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
(Autonomous Institution under VTU)
BENGALURU-560019

April-2021 to June-2021

B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I,AAAA , student of 2nd Semester, B.E, Department of Computer 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.

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PROGRAM 1-Develop a C program to convert degrees Fahrenheit into degree celcius.

PROGRAM CODE :

```
#include <stdio.h>

int main()
{
    float celsius, fahrenheit;
    printf("Enter temperature in Fahrenheit: ");
    scanf("%f", &fahrenheit);
    celsius = (fahrenheit - 32) * 5 / 9;
    printf("%.2f Fahrenheit = %.2f Celsius", fahrenheit, celsius);

    return 0;
}
```

OUTPUT :

```
Enter temperature in Fahrenheit: 293
293.00 Fahrenheit = 145.00 Celsius
Process returned 0 (0x0)   execution time : 8.128 s
Press any key to continue.
```

PROGRAME 2-Develop a C program to find the area of a triangle, given its sides as inputs using functions.

```
#include<stdio.h>
#include<math.h>
float areaoftriangle(float,float,float);
main()
{
    float a,b,c,area;
    printf("enter the length of sides of a triangle:");
    scanf("%f%f%f",&a,&b,&c);
    area=areaoftriangle(a,b,c);
    printf("area of triangle=%.2f\n",area);
    return 0;
}
float areaoftriangle(float a,float b,float c)
{
float s,area;
s=(a+b+c)/2;
area=sqrt(s*(s-a)*(s-b)*(s-c));
return area;
}
```

OUTPUT:

```
enter the length of sides of a triangle:3 4 5
area of triangle=6.00

Process returned 0 (0x0)   execution time : 4.981 s
Press any key to continue.
```

PROGRAM 3-Develop a C program to find all possible roots of a quadratic equation.

PROGRAM CODE:

```
#include<stdio.h>
#include<math.h>
int main()
{
    float a,b,c;
    float root1,root2,discriminant,imaginary;
    printf("\n please enter the values of a ,b,c of quadratic
equation: ");
    scanf("%f%f%f",&a,&b,&c);
    discriminant=(b*b)-(4*a*c);
    if(discriminant>0)
    {
        root1=(-b+sqrt(discriminant)/(2*a));
        root2=(-b-sqrt(discriminant)/(2*a));
        printf("\n two distinct real roots exist:root1=%.2f and
root2=%.2f",root1,root2);

    }
    else if(discriminant==0)
    {
            root1=root2=-b/(2*a);
            printf("\n two equal and real roots exist:root1=%.2f and
root2=%.2f",root1,root2);
    }
    else if(discriminant<0)
    {
        root1=root2=-b/2*a;
        imaginary=sqrt(-discriminant)/2*a;
        printf("\n two distinct complex roots exist:root1=%.2f+%.2f
and root2=%.2f-%.2f",root1,imaginary,root2,imaginary);

    }
    return 0;
}
```

OUTPUT :

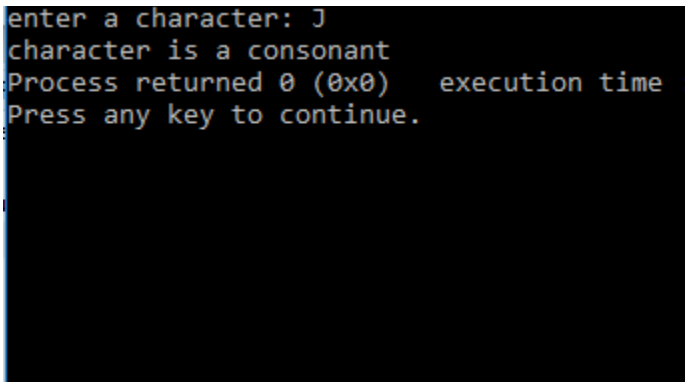
```
 please enter the values of a ,b,c of quadratic equation: 1 2 3

 two distinct complex roots exist:root1=-1.00+1.41 and root2=-1.00-1.41
Process returned 0 (0x0)   execution time : 4.290 s
Press any key to continue.
```

PROGRAM 4-Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement.

PROGRAM CODE :

```
#include<stdio.h>
int main()
{
    char c;
    printf("enter a character: ");
    scanf("%c",&c);
    switch(c)
    {
    case'a':
        printf("a is a vowel");
        break;
    case'e':
        printf("e is a vowel");
        break;
    case'i':
        printf("i is a vowel");
        break;
    case'o':
        printf("o is a vowel");
        break;
    case'u':
        printf("u is a vowel");
        break;
    case'A':
        printf("A is a vowel");
        break;
    case'E':
        printf("E is a vowel");
        break;
    case'I':
         printf("I is a vowel");
         break;
    case'O':
         printf("O is a vowel");
         break;
    case'U':
        printf("U is a vowel");
        break;
    default:
        printf("character is a consonant");
    }
}
```

OUTPUT :


enter a character: J
character is a consonant
Process returned 0 (0x0)   execution time
Press any key to continue.

PROGRAM 5-Develop a C program to print even numbers from M to N.

PROGRAM CODE :

```
#include<stdio.h>
int main()
{
    int m,n;
    printf("enter the value of m: ");
    scanf("%d",&m);
    printf("enter the value of n: ");
    scanf("%d",&n);
    int i;
    for(i=m;i<=n;i++)
    {
        if(i%2==0)
        printf("\n%d",i);
    }
    return 0;
}
```

OUTPUT :

```
enter the value of m: 20
enter the value of n: 30

20
22
24
26
28
30
Process returned 0 (0x0)   execution time : 6.009 s
Press any key to continue.
```

PROGRAM 6-Develop a program to calculate the sum of squares of first n odd numbers.

PROGRAM CODE :

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

    sum=sum+(2*i-1)*(2*i-1);
    printf("The sum of first %d odd numbers is:%d",n,sum);
    return 0;
}
```

OUTPUT :

```
enter the value of n: 4
The sum of first 4 odd numbers is:84
Process returned 0 (0x0)   execution time : 3.268 s
Press any key to continue.
```

PROGRAM 7-PROGRAM TO PERFORM ADDITION OF TWO MATRICES.

PROGRAM CODE :

```
#include <stdio.h>
int main()
{
   int m, n, c, d, first[10][10], second[10][10], sum[10][10];

   printf("Enter the number of rows and columns of matrix\n");
   scanf("%d%d", &m, &n);
   printf("Enter the elements of first matrix\n");

   for (c = 0; c < m; c++)
   {
      for (d = 0; d < n; d++)
      {
         scanf("%d", &first[c][d]);
      }
   }

   printf("Enter the elements of second matrix\n");

   for (c = 0; c < m; c++)
   {
      for (d = 0 ; d < n; d++)
      {
         scanf("%d", &second[c][d]);
      }
   }

   printf("Sum of entered matrices:-\n");

   for (c = 0; c < m; c++) {
      for (d = 0 ; d < n; d++) {
         sum[c][d] = first[c][d] + second[c][d];
         printf("%d\t", sum[c][d]);
      }
      printf("\n");
   }

   return 0;
}
```

OUTPUT :

```
Enter the number of rows and columns of matrix
2
2
Enter the elements of first matrix
1 2
3 4
Enter the elements of second matrix
3 4
1 2
Sum of entered matrices:-
4       6
4       6

Process returned 0 (0x0)   execution time : 107.617 s
Press any key to continue.
```

PROGRAM 8-Develop a C program to copy one string to another string and find its length without using built in C functions.

PROGRAM CODE :

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

int main()

{
    char string1[1000],string2[1000];
    int i;
    printf("enter any string: ");
    gets(string1);
    for(i=0;string1[i]!='\0';i++)
    {
        string2[i] = string1[i];
    }
    string2[i]='\0';
    printf("original string = '%s'\n",string1);
    printf("copied string = '%s'\n",string2);
    printf("length of the string = %d\n",i);
    return 0;


}
```

OUTPUT :

```
enter any string: LAXMI
original string = 'LAXMI'
copied string = 'LAXMI'
length of the string = 5

Process returned 0 (0x0)   execution time : 4.185 s
Press any key to continue.
```

PROGRAM 9-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.

PROGRAM CODE :

```
#include<stdio.h>
void main()
{
    struct student
    {
        int rollno;
        char name[20];
        char sec[5];
        char dept[20];
        int totalmarks;
    }student1,student2;
    printf("enter the roll number of student 1 and student 2\n");
    scanf("%d%d",&student1.rollno,&student2.rollno);
    printf("enter the name of student 1 and student 2\n");
    scanf("%s%s",student1.name,student2.name);
    printf("enter section of student 1 and student 2\n");
    scanf("%s%s",student1.sec,student2.sec);
    printf("enter the department of student 1 and student 2\n");
    scanf("%s%s",student1.dept,student2.dept);
    printf("enter the total marks of student 1 and student 2\n");
    scanf("%d%d",&student1.totalmarks,&student2.totalmarks);
    printf("STUDENT 1 DETAILS=\n");
    printf("roll no=%d\n",student1.rollno);
    printf("name=%s\n",student1.name);
    printf("section=%s\n",student1.sec);
    printf("department=%s\n",student1.dept);
    printf("total marks=%d\n",student1.totalmarks);
    printf("STUDENT 2 DETAILS=\n");
    printf("roll no=%d\n",student2.rollno);
    printf("name=%s\n",student2.name);
    printf("section=%s\n",student2.sec);
    printf("department=%s\n",student2.dept);
    printf("total marks=%d\n",student2.totalmarks);
    if(student1.totalmarks>student2.totalmarks)
    {
        printf("student 1 got highest marks\n");
    }
    else
    {
        printf("student 2 got highest marks\n");
    }
    return 0;
}
```

OUTPUT :

```
enter the roll number of student 1 and student 2
12
20
enter the name of student 1 and student 2
LAXMI
SHWETA
enter section of student 1 and student 2
C
A
enter the department of student 1 and student 2
ISE
ISE
enter the total marks of student 1 and student 2
340
360
STUDENT 1 DETAILS=
roll no=12
name=LAXMI
section=C
department=ISE
total marks=340
STUDENT 2 DETAILS=
roll no=20
name=SHWETA
section=A
department=ISE
total marks=360
student 2 got highest marks

Process returned 0 (0x0)   execution time : 55.812 s
Press any key to continue.
```

PROGRAM 10-Develop a C program to perform arithmatic operations (addition, subtraction, multiplication, division and remainder)on two integers using pointers.

PROGRAM CODE :

```
# include<stdio.h>
int main ()
{
     int n1, n2, *p, *q, sum,diff,multiplication,div,rem;


   printf("Enter two integers:\n");
   scanf("%d%d", &n1, &n2);

   p = &n1;
   q = &n2;

   sum = *p + *q;
   diff= *p - *q;
   multiplication=(*p) * (*q);
   div = (*p)/(*q);
   rem = *p % *q ;

   printf("ADDITION = %d\n", sum);
   printf("SUBTRACTION = %d\n",diff);
   printf("MULTIPLICATION = %d\n",multiplication);
   printf("DIVISION = %d\n",div);
   printf("REMAINDER = %d\n",rem);
   return 0;

}
```

OUTPUT :