Homework 2

Due: Feb 6, 11:59 PM

Name: Daniel Carpenter

Student ID: 113009743

Submission Instructions: This PDF contains fillable fields where you can input your answers. (For example, you can input your name and ID in the fields above.) Please save the document regularly so your answers are not lost. After you complete the assignment, upload a copy to Gradescope. A link to Gradescope can be found on the left side of the course Canvas page.

Important Note on Academic Integrity: This assignment should be completed individually. In recent semesters, improper collaboration on homework has led to multiple cases of plagiarism, where we receive identical or nearly identical submissions from two or more students. If you decide to discuss this assignment with other students before the deadline, make sure you first read the section of the syllabus on proper and improper collaboration. Additionally, you must include the names of these students below.

Names of Collaborators (if any) None

Question 1 (20 points; 5 points per part): Trace the execution of the following statements by filling in the table to the right of each code fragment. Each column tracks the values stored in a different variable. Note that the tables may contain more rows than you need. **Be sure to store the initial assignments in the tables.**

Example:
```
int variable = 1;
if (variable > 0)
{
   variable = 2;
}
```

variable
1
2

a)
```
int windSpeed = 60;
int category = 1;
if (windSpeed > 75)
{
   category = 4;
}
```

windSpeed	category
60	1
60	1

b)
```
int firstDrone = 18;
int secondDrone = 33;
if (firstDrone > secondDrone)
{
   firstDrone = firstDrone * 5;
}
if (firstDrone < secondDrone)
{
   secondDrone = firstDrone – 5;
   firstDrone = secondDrone – 5;
}
else
{
   secondDrone = firstDrone + 8;
}
```

firstDrone	secondDrone
18	33
18	33
28	13

c) // Read this one carefully

```
int cashReward = 42;
double purchase = 76.50;

if (purchase > 175)
{
   cashReward = (int) purchase * 2;
}
else if (purchase > 125)
{
   cashReward = (int) purchase;
}
else if (purchase > 75)
{
   cashReward = (int) purchase / 2;
}
else
{
   cashReward = 0;
}
```

cashReward	purchase
42	76.50
42	76.50
42	76.50
38	76.50
38	76.50

d)
```
double distance = 130.75;
int speed = 62;
boolean slowAndShort = false;
boolean slowOrShort = false;
boolean fastAndLong = false;

if (speed < 60)
{
   if (distance > 120)
   {
      slowOrShort = true;
   }
   else
   {
      slowAndShort = true;
   }
}
else
{
   if (distance > 120)
   {
      fastAndLong = true;
   }
   else
   {
      slowOrShort = true;
   }
}
```

slowAndShort	slowOrShort	fastAndLong
false	false	false
false	false	true

Question 2 (10 points; 2 per part): Suppose that four variables are declared and initialized as follows:

```
int leftArrow = 9;
int rightArrow = 28;
int pageUp = 73;
int pageDown = 27;
```

For each statement given below, perform the logical operations and find the resulting boolean value. If the code is not legal Java, give the answer illegal. You can earn partial credit for an incorrect result if you show your work.

Example: leftArrow < rightArrow
9 < 28
true

a) (leftArrow >= rightArrow) && (pageUp > pageDown)

(9 >= 28 && 73 > 27)
false

b) (leftArrow > rightArrow) || (pageUp <= pageDown)

(9 > 28) || (73 <= 27)
false

c) (leftArrow == rightArrow) && (pageUp > pageDown)

(leftArrow == rightArrow) && (72 > 27)
false

d) ! leftArrow =< rightArrow

illegal

e) leftArrow >= rightArrow > pageDown

illegal

Question 3 (10 points; 2 per part): Suppose that the following lines of code have been executed in a program:

```
String titleOfBook = new String("A Study in Scarlet by A. C. Doyle");
String lowerCaseTitle = new String("a study in scarlet by a. c. doyle");
String upperCaseTitle = new String("A STUDY IN SCARLET BY A. C. DOYLE");
String emoTitle = new String("A STUDY IN SCARLET!!!!! By A. C. Doyle");
String oddTitle = new String("a sTuDY iN SCaRLeT bY A. c. dOyLe");
```

Give the boolean value of each statement below. You can use Eclipse to check your work, but I encourage you to solve them by hand first, since you won't have your laptop on the exam.

a) titleOfBook.equals(oddTitle)

false

b) titleOfBook.equalsIgnoreCase(emoTitle)

false

c) upperCaseTitle == titleOfBook

false

d) upperCaseTitle.equalsIgnoreCase(oddTitle)

true

e) upperCaseTitle.equalsIgnoreCase(titleOfBook)

true

Question 4 (10 points): Spreadsheets can be stored in a format called Comma Separated Values (CSV), which are text files with data separated by commas. Consider the spreadsheet below:

Book	Cost	Number
Hamlet	24.95	10
King Lear	18.42	13

If this data were stored in a CSV file, it would appear as follows:

Book , Cost , Number<newline>
Hamlet , 24.95 , 10<newline>
King Lear , 18.42 , 13<newline>

Suppose this information is typed into a computer. Write a code fragment to read the data with the Scanner constructed below. Calculate the total cost (24.95 + 18.42) and total number of books (10 + 13) and store these values in the variables totalCost and totalNumber.

```
Scanner keyboard = new Scanner(System.in);
double totalCost = 0;
int totalNumber = 0;

// Write your code below using only these variables. Your code
// should not contain literal values. For instance, do not calculate
// the total cost with the statement "totalCost = 24.95 + 18.42".
// Instead, use the Scanner to read the values from the keyboard.
```

```
import java.util.Scanner;
public class Homework_2 {
 public static void main(String[] args)
 {

Scanner keyboard = new Scanner(System.in);
  double totalCost = 0;
  int totalNumber = 0;

  System.out.println("totalCost = " + keyboard.nextDouble() + " + " + keyboard.nextDouble
());
  System.out.println("totalBooks = " + keyboard.nextInt() + " + " + keyboard.nextInt());

 }
}
```