St. Francis Institute of Technology, Mumbai-400 103

Department Of Information Technology

A.Y. 2023-24

Class: SE-ITA/B, Semester: III

Subject: **Java Labs**

Experiment 2

Aim: Write a program to demonstrate java class, array, vector

Theory

Problem Statement Write Java code to demonstrate the following:

a) Write a program that would print the information (name, year of joining, salary, address) of three employees by creating a class named 'Employee'.

The output should be as follows:

Name	Year of joining	Address
Robert	1994	64C- WallsStreat
Sam	2000	68D- WallsStreat
John	1999	26B- WallsStreat

. **b)** Write a java program to add n strings in a vector array. Input new string and check whether it is present in the vector. If it is present delete it otherwise add it to the vector.

Prerequisite: Knowledge of class, arrays and vectors.

Requirements: Personal Computer (PC), Windows Operating System, JDK 1.8 and above,online java compiler/IDE.

Pre-Experiment Exercise:

Theory:

a. Array:

An array is a group of contiguous or related data elements that share a common name. A list of items can be given only one variable name and such a variable is called an array. Like any other variables, arrays must be declared and created in the computer memory before they are used.

Creation of an array involves three steps:

1. Declaring the array

2. Creating memory locations

3. Putting values into the memory locations.

Java allows us to create arrays using 'new' operator only, as shown below:

1. **One- Dimensional arrays:**

Arrayname = **new** type[size];

2. **multi-Dimensional arrays:**

arrayname=**new** type[row][col];

b. **Vector:**

The Vector class implements a growable array of objects. Like an array, it contains components that can be accessed using an integer index. However, the size of a Vector can grow or shrink as needed to accommodate adding and removing items after the Vector has been created. Each vector tries to optimize storage management by maintaining a capacity and a capacity increment. The capacity is always at least as large as the vector size; it is usually larger because as components are added to the vector, the vector's storage increases in chunks the size of capacity increment. An application can increase the capacity of a vector before inserting a large number of components; this reduces the amount of incremental reallocation.

Laboratory Exercise

A. Procedure

1. Write java code and save with .java extension
2. Compile program using javac filename.java
3. Run program using java filename

6. Post-Experiments Exercise

A. Extended Theory:

1. Explain different array declaration with example

2. Differentiate between Array and Vector.

3. Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate methods for each operation whose real and imaginary parts are entered by user.

B. Questions/Programs:

1. Write a Java program to implement 15 methods of Vector class.

C. Conclusion:

1. Write what was performed in the experiment/program.

2. Mention few applications of what was studied.

D. References

1. Balguruswamy, "Programming with java A primer", Fifth edition, Tata McGraw Hill Publication. 2. Learn to Master JAVA, from Star EDU solutions , by ScriptDemics.

3. www.programmingsimplified.com

4. www.javatpoint.com