Java Lab 2

Intake 53

1. Write a Java program to create a class called **Smartphone** with private instance variables brand, model, and storageCapacity. Provide public getter and setter methods to access and modify these variables. Add a method called increaseStorage() that takes an integer value and increases the storageCapacity by that value.
2. Create a class named **Complex** that must have two integer data members (real, and imag). Create two constructors, one Read function to take keyboard input, one Add (return object), function, and one Display function to print results. The Add function must take one object as an argument. Watch the input and output section for better understanding.

Input

Enter real and imaginary numbers respectively: 16 7

Enter real and imaginary numbers respectively: 5 8

Output

Sum = 21 + 15i

3. Create a class named **Time** that must have three integer data members (hours, minutes, and seconds). Create two constructors, one member function named add_time (return object), and one display function to print the time in 11:59:59 format. The add_time function must take two objects as arguments. The main function calls the add_time function to add two-time objects and store the result in a third object. Use the display function to print the result on the console.
   Input: 2 55 40, 5 20 30 Output: 8:16:10

4. Write a Java program to create a class known as **Person** with methods called getFirstName() and getLastName(). Create a child class called **Employee** that adds a new method named getEmployeeId() and accesses the getLastName() method to include the employee's job title.

5. Write a Java program to create a class called **Shape** with methods called getPerimeter() and getArea(). Create a child class called **Circle** that uses the getPerimeter() and getArea() methods to calculate the area and perimeter of a circle.

6. Write a Java program to create a class known as **BankAccount** with methods called deposit() and withdraw(). Create a child class called SavingsAccount that acesses the withdraw() method to prevent withdrawals if the account balance falls below one hundred.

7. Write a Java program to create a vehicle class hierarchy. The base class should be **Vehicle**, with child classes Truck, Car and Motorcycle. Each child class should have properties such

as make, model, year, and fuel type. Implement methods for calculating fuel efficiency, distance traveled, and maximum speed.

8. Write a Java program that creates a class hierarchy for employees of a company. The base class should be Employee, with child classes Manager, Developer, and Programmer. Each child class should have properties such as name, address, salary, and job title. Implement methods for calculating bonuses, generating performance reports, and managing projects.

9. We want to calculate the total marks of each student of a class in Physics, Chemistry and Mathematics and the average marks of the class. The number of students in the class are entered by the user. Create a class named Marks with data members for roll number, name and marks. Create three other classes inheriting the Marks class, namely Physics, Chemistry and Mathematics, which are used to define marks in individual subjects of each student.