Section 2 Exam 1: Theory Component

- This exam is closed-book, closed-note, closed electronics, closed NetBeans, and no USBs.
- Calculators, cell phones, and devices that allow communication of any kind are not permitted for use in any way during examination.
- The sooner you complete this exam, the more time you'll have for your programming part of this exam.
- Please write your answers in the attached answer sheet file and submit (upload) that file
- Cross out whatever you don't want to be marked.
- If more than one answer is provided for a question requiring a written answer, only the first answer will be graded.
- Your grade for this theory part of the exam will be based on your first upload of your answer sheet file.

True or False Questions ($10 \times 2 = 20$ points)

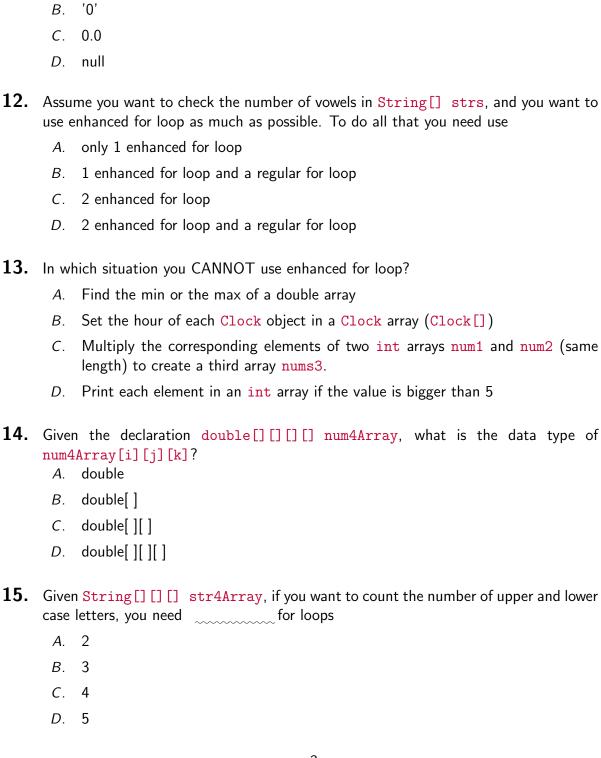
Indicate whether each of the statements below is True or False. Write True False on the answer sheet.

- 1. No matter what data type an array stores, you can initialize the array either by using the keyword new, or by using the braces "{}" filled with comma separated initial values.
- **2.** If you want to check the value of an int element in an N-dimensional int array, you needs N-1 of pairs of square brackets[] to indicate the index.
- **3.** Assume you have an int[] nums; then, the call Arrays.sort(nums) will directly sort the array, rearranging its elements when necessary.
- **4.** Two arrays are said to be parallel if they have no elements in common.
- **5.** boolean equals(Object obj) is an overloaded method.
- **6.** Consider the statement String[] strs = {"hello", "Hi"}; After executing this statement, only 1 reference is allocated in the memory.
- **7.** An int array uses 1 piece of memory, the same as an int variable.
- **8.** We can use enhanced for loop to print an array in the reversed order.
- **9.** Object is the ultimate parent class of every class in Java.
- 10. A class must have a getter and a setter method for every data member.

Multiple Choice Questions ($10 \times 2 = 10$ points)

11. The default value of an element in an int[] array is

In the space provided on the answer sheet, write the letter of only one answer choice that best completes each statement or best answers each question.



- **16.** An array _____
 - A. may have a negative size
 - B. may have elements with different data types
 - C. may have elements with the same value
 - D. may have unlimited storage space
- 17. You can initialize an int array a using the syntax _____

```
A. int[] a = \{1,2,3\};
```

- B. int[3] $a = \{1,2,3\};$
- $C. \quad int[] \ a = [1,2,3];$
- D. int[3] a = [1,2,3];
- 18. The Arrays.toString() method can be used on _____
 - A. Only 1d array
 - B. Only 2 and more dimensional arrays
 - C. Both a and b
 - D. None of a and b
- 19. What will the following code segment print?

```
char character = 'a';
System.out.print(character - 'a' + 'A' + 1);
```

- A. 'A'
- B. 'B'
- C. The ASCII code of 'B'
- D. Error

 ${\bf 20.} \ \ {\bf What will the following code segment print?}$

```
int a = (char) (12.5 + 8 / 3) % (int) (7 / 4 + (double) (8 / 3)
   );
switch (a)
{
   case   0:
       System.out.print(0);
   case   1:
       System.out.print(1);
   case   2:
       System.out.print(2);
}
```

- *A*. 0
- B. 01
- C. 012
- D. 2

Short Answer Question ($4 \times 5 = 20$ points)

Answer any 4 of the 6 questions 21 to 26 below.

- 21. Given int[] nums,
 - 1. write a regular for loop to go through the array and print each element on a new line, and
 - 2. write an enhanced for loop to do the same thing
- **22.** Name five methods from the Java Arrays Class API, giving a simple example for each.
- **23.** Assume that
 - 1. you have a class Product, which has a copy constructor, and
 - 2. you have another class **Shop**, that contains two data members:

```
String name
Product[] products
```

Write a copy constructor for the **Shop** class.

24. Write enhanced for loop(s) to count the number of even numbers in int[] nums

For questions 25 and 26, determine whether the given Java code segment will compile. If your answer is yes, what will be the output? If you think the code will not compile, describe the reason for the error.

25.

```
Boolean [] flags = {true, true, false, false};
for (int i = 0; i < flags.length; i++) {
   int j = (i == flags.length - 1) ? 0 : i + 1;
   if ((flagss[i] && !flags[j] )|| (!flags[i] && flags[j]))
        System.out.print('T');
   else
        System.out.print('F');</pre>
```

26.