

**Maharashtra State Board Of Technical Education,  
Mumbai**

**GOVERNMENT POLYTECHNIC, KARAD**

**First-year Diploma Engineering (I scheme)**

**A**

**Report**

**On**

**MICRO-PROJECT**

**Academic Year :2021-22**

**“SCIENTIFIC CALCULATOR”**

.....  
**Submitted by:**

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## **CERTIFICATE**

This is certify that as part of the partial fulfillment of the Three years Diploma course for the semester 1st , the bonafied students studying First year diploma (Computer), I-scheme, Miss. Akshata Bachche, Miss Riya Kharade, Miss Sanika Powar, Miss Purva Jadhav, Miss Purva Kamble, Miss Shweta Gawade.

Have completed the project report titled as “Library Management system in C programming” for the subject- Programming in C(22226) under the guidance of Mrs. Birnale Mam and submitted it to Department of Science and Humanities. Govt. Polytechnic. Karad.

(GUIDE)

Mrs. M. A. Birnale

(Head of Department)

Mrs. S. B. Patil

Place : Govt. Polytechnic Karad.

Date : 21/05/2022

## **ACKNOWLEDGEMENT**

We take this opportunity to thank all those who have directly and indirectly inspired, directed and assisted us towards successful completion of this project report.

We express our sincere thanks to Prof.R.K.Patil and the Head of Department Prof.S.B.Patil Mam, for having us allowed to submit this report as a part of our academic learning.

We express our sincere thanks to Prof.M.A.Birnale, Lecturer Computer Department, Govt. Polytechnic Karad for encouragement throughout the project report and guideline in designing and working out this project. We are also grateful to team of our microproject.

Place : Government Polytechnic Karad.

Date :21/05/2022

# PART B

## MICRO PROJECT

### REPORT

Title of a micro project

## “SCIENTIFIC CALCULATOR”

#### ❖ Brief Description:

Scientific calculators include exponents, log, natural log (ln), trig functions, and memory. These functions are vital when you're working with scientific notation or any formula with a geometry component. Basic calculators can do addition, subtraction, multiplication, and division. Basic functions and exponents, Calculate basic functions such as addition, subtraction, multiplication, and division, Logarithms, Sine, cosine, and tangent functions, Scientific notation, Binary functions are used in this.

A scientific calculator is a calculator designed to help you calculate science, engineering, and mathematics problems. It has special buttons for parentheses, trigonometric functions, exponents, inverses of trigonometric functions.

### ❖ Aim of Micro-Project:

To Eligible for prepare a code using various attributes of 'c'.To study mathematical functions.To solve the Arithmetic and Scientific operations using a scientific Calculator. The purpose of a calculator is to do correct calculations and to do so efficiently. It is clear that a calculator should relieve the user of the need to do mental operations and of the need to rely on paper, so far as much as possible.In maths, a scientific calculator is a valuable and useful tool, since it allows the user to solve more difficult equations greater than one or two terms quickly and easily. Equations with a scientific calculator are commonly used in maths, physics and other sciences.This graphical scientific calculator is purely written in C programming language. It uses small functions to draw buttons on the screen and perform scientific operations like conversion, logarithm, and other operations. Every operation can be performed using the mouse buttons as well as keyboard. It can perform almost all the functions shown on the screen except few functions which will be implemented in the next version of this calculator code.

### ❖ Course Outcomes Integrated

- Write simple C programs using arithmetic expressions.
- Develop an algorithm to solve problems
- Develop C' programs using a control structure.
- Develop/use functions in C programs for modular programming approach.

❖ **Action plan:**

Sr.No.	Details of Activity	Planned start date	Planned finish date	Responsible team members
1.	Selection of Topic	28/04/22	01/05/22	All team members
2.	Requirement Analysis	04/05/22	07/05/22	All team members
3.	Design & implement the solution	08/05/22	11/05/22	All team members
4.	Report preparation	12/05/22	13/05/22	All team members

(RELATED THEORY)

- Select the topic of the micro-project.
- Detail study of a given subject.
- To collect the information regarding the selected micro-project.
- To collect To information from teachers and some reference books.
- To prepare the chart for the micro-project.
- Prepare Part (A) Proposal of the Micro-project.
- Prepare Part (B) Report of the Micro-project.
- Checking the soft copies under the guidance of the subject teacher.
- After confirmation from the teacher, get a hard copy of the micro-project and submit it

❖ **Resources Required :**

Sr. No.	Name of Resources	Specifications	Qty
1.	Computer System	Desktop with basic configuration	As per requirement
2.	MS Office	Word	As per requirement
3	C Compiler	Online	As per requirement

## ● Code Of Microproject:

```
main.c
1 - /*****
2  scientific calculator
3  *****/
4  #include<stdio.h>
5  #include<stdlib.h>
6  #include<math.h>
7  #define note "Please, enter the valid operation"
8  void addition();
9  void subtraction();
10 void multiplication();
11 void division();
12 void modulus();
13 void factorial();
14 void power();
15 void square();
16 void cube();
17 void squareroot();
18 int main()
19 {
20     printf("\t\tWelcome to the scientific calculator!!\n\n");
21     int choice;
22     printf("\n*****Press 0 to quit the program*****\n");
23     printf("Enter 1   for Addition \n");
24     printf("Enter 2   for Subtraction \n");
25     printf("Enter 3   for Multiplication \n");
26     printf("Enter 4   for Division \n");
27     printf("Enter 5   for Modulus\n");
28     printf("Enter 6   for Power \n");
29     printf("Enter 7   for Factorial \n");
30     printf("Enter 8   for square \n");
31     printf("Enter 9   for cube \n");
32     printf("Enter 10  for squareroot\n\n");
33     printf("\n*****\n");
34     while(1){
35         printf("\n\nEnter the operation you want to do: ");
36         scanf("%d",&choice);
37         switch(choice)
38         {
39             case 1:
40                 addition();
41                 break;
42             case 2:
43                 subtraction();
44                 break;
45             case 3:
46                 multiplication();
47                 break;
48             case 4:
49                 division();
50                 break;
51             case 5:
52                 modulus();
53                 break;
54             case 6:
55                 power();
56                 break;
57             case 7:
58                 factorial();
59                 break;
60             case 8:
61                 square();
62                 break;
63             case 9:
64                 cube();
65                 break;
66             case 10:
67                 squareroot();
68                 break;
69             case 0:
70                 exit(0);
```

```

70         exit(0);
71         default:
72             printf("\n** %s *\n",note);
73     }
74 }
75 return 0;
76 }
77 void addition()
78 {
79     printf("Enter the numbers you want to add: ");
80     int a,b;
81     scanf("%d%d",&a,&b);
82     printf("The sum of a and b is %d\n",a+b);
83     printf("\n\n*****");
84 }
85 void subtraction()
86 {
87     printf("Enter the numbers you want to subtract: ");
88     int a,b;
89     scanf("%d%d",&a,&b);
90     printf("The subtraction of a and b is %d\n",a-b);
91     printf("\n\n*****");
92 }
93 void multiplication()
94 {
95     printf("Enter the numbers you want to multiply: ");
96     int a,b;
97     scanf("%d%d",&a,&b);
98     printf("The multiplication of a and b is %d\n",a*b);
99     printf("\n\n*****");
100 }
101 void division()
102 {
103     printf("Enter the numbers you want to divide: ");
104     int a,b;
105     scanf("%d%d",&a,&b);

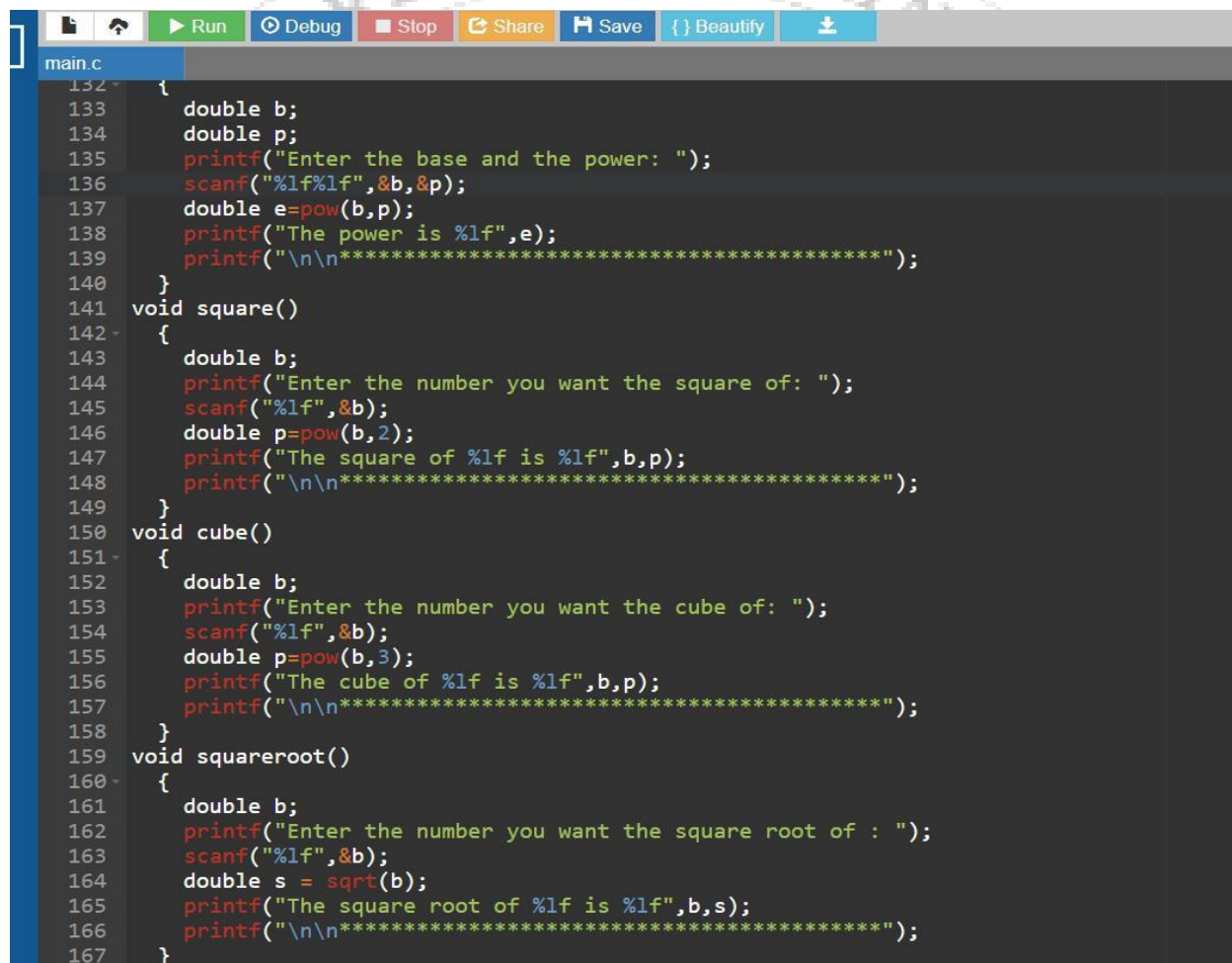
```

```

106     printf("The division of a and b is %f\n",(float)a/(float)b);
107     printf("\n\n*****");
108 }
109 void modulus()
110 {
111     printf("Enter the numbers you want to find modulus of: ");
112     int a,b;
113     scanf("%d%d",&a,&b);
114     printf("The modulus of a and b is %d\n",a%b);
115     printf("\n\n*****");
116 }
117 void factorial()
118 {
119     int n,factorial;
120     printf("Enter the number you want the factorial of: ");
121     scanf("%d",&n);
122     factorial=1;
123     for(int i=1;i<=n;i++)
124     {
125         factorial=factorial*i;           // factorial*=i;
126     }
127     printf("\nFactorial of %d is %d",n,factorial);
128     printf("\n\n*****");
129 }
130 void power()
131 {
132     double b;
133     double p;
134     printf("Enter the base and the power: ");
135     scanf("%lf%lf",&b,&p);
136     double e=pow(b,p);
137     printf("The power is %lf",e);
138     printf("\n\n*****");
139 }
140 void square()

```





```
132 {
133     double b;
134     double p;
135     printf("Enter the base and the power: ");
136     scanf("%lf%lf",&b,&p);
137     double e=pow(b,p);
138     printf("The power is %lf",e);
139     printf("\n\n*****");
140 }
141 void square()
142 {
143     double b;
144     printf("Enter the number you want the square of: ");
145     scanf("%lf",&b);
146     double p=pow(b,2);
147     printf("The square of %lf is %lf",b,p);
148     printf("\n\n*****");
149 }
150 void cube()
151 {
152     double b;
153     printf("Enter the number you want the cube of: ");
154     scanf("%lf",&b);
155     double p=pow(b,3);
156     printf("The cube of %lf is %lf",b,p);
157     printf("\n\n*****");
158 }
159 void squareroot()
160 {
161     double b;
162     printf("Enter the number you want the square root of : ");
163     scanf("%lf",&b);
164     double s = sqrt(b);
165     printf("The square root of %lf is %lf",b,s);
166     printf("\n\n*****");
167 }
```

- **Output of Micro-Project:**

```
Welcome to the scientific calculator!!

*****Press 0 to quit the program*****
Enter 1  for Addition
Enter 2  for Subtraction
Enter 3  for Multiplication
Enter 4  for Division
Enter 5  for Modulus
Enter 6  for Power
Enter 7  for Factorial
Enter 8  for square
Enter 9  for cube
Enter 10 for squareroot

*****

Enter the operation you want to do: 1
Enter the numbers you want to add: 210 90
The sum of a and b is 300

*****

Enter the operation you want to do: 2
Enter the numbers you want to subtract: 210 10
The subtraction of a and b is 200

*****

Enter the operation you want to do: 3
Enter the numbers you want to multiply: 2 10
The multiplication of a and b is 20

*****
```



\*\*\*\*\*

Enter the operation you want to do: 4  
Enter the numbers you want to divide: 10 5  
The division of a and b is 2.000000

\*\*\*\*\*

Enter the operation you want to do: 5  
Enter the numbers you want to find modulus of: 10 2  
The modulus of a and b is 0

\*\*\*\*\*

Enter the operation you want to do: 6  
Enter the base and the power: 2 3  
The power is 8.000000

\*\*\*\*\*

Enter the operation you want to do: 7  
Enter the number you want the factorial of: 4  
  
Factorial of 4 is 24

\*\*\*\*\*

Enter the operation you want to do: 8  
Enter the number you want the square of: 10  
The square of 10.000000 is 100.000000

\*\*\*\*\*

Enter the operation you want to do: 9  
Enter the number you want the cube of: 2  
The cube of 2.000000 is 8.000000



The power is 8.000000

\*\*\*\*\*

Enter the operation you want to do: 7

Enter the number you want the factorial of: 4

Factorial of 4 is 24

\*\*\*\*\*

Enter the operation you want to do: 8

Enter the number you want the square of: 10

The square of 10.000000 is 100.000000

\*\*\*\*\*

Enter the operation you want to do: 9

Enter the number you want the cube of: 2

The cube of 2.000000 is 8.000000

\*\*\*\*\*

Enter the operation you want to do: 10

Enter the number you want the square root of : 25

The square root of 25.000000 is 5.000000

\*\*\*\*\*

Enter the operation you want to do: 11

\*\* Please, enter the valid operation \*

Enter the operation you want to do: 0

...Program finished with exit code 0

Press ENTER to exit console.

- **Algorithm Of Micro-Project:**

Step 1: START

Step 2: Declare functions Addition, Subtraction, Multiplication, Division, Modulus, Power, Factorial, Square, Cube, Squareroot.

Step 3: Print welcome to Scientific Calculator.

Step 4: Declare variable named choice.

Step 5: Enter 1 for Addition.

Step 6: Enter 2 for Subtraction.

Step 7: Enter 3 for Multiplication.

Step 8: Enter 4 for Division.

Step 9: Enter 5 for Modulus.

Step 10: Enter 6 for Power.

Step 11: Enter 7 for Factorial.

Step 12: Enter 8 for Square.

Step 13: Enter 9 for Cube.

Step 14: Enter 10 for Squareroot.

Step 15: Print Enter the operation you want to do take choice from user.

Step 16: Put the choice of user insert switch.

Step 17 : Inside case 1 call function named addition and give the break.

Step 18: Inside case 2 call function named subtraction and give the break.

Step 19 : Inside case 3 call function named multiplication and give the break.

Step 20 : Inside case 4 call function named division and give the break.

Step 21: Inside case 5 call function named modulus and give the break.

Step 22: Inside case 6 call function named power and give the break.

Step 23: Inside case 7 call function named factorial and give the break.

Step 24: Inside case 8 call function named square and give the break.

Step 25: Inside case 9 call function named cube and give the break.

Step 26: Inside case 10 call function named Squareroot and give the break.

Step 27: Inside case 0 call function named exit and give the break.

Step 28: Print the default statement please, enter valid operation.

Step 29: Define addition

Step 30: Print enter the number you want to add.

Step 31: Declare a , b and read their values from user.

Step 32: Print sum.

Step 34: Define subtraction

Step 35: Print enter the number you want to subtraction.

Step 36: Declare a , b and read their values from user.

Step 37: Print subtraction

Step 38: Define Multiplication.

Step 39: Print enter the number you want to multiplication.

Step 40: Declare a , b and read their values from user.

Step 41: Print multiplication.

Step 42: Define division.

Step 42: Print enter the number you want to division.

Step 43: Declare a , b and read their values from user.

Step 44: Print division

Step 45: Define modulus.

Step 46: Print enter the number you want to modulus.

Step 47: Declare a , b and read their values from user.

Step 48: Print modulus.

Step 49: Define power.

Step 50: Print enter the number you want to power.

Step 51: Declare a , b and read their values from user.

Step 52: Print power.

Step 53: Define factorial.

Step 54: Print enter the number you want to factorial.

Step 55: Declare a , b and read their values from user.

Step 56: Print factorial.

Step 57: Define square.

Step 58: Print enter the number you want to square.

Step 59: Declare a , b and read their values from user.

Step 60: Print square.

Step 61: Define cube.

Step 62: Print enter the number you want to cube.

Step 63: Declare a , b and read their values from user.

Step 64: Print cube.

Step 65: Define Squareroot.

Step 66: Print enter the number you want to Squareroot.

Step 67: Declare a , b and read their values from user.

Step 68: Print Squareroot.

Step 69: STOP

**THANK-YOU!!!**

