

DRAFT USER MANUAL

STAGE –II

GROUP – 14

SLOT – 6

SCIENTIFIC CALCULATOR

TEAM MEMBERS:-

- | | |
|--------------------|-----------|
| 1. T SAI GOUTAM | 140100099 |
| 2. TRISHALA BOTHRA | 140100094 |
| 3. SANSKAR JAIN | 140100084 |

INTRODUCTION:-

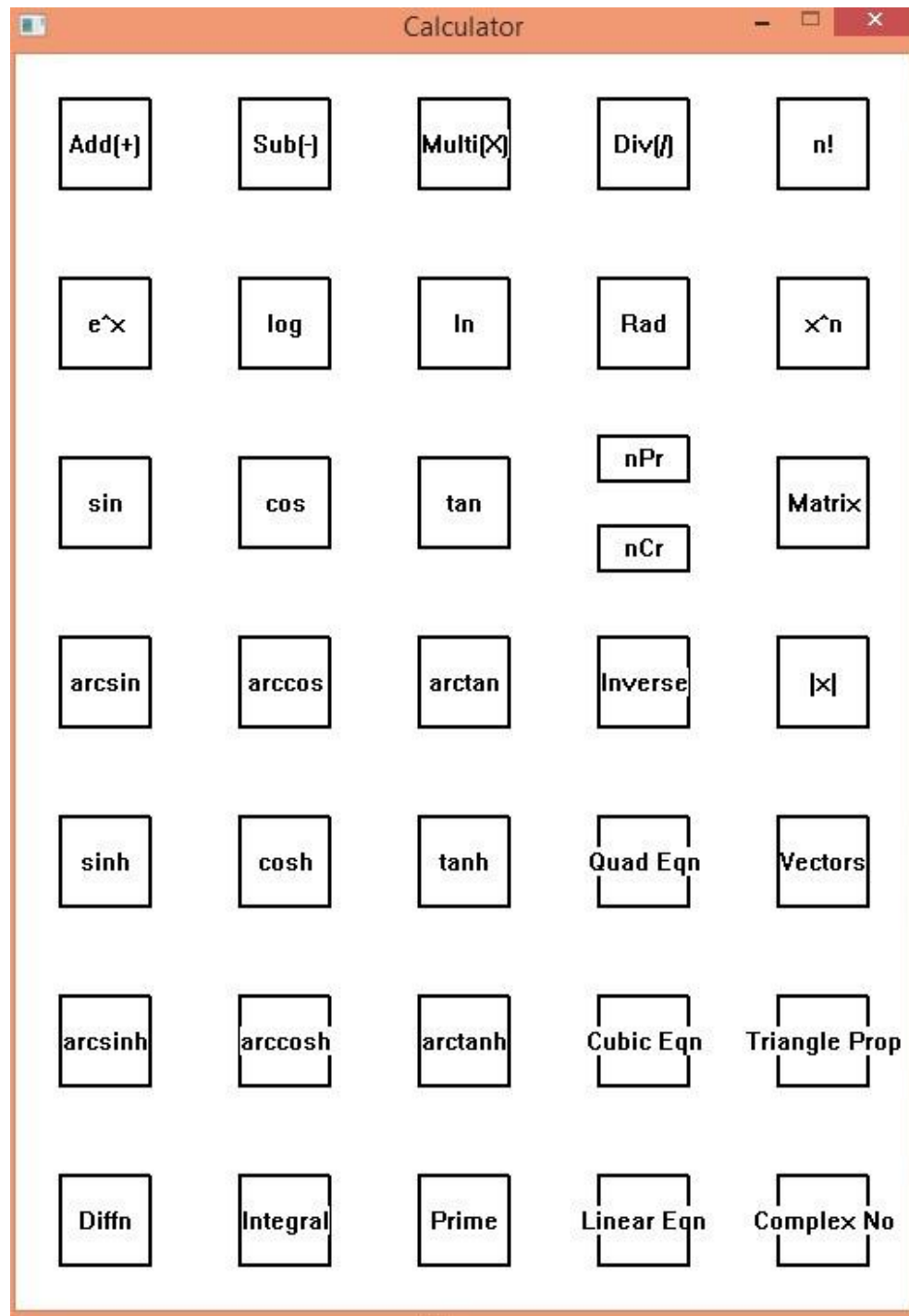
Scientific Calculator is basically an electronic calculator which is basically designed to calculate problems in science, engineering and mathematics. They have applications in almost all the current fields of science and technology and widely used in both education and professional settings.

BASIS OF THE PROJECT:-

The project is mainly based on most of the operations which are done by a scientific calculator, without using the cmath library. Simplecpp is used in the graphics part of this project.

INSTRUCTIONS FOR THE USER:-

Once the project is run ,the window shown below is seen.Click on any of the options shown on the canvas window. After clicking, you will be redirected to the terminal where you are required to enter the input and result which is obtained after calculation will be displayed on the terminal window.



- Add(+)- The first button in the window is used for addition of two numbers . Once it is commanded then the program is directed to another window asks you two number which you intend to add and gives the added number as result.
- Sub(-)-The second option similar to first option is of subtraction which which subtracts a number from other and returns the result , once it is directed to another window.
- Multi(*)-This one when recommended multiply the two number which will be asked after the second window appears .
- Div(/)-This options allow us to divide two if and only if the divisor or the second number is not zero .Shows an error if zero is given.
- n!-This function is a factorial function which returns the factorial of non negative integer.
- e^x – This function when commanded gives exponential of the x given, returns the e^x (e raised to the power of a real number x).
- log – Gives the log of any positive number to the base 10.
- ln – Gives the log of any positive real number to the base e.
- Rad – This convert the input in degrees into radians.
- x^n – For any given real number raised to any power, it gives the raised value.
- Sin- This function when clicked asks you angle in degrees whose sine is returned.
- Cos- This function when clicked asks you angle in degrees whose cosine is returned.

- Tan-This function when clicked asks you angle in degrees whose tangent is returned.
- arcSin-As the name shows, sin inverse of a real number in the natural domain is returned using this function.
- arcCos-This gives cosine inverse of a number in the domain else it shows error.
- arcTan-Tan inverse of any real number is shown using this function.
- Sinh-sinhx is given.
- Cosh-coshx is given.
- Tanh-tanhx is given.
- Arcsinh-Inverse of sinh function is shown using this operation.
- Arccosh-Inverse of coshx function can be found.
- Arctanh-Inverse of tanh function is found.
- nPr-This function is permutation of r objects at n places .it is equivalent to $n!/(n-r)!$
- nCr-This function is combination of r objects from n objects .it is equivalent to $n!/(n-r)!r!$
- Inverse – It gives the inverse of any real number except zero (0) as it is not defined.
- |x| – It returns modulus of any given real or complex number.
- Quad eqn – Gives the roots of a single variable quadratic equation.
- Vectors-This has sub-functions which include-
 1. Addition-gives $a + b$
 2. Subtraction-gives $a - b$
 3. Dot product-gives $a.b$

4. Vector product-gives $\mathbf{a} \times \mathbf{b}$
5. Magnitude- $|\mathbf{a}|$
6. Angles-gives the angles made by the vector \mathbf{a} with X,Y,Z axes respectively
- Complex No-This has sub-functions as shown below-
 1. Addition-Adds two complex numbers
 2. Subtraction-Subtracts two complex numbers
 3. Multiplication- Multiplies two complex numbers
 4. Division- Divides two complex numbers
 5. Conjugate-Gives the conjugate of a given complex number.
 6. Square root>Returns the square root of a complex number.
- Cubic Eqn– This gives the nature of roots of a cubic equation whether they are equal or unequal and real or complex.
- Triangle prop – This has various buttons :
 - 1.Sides of a triangle
 - 2.Centroid
 - 3.Incentre
 - 4.Orthocentre
 - 5.Circumcentre
 - 6.Area
 - 7.Angles
 - 8.Inradius
 - 9.Circumradius
 - 10.Lengths of medians
 - All these functions are can be performed respective function when respective number is called.
- diffn-In this there are a variety of functions like polynomials, exponentials and trigonometric functions, whose differential will be returned.
- Integral- In this there are a variety of functions like polynomials, exponentials and trigonometric functions whose integral will be returned.
- Complex no – This has sub-operations like addition, subtraction, multiplication and division on any two complex numbers. It also gives the conjugate and square root of a given complex number.

THE END