Name/Username: _____ Fall 2018 C212/A592 Early Evaluation Exam 09/19

1. What does this line of code print:
```
System.out.println("+---+\n|   |\n+---+");
// 01234567890123456789012345678901234567
```
2. Write code to calculate the following expression with `BigDecimal` objects: `4.35 * 100`

Evaluate the following expressions:

3. `3 - 4 + 5`
4. `3 – 4 * 5`
5. `2 / 3 * 4`
6. `2 * 3 / 4`
7. `3 % 5`
8. `-3 % 5`
9. `5 % 3`
10. `5 % -3`
11. `3 % -5`
12. `49 / 17 % 5`
13. `49 / (17 % 5)`
14. `('a' + 'b') % 2`
15. `false || true`
16. `! true && false`
17. `! (true && false)`

Assuming[1] `int n = 3;` evaluate the following expressions:

18. `n > ++n`
19. `++n – n`
20. `n++ == n++`
21. `++n == n++`
22. `n++`
23. `++n`
24. `( n = n++ - ++n ) < 0`
25. What is n now[2]?

Evaluate the following expressions:

26. `"1" + (2 + 3)`
27. `"1" + 2 + 3`
28. `1 + "2" + 3`
29. `1 + 2 + "3"`
30. `"tomato".charAt(2) - "potato".charAt(5)`
31. `"eggplant".length()`
32. `"eggplant".substring("kale".length())`
33. `"kale".charAt(3)`
34. `"eggplant".substring("eggplant".length()-1)`
35. `"beans".substring(1, 4)`

Assuming that a has a `boolean` value and n is an `int` please simplify the following expressions:

36. `!a == true`
37. `!a != false`
38. `true && !a`
39. `if (n == 3)  a = true ;  else  a = false;`
40. `if (n != 3)  a = false;  else  a = true ;`
41. `a = false; if (n > 3) if (n < 5) a = true;`
42. `if (n < 0) a = true; else a = (n > 1);`
43. `n < 5 || n > 3`
44. `n < 3 && n > 5`

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[1] n is 3 before each one of these expressions gets evaluated (assuming that that matters)

[2] Question 25 refers to question 24. All other questions are distinct and independent.

45. Can every `while` loop be expressed as a `for` loop and if so how?

46. Can every `while` loop be expressed as a `do-while` loop and if so how?

Determine the value of n at the end of the following fragments of code:

47. `int m = 18, n = 10; if (m > 10) { if (m > 5) n = 1; } else n = 2;`

48. `int m = 18, n = 10; if (m > 10)  if (m > 5) n = 1;  else n = 2;`

49. `int m = 18, n = 10; if (m < 10) { if (m > 5) n = 1; } else n = 2;`

50. `int m = 18, n = 10; if (m < 10)  if (m > 5) n = 1;  else n = 2;`

51. You type `"tomato" == "tomato"` in DrJava Interactions panel and it evaluates to `false`.

```
Welcome to DrJava.  Working directory is C:\Users\dgerman\c212\fall2018\examOne
> "tomato" == "tomato"
false
>
```

You then write and compile this program:

```
public class One {
  public static void main(String[] args) {
    System.out.println( "tomato" == "tomato" );
  }
}
```

Here's what you get when you run it:

```
Welcome to DrJava.  Working directory is C:\Users\ dgerman\c212\fall2018\examOne
> java One
true
>
```

What's going on? Why the difference? What effect does this have on your programming in Java?

52. Make up an example in Java that demonstrates what is known as "the dangling else problem" using the following statement: "A student with a GPA of at least 1.5, but less than 2, is on probation. With less than 1.5, the student is failing."

This part of the exam (today in WH120 @2:30-3:45pm) is written, closed-book, individual work and lasts 75 minutes. Please try to fit the answers next to each question on the preceding page but feel free to use this as scratch paper. In the end submit them both (feel free to take pics with your phone when you come to turn it in here at the front of the classroom but not before). You will receive them back (if you did turn them both in) in lab. Lab is open book open notes and you are free to talk with anyone. In lab you will try to determine objectively what your grade for the written part is based on your answers: you will write a short report indicating for each question what the right answer is, and why, then how your answer relates to that. If your answer is correct you give yourself a point. If your answer is wrong you give yourself a 0 (zero). If your answer is partially correct determine how much in (0, 1) that is and give yourself that many points. Add them up divide by 0.52 and that's your score (out of 100). State it, as part of your Lab 05 assignment, so we can compare it with what my score is, when I post them on Monday.

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