REPORT NAME: Study on implementing the functions of Complex\_ vector.

INTRODUCTION:

The **Java** is a general-purpose computer programming language that is class-based, object-oriented and specifically designed to have as few implementation dependencies as possible. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of computer architecture. As of 2016, Java is one of the most popular programming languages in use, particularly for client server applications. Programs written in Java have a reputation for being slower and requiring more memory than those written in C++. the addition of language features supporting better code analysis (such as inner classes, the String Builder class, optional assertions, etc. Some platforms offer direct hardware support for Java; there are microcontrollers that can run Java in hardware instead of a software Java virtual machine, and ARM based processors can have hardware support for executing Java bytecode through their Jazelle option (while its support is mostly dropped in current implementations of ARM).Here some functions of complex\_vector which contains complex no. as its elements are implemented by java.

METHOD FORMULA:

The methods are applied using some formula:

**#Magnitude Calculation:**

If (a + bi) is a complex no., magnitude of the complex no. is:

M=sqrt(a^2 + b^2).

For every complex no. we can get magnitude.

Assume we have 3 complex no. elements in a vector, and the magnitudes of them are m1,m2,m3 respectively.

Then the magnitude of the vector will be:

M(vector)=sqrt(m1^2 +m2^2 +m3^2).

In general the equation will be:

M(vector)=sqrt(a1^2+ b1^2 + a2^2 +b^2 + a3^2 +b3^2).

**If two vector have magnitude m1,m2 respectively, the operations done on the vector will be as follows:**

**#The Addition formula:**

Add= m1+ m2.

**#The Subtraction formula**:

Sub=m1-m2.

**#The Multiplication formula:**

Multy=m1\*m2.

**#The Division formula:**

Div=m1/m2.

This is how our methods work.

**DISCUSSION:**

In this laboratory implementation, we use java language for implementing the methods of Complex vector. In the java project we have had to make complex number class where the complex number will be formed and their other methods (like add, sub, multiply, div) would be built by user or, us. And there was another class for vector forming. Finally we have had a main class from where the other classes are called. Then the main class is used for calling other class and performing main tasks joining the other classes. In this project, first the average of the elements of a vector is calculated. Then the complex number represents the vector or, we could say that the averaged complex number is used as a vector. And then it could possible to perform addition , subtraction, multiplication, division methods between two vector considering each of them as a complex number.Finally, Our Complex Vector project was done successfully and the experience will help us in further laboratory or, building any other java project.