INSTRUCTIONS:

- Keep your eyes on your own paper and do your best to prevent anyone else from seeing your work.
- Do NOT communicate with anyone other than the professor/proctor for ANY reason in ANY language in ANY manner.
- This exam is closed notes, closed books, and no calculator, no electronics.
- Turn all mobile devices OFF and put them away now. You cannot have them on your desk.
- Write neatly and clearly indicate your answers. If I cannot read your answer, I will assume to be incorrect.
- Stop writing when told to do so at the end of the exam. I will take 10 points OFF if you keep writing after I told you to stop.
- Academic misconduct will not be tolerated. Suspected academic misconduct will be immediately referred to the Emory Honor Council. Penalties for misconduct will be a zero on this exam, an F grade in the course, and/or other disciplinary action that may be applied by the Emory Honor Council.

TIME: This exam has 5 questions on 6 pages including the title page. Please check to make sure all pages are included. You will have a total of 60 minutes to complete the exam. Good luck!

I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Emory community. I have also read and understand the requirements and policies outlined above.

Signature: ____________________________________________

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1. (16 points) Draw the array that would result after the following code is executed.

   (a) (4 points)
   int[] data = new int[8];
data[0] = 3;
data[7] = -18;
data[4] = 5;
data[1] = data[0];

   int x = data[4];
data[4] = 6;
data[x] = data[0] * data[1];

   (b) (6 points)
   int[] list = {2, 18, 6, -4, 5, 1};
   for (int i = 0; i < list.length; i++) {
     list[i] = list[i] + (list[i] / list[0]);
   }

   (c) (6 points) Consider the function below:
   public static void mystery(int[] a) {
     for (int i = 0; i < a.length - 1; i++) {
       if (a[i] < a[i+1]) {
         a[i] = a[i+1];
       }
     }
   }

   Draw the array a2 after the code below executes.
   int[] a2 = {2, 4, 6, 3, 7, 9};
mystery(a2);
2. (11 points) Write a function no29 which takes an array of single digit integers as a parameter. The function should return a boolean value. The function returns true if the array contains no 2s or it contains no 9s. Examples of function calls and return values:

no29({1,2,3}) returns true
no29({1,2,8,9}) returns false
no29({7,8,9}) returns true

3. (5 points) What modifier should you use on the members of a class so that they are not accessible to another class in a different package, but are accessible to any classes in this class’s package?

   A) public
   B) private
   C) Use the default modifier.
4. (26 points) Write code that creates and uses a class named Student to update data information for a student in cs170 class. Each student has private information such as id (integer) and date of birth (string), and non-private information such as name (string). Use the Student class to perform the following operations:

- Create a Student object that has the following info:
  id = 12345, name = John Smith, dob = 12/12/2001
- Print the Student info to the screen (use toString method) in the following format
  id = 12345 name = John Smith dob = 12/12/2001
- Fix the dob mistake to dob = 12/12/1990
- Print the Student info to the screen (use toString method)
  id = 12345 name = John Smith dob = 12/12/2001

Note: For full points your main method should have only the lines that include the object creation and method invocations. The test class should include only the main method.
5. (12 points) Declare two strings named s1 and s2 which include the following texts "ArithmeticException" and "RuntimeException", respectively. Write code to perform the following tasks:

A) Concatenate these strings into a string named s3.

B) Compare s1 and s2 strings, ignore case.

C) Create a new string that starts from index 7 to index 9 of s2.

D) Assign the index of the first occurrence of character ‘e’ in s3 to an int variable x.

E) Split s3 by character ‘e’ into an array named tok.

F) Indicate the output of the print statements below. If the statement would generate an error, simply write “error”.

```java
System.out.println(s1.charAt(s1.length()));
System.out.println(s2.charAt(s2.length()-1));
```