*C1A, C1F Tutorial Course*

***Homework Lab Set A-1***

***C1 – Introduction to Computer Science – Learning Java***

***Due Date: Thursday, July , 2018***

Instructor: Evan Chen

**Full Name (PRINT LEGIBLY): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

***Signature Pledge***

***I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, pledge that I will not plagiarize my work. Upon submitting my homework set, I promise that all of my work is my own and that it is not copied from a classmate of mine and it is not work done by any of my friends or colleagues or other teachers and professors. If I do copy some code or any of the answers online, I promise that all of this work is referenced wherever needed. I know that in failure to comply to this pledge, I will receive a 20-mark reduction.***

Work on the course material and problems below. You must complete all of the questions displayed in Part I. You may choose to work on only 5 questions from Part II and 4 questions from Part III. Please write down your chosen questions on **page 2** of this booklet.

**When you are finished, please hand in your work to me before end of day July 5th, 2018. Your work will include the following:**

* *This assignment booklet with all of the Part I questions answered. (You must hand this to me in person.*
* *Submit all of the code (in Github) online* **ONLY***, DO NOT PRINT IT OUT AND STAPLE IT TO THIS BOOKLET.*

**Late submissions result in a 15% reduction of your total mark on this evaluation.**

*Instructions*

1. Please answer all of the Short Answer knowledge questions in Part I. You may record your answers in pen or in pencil. If you need assistance, feel free to ask me through text, email, or in person (right before the class starts or after class).
2. In Part II of this booklet, you are required to work on any 5 questions out of the 10. Please note that some of the sub-questions may require you to directly answer on this booklet, but almost all of the questions will require you to code. You may find the starter code on the tutorial course webpage that corresponds to the questions you have chosen to do. Please note that all code MUST be submitted online, through Github.
3. In Part III of this booklet, you are required to work on 4 of the questions out of the 5 there. However, there will be **no starter code provided for you on the tutorial course webpage**. You are required to write all of your code from scratch. Please note that all code MUST be submitted online, through Github.

**Homework Questions Completed**

**from Part II:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Homework Questions Completed**

**from Part III:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Grading Scheme:

Part I /15 marks **Total /170 marks**

Part II /50 marks

Part III /100 marks

***Part I*** – ***Short Answer + Knowledge Questions***

Answer the following questions. There are twenty questions. Each question is worth one mark. Be sure to read each question carefully before answering. Please answer using pen or pencil. You may also choose to type up your answers (if you wish to submit it online). Please keep your answers short.

1. What is the **main** function? What is its purpose? Write down what the header of the **main** function is.
2. What is the difference between **System.out.println**() and **System.out.print**()?
3. How do you return a value from the function? Can you return nothing?
4. Suppose I had the following code written.

System.out.print(“ Hello World”);

System.out.println(“I’m on another line? “);

System.out.println(“This is another line.”);

System.out.print(“How about this? ”);

What will it print out?

1. What is the purpose of a variable?
2. Consider the following code.

int i = 10;

int j = 20;

int swap;

swap = i;

i = j;

j = swap;

What is the value of variable i?

1. Consider the following code.

int i = 10;

int j = 20;

int swap;

swap = i;

i = j;

j = swap;

What is the value of i + j \* swap?

1. Can you return a void value? Why or why not?
2. Consider the following code:

public int isInfFunction(int x) {

if(x == 0) {

return x;

}

return 1 + isInfFunction(x);

}

If I were to have ran the following code in the main function:

int x = 0;

int value = isInfFunction(x);

System.out.println(“The value is ” + value);

What would the System.out.println() snippet print out? Will this call the function infinitely?

1. Consider the following code:

public int isInfFunction(int x) {

if(x == 0) {

return x;

}

return 1 + isInfFunction(x);

}

If I were to have ran the following code in the main function:

int x = 10;

int value = isInfFunction(x);

System.out.println(“The value is ” + value);

What would the System.out.println() snippet print out? Will this call the function infinitely?

1. Write an if statement based on this scenario (assume the String variable “colourOf*Marble*” has been defined already, but not assigned anything yet):

Imagine that the program has asked the user what their favourite colour is on their marble. The user types in “blue” and hits the enter key. The program returns “Blue is a beautiful colour.”

The program will print out one of the following:

* If the user types in “blue”, the program should print out “Blue is a beautiful colour.”
* If the user types in “red”, the program should print out “Red is a fiery and magnificent color.”
* If the user types in “yellow”, the program should print out “Yellow is as bright as the wonderful sun.”
* If the user types in any other colour, the program should print out “Hey, these are not primary colours!”

1. Suppose that you had three functions named A, B, and C. Function A takes in an integer parameter called x and Function B takes in an integer parameter called y. Function C does not take in any parameters. All of their return value types are integers.

If function A returned a value of x, function B returned a value of y, and function C return a value of 1, for whatever values x and y are inside their respective functions, what would the value be if you were to have solved this mathematical expression?

System.out.println(A()\*B() + (C() – A() + B()));

*(Please answer using only mathematical notation – that means you must use the actual variable names, x and y, because we do not know what x and y are in this case. In the actual code, when compiled and run, you cannot technically print out the variable names “x” and “y”…)*

1. Suppose that you had three functions named A, B, and C. Function A takes in an integer parameter called x and Function B takes in an integer parameter called y. Function C does not take in any parameters. All of their return value types are integers.

Function A returns a value of x, function B returns a value of y, and function C returns a value of 1, for whatever values x and y are inside their respective functions.

If the user passed in a value of x = 10 to function A, a value of y = 35 to function B, what would the following code print out? (What value would be printed into the console?)

System.out.println(A()\*B() + (C() – A() + B()));

*(Hint: this time, you are actually printing out a value. You must calculate it first…)*