

Quiz 3
BE-104, Dr. C. S. Tritt, Spring '05

Each of the following 2 problems is worth the same amount. This is a closed notes, closed book, closed laptop, closed neighbor quiz. Work carefully to avoid making careless mistakes.

1. What output would be produced when the main method in the following file was run?

```
public class Quiz {  
  
    private final int MAXSCORE = 100;  
    private int score;  
  
    public Quiz(int value) {  
        score = value;  
    }  
  
    public Quiz() {  
        score = MAXSCORE;  
    }  
  
    public void bonus(int value) {  
        score = score + value;  
    }  
  
    public void penalty(int value) {  
        score = score - value;  
    }  
  
    public int getScore() {  
        return score;  
    }  
}
```

```
class QuizTest {  
  
    public static void main(String[] args) {  
        Quiz myQuiz = new Quiz(75);  
        Quiz hisQuiz = new Quiz();  
        myQuiz.bonus(10);  
        hisQuiz.penalty(20);  
        System.out.println("My result: " + myQuiz.getScore());  
        System.out.println("His result: " + hisQuiz.getScore());  
    }  
}
```

Values (in sequence):

myQuiz 75, 85
hisQuiz 100, 80

Output:

My result: 85
His result: 80

His result: 55 → -20
His result: -20 → -20

2. Design and write the Java code for a class that represents a pill dispenser like the one being designed by a Junior B.E. design team. The class needs to keep track of the number of pills in the dispenser. The class should have a constructor that creates a dispenser initially containing the number of pills specified by the constructor's argument. The dispenser needs to respond to messages (have methods) for: 1) dispensing a specified number of pills, 2) adding a specified number of pills to those already in the dispenser and 3) emptying the dispenser (i.e., setting its pill count to zero). For the purposes of this quiz, you do not have to test for over filling of the dispenser or running out of pills. You do not have to write a main method to test the class.

Much of the following code is not required...

```
/*
 * Sample solution for Quiz 3, Problem 2.
 * Prepared by C. S. Tritt, Ph.D.
 * Last revised: 4/20/05
 */

public class PillDispenser {

    private int numPills; // Number of pills in dispenser.

    PillDispenser(int startNumber){ // Constructor
        numPills = startNumber;
    }

    public int dispense(int N) {
        numPills -= N;
        return N; // Return number dispensed, not required.
    }

    public int fill(int N) {
        numPills += N;
        return N; // Return number added, not required.
    }

    public int empty() {
        int hold = numPills; // Temporary variable.
        numPills = 0; // Set contents to zero
        return hold; // Return number removed, not required.
    }

    public int getCount() { // Not required.
        return numPills;
    }
}
```

```
class PDTest { // Not required

    public static void main(String[] args) {
        PillDispenser myPD = new PillDispenser(20);
        System.out.println("Initial count: " + myPD.getCount());
        System.out.println("Dispensed: " + myPD.dispense(3));
        System.out.println("New count: " + myPD.getCount());
        System.out.println("Added: " + myPD.fill(8));
        System.out.println("Next count: " + myPD.getCount());
        System.out.println("Emptied: " + myPD.empty());
        System.out.println("Final count: " + myPD.getCount());
    }
}
```

5 points for about anything (mercy points). -5 for minor mistakes. Missing constructor - 15.

Why did people do: `pills = pills - pills;` instead of `pills = 0;`