Solutions for Section #5

Problem 1: Image Processing

```
    private GImage flipHorizontal(GImage image) {
        int[][] pixels = image.getPixelArray();
        int width = pixels[0].length;
        int height = pixels.length;
        for (int row = 0; row < height; row++) {
            for (int col1 = 0; col1 < width / 2; col1++) {
                int col2 = width - col1 - 1;
                int temp = pixels[row][col1];
                pixels[row][col1] = pixels[row][col2];
                pixels[row][col2] = temp;
            }
        }
        return new GImage(pixels);
    }
```

Problem 2: Trace

The result is the following:

```
4 5 6 6
5 6 7 7
6 7 8 8
```

Problem 3: Intersect HashMaps

```
    private Map<String, Integer> intersect(Map<String, Integer> map1,
                                            Map<String, Integer> map2) {
        Map<String, Integer> result = new HashMap<String, Integer>();
        for (String key : map1.keySet()) {
            if (map2.containsKey(key)) {
                int value1 = map1.get(key);
                int value2 = map2.get(key);
                if (value1 == value2) {
                    result.put(key, value1);
                }
            }
        }
        return result;
    }
```

Problem 4: Bank Accounts

```java
public class BankAccounts extends ConsoleProgram {

    private static final int INITIAL_BALANCE = 100;

    public void run() {
        Map<String, Integer> accounts = new HashMap<String, Integer>();
        readTransactions(accounts);
        printMap(accounts);
    }

    private void readTransactions(Map<String, Integer> accounts) {
        while (true) {
            // read the transaction
            String from = readLine("From: ");
            if (from.isEmpty()) break;
            String to = readLine("  To: ");
            int amount = readInt(" Amt: $");
            println();

            // credit/debit the accounts
            updateMap(accounts, from, -amount);
            updateMap(accounts, to, amount);
        }
    }

    private void updateMap(Map<String, Integer> accounts, String name, int amt) {
        if (!accounts.containsKey(name)) {
            accounts.put(name, INITIAL_BALANCE);
        }
        int newBalance = accounts.get(name) + amt;
        accounts.put(name, newBalance);
    }

    private void printMap(Map<String, Integer> map) {
        for (String key: map.keySet()) {
            int balance = map.get(key);
            println("Account [" + key + "] has $" + balance);
        }
    }
}
```