

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



DECLARATION

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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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 :

```
Enter temperature in Fahrenheit: 36
36.00 Fahrenheit = 2.22 Celsius
Process returned 0 (0x0)   execution time : 3.817 s
Press any key to continue.
```

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

```
#include <stdio.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
2
3
4
Area of the triangle = 2.90

Process returned 0 (0x0)   execution time : 17.948 s
Press any key to continue.
_
```

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

```
#include<stdio.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
2
4
the roots are imaginary and are equal to:-1.00 + i1.73 ,-1.00 - i1.73
Process returned 0 (0x0)   execution time : 5.355 s
Press any key to continue.

```

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:

```
Enter the character:k
k is a consonant
Process returned 0 (0x0)   execution time : 2.330 s
Press any key to continue.
```

5. Develop a 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:


```
enter the value of m and n:
8
24
8
10
12
14
16
18
20
22
24

Process returned 0 (0x0)   execution time : 14.002 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 :

```
Enter an integer to get sum of squares : 5
The sum of square of first 5 odd numbers is 165
Process returned 0 (0x0)   execution time : 39.286 s
Press any key to continue.
```

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");
}

```

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```

return 0;
}

```

OUTPUT:

```

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

ENTER VALUES FOR MATRIX B:
9
8
7
6
5
4

THE VALUES OF MATRIX C ARE:
10  10  10
10  10  10

Process returned 0 (0x0)   execution time : 12.675 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 : 27.850 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>

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. 10
Name: abc
Section: A
Department: cse
Fees: 100000
Result: 85
Enter details of 2nd Student
Roll No. 12
Name: xyz
Section: B
Department: cse
Fees: 100000
Result: 88
The details of student who got highest marks are as follows
Roll No.: 12
Name: xyz
Section: B
Department: cse
Fees: 100000
Result = 88
Process returned 0 (0x0)   execution time : 95.914 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 :

```
Enter num 1: 88  
Enter num 2: 54  
  
Sum :142  
Difference :34  
Quotient :1.63  
Product :4752  
Remainder :34  
  
Process returned 0 (0x0)   execution time : 16.964 s  
Press any key to continue.
```


