VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

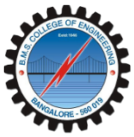
C PROGRAMMING LAB RECORD

Submitted by

SHIVAM SISODIA(1BM20IS143)

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
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,Shivam Sisodia , 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

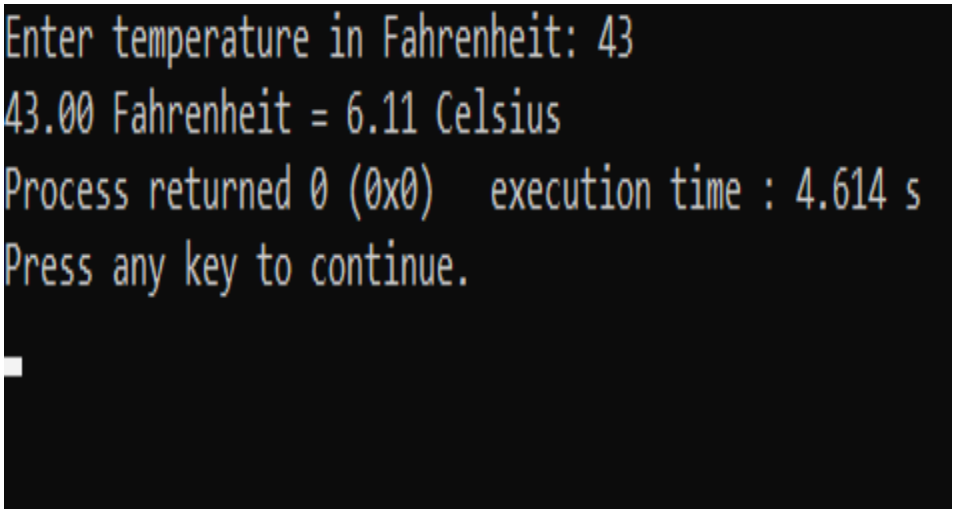
We also declare that to the best of our knowledge and belief, the development reported here is not from part of any other report by any other students.

SHIVAM SISODIA (1BM20IS143)

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

```
#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 :



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

```
#include <stdio.h>
#include <math.h>
double area_of_triangle(double, double, double);
int main()
{ double a, b, c, area;
 printf("Enter the lengths of sides of a triangle\n");
 scanf("%lf%lf%lf", &a, &b, &c);
 area = area_of_triangle(a, b, c);
 printf("Area of the triangle = %.2lf\n", area);
 return 0;
}
double area_of_triangle(double a, double b, double c)
{ double s, area;
s = (a+b+c)/2;
area = sqrt(s*(s-a)*(s-b)*(s-c));
return area;
}
```

OUTPUT :

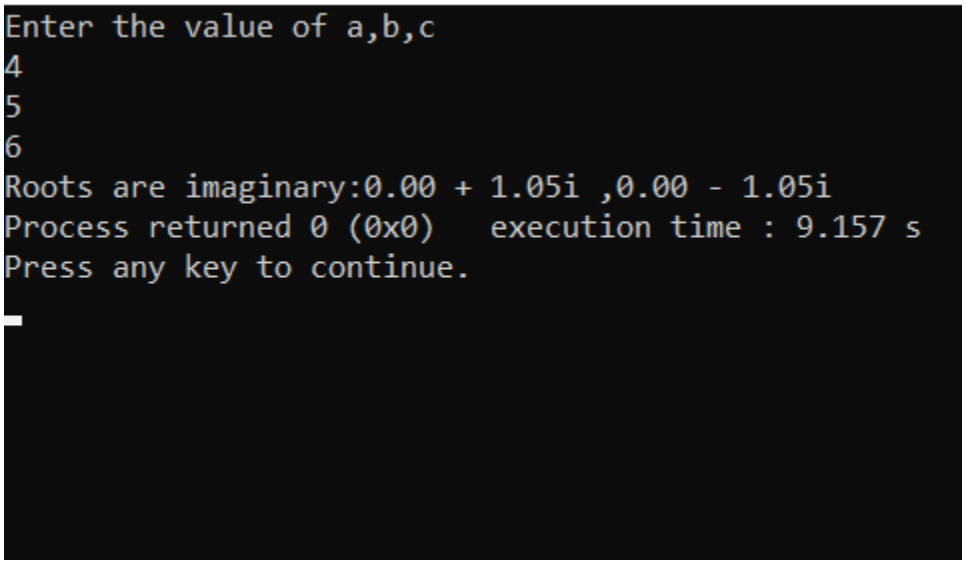
```
Enter the lengths of sides of a triangle
4
5
6
Area of the triangle = 9.92

Process returned 0 (0x0)   execution time : 10.056 s
Press any key to continue.
```

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

```
int a,b,c;
printf("Enter the value of a,b,c\n");
scanf("%d %d %d",&a,&b,&c);
roots(a,b,c);
return 0;
}
int roots(int a,int b,int c)
{
int d;
float x1,x2,img;
d=b*b-4*a*c;
if(d>0)
{
x1=(-b + sqrt(d))/(2*a);
x2=(-b - sqrt(d))/(2*a);
printf("Roots of quadratic are:%f %f",x1,x2);
}
else if(d==0)
{
x1=x2=(-b)/(2*a);
printf("Roots are:%f %f",x1,x2);
}
```

```
else
{
x1=(-b)/(2*a);
img=sqrt(-d)/(2*a);printf("Roots are imaginary:%0.2f + %0.2fi
,%0.2f - %0.2fi",x1,img,x1,img);
}
}
```

OUTPUT :

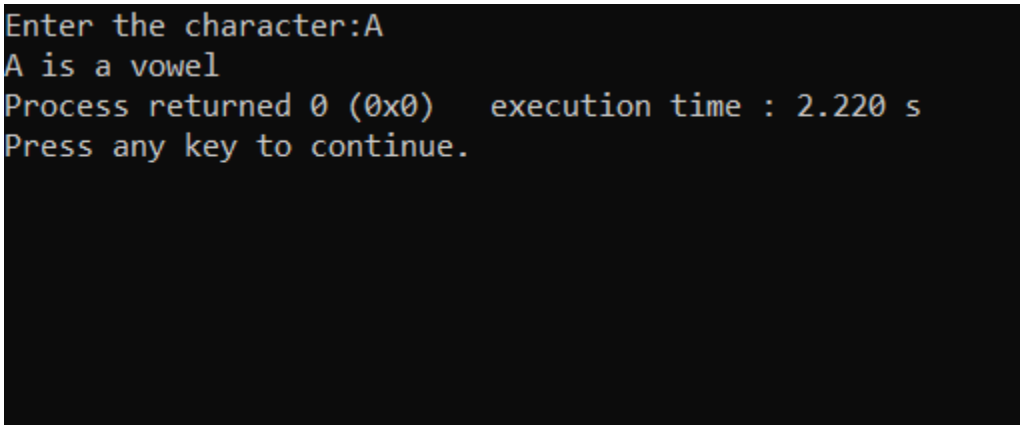


4. Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement

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

```
printf("%c is a consonant",letter);
}
return 0;
```

OUTPUT :



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

```
#include<stdio.h>
int main(){
 int f1,f2,rem,i;
 printf(" Give the First number for the Range : \n");
 scanf("%d",&f1);
 printf(" Give the Final number for the Range : \n");
 scanf("%d",&f2);
 printf("\n The Even numbers between %d and %d are ",f1,f2);
 for(i=f1; i<=f2; ++i){
 rem = i % 2;
 if(rem == 0)
 printf("\n %d",i);
 }
 return 0;
```

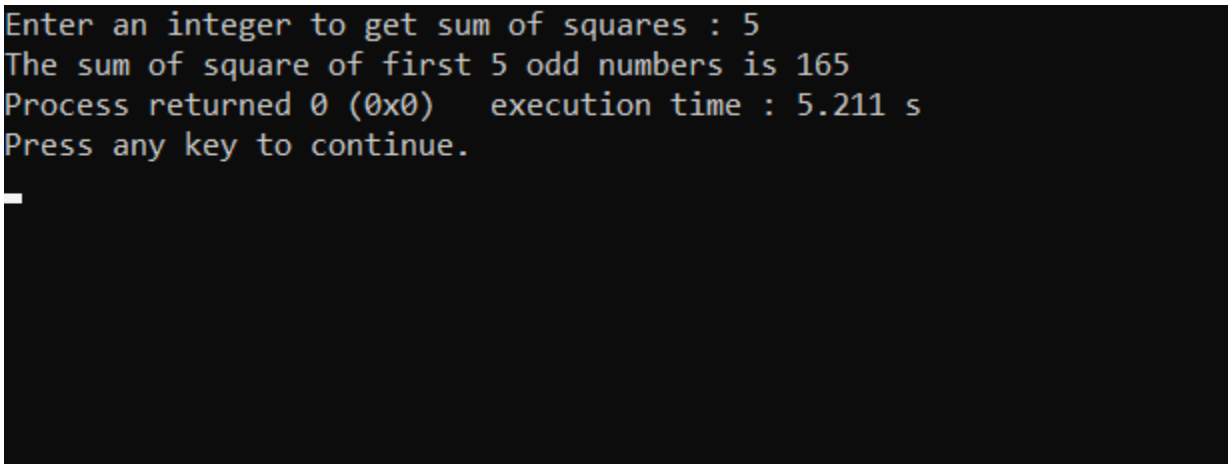
OUTPUT :

```
 Give the First number for the Range :
3
 Give the Final number for the Range :
34

 The Even numbers between 3 and 34 are
 4
 6
 8
 10
 12
 14
 16
 18
 20
 22
 24
 26
 28
 30
 32
 34
Process returned 0 (0x0)   execution time : 12.700 s
Press any key to continue.
```

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

```
#include <stdio.h>
int main()
{
int n =0;
printf("Enter an integer to get sum of squares : ");
 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 :



7. Develop a program to perform addition of two Matrices

```
#include <stdio.h>
int main()
{
 int a[2][3],b[2][3],c[2][3],i,j;
 printf("\nENTER VALUES FOR MATRIX A:\n");
 for(i=0;i<2;i++)
 for(j=0;j<3;j++)
 scanf("%d",&a[i][j]);
 printf("\nENTER VALUES FOR MATRIX B:\n");
 for(i=0;i<2;i++)
 for(j=0;j<3;j++)
 scanf("%d",&b[i][j]);
 for(i=0;i<2;i++)
 for(j=0;j<3;j++)
 c[i][j]=a[i][j]+b[i][j];
 printf("\nTHE VALUES OF MATRIX C ARE:\n");
 for(i=0;i<2;i++)
 {
 for(j=0;j<3;j++)
 printf("%5d",c[i][j]);
 printf("\n");
 }
```

```
 return 0;
}
```

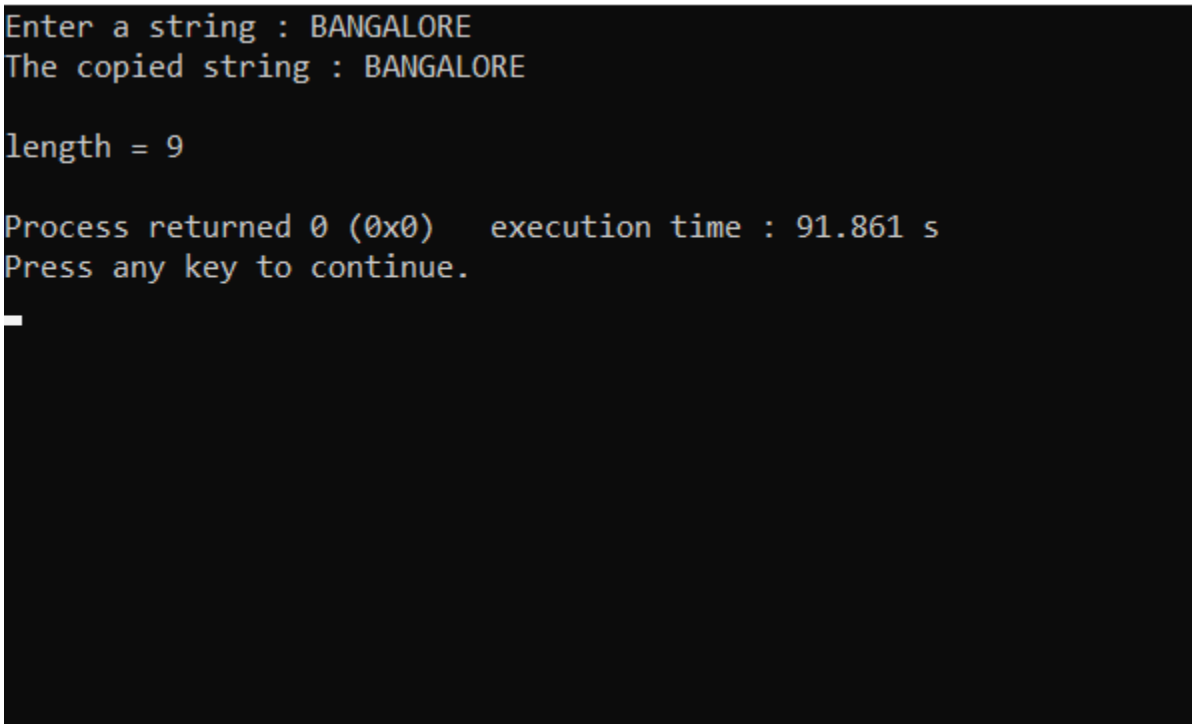
OUTPUT :

```
ENTER VALUES FOR MATRIX A:
4
3
5
2
6
1

ENTER VALUES FOR MATRIX B:
4
6
2
3
1
6

THE VALUES OF MATRIX C ARE:
    8    9    7
    5    7    7

Process returned 0 (0x0)   execution time : 18.514 s
Press any key to continue.
```

8. 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(){
char str1[100],str2[100];
int i=0;
printf("Enter a string : ");
gets(str1);
for(int i=0;i<100;i++){
str2[i]=str1[i];
}
while(str2[i]!='\0'){
i++;
}
printf("The copied string : ");
puts(str2);
printf("\nlength = %d\n",i);
}
```

OUTPUT :


Enter a string : BANGALORE
The copied string : BANGALORE
length = 9
Process returned 0 (0x0) execution time : 91.861 s
Press any key to continue.

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

```
#include <stdio.h>

#define MAX_SIZE 100

struct Student {
    char name[MAX_SIZE];
    char roll_no[MAX_SIZE];
    char department[MAX_SIZE];
    int fees;
    int marks;
} student1, student2;

int main() {



    printf("Enter details for Student 1:\n");
    printf("name: ");
    fgets(student1.name, MAX_SIZE, stdin);
```

```
printf("roll number: ");
fgets(student1.roll_no, MAX_SIZE, stdin);
printf("department: ");
fgets(student1.department, MAX_SIZE, stdin);
printf("fees: ");
scanf("%d", &student1.fees);
printf("marks: ");
scanf("%d", &student1.marks);

getchar(); // read leftover linefeed

printf("Enter details for Student 2:\n");
printf("name: ");
fgets(student2.name, MAX_SIZE, stdin);
printf("roll number: ");
fgets(student2.roll_no, MAX_SIZE, stdin);
printf("department: ");
fgets(student2.department, MAX_SIZE, stdin);
printf("fees: ");
scanf("%d", &student2.fees);
printf("marks: ");
scanf("%d", &student2.marks);
```

```
struct Student best_student;

if (student1.marks > student2.marks) {
   printf("\nstudent 1 has scored higher marks.\n");
   best_student = student1;
}
else {
   printf("\nstudent 2 has scored higher marks.\n");
   best_student = student2;
}

printf(
   "name: %s\n"
   "roll number: %s\n"
   "department: %s\n"
   "fees: %d\n"
   "marks: %d\n"
   ,
   best_student.name,
   best_student.roll_no,
   best_student.department,
   best_student.fees,
   best_student.marks
```

```
    );

    return 0;
}
```

OUTPUT :

```
Enter details for Student 1:
name: XYE
roll number: 6
department: ISE
fees: 4568
marks: 87
Enter details for Student 2:
name: XCV
roll number: 65
department: CSE
fees: 5600
marks: 65

student 1 has scored higher marks.
name: XYE

roll number: 6

department: ISE

fees: 4568
marks: 87

Process returned 0 (0x0)   execution time : 69.842 s
Press any key to continue.
```

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

```
#include<stdio.h>
int ops(int *, int *, int *, int *, int*, float *, int *);
int main()
{
int a,b;
int add,sub,mul,rem;
float quo;
printf("Enter num 1: ");
scanf("%d",&a);
printf("Enter num 2: ");
scanf("%d",&b);
ops(&a, &b, &add, &sub, &mul, &quo,
&rem); printf("\n");
printf("Sum :%d\n",add);
printf("Difference :%d\n",sub);
printf("Quotient :%0.2f\n",quo);
printf("Product :%d\n",mul);
printf("Remainder :%d\n",rem);
}
int ops(int *a, int *b, int *add, int *sub, int *mul, float *quo, int
*rem)
```

```
{
*add=*a+*b;
*sub=*a-*b;
*mul=*a**b;
*quo=(float)(*a)/(*b);
*rem=(*a)%(*b);
}
```

OUTPUT :