**Programming Paradigms Laboratory**

**B.Tech.**



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| Faculty | Engineering & Technology |
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| Name of the Laboratory | Programming Paradigms Laboratory |
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# Laboratory 2

Title of the Laboratory Exercise: Classes and Objects

1. Questions
2. Develop a java program to Create a class called Employee that includes three instance variables—a first name (type String), a last name (type String) and a monthly salary (double). Define a constructor that initializes the three instance variables, setInfo() and a getInfo() which takes the salary, number of hours of work per day of employee as parameter method. If the monthly salary is not positive, do not set its value. Create two Employee objects and display each object’s yearly salary. Then give each Employee a 10% raise and display each Employee’s yearly salary again.
3. Create a class MyComplex that includes real and imaginary instance variables. Define a constructor to initializes instance variables using this keyword and methods to perform arithmetic operations.
4. Calculations/Computations/Algorithms

Step 1: Create Employee class

Step 2: Define instance variables String fName, lName, double salary, workhours

Step 3: Define a constructor which takes the first, last name and the salary of the employee as parameters

Step 4: public void setinfo(double salary, double workHours) {

if (salary >= 0)

this.salary = salary;

this.workHours = workHours;

}

Step 5: define getinfo method to print employee details

Step 6: public void giveRaise(double rate) {

this.salary = rate \* 0.01 \* this.salary + this.salary;

}

Step 7: public void getAnnualSalary() {

double annualSal = this.salary \* 12;

System.out.println("Annual Salary is" + annualSal);

}

Step 8: Define another class EmplyoeeMain, within the same package

Step 9: create new employee objects with the help of the constructor

Step 10: Perform the required operations, like set and get info or giving raise, etc.

b.

Step 1: Create Complex class

Step 2: define instance variable real, imagi of type double

Step 3: Create constructor which takes the real and imaginary part of the complex number as parameters

Step 4: define static methods to compute the sum, difference and product of two complex numbers.

Step 5: define a method to display the complex number

Step 6: Create a Class ComplexMain

Step 7: Create the objects of Complex class

Step 8: Perform the required arithmetic operation on the objects

Step 9: display the result.

1. Presentation of Results



Figure Employee Class

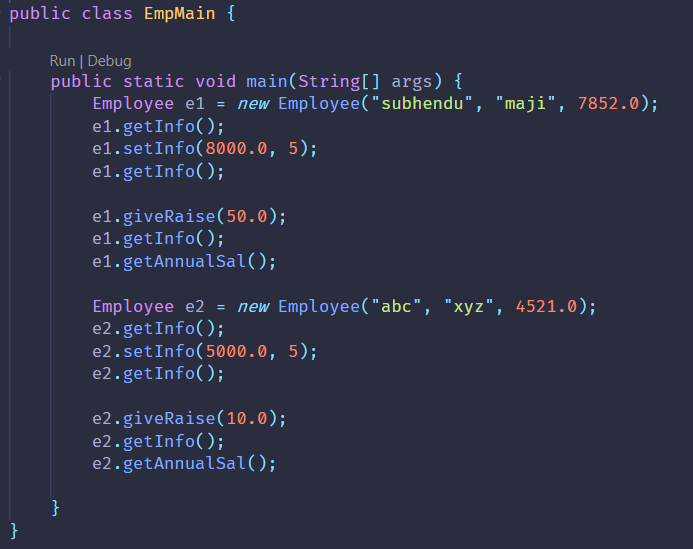


Figure EmployeeMain Class

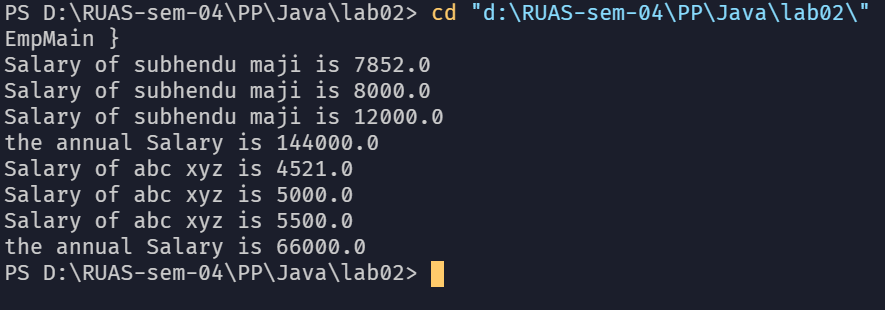


Figure output of employee class

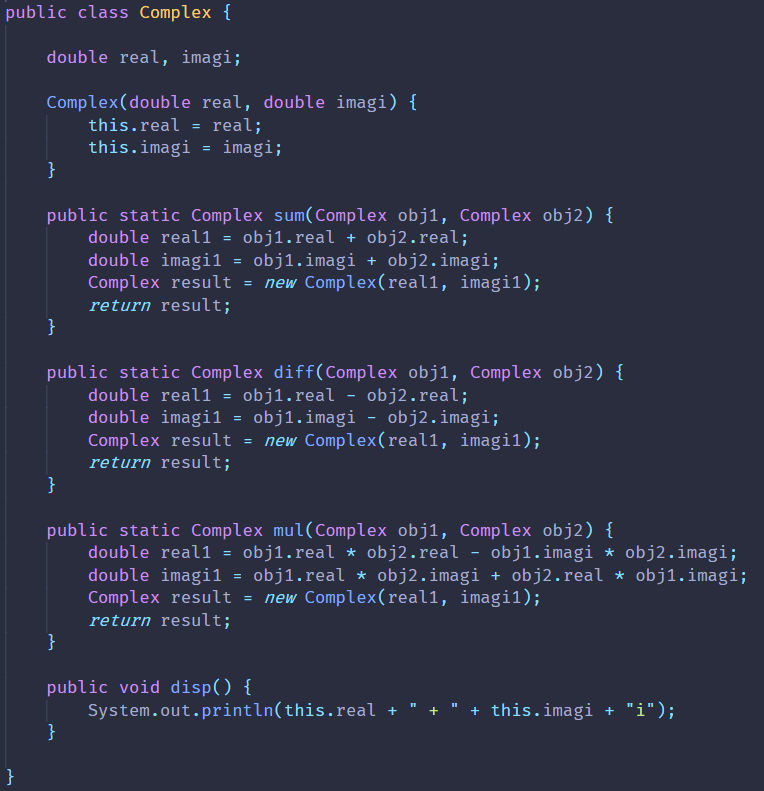


Figure complex class

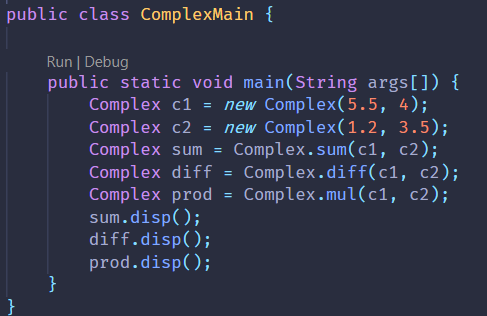


Figure complex Main class

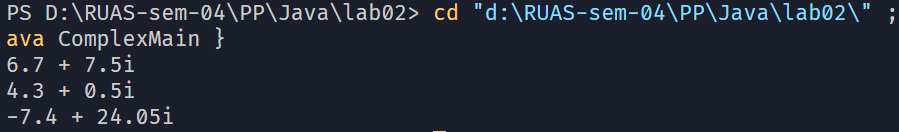


Figure output of complex

1. Conclusions

* When we define a class, a java creates a default constructor. We can also create a parameterized constructor manually
* Instance variable vary with different objects of the same class, class variable are the same throughout the class
* Static methods are the methods of the class, whereas the others are the methods of the object of the class.
* At most one public class definition per file. This class name should match the file name. If there are more than one public class definitions, compiler will accept the class with the file's name and give an error at the line where the other class is defined.

1. Limitations of Experiments and Results

* In Complex arithmetic program, program does not calculate division of two complex numbers, it can be implemented.