

This exam is open text book and closed notes. Different questions have different points associated with them with later occurring questions having more worth than the beginning questions. Because your goal is to maximize your number of points, we recommend that you do not dwell too long on any particular question during your first pass through the exam.

When an integer type is required use `int`; when a floating point type is required use `double`.

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Total \_\_\_\_\_ / 100

**Pledge:**

1. (3 points) What section of CS101 are you in?

\_\_\_\_\_ 2 CS101E \_\_\_\_\_ 7 1400-1515 Thursday

\_\_\_\_\_ 3 0800-0915 Thursday \_\_\_\_\_ 8 1530-1645 Thursday

\_\_\_\_\_ 4 0930-1045 Thursday \_\_\_\_\_ 9 1700-1815 Thursday

\_\_\_\_\_ 5 1100-1215 Thursday \_\_\_\_\_ 10 1830-1945 Thursday

\_\_\_\_\_ 6 1230-1345 Thursday \_\_\_\_\_ 11 2000-2115 Thursday

2. (3 points) What is the value of the following expression?

$$( 3 / 4 )$$

3. (3 points) What is the value of the following expression?

$$(12 \% 6 + 2)$$

4. (3 points) What is the value of the following expression?

$$( 2+2 * 3 )$$

5. (3 points) What is the value of the following expression?

$$( 1.0 + 2 / 6 )?$$

6. (3 points) Write a single *statement* that *defines* a floating point variable  $x$  whose initial value is 32.64.

7. (3 points) Suppose  $n$  and  $m$  are *previously defined and initialized* integer variables. What type of *statement* is

$n = m;$

8. (3 points) Suppose  $n$  and  $m$  are *previously defined and initialized* integer variables. What happens to  $n$  in *statement*

$n = m;$

9. (3 points) Suppose  $n$  and  $m$  are *previously defined and initialized* integer variables. What happens to  $m$  in *statement*  
 $n = m;$
10. (3 points) Suppose  $m$ ,  $n$ ,  $j$  and  $k$  are *previously defined and initialized* integer variables. Write a single *statement* that assigns  $m$  the value of  $n$  times the quantity  $j$  minus  $k$ .
11. (3 points) Suppose  $n$  is a *previously defined* integer variable and  $x$  is a *previously defined* floating point variable with value 8.16. Does the following statement compile without error? Why?  
 $n = x;$
12. (3 points) Suppose  $x$  is a *previously defined* floating point variable and  $n$  is a *previously defined* integer variable with value 8. Does the following statement compile without error? Why?  
 $x = n;$
13. (3 points) Suppose  $n$  is a *previously defined and initialized* integer variable. Write a *statement* that increases the value of variable  $n$  by 1, where the statement does not use the  $=$  operator.
14. (3 points) Write an appropriate *statement* that defines an integer constant named ONE whose value is 1.
15. (3 points) Is `std::n` a Java keyword?

16. (4 points) What method is defined in every Java application program?

17. (4 points) Write a Java comment stating that there are 10 kinds of people.

Consider the following class definition in questions 18 through 20.

```
public class C {
    private int number;
    public C() {
        this.number = 0;
    }
    public C(int n) {
        this.number = n;
    }
    public void set(int n) {
        this.number = n;
    }
    public int get() {
        return this.number;
    }
    public String toString() {
        String result = "C: (" + this.number + ")";
        return result;
    }
}
```

18. (4 points) How many constructors does the class C definition provide?

19. (4 points) List the name(s) of the accessors (inspectors) provided by the class C definition.

20. (4 points) List the name(s) of the instance variables (attributes) provided by the class C definition.
21. (5 points) Write a single *statement* that displays to standard output the message *There are 10 kinds of people.*
22. (5 points) Write a single *statement* that defines a Scanner variable `stdIn` associated with the standard input stream. Your definition must be compatible with the latest version of Java.
23. (5 points) Write a single appropriate *statement* that prompts the user to provide the ambient temperature. For your information, the associated input will be used as an integer Celsius value.
24. (5 points) Using a *previously defined* Scanner variable `stdIn` associated with the standard input stream, write a single *statement* that defines and initializes an integer variable `ambient` with the next integer input value from standard input.
25. (5 points) What is the value of a `Line` variable `line1` after the following statement completes?  
`Line line1 = new Line();`

26. (5 points) Consider the following class definition.

```
String s = "01234567890123456789";
System.out.println( "length = " + s.length() );
System.out.println( "charAt = " + s.charAt(4) );
System.out.println( "substring = " + s.substring(4, 8) );
System.out.println( "indexOf = " + s.indexOf("12") );
System.out.println( "indexOf = " + s.indexOf("A") );
```

What is its output?

length =

charAt =

substring =

indexOf =

indexOf =

27. (5 points) Examine code segment

```
int neonTetra = 1;
int redHerring = neonTetra;
String name1 = "wahoo";
String name2 = name1;
```

and fill-in the following diagram to represent memory after the code segment has completed. (Not all elements of the diagram are necessarily used or even make sense.)

