

B.M.S COLLEGE OF ENGINEERING BENGALURU
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SPC AAT Report on

SIMPLE CALCULATOR

Submitted in partial fulfillment of the requirements for AAT

Bachelor of Engineering
in
AIML Department

Submitted by:

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B.M.S COLLEGE OF ENGINEERING
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING



DECLARATION

We, Balvanth V S & Ashlesh shetty students of 1st Semester, B.E, Department of AIML, BMS College of Engineering, Bangalore, hereby declare that, this AAT Project entitled "**SIMPLE CALCULATOR**" has been carried out in Department of AIML, BMS College of Engineering, Bangalore during the academic semester Oct 2025– Jan 2026. We also declare that to the best of our knowledge and belief, the AAT Project report is not from part of any other report by any other students.

Student Name

1.Balvanth V S

2.ASHLESH SHETTY

Student Signature

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CERTIFICATE

This is to certify that the AAT Project titled "**SIMPLE CALCULATOR**" has been carried out by **BALVANTH V S (1BM25AI160)** and **ASHLESH SHETTY(1BM25AI236)** under the mentorship of **Prof,Dr LAXMAN SINGH** during the academic year 2025-2026.

Signature of the Faculty in Charge

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1. INTRODUCTION

This project is a menu-driven **simple calculator** developed in the C programming language. Its primary purpose is to demonstrate how fundamental programming concepts—such as loops, conditional statements, user input handling, and mathematical operations—can be combined to create an interactive and functional application. The calculator provides users with a set of essential arithmetic and mathematical operations, including addition, subtraction, multiplication, division, modulus, power, square root, and cube root. By repeatedly displaying a menu and accepting user choices, the program allows continuous interaction until the user decides to exit.

The project uses a while loop to maintain its operational flow, ensuring that the menu reappears after each calculation. It also incorporates a switch statement to execute the operation selected by the user. Error handling is included for invalid menu choices and mathematical exceptions such as division or modulus by zero. When such errors occur, the project notifies the user and safely continues without crashing. Mathematical functions from the `<math.h>` library, such as `pow()` and `sqrt()`, are used to perform more advanced calculations.

Overall, this calculator project serves as a practical example of structured programming in C. It highlights how user interaction, control flow, and mathematical processing can be integrated into a single, easy-to-use application. It is especially useful for beginners who want to understand how real-world console applications are built using basic C constructs.

2. ALGORITHM

STEP 1: Start

STEP 2: Declare variables

- o Declare int choice;
- o Declare double first, second, result;

STEP 3: Begin infinite loop

- o Use while(1) to repeatedly run the calculator until the user chooses to exit.

STEP 4: Display menu

- o Call print_menu() to show the list of operations and the exit option.

STEP 5: Read user choice

Use scanf("%d", &choice); to input the user's menu choice.

STEP 6: Check for exit condition

If choice == 9, then:

 break the loop.

 Go to step 18 (End).

STEP 7: Validate menu choice

If choice < 1 or choice > 9:

 Print "invalid menu choice" to stderr.

 Use continue to skip the rest of the loop and go back to step 4.

STEP 8: Input first number

Print prompt: "PLEASE ENTER THE FIRST NUMBER:"

Read first using scanf("%lf", &first);

STEP 9: Input second number

Print prompt: "NOW ENTER THE SECOND NUMBER:"

Read second using scanf("%lf", &second);

STEP 10: Select operation using switch

Use switch(choice) to decide which operation to perform.

Case 1 – Addition

If choice == 1:

 result = first + second;

 Go to step 16.

Case 2 – Subtraction

If choice == 2:
 result = first - second;
 Go to step 16.

Case 3 – Multiplication

If choice == 3:
 result = first * second;
 Go to step 16.

Case 4 – Division

If choice == 4:
 If second != 0:
 result = first / second;
 Else:
 Set result = NAN;
 Print "MATH ERROR".

Case 5 – Modulus

If choice == 5:
 If second != 0:
 Cast both numbers to int and compute:
 result = (int)first % (int)second;
 Else:
 Set result = NAN;
 Print "MATH ERROR".

Case 6 – Power

If choice == 6:
 result = pow(first, second);

Case 7 – Square root

If choice == 7:
 result = pow(first, 0.5);

Case 8 – Cube root

If choice == 8:
 result = pow(first, 0.3333333333333333);

STEP 11: Check for invalid result

After the switch block, check:
 If isnan(result) is true:

Use continue to go back to step 4 (skip printing result).

STEP 12: Display result

If result is not NAN:

Print: "RESULT OF THE OPERATION IS %.2f" with result.

STEP 13: Repeat loop

Control returns to the top of the while(1) loop.

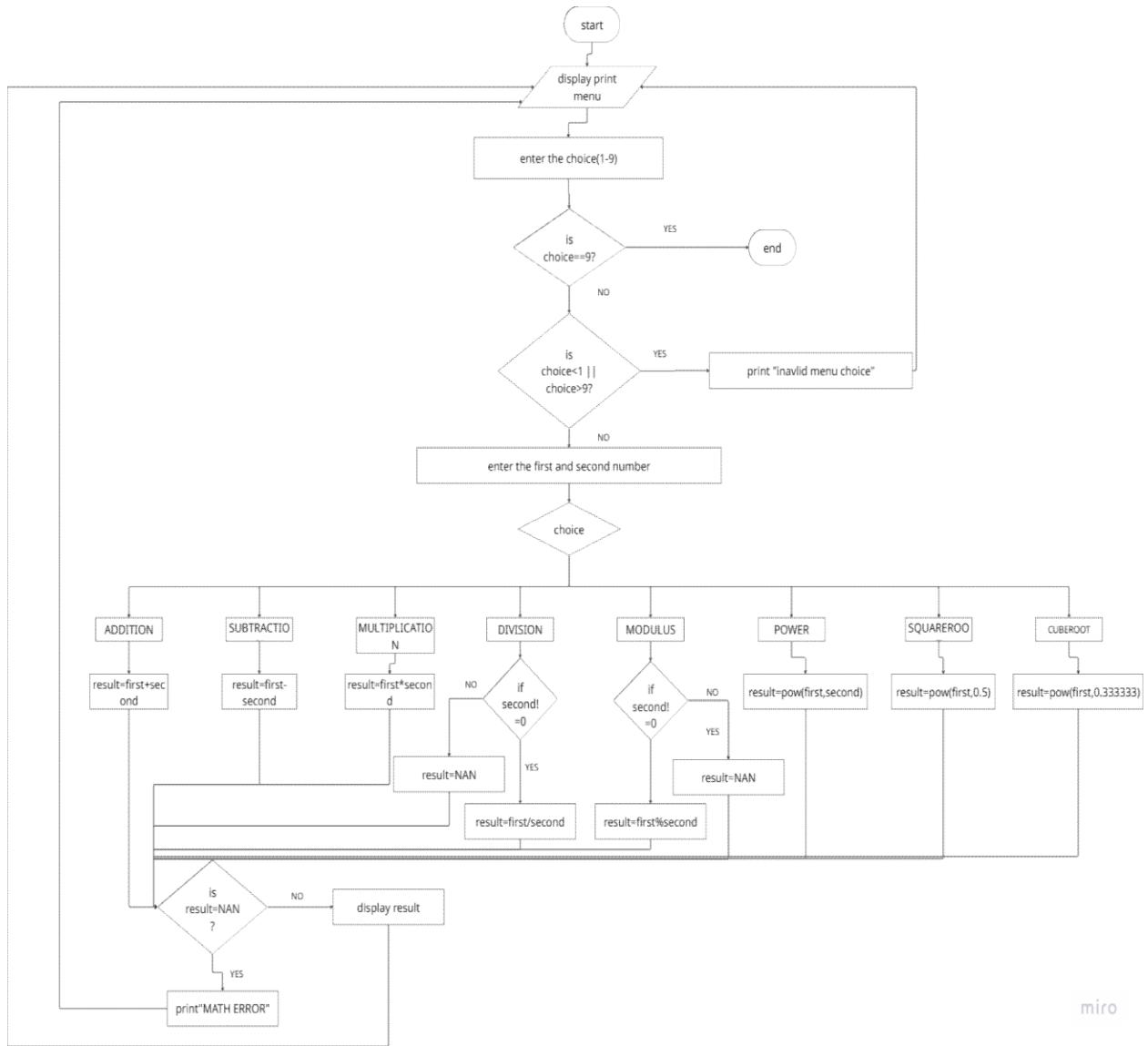
The menu is shown again and steps 4–20 repeat.

STEP 14: End program

After break from the loop (when choice == 9),

return 0;

3.FLOWCHART



4. SOURCE CODE

```
#include<stdio.h>
#include<math.h>

void print_menu();

int main()
{
    int choice;
    double first,second,result;

    while(1){--+
        print_menu();
        scanf("%d",&choice);

        if(choice==9)
        {
            break;
        }

        if(choice<1 || choice>9)
        {
            fprintf(stderr,"invalid menu choice");
            continue;
        }

        printf("\nPLEASE ENTER THE FIRST NUMBER:");
        scanf("%lf",&first);
```

```
printf("NOW ENTER THE SECOND NUMBER:");
scanf("%lf",&second);

switch(choice)
{
case 1://ADD
result=first+second;
break;

case 2://SUBTRACT
result=first-second;
break;

case 3://MULTIPLY
result=first*second;
break;

case 4://DIVIDE
if(second!=0){
result=first/second;}
else
{ result=NAN;
printf("MATH ERROR");}

break;

case 5://MODULUS
if(second!=0){
```

```
result=(int)first%(int)second;}  
else{ result=NAN;  
printf("MATH ERROR");  
  
}  
break;  
  
case 6://POWER  
result=pow(first,second);  
break;  
  
case 7://sqaureroot  
result=pow(first,0.5);  
break;  
  
case 8://cuberoot  
result=pow(first,0.3333333333333333);  
break;  
}  
  
if(isnan(result))  
{  
continue;  
  
}  
else{  
printf("\nRESULT OF THE OPERATION IS %.2f\n",result);  
}
```

```
}

return 0;

}

void print_menu()
{
printf("\n-----WELCOME TO SIMPLE CALCULATOR-----\n");
printf("\nchoose one of the following operation");
printf("\n1.ADDITION");
printf("\n2.SUBTRACTION");
printf("\n3.MULTIPLICATION");
printf("\n4.DIVISION");
printf("\n5.MODULUS");
printf("\n6.POWER");
printf("\n7.SQUARE_ROOT");
printf("\n8.CUBE_ROOT");
printf("\n9.EXIT");

printf("\nEnter YOUR CHOICE:");
}
```

5. RESULTS

```
choose one of the following operation
1.ADDITION
2.SUBTRACTION
3.MULTIPLICATION
4.DIVISION
5.MODULUS
6.POWER
7.SQUARE_ROOT
8.CUBE_ROOT
9.EXIT
```

```
ENTER YOUR CHOICE:1
```

```
PLEASE ENTER THE FIRST NUMBER:654
NOW ENTER THE SECOND NUMBER:354
```

```
RESULT OF THE OPERATION IS 1008.00
```

```
ENTER YOUR CHOICE:2
```

```
PLEASE ENTER THE FIRST NUMBER:594
NOW ENTER THE SECOND NUMBER:484
```

```
RESULT OF THE OPERATION IS 110.00
```

```
ENTER YOUR CHOICE:3
```

```
PLEASE ENTER THE FIRST NUMBER:65
NOW ENTER THE SECOND NUMBER:52
```

```
RESULT OF THE OPERATION IS 3380.00
```

```
ENTER YOUR CHOICE:4
```

```
PLEASE ENTER THE FIRST NUMBER:655
NOW ENTER THE SECOND NUMBER:65
```

```
RESULT OF THE OPERATION IS 10.08
```

```
ENTER YOUR CHOICE:4
```

```
PLEASE ENTER THE FIRST NUMBER:54
NOW ENTER THE SECOND NUMBER:0
MATH ERROR
```

ENTER YOUR CHOICE:5

PLEASE ENTER THE FIRST NUMBER:655
NOW ENTER THE SECOND NUMBER:54

RESULT OF THE OPERATION IS 7.00

ENTER YOUR CHOICE:5

PLEASE ENTER THE FIRST NUMBER:54
NOW ENTER THE SECOND NUMBER:0
MATH ERROR

ENTER YOUR CHOICE:6

PLEASE ENTER THE FIRST NUMBER:54
NOW ENTER THE SECOND NUMBER:3

RESULT OF THE OPERATION IS 157464.00

ENTER YOUR CHOICE:7

PLEASE ENTER THE FIRST NUMBER:625
NOW ENTER THE SECOND NUMBER:0

RESULT OF THE OPERATION IS 25.00

ENTER YOUR CHOICE:8

PLEASE ENTER THE FIRST NUMBER:704969
NOW ENTER THE SECOND NUMBER:0

RESULT OF THE OPERATION IS 89.00

ENTER YOUR CHOICE:9

Process returned 0 (0x0) execution time : 742.396 s
Press any key to continue.

6. REFERENCES

YOUTUBE

<https://youtu.be/ShlJel8gOeU?si=ODkNJkK5dW9Eaz4s>

<https://youtu.be/p0QUmC2WJwM?si=pYU-cuv3O-XwrwkV>

<https://youtu.be/irqbmMNs2Bo?si=2PnfOM9elT6yNJVq>

BOOKS

- [*C Programming Absolute Beginner's Guide*](#)
- [*Let Us C*](#) (Kanetkar)