VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

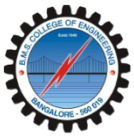
C PROGRAMMING LAB RECORD

Submitted by

Sakshi Shahi (1BM20CS139)

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,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.

SAKSHI SHAHI (1BM20CS139)

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

CODE:

```
#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:

```
Enter temperature in Fahrenheit: 100
100.00 Fahrenheit = 37.78 Celsius
```

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

CODE:

```
#include <stdio.h>
#include <math.h>
int areacalculate(int a,int b,int c)
{
float s , area , s1;
s1=a+b+c;
s = s1/2;
area = sqrt(s*(s-a)*(s-b)*(s-c));
printf("Area of Triangle of given sides is %0.2f",area);
return 0;
}
int main(){
int a1,b1,c1;
printf("Enter three side of triangle\n");
scanf("%d %d %d",&a1,&b1,&c1);
areacalculate(a1,b1,c1);
return (0);
}
```

OUTPUT:

```
Enter three side of triangle
12 15 13
Area of Triangle of given sides is 74.83
```

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

CODE:

```
#include<stdio.h>
#include<math.h>
int main()
{
float a,b,c,D,x1,x2;
printf("enter values of coefficients a, b and c :\n");
scanf("%f %f %f",&a,&b,&c);
D=(b*b - 4*a*c);
if (D<0)
{
printf("The roots are imaginary\n First root is : %f + i%f", -b/(2*a),
sqrt(-D)/(2*a) );
printf("Second root is : %f - i%f", -b/(2*a), sqrt(-D)/(2*a) );
}
else if(D>0){
x1=(-b + sqrt(D))/(2*a);
x2=(-b - sqrt(D))/(2*a);
printf("The roots are real and distinct\n First root is : %f\n",x1);
printf("Second root is :%f\n",x2);
}
else{
x1=-b/(2*a);
printf("The roots are real and equal\n First root is :%f\n The second root is :%f",x1,x1);
}
return 0;
}
```

OUTPUT:

```
enter values of coefficients a, b and c :
1 4 5
The roots are imaginary
 First root is : -2.000000 + i1.000000Second root is : -2.000000 - i1.000000
```

```
enter values of coefficients a, b and c :
3 -5 -8
The roots are real and distinct
 First root is : 2.666667
Second root is :-1.000000
```

```
enter values of coefficients a, b and c :
-1 6 -9
The roots are real and equal
 First root is :3.000000
 The second root is :3.000000
```

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

CODE:

```
#include<stdio.h>
int 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");
       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");
  }
    return 0;
}
```

OUTPUT:

```
Enter any alphabet: A
Vowel
```

```
Enter any alphabet: C
Consonant
```

```
Enter any alphabet: i
Vowel
```

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

CODE:

```
#include<stdio.h>
int main()
{
   int m,n;
   printf("Enter m : ");
   scanf("%d",&m);
   printf("Enter n : ");
   scanf("%d",&n);
   while(m<=n)
{
   if (m%2==0)
   printf("%d\n",m);
   m++;
 }
}
```

OUTPUT:

```
Enter m : 45
Enter n : 66
46
48
50
52
54
56
58
60
62
64
66
```

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

CODE:

```
#include<stdio.h>
int main()
{
 int n;
 printf("Enter n : ");
 scanf("%d",&n);
 int s=0;
 for(int i=0;i<(2*n);i++){
 if(i%2!=0)
 s+=(i*i);
 }
 printf("\nSum of first %d odd numbers = %d\n",n,s);
}
```

OUTPUT:

```
Enter n : 5

Sum of first 5 odd numbers = 165
```

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

CODE:

```
#include <stdio.h>
int main(){
int n,m,i,j;
printf("Enter number of rows : ");
scanf("%d",&n);
printf("Enter number of columns : ");
scanf("%d",&m);
int arr1[n][m],arr2[n][m],arr3[n][m];
printf("Enter matrix 1 : \n");
for(i=0;i<n;i++){
 for(j=0;j<m;j++){
 //printf("Enter element [%d][%d] - ",i+1,j+1);
 scanf("%d",&arr1[i][j]);
 }
}
printf("Enter matrix 2 : \n");
for(i=0;i<n;i++){
 for(j=0;j<m;j++){
 //printf("Enter element [%d][%d] - ",i+1,j+1);
 scanf("%d",&arr2[i][j]);
 }
}
printf("Addition of matrices : \n");
for(i=0;i<n;i++){
```

```
 for(j=0;j<m;j++){
 arr3[i][j]=arr1[i][j]+arr2[i][j];
 }
}
for(i=0;i<n;i++){
 for(j=0;j<m;j++){
 printf(" %d ",arr3[i][j]);
 }
 printf("\n");
}
}
```

OUTPUT:

```
Enter number of rows : 3
Enter number of columns : 3
Enter matrix 1 :
4 5 8
9 7 3
2 6 9
Enter matrix 2 :
2 6 4
8 9 5
3 6 1
Addition of matrices :
 6  11  12
 17  16  8
 5  12  10
```

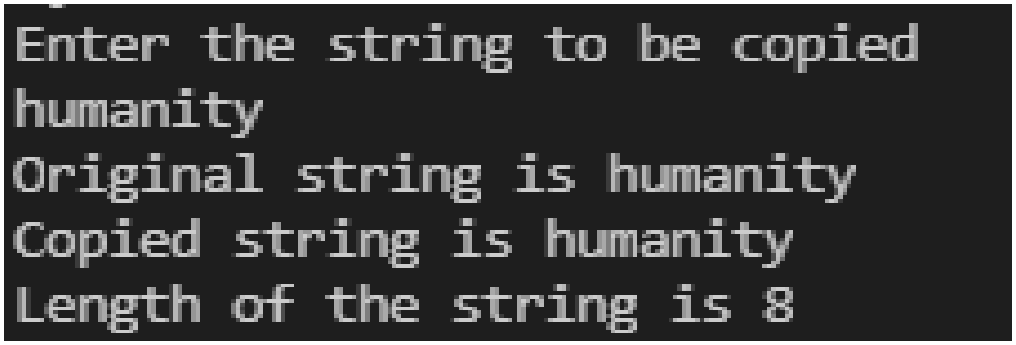
8. Develop a C program to copy one string to another string and find its length without using built in functions.

CODE:

```
#include<stdio.h>
 int len(char str[20])
{
 int i=0,count=0;
 while(str[i]!='\0')
 {
   count += 1;
     i++;
 }
   return count;
 }
int main()
 {
 char str1[20],str2[20];
 int i=0,j=0;
printf("Enter the string to be copied\n");
 scanf("%s",str1);
while(str1[i] != '\0')
{
str2[j]=str1[i]; i++; j++;
}
 printf("Original string is %s\n",str1);
 printf("Copied string is %s\n",str2);
```

```
printf("Length of the string is %d\n",len(str1));
}
```

OUTPUT:



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.

CODE:

```
#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");
scanf("%s",stud1.section);
printf("Enter the department of student 1\n");
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);
printf("Department of student1 %s\n",stud1.dept);
printf("Fees of student1 %0.2f\n",stud1.fees);
printf("Total marks of student 1 %d\n",stud1.totalmarks);
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 %0.2f\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
39
Enter name of student 1
sakshi
Enter the Section of student 1
CN
Enter the department of student 1
CSE
Enter the fees of student 1
70000
Enter total marks of student 1
492
Enter Roll of student 2
33
Enter name of student 2
Samridhi
Enter the Section of student 2
CA
Enter the department of student 2
CSE
Enter the fees of student 2
70000
Enter total marks of student 2
465
Roll Number of student 1 39
Name of student 1 sakshi
Section of student 1 CN
Department of student1 CSE
Fees of student1 70000.00
Total marks of student 1 492
Roll Number of student 2 33
Name of student 2 Samridhi
Section of student 2 CA
Department of student 2 CSE
Fees of student2 70000.00
Total marks of student 2 465
Student 1 secured highest marks
```

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

CODE:

```
#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: