CSC 254
NOTES
Week 02

Name (Print): _____

This assignment contains 7 pages (including this page) and 37 questions. Check to see if any pages are missing.

These pages are indexed to the videos for this course.

Grading
Your answers must be hand-written on printed copies of the notes.

- I will not accept typed answers
- I will not accept answers written on notebook paper.
- This document will only be "spot checked." Not all answers may be graded.
- *Don't skip questions!* If you don't know an answer, at least give it a try. Or explain what you don't understand. Put a big star or arrow around the points you don't understand and ask about them in class.
- Keep your copy. When I make up the test I will go down the notes page and draw inspiration from these questions when making up the exam. These notes pages will be good study guides.
- You may write any lingering questions or muddy points at the end of the document. Then ask in class
- Scan this document into a .pdf file and turn it in. If you don't have access to a regular scanner then install a "CamScanner" app on your phone or tablet. They work pretty well. Photographs will not be accepted. You must scan to a .pdf document.

Video 02.010 Part 1

1. The video lists several concepts the instructor will assume you know. The list is shown below. The list is produced below. Please circle any of the items you feel like you are unprepared for. Then, during the class session ask about these topics. At this point you do not need to be experts in these topics, but you should at least know what the terms refer to.

   - comments
   - variables
   - calculations and basic math
   - variable assignments
   - String literals
   - print statements
   - algorithm
   - debugger

Video 02.010 Part 2

2. What symbol is used for a line comment? _____

3. What are the Java operators for each of the following?

   - ____ addition
   - ____ subtraction
   - ____ multiplication
   - ____ division
   - ____ modulo (finding the remainder

Video 02.020 IDs

4. Why is naming things difficult? What are the characteristics of a "good" name versus a "bad" name?

5. What are the four syntax rules listed in the video?

   -
   -
   -
   -

6. What characters may appear as the first character of an id?

The next couple of questions are not really discussed in the video. Perhaps I should have. But think about them and come up with an answer.

7. A single character may be an id. Digits are not allowed as the first character of an id. What problems could come up if this was allowed. A sample of some possible code is listed below

```
double x = 5.0;
double 3 = 4.0;
x = 3;
```

8. A dash or hyphen may not appear as part of an id. What problems could come up if this was allowed. A sample of some possible code is listed below

```
double amount = 100.00;
double sales-tax = 0.07;
double price = amount * sales-tax;
```

---

9. Look through the list of reserved words. We have already used some

reserved words in class as we were writing programs.

10. A lot of words that seem like they *should be* reserved words, but they are not. In the following code circle all of the words that start with a letter but which are ***not*** key words.

```
public class Thing{

    public static void main(String[] args){

        double x = 0.0;

        System.out.println(Math.PI);
    }
}
```

11. What does "case sensitive" mean? Are Java ids case sensitive?
12. What is "camelCase?" Give an example.
13. What is the style guideline for class names?
14. Why is the style guideline for named constants?
15. $ and _ are allowed to start Java variables. Why shouldn't you declare variables of these types?
16. What does "Self Documenting Code" mean?
17. Both camelCase and underscore are useful when joining two words together into a single ID. When does Java usually use camelCase and when does it usually use underscores?
18. What do each of the following single-variable letter names usually mean?
    - i
    - n
    - s
    - x and y

19. Should you abbreviate? Why or why not?

20. For each of the following, write + in front of an id if it follows both the syntax and style rules. Put a 0 next to it if it follows the syntax, but not the style rules for user-created variables. Put a - sign next to variables that violate the syntax rules. Assume each is a variable. If it would be a good name for a class then write "Class" next to it.

    - name
    - Name
    - price
    - price
    - export
    - wrkHrs
    - work-hours
    - final
    - Final

Video 02.030 Variables & Data Types

21. The video discusses the 4 main data types in Java. Write a brief description of each. Be sure to distinguish between an integer and a double

    `double`

    `integer`

    `String`

    `boolean`

22. What is the default type for real numbers in Java?

23. In the following, what gets stored in x? Is it an int or a double?

    ```
    double x = 8
    ```

24. If you don't initialize a variable, what value is stored in the variable?

25. If you have a number over 3 billion, can the number be stored in a double?
26. How many digits of accuracy may be represented as a double?
27. What would the equivalent be the "normal" decimal value of $1.23x10^4$
28. Write 1.23e105 in Scientific Notation.
29. What is the largest double value (approximately). Would you prefer to write this number out in regular notation or would you rather write it in scientific notation?
30. In what situations do doubles cause some problems when doing calculations?
31. What is the largest possible value for an integer (to the nearest billion)?
32. Why is String capitalized, but double and int are not capitalized?
33. How is String data represented differently than numeric data in Java?

34. This is not explicitly covered in the video, but you should be able to reason it out if you think about it.

    In Java, two integers may be compared as `(5 == 2+3)`. What would be the problem with comparing string data such as `("Bob" == "Bo"+"b")`?

35. What types of values could a boolean variable hold?

36. If you do not initialize a boolean variable, what value would it be set to (this question may be out of sequence. Remember that Java defaults to a "zero-ish" value.)

37. What would be printed by each of the following? (Try each statement out in IntelliJ if you are not sure of the answer). The last one was not done in the video. Think about it. Then try it. The last question is really just an effort to force you to experiment on your own.

```
System.out.println(3.14 / 0.);

System.out.println(Math.PI / -0.);

System.out.println(Math.sqrt(-1.));

System.out.println(Infinity - 1.0);

System.out.println(Math.log(Math.E));
```