Grading

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1. (4 points) What is your course section?

   CS 101

   CS 101E
The following definitions are in effect throughout the remainder of the test.

```java
public class A {
    private int v1;
    private int v2;
    public A(int f1, int f2) {
        this.v1 = f1;
        this.v2 = f2;
    }
    public String toString() {
        return "( v1 = " + v1 + " v2 = " + v2 + ")";
    }
}

public class B {
    private int b;
    public B() {
        System.out.println("b = " + b);
    }
}

public class C {
    private int c1;
    static private int c2;
    public C() {
        c1 = 0;
        c2 = 0;
    }
    public void increment() {
        ++c1;
        ++c2;
    }
    public String toString() {
        return "( c1 = " + c1 + " c2 = " + c2 + ")";
    }
}
```
2. (8 points) Evaluate the following expressions and give the value.

a) \(10 == 20 \land 20 <= 10\) __________

b) \(true || false && false\) __________

c) \(! true && false\) __________

d) \(10 + 10 <= 20 || 10 != 10\) __________

3. (4 points) Complete the truth table for the logical operation \(\text{some}\). The logical operation \(\text{some}\) is true if and only if at least one of \(p\) and \(q\) are false.

\[
\begin{array}{ccc}
 p & q & p \text{ some } q \\
\hline
\text{false} & \text{false} & \text{false} \\
\text{false} & \text{true} & \text{false} \\
\text{true} & \text{false} & \text{false} \\
\text{true} & \text{true} & \text{true} \\
\end{array}
\]

4. (4 points) Complete the truth table for the logical operation \(\text{less}\). The logical operation \(\text{less}\) is true if and only if \(p < q\). Hint: \(false < true\).

\[
\begin{array}{ccc}
 p & q & p \text{ less } q \\
\hline
\text{false} & \text{false} & \text{false} \\
\text{false} & \text{true} & \text{true} \\
\text{true} & \text{false} & \text{false} \\
\text{true} & \text{true} & \text{true} \\
\end{array}
\]

5. (4 points) What is the output of the following code segment?

```java
B myB = new B();
b =
```

6. (3 points) Consider the following code segment.
   ```java
   int n1 = 12;
   int n2 = 144;
   if (n2 < n1) {
       n1 = 10;
   }
   System.out.println("n1 = " + n1);
   
   ```
What is its output?
   
   `n1 =`

7. (3 points) Consider the following code segment.
   ```java
   String s1 = "wahoo";
   String s2 = "wahoo";
   if (s2.equals(s1)) {
       s1 = "UVA";
   }
   System.out.println("s1 = " + s1);
   
   ```
What is its output?
   
   `s1 =`

8. (3 points) Consider the following code segment.
   ```java
   String s1 = new String("wahoo");
   String s2 = new String("wahoo");
   if (s2.equals(s1)) {
       s1 = "UVA";
   }
   System.out.println("s1 = " + s1);
   
   ```
What is its output?
   
   `s1 =`

9. (4 points) Consider the following code segment?
   ```java
   C n1 = new C();
   C n2 = new C();
   n1.increment();
   n2.increment()
   System.out.println( n1.toString() );
   System.out.println( n2.toString() );
   
   ```
What is its output?
   
   `( c1 = c2 = )`
10. (4 points) Does the following program compile? Why?

```java
public class DemoB {
    public static void main(String[] args) {
        B b1 = new B();
        B b2 = b1;
        int v = b1.b;
        System.out.println(v);
    }
}
```

11. (2 points) Does the following program compile? Why?

```java
public class DemoA {
    public static void main(String[] args) {
        A a = new A();
        System.out.println(a);
    }
}
```

12. (4 points) Rewrite the following code segment using proper indentation.

```java
if (n == 1) { i = 1; } else { if (n != 2) { i = 2; } else { i = 3; } }
```
Questions 13 – 15 consider the following code segment.

```java
if ( i != 4 ) {
    if ( (i + j) < 6 ) {
        System.out.println("A");
    } else {
        System.out.println("B");
    }
} else if ( i > j ) {
    System.out.println("C");
} else {
    if ( j == 3 ) {
        System.out.println("D");
    } else {
        System.out.println("E");
    }
}
```

13. (4 points) If i is 6 and j is 5, what is the output?

14. (4 points) If i is 4 and j is 5, what is the output?

15. (4 points) Give values for i and j that cause D to be displayed.

   i =     j =

16. (8 points) Write a default constructor for class A initializes the instance variables to the int value 1.

17. (6 points) Write an appropriately named accessor for class A that returns the value of the v1 attribute of the invoking object.
18. (6 points) Write an appropriately named mutator for class A, which has a single int parameter f1. The mutator sets the v1 attribute of the invoking object to f1.

19. (7 points) Write an equals() method for class A. The method should return true if and only if the actual parameter is an A object whose attributes match the attributes of the invoking object.

20. (4 points) Complete the following code segment in the following manner.
   • a1 references a new default constructed A object.
   • a2 references a new A object constructed so that its attributes both equal 10.

   A  a1 =
   A  a2 =
21. (10 points) Write a program named `ProcessTwo.java`. The program prompts and extracts an integer number from standard input. If the first number is less than 5 then the program displays "Wahoo"; otherwise it displays "Cavalier". Commenting and input echoing is not necessary.