

## ITEC 120 Lab 8

Created by Dr. Ray

*Reference links:*

<http://www.radford.edu/~aaray/template.java>

<http://www.radford.edu/~aaray/FunctionContainer.java>

You will need to turn in a lab report for this lab.

### **Problem 1: Hello World with 2D arrays**

Create a 2D array of Strings with two rows and one column. Set the first row's value to be Hello and the second row's value to be World. Print out the contents of the array using a for loop.

### **Problem 2: Sales tracking**

Crazy Gadgets Inc. has contracted you to help write some analytics tools for management. Their sales units are broken down into ten different employees, which have seven days worth of profit information associated with them. You will need to find the worker with the least profitable day, the most profitable day, the average profit for each worker, and the worker with the highest average profit.

#### **Part 1: Fill the array with data**

A senior engineer has over-ridden the random number generator so that if you send the `randInt` method 100 it will return the profit data for an employee. After all the profit data for one employee has been generated, the next employee's data will come out of the random number generator. Write a nested for loop that will fill a 2D array of integers that represents each worker's profit over the past seven days.

#### **Part 2: Print out the array**

Print the array of data to make sure it is right.

#### **Part 3: Calculate min/max**

Find the lowest and highest recorded instance of profit in the array. Also, find the total amount of profit made as well as the average profit. Once you have found the information, print it out so that management can use it when making reports.

#### **Part 4: Calculate each worker's average profit**

Management also wants to figure out the average amount of profit each worker is generating for the company. They also want to know which worker has the highest average profit. Once you have calculated the information, print it out so management can award the worker with the highest average profit with a free lunch.

### **Problem 3: Sign alignment**

Ascii Signs Inc. has contracted you to write a program that can generate Ascii signs for their customers. They want to type in two lines of text into a program and have an Ascii sign appear as the output. An Ascii sign consists of two lines of text input which are stored in a 2D array of characters (one row per line of input). The first line of text is longer than the second line, so you should create the number of columns in the array using the length of the first line of text entered into the program.

Since the first line is longer than the second line, you must shift the word in the second row over to the center of the array. To do this, figure out the difference in size between the first input line and the second input line. Next, divide the difference by two (this is known as the shift). Afterwards, go through the second row in the 2D array by starting at the column that holds the character representing the end of the second line of text entered. Move that character shift number of places to the right. Repeat this process until you have shifted all of the characters in the second row the desired number of places. Lastly, over-write the first shift number of characters in the second row to be spaces.

To output the 2D array holding the sign, print the lines in the following manner:

Output a | then a space, then each character in one row of the array followed by a space. After the first row is outputted, output a | then goto the next line and repeat for the second row. Below is an example of input and output for this problem.

#### **Input:**

```
Home Sweet  
Home
```

#### **Output:**

```
| H o m e   S w e e t |  
|           H o m e     |
```