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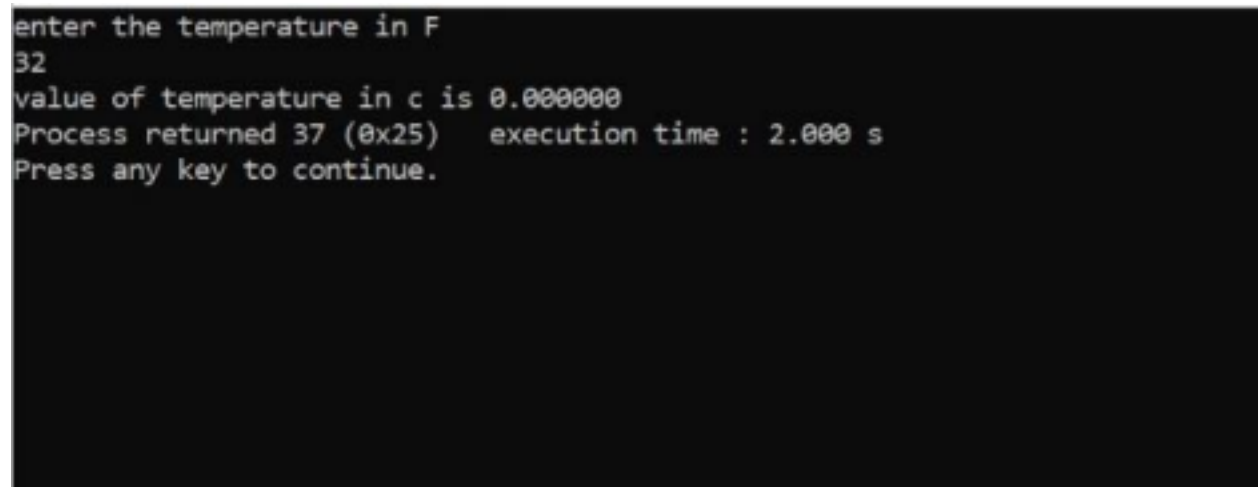
We also declare that to the best of our knowledge and belief, the development reported here is not from part of any other report by any other students.

CHINMAY GARG(1BM20CS035)

1.C program to convert degrees Fahrenheit into degrees celsius.

```
#include<stdio.h>
void main()
{
    float F,C;
    printf("enter the temperature in F\n");
    scanf("%f",&F);
    C=(F-32)*5/9;
    printf("value of temperature in c is %f",C);
}
```

OUTPUT

```
enter the temperature in F
32
value of temperature in c is 0.000000
Process returned 37 (0x25)   execution time : 2.000 s
Press any key to continue.
```

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

```c
#include <stdio.h>
#include <conio.h>
#include <math.h>
float ar(float a, float b, float c);
int main()
{
  float a, b, c, area;
  printf("\nEnter the lengths of sides of a triangle \n");
  scanf("%f%f%f",&a,&b,&c);
  area = ar(a,b,c);
  printf("Area of the triangle = %.2f\n",area);
  return 0;
  getch();
}

float ar(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;
}
```

```
Enter the lengths of sides of a triangle
10
10
10
Area of the triangle = 43.30

Process returned 0 (0x0)    execution time : 108.715 s
Press any key to continue.
```

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

```c
#include <stdio.h>

#include <math.h>

void main()
{
   float a,b,c;
   float discriminant;
   float root1, root2, imaginary;

   printf("Enter values of a, b, c of quadratic (ax^2 + bx + c):");
   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("Two distinct and real roots exists: %.2f and %.2f",
root1, root2);
   }
     else if(discriminant < 0)
```

```
{

    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);

  }

  else if(discriminant == 0)

  {

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

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

  }
}
```

OUTPUT

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

```c
#include <stdio.h>
void main()
{
    char ch;
    printf("Enter any alphabet: ");
    scanf("%c", &ch);
    switch(ch)
    {
        case 'a':
            printf("Vowel");
            break;
        case 'e':
            printf("Vowel");
            break;
        case 'i':
            printf("Vowel");
            break;
        case 'o':
            printf("Vowel");
            break;
        case 'u':
            printf("Vowel");
```

```c
        break;
    case'A':
     printf("Vowel");
        break;
    case'E':
        printf("Vowel");
        break;
    case'I':
        printf("Vowel");
        break;
    case'O':
        printf("Vowel");
        break;
    case'U':
        printf("Vowel");
        break;
    default:
        printf("Consonant");
    }
}
```

OUTPUT

```
Enter any alphabet: e
Vowel
Process returned 5 (0x5)    execution time : 3.229 s
Press any key to continue.
```

```
Enter any alphabet: F
Consonant
Process returned 9 (0x9)    execution time : 3.301 s
Press any key to continue.
```

5.C program to print even numbers from M to N.
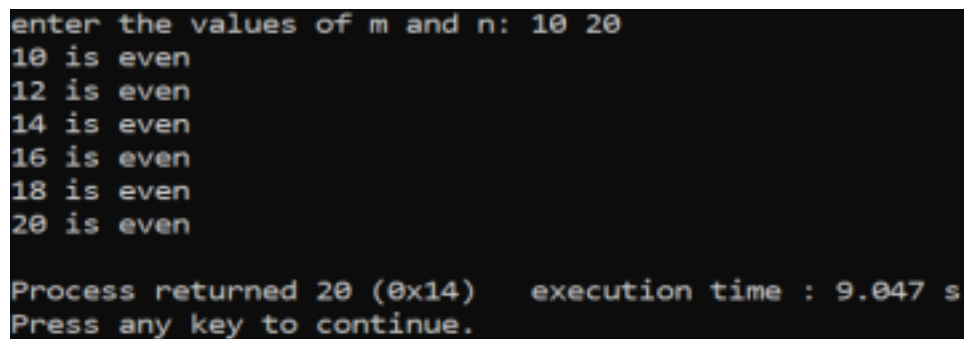
```c
#include<stdio.h>
void main()
{
    int m,n;
    printf("enter the values of m and n: ");
    scanf("%d %d",&m,&n);

    for (int i = m; i <= n; i++)
    {
        if (i%2==0)
        {
            printf("%d is even\n",i);
        }
    }
}
```

OUTPUT

```
enter the values of m and n: 10 20
10 is even
12 is even
14 is even
16 is even
18 is even
20 is even

Process returned 20 (0x14)    execution time : 9.047 s
Press any key to continue.
```

10

6.C program to calculate the sum of squares of first n odd numbers.

```c
#include <stdio.h>
int main()
 {
   int n ;
   printf("enter the number of odds of which sum is to be determined: ");
   scanf("%d",&n);
   int sum = 0;
   for (int i = 1; i <= n; i++)
 {
     sum += (2*i - 1) * (2*i - 1);
     }
   printf("The sum of square of first %d odd numbers is %d",n, sum);
   return 0;
}
```

OUTPUT

```
enter the number of odd num of which sum is to be determined: 4
The sum of square of first 4 odd numbers is 84
Process returned 0 (0x0)   execution time : 6.278 s
Press any key to continue.
```

7.C a program to perform addition of two Matrices.

```c
#include<stdio.h>
#include<stdlib.h>
void main()
{
    int rows1,col1,rows2,col2,row_sum,col_sum;
    int mat1[5][5], mat2[5][5], sum[5][5];
    printf("enter the no. of rows and column in the first matrix:\n");
    scanf("%d %d",&rows1,&col1);
    printf("enter the no. of rows and columns of second matrix\n");
    scanf("%d %d",&rows2,&col2);
    if (rows1 != rows2 || col1 != col2)
    {
        printf("the rows and columns of both the matrices should be same\n");
        exit(0);
    }
    row_sum=rows1;
    col_sum=col1;
    printf("enter the elements of first matrix\n");
    for (int i = 0; i < rows1; i++)
    {
        for (int j = 0; j < col1; j++)
```

```c
  { scanf("%d",&mat1[i][j]);

}
 }
 printf("enter the elements of second matrix\n");
 for (int i = 0; i < rows2; i++)
 {
    for (int j = 0; j < col2; j++)
    {
       scanf("%d",&mat2[i][j]);
    }
 }
 for (int i = 0; i < row_sum; i++)
 {
    for (int j = 0; j < col_sum; j++)
    {
       sum[i][j] = mat1[i][j] + mat2[i][j];
    }
 }
 printf("Sum matrix of entered matrices is: \n");
 for (int i = 0; i < row_sum; i++)
 {
    printf("\n");
```

```
    for (int j = 0; j < col_sum; j++)

    {
```

```
        printf("%d\t", sum[ i][j]);

    }

  }

  return 0;

}
```

OUTPUT

```
enter the no. of rows and column in the first matrix:
3 3
enter the no. of rows and columns of second matrix
3 3
enter the elements of first matrix
1 2 3
1 2 3
1 2 3
enter the elements of second matrix
1 2 3
1 2 3
1 2 3
Sum matrix of entered matrices is:

2        4        6
2        4        6
2        4        6
Process returned 3 (0x3)    execution time : 61.876 s
Press any key to continue.
```
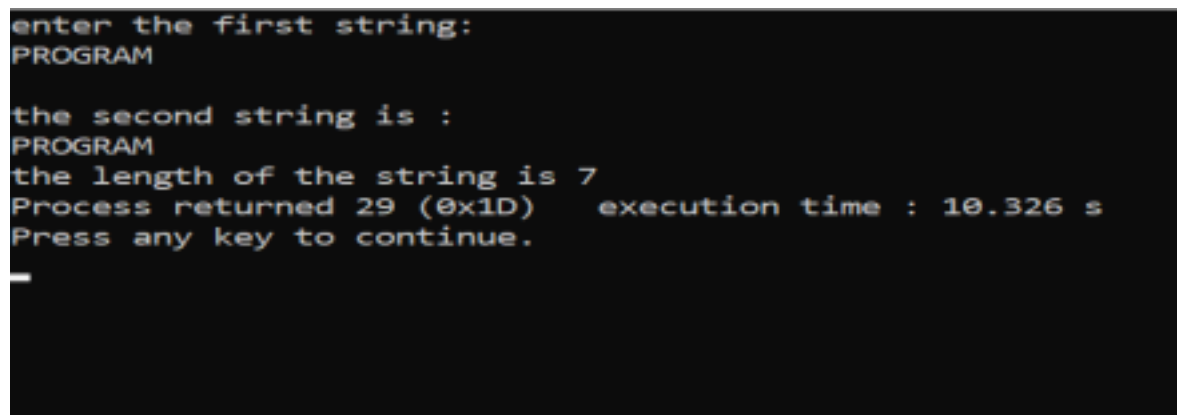
8.C program to copy one string to another string and find its length without using built in functions.

```c
#include<stdio.h>
void main()
{
    char str1[10], str2[10];
    int i;
    printf("enter the first string:\n");
    gets(str1);
    for (i = 0; str1[i] != '\0';)
    {
     str2[i] = str1[i];
     i++;
    }
    printf("\nthe second string is :\n");
    puts(str2);
    printf("the length of the string is %d",i);
}
```

OUTPUT

9. 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.

```c
#include<stdio.h>

struct student{
    int rollnumber;
    char name[20];
    char section[20];
    char dept[10];
    float fees;
    int totalmarks;
};
int main()
{
    int i;
    struct student stud1,stud2;
    printf("Enter Roll of student 1\n");
    scanf("%d",&stud1.rollnumber);
    printf("Enter name of student 1\n");
    scanf("%s",stud1.name);
    printf("Enter the Section of student 1\n");
```

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

```c
scanf("%s",stud1.dept);
printf("Enter the fees of student 1\n");
scanf("%f",&stud1.fees);
printf("Enter total marks of student 1\n");
scanf("%d",&stud1.totalmarks);
printf("Enter Roll of student 2\n");
scanf("%d",&stud2.rollnumber);
printf("Enter name of student 2\n");
scanf("%s",stud2.name);
printf("Enter the Section of student 2\n");
scanf("%s",stud2.section);
printf("Enter the department of student 2\n");
scanf("%s",stud2.dept);
printf("Enter the fees of student 2\n");
scanf("%f",&stud2.fees);
printf("Enter total marks of student 2\n");
scanf("%d",&stud2.totalmarks);
printf("Roll Number of student 1: %d\n",stud1.rollnumber);
printf("Name of student 1: %s\n",stud1.name);
printf("Section of student 1: %s\n",stud1.section);
```

```c
    printf("Department of student1: %s\n",stud1.dept);
    printf("Fees of student1 %f\n",stud1.fees);
    printf("Total marks of student 1: %d\n",stud1.totalmarks); 17

    printf("Roll Number of student 2: %d\n",stud2.rollnumber);
    printf("Name of student 2: %s\n",stud2.name);
    printf("Section of student 2: %s\n",stud2.section);
    printf("Department of student 2: %s\n",stud2.dept);
    printf("Fees of student2: %f\n",stud2.fees);
    printf("Total marks of student 2: %d\n",stud2.totalmarks);
    if(stud1.totalmarks>stud2.totalmarks)
    {
        printf("Student 1 secured highest marks");
    }
    else if(stud1.totalmarks==stud2.totalmarks)
    {
        printf("Student 1 and 2 secured same marks");
    }
    else
    {
        printf("Student 2 secured highest marks");
    }
    return 0;
}
```

OUTPUT -

```
Enter Roll of student 1
23
Enter name of student 1
RAHUL
Enter the Section of student 1
N
Enter the department of student 1
CSE
Enter the fees of student 1
100000
Enter total marks of student 1
85
Enter Roll of student 2
24
Enter name of student 2
RAMESH
Enter the Section of student 2
N
Enter the department of student 2
CSE
Enter the fees of student 2
100000
Enter total marks of student 2
90
Roll Number of student 1: 23
Name of student 1: RAHUL
Section of student 1: N
Department of student1: CSE
Fees of student1 100000.000000
Total marks of student 1: 85
Roll Number of student 2: 24
Name of student 2: RAMESH
Section of student 2: N
Department of student 2: CSE
Fees of student2: 100000.000000
Total marks of student 2: 90
Student 2 secured highest marks
Process returned 0 (0x0)   execution time : 37.821 s
Press any key to continue.
```

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

```c
#include<stdio.h>
void add(int *a,int *b,int *ans)
{
   *ans = *a + *b;
}
void sub(int *a,int *b,int *ans)
{
   *ans = *a - *b;
}
void mul(int *a,int *b,int *ans)
{
*ans = (*a) * (*b);
}
void div(int *a,int *b,int *ans)
{
  *ans=(*a)/(*b);
}
void remainder(int *a,int *b,int *ans)
```

```c
{
  *ans=(*a)%(*b);
}

int main()
{
  int a,b,ans1,ans2,ans3,ans4,ans5;
  printf("enter the values of a and b\n");
  scanf("%d %d",&a,&b);
  add(&a,&b,&ans1);
  sub(&a,&b,&ans2);
  mul(&a,&b,&ans3);
  div(&a,&b,&ans4);
  remainder(&a,&b,&ans5);
  printf("add = %d\n",ans1);
  printf("sub = %d\n",ans2);
  printf("mul = %d\n",ans3);
  printf("div = %d\n",ans4);
  printf("remainder = %d\n",ans5);
}
```

OUTPUT

```
enter the values of a and b
20
10
add = 30
sub = 10
mul = 200
div = 2
remainder = 0

Process returned 0 (0x0)   execution time : 4.086 s
Press any key to continue.
```

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