| **1** | **public class Trace1 {** |
| --- | --- |
| **2** | **public int p = 3, y = 2, sum;** |
| **3** | **public void methodA(){** |
| **4** | **int x = 0, y = 0;** |
| **5** | **y = y + this.y;** |
| **6** | **x = sum + 2 + p;** |
| **7** | **sum = x + methodB(p, y) + this.y;** |
| **8** | **System.*out*.println(x + " " + y+ " " + sum);** |
| **9** | **}** |
| **10** | **public int methodB(int p, int n){** |
| **11** | **int x = 0;** |
| **12** | **y = this.y + (++p);** |
| **13** | **x = x + 2 + n;** |
| **14** | **sum = sum + x + y;** |
| **15** | **System.*out*.println(x + " " + y+ " " + sum);** |
| **16** | **return sum;** |
| **17** | **}** |
| **18** | **}** |

**Driver code:**

| public class Tester1 {  public static void main(String [] args){  Trace1 t1 = new Trace1();  t1.methodA();  t1.methodA();  Trace1 t2 = new Trace1();  System.out.println(t2.methodB(2,3));  }  } | **Outputs** | | |
| --- | --- | --- | --- |
| **x** | **y** | **Sum** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  | | |

Write the code in java for the **“Vehicle”** class. The tester class and the output is given below:

| **Tester class** | **Output** |
| --- | --- |
| public class TesterVehicle{  public static void main(String [] args){  Vehicle car = new Vehicle();  System.out.println("Attributes of car object:");  System.out.println(car.type);  System.out.println(car.wheels);  System.out.println(car.color);  System.out.println("=========");  Vehicle bike = new Vehicle();  bike.type="Motor bike";  bike.wheels=2;  bike.color="Red";  System.out.println("Attributes of bike object:");  System.out.println(bike.type);  System.out.println(bike.wheels);  System.out.println(bike.color);  }  } | Attributes of car object:  Car  4  White  =========  Attributes of bike object:  Motor bike  2  Red |

| **Driver Code** | **Output** |
| --- | --- |
| **public class TesterCourse{**  **public static void main(String[] args) {**  **Course c1 = new Course();**  **Course c2 = new Course();**  **System.*out*.println("========== 1 ==========");**  **c1.createCourse("Programming Language I", "CSE110", 3);**  **c1.displayCourse();**  **System.*out*.println("========== 2 ==========");**  **c2.createCourse("Data Structures", "CSE220", 3);**  **c2.displayCourse();**  **System.*out*.println("========== 3 ==========");**  **c1.updateCourse("Programming Language II", "CSE111", 3);**  **c1.displayCourse();**  **}**  **}** | **========== 1 ==========**  **Course Name: Programming Language I**  **Course Code: CSE110**  **Course Credit: 3**  **========== 2 ==========**  **Course Name: Data Structures**  **Course Code: CSE220**  **Course Credit: 3**  **========== 3 ==========**  **Course Name: Programming Language II**  **Course Code: CSE111**  **Course Credit: 3** |

Create a **Dog** class so that the tester code generates the given output:

| **Driver Code** | **Expected Output** |
| --- | --- |
| **public class TesterDog{**  **public static void main (String[] args) {**  **Dog scooby = new Dog();**  **Dog oldie = new Dog();**  **Dog goofy = new Dog();**    **scooby.changeName("Scooby");**  **goofy.changeName("Goofy");**    **System.*out*.println("1. ===============");**  **System.*out*.println(scooby.bark());**  **System.*out*.println("2. ===============");**  **System.*out*.println(oldie.bark());**  **System.*out*.println("3. ===============");**  **oldie.changeColor("White");**  **System.*out*.println("4. ===============");**  **System.*out*.println(oldie.bark());**  **System.*out*.println("5. ===============");**  **System.*out*.println(goofy.bark());**  **System.*out*.println("6. ===============");**  **scooby.changeColor("Brown");**  **System.*out*.println("7. ===============");**  **System.*out*.println(scooby.bark());**  **System.*out*.println("8. ===============");**  **goofy.changeColor("Black");**  **}**  **}** | **1. ===============**  **Scooby is barking**  **2. ===============**  **A dog is barking**  **3. ===============**  **This dog is White**  **4. ===============**  **White dog is barking**  **5. ===============**  **Goofy is barking**  **6. ===============**  **Scooby is Brown**  **7. ===============**  **Scooby the Brown dog is barking**  **8. ===============**  **Goofy is Black** |

Design the **Reader** class in such a way so that the following code provides the expected output.

* A reader will have a name, capacity to read and an array of books they are reading.
* The initial capacity of a reader will be 0. The initial name will be “New user”.
* A new array is created every time a reader’s capacity is increased, which replaces the initial array.

| **Driver Code** | **Expected Output** |
| --- | --- |
| public class Reader\_tester {  public static void main(String[] args){  Reader r1 = new Reader();  Reader r2 = new Reader();    r1.createReader("Albert", 2);  r2.createReader("Issac", 5);    System.*out*.println("1 ==========");  r1.readerInfo();    System.*out*.println("2 ==========");  r2.addBook("Java");  r2.addBook("Python");  r2.addBook("C++");  r2.readerInfo();    System.*out*.println("3 ==========");  r1.addBook("C#");  r1.addBook("Rust");  r1.addBook("GoLang");    System.*out*.println("4 ==========");  r1.increaseCapacity(5);  r1.addBook("Python");    System.*out*.println("5 ==========");  r1.readerInfo();  }  } | 1 ==========  Name: Albert  Capacity: 2  Books:  No books added yet  2 ==========  Name: Issac  Capacity: 5  Books:  Book 1: Java  Book 2: Python  Book 3: C++  3 ==========  No more space for new book  4 ==========  Albert's capacity increased to 5  5 ==========  Name: Messi  Capacity: 5  Books:  Book 1: C#  Book 2: Rust  Book 3: Python |