

SRS DOCUMENT

INTRODUCTION:

Calculator which has features like basic arithmetic , exponential, trigonometric and even some features of statistics ,calculating solutions of equations vector arithmetic etc.

SCOPE:

Scientific calculators are used now a days very often for many computational tasks and fast calculations. Many mathematical functions like trigonometric, exponential are very much useful now a days in many scientific divisions.

TECHNOLOGY USED:

- 1)CodeBLOCKS
- 2)Ubuntu
- 3)windows 8/8.1
- 4)Canvas(graphics package simple.cpp)

REFERENCE:

1. Professor Abhiram Ranade book on introduction to c++ programme
2. Web reference: www.c++.com/tutorial We also referred YouTube videos and various Wikipedia pages to do our job.

FEATURES:

1. Our calculator will be performing basic arithmetic operations ,exponential ,logarithm ,squaring, cube ,square root, cube root, power functions, trigonometric ,factorial, using some variable for polynomials and some trigonometric functions.

Our calculator will also consist of vector part and some basic statistical stuffs like solving multivariable equations.

LIBRARIES USED:

- 1) iostream
- 2) cmath
- 3) simplecpp

ALGORITHM-

In our calculator, we have used two variables input and output; input is like, if mouse clicks on particular range of co-ordinates then the part which is there on that part of windows will be taken as input, for every button on our windows, there is some integer, so we have taken input as that integer and we have used switch operator for the further operation

Our calculator window consists of only operators like arithmetic operators, trigonometric etc and numpad for input of numbers.

Numerical inputs will be given from mouse. It consists two types of arrays, one array is for numerical input, other array for operators, if first input is from mouse such that there may be one or more than one inputs continuously then whatever number given till user clicks any operator on our window that number will become first element in our number array, and the operator which user clicked will become first element in our operator array. So if until now user had given one numerical input and one operator, so it continues like that and when user clicks "=" operator on the window compilations takes place so as mentioned above our operators on the window have some inputs in numerical form and we will be using it for further operations

some corresponding characters as '+'=1, '-'=2, '*'=3, '/'=4, //in this program I have taken character input in the form of characters .

How we made scientific calculator:

Our project used simple cpp graphics package and code blocks to make this scientific calculator.

We divided project into two parts:

Part 1 : Code on taking inputs from canvas screen and some from terminal window. At same time display those inputs on screen. Ofcourse on terminal window it will be shown automatically but on canvas window we need to write code on to display the inputs. After taking the inputs the input string need to be stored on two different arrays. One character array and the other is operator array for our use in part 2.

Once part two processing is done

then display answer on screen.

Part 2: Inputs are taken. Now we need to perform required calculations.

In the terminal window solving equations, vector cross product and statistical part code is trivial. The code was made in such a way that it asks information after every input. Simple knowledge of programming was used like using loops, switch case, and even dynamic allocating variables.

Now after taking inputs from canvas window many functions were made to deal with solving part.

First the inputs given needs to be checked. If inputs given is wrong "syntax error" message will be printed. After check function evaluate function needs to be invoked to compute evaluation. If evaluate function returns -1, then "maths error" message will be printed.

This evaluate function has four parts consisting of four for loops. In first for loop all bracket part is searched and function is called again and again recursively to solve the problem. First for loop exits when no brackets will be present.

Then second for loop will work on operators like sin, cos etc except the arithmetic operators. This for loop also calls evaluate2 function which indeed calls the required operator function and then updatearray function to do the operation answer is updated and all other characters in front of those operators will be moved backward.

Similar case is for third and fourth for loop and hence evaluation is done and final answer is stored in A[0][0] matrix.

Thus this is the working process of making scientific calculator.