# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

**"JnanaSangama", Belgaum -590014, Karnataka.**

## C PROGRAMMING LAB RECORD

***Submitted by***


**Ayush Katiyar (1BM20IS025)**


***Under the Guidance of***
**Prof. Rekha G S**
**Assistant Professor,**
**Department of CSE,**
**BMSCE**

***in partial fulfillment for the award of the degree of***
**BACHELOR OF ENGINEERING**
***in***
**INFORMATION 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, Ayush Katiyar, 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

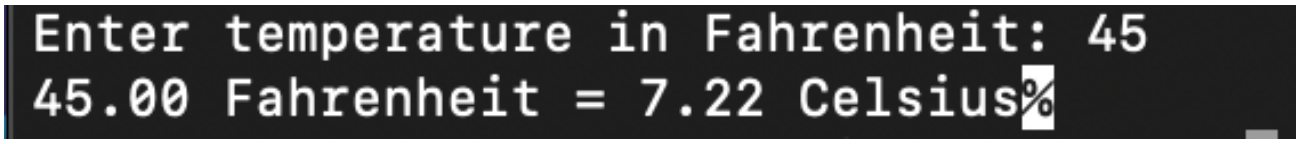
We also declare that to the best of our knowledge and belief, the development reported here is not from part of any other report by any other students.

Ayush Katiyar (1BM20IS025)

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

```c
#include <stdio.h>

int main()
{
    float celsius, fahrenheit;

    printf("Enter temperature in Fahrenheit: ");
    scanf("%f", &fahrenheit);

    celsius = (fahrenheit - 32) * 5.0 / 9.0;
    printf("%.2f Fahrenheit = %.2f Celsius", fahrenheit, celsius);

    return 0;
}
```

**OUTPUT :**



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

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


float AreaofaTriangle( 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;
}

int main()
{
   float a, b, c, Area;

   printf("\n Please Enter the three sides of triangle\n");
   scanf("%f%f%f",&a,&b,&c);

   Area = AreaofaTriangle(a, b, c);
   printf("\nArea of triangle = %.2f\n", Area);

   return 0;
}
```

## Output :

```
 Please Enter the three sides of triangle
12 34 40

Area of triangle = 189.71
```

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

```
#include<stdio.h>
#include<math.h>
int main(){
      float a,b,c,root1,root2,d,realpart,imagpart;
      printf("enter the value of a,b,c:\n"); //ax^2+bx+c
          scanf("%f%f%f",&a,&b,&c);
        d= (b*b)- 4*a*c;
        if(d==0){       //   equal and real roots
            root1=(-b)/2*a;
            root2=(-b)/2*a;
            printf("the roots are equal and are equal to :
%.2f",root1);
        }
        else if(d>0){      // roots are real but different
            root1=((-b)+sqrt(d))/2*a;
            root2=((-b)-sqrt(d))/2*a;

            printf("the roots are distinct and are equal to :
%.2f ,%.2f",root1,root2);
        }
        else {         //roots are imaginary
            realpart=(-b)/2*a;
            imagpart=sqrt(-d)/2*a;
            printf("the roots are imaginary and are equal to:%.2f
+ i%.2f ,%.2f - i%.2f",realpart,imagpart,realpart,imagpart);
        }

      return 0;}
```

## Output :

```
enter the value of a,b,c:
1 4 4
the roots are equal and are equal to :-2.00
```

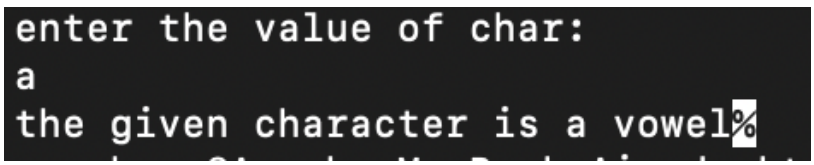
```
enter the value of a,b,c:
1 5 6
the roots are distinct and are equal to :-2.00 ,-3.00
```

```
enter the value of a,b,c:
1 2 3
the roots are imaginary and are equal to:-1.00 + i1.41 ,-1.00 - i1.41
```

# 4.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 value of char:\n");
    scanf("%c",&ch);
    switch(ch){
        case 'a':
        case 'A':
        case'e':
        case'E':
        case'i':
        case'I':
        case 'o':
        case'O':
        case'u':
        case'U':
        printf("the given character is a vowel");
        break;
        default:
        printf("the given character is a consonant");
        break;
    }return 0;
}
```

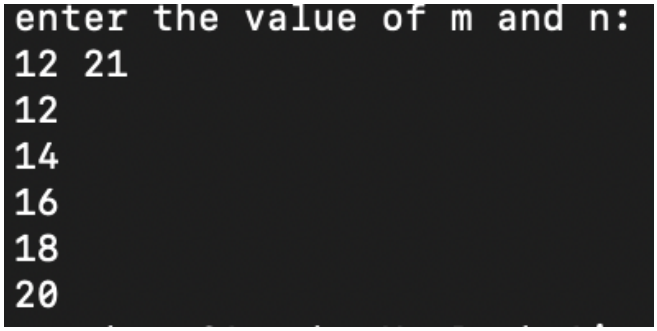
## Output:



# 5.C program to print even numbers from M to N

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

## Output:



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

```
#include <stdio.h>
int main(){
    int num,sum=0;
    printf("enter the number\n");
    scanf("%d",&num);
    for(int i=1;num>0;num--,i=i+2){
        sum= sum+(i*i);
    }
    printf("The required sum is = %d",sum);
return 0;
}
```

## Output :

```
enter the number
5
The required sum is = 165%
```

# 7.C program to perform addition of two Matrices

```
  #include <stdio.h>
int main() {
  int r, c, a[100][100], b[100][100], sum[100][100], i, j;
  printf("Enter the number of rows (between 1 and 100): \n");
  scanf("%d", &r);
  printf("Enter the number of columns (between 1 and 100): ");
  scanf("%d", &c);

  printf("\nEnter elements of 1st matrix:\n");
  for (i = 0; i < r; ++i)
    for (j = 0; j < c; ++j) {

      scanf("%d", &a[i][j]);
    }

  printf("Enter elements of 2nd matrix:\n");
  for (i = 0; i < r; ++i)
    for (j = 0; j < c; ++j) {

      scanf("%d", &b[i][j]);
    }
  for (i = 0; i < r; ++i)
    for (j = 0; j < c; ++j) {
      sum[i][j] = a[i][j] + b[i][j];
    }
 printf("\nSum of two matrices: \n");
  for (i = 0; i < r; ++i)
    for (j = 0; j < c; ++j) {
      printf("%d   ", sum[i][j]);
      if (j == c - 1) {
        printf("\n");
      }
    }

  return 0;}
```

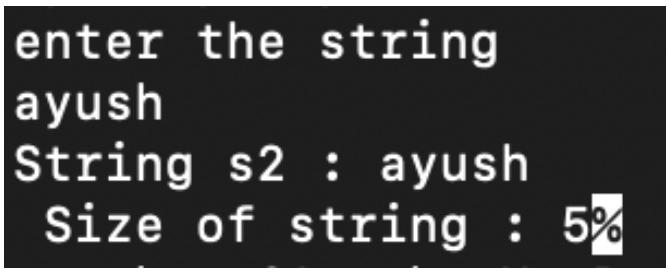
## Output:

```
Enter the number of rows (between 1 and 100):
3
Enter the number of columns (between 1 and 100): 3

Enter elements of 1st matrix:
1 2 3
4 5 6
2 3 4
Enter elements of 2nd matrix:
2 4 5
3 4 6
8 6 4

Sum of two matrices:
3   6   8
7   9   12
10   9   8
```

# 8.C program to copy one string to another string and find its length without using built in functions

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

    char s1[100] , s2[100], i;
  printf("enter the string\n");
  scanf("%s",s1);

  int count=0;
    for (i = 0; s1[i] != '\0'; ++i) {
       count++;
        s2[i] = s1[i];
    }

    s2[i] = '\0';
printf("String s2 : %s \n Size of string : %d", s2,count);

    return 0;
}
```

## 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

```
#include <stdio.h>
struct student{
  int rollno;
  char name[20];
  char sec[10];
  char dep[10];
  int fees;
  int result;
};
struct student getinfo();
void print(struct student s1);
int main() {
   struct student s1,s2;
  printf("Enter details of 1st Student\n");
  s1 = getinfo();
  printf("Enter details of 2nd Student\n");
  s2 = getinfo();
    if(s1.result>s2.result){
        print(s1);
    }
    else{
        print(s2);
    }
```

```
    return 0;
}

struct student getinfo(){
    struct student s1;
    printf("roll No. ");
  scanf("%d",&s1.rollno);
  printf("Name: ");
  scanf("%s",s1.name);
  printf("Section: ");
  scanf("%s",s1.sec);
  printf("Department: ");
  scanf("%s",s1.dep);
  printf("Fees: ");
  scanf("%d",&s1.fees);
  printf("Result: ");
  scanf("%d",&s1.result);
  return s1;
}


void print(struct student s1){
    printf("The details of student who got highest marks are as
follows\n");
    printf("Roll No.: %d\n",s1.rollno);
    printf("Name: %s\n",s1.name);
    printf("Section: %s\n",s1.sec);
    printf("Department: %s\n",s1.dep);
    printf("Fees: %d\n",s1.fees);
    printf("Result = %d",s1.result);
}
```

## Output :

```
Enter details of 1st Student
roll No. 12
Name: ayush
Section: cn
Department: ise
Fees: 220000
Result: 89
Enter details of 2nd Student
roll No. 13
Name: lavish
Section: cn
Department: ise
Fees: 222000
Result: 90
The details of student who got highest marks are as follows
Roll No.: 13
Name: lavish
Section: cn
Department: ise
Fees: 222000
```

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

```
#include <stdio.h>
int main()
{   int num1, num2, sum,subtr,mult;
    float div;
    int *ptr1, *ptr2;

    ptr1 = &num1;
    ptr2 = &num2;

    printf("Enter any two numbers: ");
    scanf("%d%d", ptr1, ptr2);

    sum = *ptr1 + *ptr2;
    subtr=*ptr1 - *ptr2;
    mult= (*ptr1)*(*ptr2);
    div= (float)(*ptr1)/(*ptr2);

    printf("Sum = %d\nDifference = %d\nMultiplication =
%d\nDivision = %.2f", sum,subtr,mult,div);

    return 0;
}
```

## Output :

```
Enter any two numbers: 12 23
Sum = 35
Difference = -11
Multiplication = 276
Division = 0.52%
```