COMP 210 – Data Structures and Analysis (Sections 1 & 2)

Assignment #1 – Part 2 – Getting Started

Issue Date: August 30, 2023. **Due Date: Wednesday September 6th, 11:55pm**

Total Points: 5. *Part 3 = 4 Points*.

Student Name: Christopher Kim

Student PID: 730609553

Rules for ALL HWs (in addition to any statements in the syllabus):

You are encouraged to discuss the homework assignments and study together in groups, but when it comes to formulating/writing/coding solutions you must work alone and independently. If required, you should be able to explain your answer clearly to TAs/LAs. Copying homework solutions from another student, from the Internet, solution sets of friends, or other sources will be considered cheating and treated accordingly.

Part 2 (4 Points)

In this part you are required to write an additional Java program and answer questions given below. This part will be manually graded and you should provide your responses in the spaces below and then upload this file **as a pdf in Gradescope "Assignment 1 – Part 2".**

i) In the same package (assn01) create another java class called "Part2", with a "main" method that does the following:
   - Declares a variable short **sh**, which is to be set to the largest short integer.
   - Then calls another static method "method2".

ii) Create "method2" that:
   - Declares a (Hex) **int n2 = 0xABC**, and prints out the number as a decimal.
   - Calls another static method "method3".

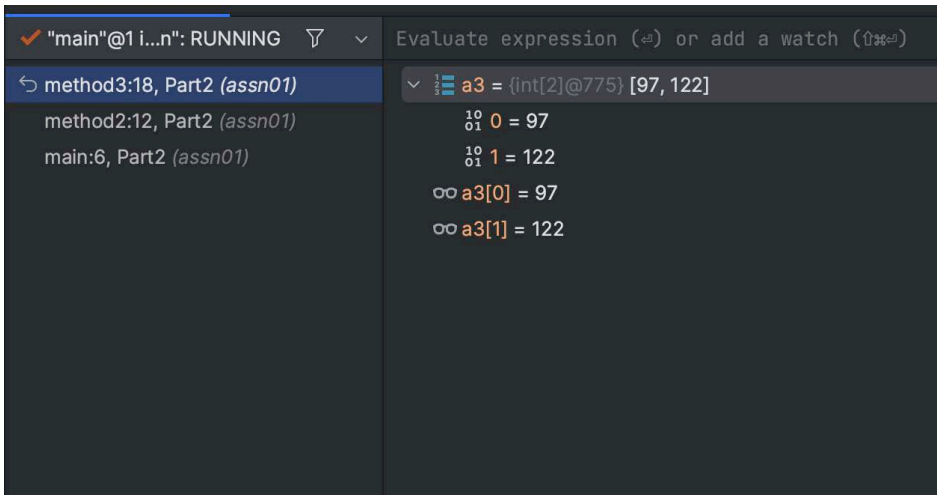
iii) Create "method3" that:
   - Declares an array **int[] a3 = {'a', 'z'}**
   - Runs the following statement: **System.out.println(a3[0]+" "+ a3[1]);**

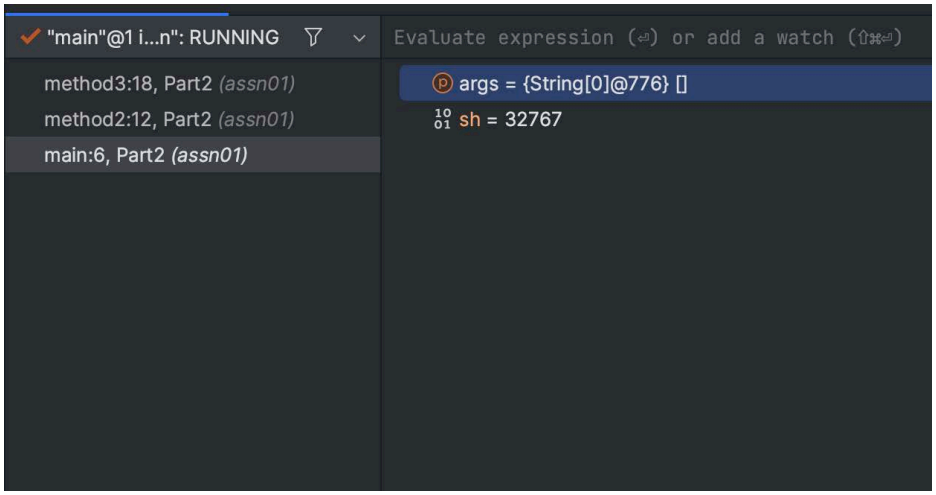
a) Insert a copy of your code in the space below (image or text):

Part2.java

```
1  package assn01;
2
3  public class Part2 {
4      public static void main(String[] args) {
5          short sh = 32767;
6          method2();
7      }
8
       1 usage
9      public static void method2() {
10         int n2 = 0xABC;
11         System.out.println(n2);
12         method3();
13     }
14
       1 usage
15     public static void method3() {
16         int[] a3 = {'a', 'z'};
17         System.out.println(a3[0]+" "+ a3[1]);
18     }
19 }
```

b) Setup a breakpoint in ***method3*** before it exits, and debug the program to stop at this breakpoint to show the following: The **main**, **method2** and **method3** stacks and their **variables** with expanded details. (You must capture these images and show the values below).





c) What are the contents of the Stack memory? What are the contents of the Heap memory?

The contents of the Stack memory are:
- the method calls: main, method2, method3
- primitives: sh, n2

The contents of the Heap memory are:
- the reference types: a3

d)

(i) Can you write an equation showing how the required value of ‘sh’ can be calculated (based on number of bits)?

(ii) show how ‘n2’ can be calculated?

(iii) Explain how the 2 values printed out in method3 were obtained.