Paper Compiling with Java Objects   ****<u>SOLUTION KEY</u>****

Directions: For each exercise, carefully digest the Java code. Model each object using the samples from the online tutorial (i.e. draw a box, label the class name, member vars, and methods). Then <u>compute by hand</u> exactly what will show up in the NetBeans output when this program is executed. Write your answer in the box at the bottom of each exercise.

PaperObjects 1 : EBook

```
class EBook{
    public String title;
    public int numPages;
    public int numPagesRead;
    public double minutesReading;
}

public class PaperObjects1 {

    public static void main(String[] args) {

        EBook javaBook = new EBook();

        EBook pythonBook = new EBook();


        javaBook.title = "Thinking In Java";

        javaBook.numPages = 950;

        javaBook.numPagesRead = 400;


        pythonBook.numPages = 1400;

        pythonBook.numPagesRead = 12;

        pythonBook.minutesReading = 111.3;


        int delta = javaBook.numPages – pythonBook.numPages;

        System.out.println(delta);

        javaBook.numPages = pythonBook.numPages;

        delta = javaBook.numPages – pythonBook.numPages;

        System.out.println(delta);

        System.out.println(pythonBook.title);

        System.out.println(javaBook.title.toUpperCase());


    } // close main
} // close class PaperObjects1
```
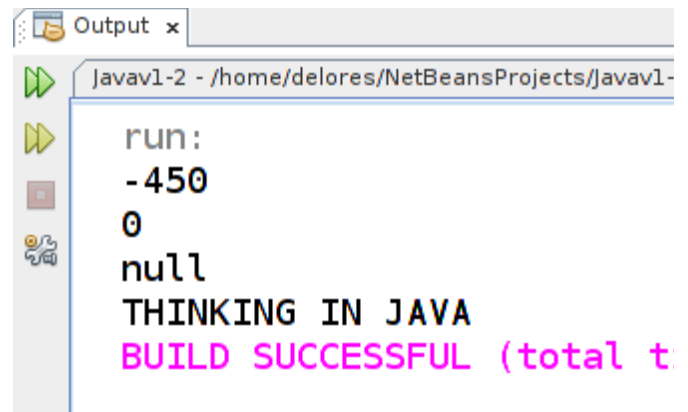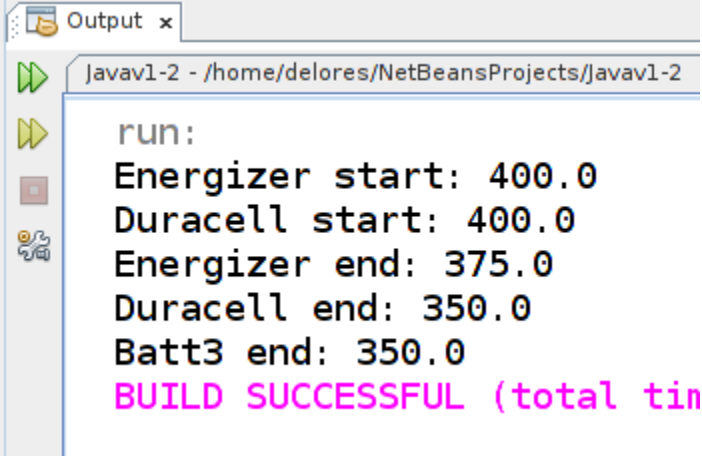
Output ×

Javav1-2 - /home/delores/NetBeansProjects/Javav1-

```
run:
-450
0
null
THINKING IN JAVA
BUILD SUCCESSFUL (total t
```

Paper Objects 2: Battery

```java
class Battery{

    private final double POWER_USED_PER_MIN = 0.25;

    private double powerRemaining = 400.0;

    public double useBattery(double time){

        double PwrUsed = time * POWER_USED_PER_MIN;

        powerRemaining = powerRemaining - PwrUsed;

        return powerRemaining;

    }

    public void charge(){

        powerRemaining = powerRemaining + 200;

    }

    public double getPowerRemaining(){

        return powerRemaining;

    }

 }

public class PaperObjects2 {

    public static void main(String[] args) {

        Battery energizer; Battery duracell;

        energizer = new Battery();

        duracell = new Battery();


        System.out.println("Energizer start: " + energizer.getPowerRemaining());

        System.out.println("Duracell start: " + duracell.getPowerRemaining());


        energizer.useBattery(100);

        duracell.useBattery(1000);

        energizer.useBattery(800);

        energizer.charge();

        Battery batt3 = duracell;

        batt3.charge();


        System.out.println("Energizer end: " + energizer.getPowerRemaining());

        System.out.println("Duracell end: " + duracell.getPowerRemaining());

        System.out.println("Batt3 end: " + batt3.getPowerRemaining());

    } // close main

} // close class
```
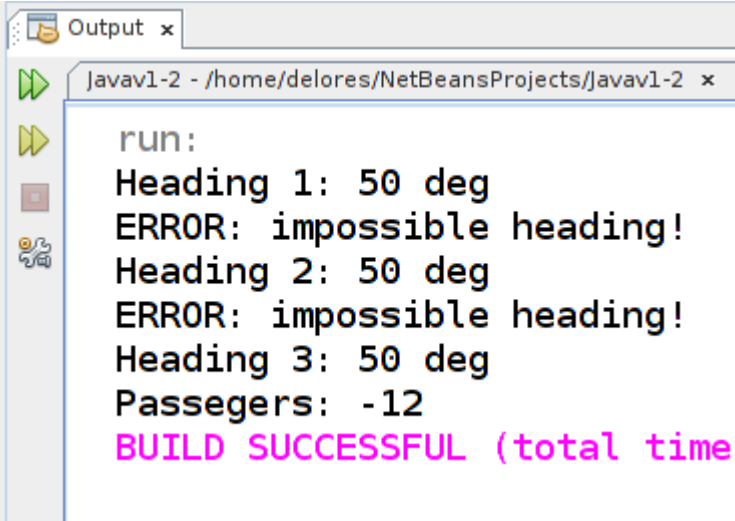
// scratch space

Output x

Javav1-2 - /home/delores/NetBeansProjects/Javav1-2

```
run:
Energizer start: 400.0
Duracell start: 400.0
Energizer end: 375.0
Duracell end: 350.0
Batt3 end: 350.0
BUILD SUCCESSFUL (total tim
```

Paper Objects 3:

```java
class Plane{

    final int MAX_DEGREES = 360;

    private int heading = 0;  private int numPass = 0;

    public void changeHeaing(int newHeading){

        if(newHeading < MAX_DEGREES && newHeading >= 0){

            heading = newHeading;

        } else {

            System.out.println("ERROR: impossible heading!");

        }

    }
    public int getHeading(){
        return heading;
    }
    public int getNumPass(){
        return numPass;
    }
    public void setNumPass(int num){
        numPass = num;
    }
}
```

Output ×

Javav1-2 - /home/delores/NetBeansProjects/Javav1-2 ×

```
run:
Heading 1: 50 deg
ERROR: impossible heading!
Heading 2: 50 deg
ERROR: impossible heading!
Heading 3: 50 deg
Passegers: -12
BUILD SUCCESSFUL (total time
```
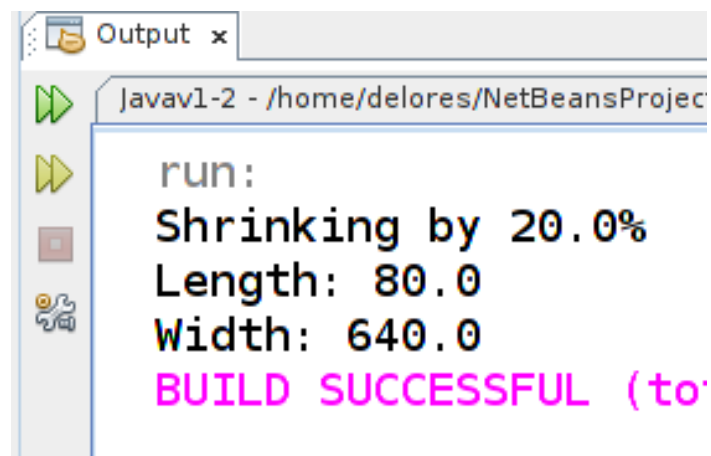
```java
public class PaperObjects4 {

    public static void main(String[] args) {

        Plane superJet = new Plane();

        superJet.setNumPass(100);

        superJet.changeHeaing(50);

        System.out.println("Heading 1: " + superJet.getHeading() + " deg");

        superJet.changeHeaing(360);

        System.out.println("Heading 2: " + superJet.getHeading() + " deg");

        superJet.setNumPass(-12);

        superJet.changeHeaing(-20);

        System.out.println("Heading 3: " + superJet.getHeading() + " deg");

        System.out.println("Passegers: " + superJet.getNumPass());

    }

}
```

Quash that bug!

Directions: The following code contains four erros in LOGIC that MAY prevent the class from compiling. Find the three lines with errors, CORRECT/quash them, and compute the program's output after the changes.

```
class PersianRug{

    public double length;

    public double width;

    public void shrinkRung(double perc){

        System.out.println("Shrinking by " + perc + "%");

        length = length - (length * (perc / 100.0));

//        width = (width * (perc / 100.0)); // err

        width = width - (width * (perc / 100.0)); // fixed

    }

}

public class QuashThatBug1 {

    public static void main(String[] args) {

        PersianRug coolRug = new PersianRug();

//        length = 100.0; // err

//        width = 800.0; // err

        coolRug.length = 100; // fixed

        coolRug.width = 800; // fixed

        coolRug.shrinkRung(20.0);

//        System.out.println("Length: " + coolRug.getLength()); // err

        System.out.println("Length: " + coolRug.length); // fixed

//        System.out.println("Width: " + coolRug.setWidth()); // err

        System.out.println("Width: " + coolRug.width); // fixed

    }

}
```

Output ×

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run:
Shrinking by 20.0%
Length: 80.0
Width: 640.0
BUILD SUCCESSFUL (to