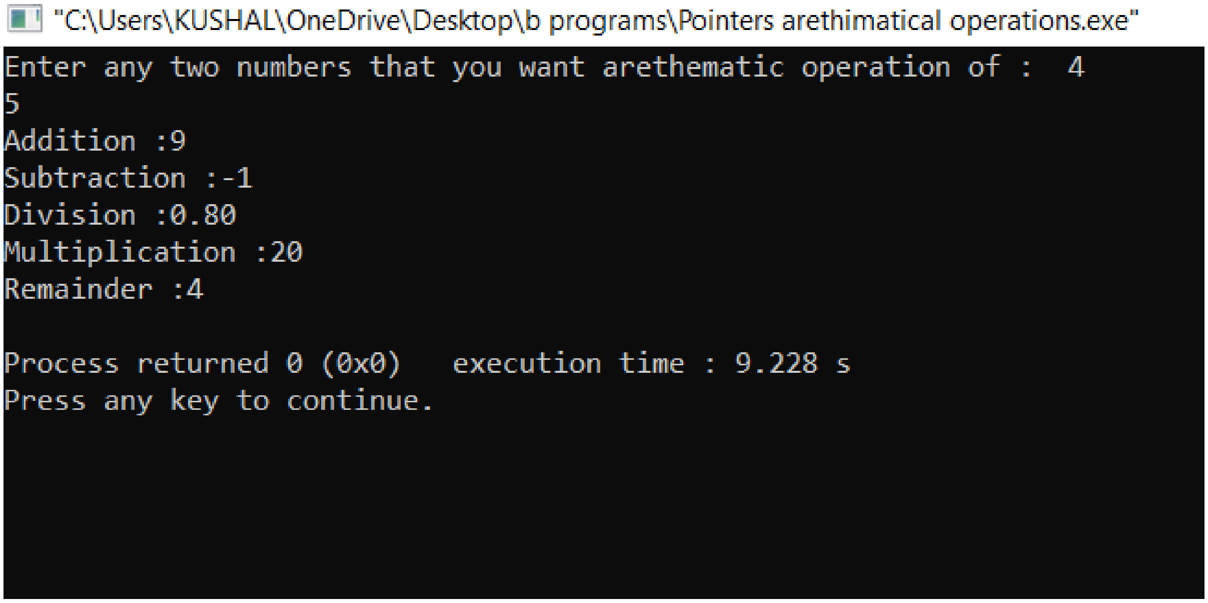

"C:\Users\KUSHAL\OneDrive\Desktop\b programs\structure student info.exe"

```
Enter the roll no's of student 1 and 2 :
99
98
Enter the name's of student 1 :
kushal
Enter the name's of student 2 :
potta
Enter the section's of student 1 and student 2 :
a
Enter the department of student 1 :
ise
Enter the department of student 2 :
cse
Enter the fees of both the students :
58000
58000
Enter the total marks of student 1 :
99
Enter the total marks of student 2 :
98
Student 1's marks are higher :

Process returned 0 (0x0)   execution time : 37.343 s
Press any key to continue.
```

Q10. Develop a C program to perform arithmetic operations (addition, subtraction,multiplication, division and remainder) on two integers using pointers.

```
#include<stdio.h>

#include<math.h>


int operations(int *, int *, int *, int *, int*, float*, int *);

int main()

{

   int a,b;

   int addition,subtraction,multiplication,remainder;

   float division;

   printf("Enter any two numbers that you want arethematic operation of :
");

   scanf("%d %d",&a,&b);

   operations(&a, &b, &addition, &subtraction, &multiplication,&division,
&remainder);

   printf("Addition :%d\n",addition);

   printf("Subtraction :%d\n",subtraction);

   printf("Division :%0.2f\n",division);

   printf("Multiplication :%d\n",multiplication);

   printf("Remainder :%d\n",remainder);

   return 0;

}

   int operations(int *a, int *b, int *addition, int *subtraction, int
   *multiplication, float *division, int *remainder)
{
   *addition=*a+*b;
   *subtraction=*a-*b;
   *multiplication=*a**b;
   *division=(float)(*a)/(*b);
   *remainder=(*a)%(*b);
   return 0;
}
```

Output 10 :



"C:\Users\KUSHAL\OneDrive\Desktop\b programs\Pointers arethimatical operations.exe"

```
Enter any two numbers that you want arethematic operation of :  4
5
Addition :9
Subtraction :-1
Division :0.80
Multiplication :20
Remainder :4

Process returned 0 (0x0)   execution time : 9.228 s
Press any key to continue.
```

Thank you

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