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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, 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.

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:-

The image shows a terminal window with two sections: 'Input' and 'Output'. In the 'Input' section, the number '45' is entered. In the 'Output' section, the text 'Enter temperature in Fahrenheit: 45.00 Fahrenheit = 7.22 Celsius' is displayed.

```
Input
45

Output
Enter temperature in Fahrenheit: 45.00 Fahrenheit = 7.22 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>

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:-

Input

```
12 36 40
```

Output

```
Please Enter the three sides of triangle
```

```
Area of triangle = 212.26
```

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,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:-

Input

```
1 5 6
```

Output

```
enter the value of a,b,c:
```

```
the roots are distinct and are equal to :-2.00 ,-3.00
```

Input

```
1 2 3
```

Output

```
enter the value of a,b,c:
```

```
the roots are imaginary and are equal to:-1.00 + i1.41 , -1.00 - i1.41
```

Input

1 4 4

Output

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

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

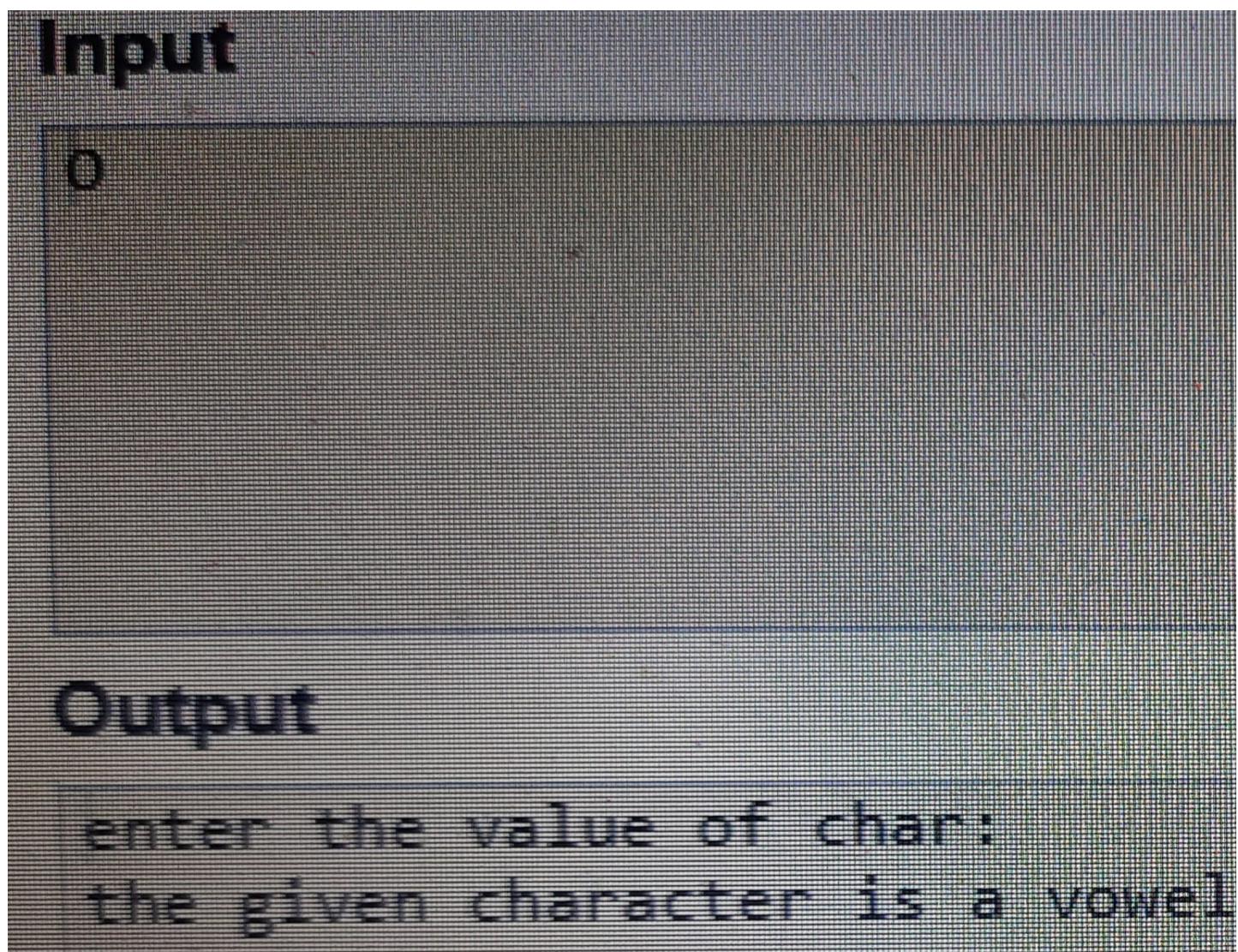
CODE:-

```
#include<stdio.h>

int main(){
    char ch;
    printf("enter 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  
consonant");  
break;  
}return 0;  
}
```

OUTPUT:-



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

CODE:-

```
#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:-

Input

```
14 23
```

Output

```
enter the value of m and n:
```

```
14
```

```
16
```

```
18
```

```
20
```

```
22
```

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

CODE:-

```
#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:-

Input

5

Output

enter the number

The required sum is = 165

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

CODE:-

```
#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;
}
```

Input

1	2	3
4	5	6
2	3	4
2	4	5
3	4	6
8	6	4

Output

Enter elements of 1st matrix:

Enter elements of 2nd matrix:

Sum of two matrices:

3	6	8
7	9	12
10	9	8

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 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:-

```
Output
$ ./a.out
enter the string
String s2 : harsh
Size of string : 5
```

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 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:-

Input

7

harsh

cn

ise

22000

89

13

Output

Roll No.: 7

Name: harsh

Section: cn

Department: ise

Fees: 22000

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 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:-

Input

16 27

Output

Enter any two numbers: Sum = 43

Difference = -11

Multiplication = 432

Division = 0.59

