CSE 501N - Fall 2009
Quiz #1

Name _____________________

Short Answer (5 Points)

1.) **Control Flow** is the order of execution of statements in a program.

2.) We create objects in Java with a class’s **Constructor**.

3.) **Abstraction** is the process of hiding implementation details.

4.) **Encapsulation** is the process of protecting access to an object’s instance variables in order to maintain a stable state.

True or False (2 Points)

5.) (True / False) - It is illegal for a method with a `void` return type to have a `return` statement.

*Rationale: A method can have a return statement, but may not return a value, e.g.:

```java
return;
```

6.) (True / False) - Overloading a method is legal only if the overloaded methods have exactly the same method signature.

*Rationale: Overloaded methods may have the same method name, but must have different signatures.

Short Answer (3 Points)

7.) Evaluate the following expression for the variable `balance`.

```java
float balance = 1000;
balance = (3/2) * balance;
```

*balance evaluates to 1000. The coefficient preceding it in the second statement is comprised of integer operands. This makes it evaluate to 1, since an integer is incapable of storing the fractional portion of the result (0.5).*

8.) Give at least one way in which the second statement in Question 7 could be changed to achieve the intended result.

1.) Change at least one of the operands of the coefficient expression to be a floating-point constant:

```
(3.0/2)
```
2.) Cast the one of the coefficient operands to a double:

\[(\text{double}) 3/2\]

9.) Re-write the assignment from Question 7 to use the *= assignment operator.

\[\text{balance} *= (3/2);\]

// or

\[\text{balance} *= (3.0/2);\]

10.) If the variable \text{degrees} is a double, the expressions \((\text{degrees}-32) \times \frac{5}{9}\) evaluates to a different result than the statement \(\frac{5}{9} \times (\text{degrees}-32)\). Explain why this is so. \text{Hint: Think about operand types and operator precedence.}

\text{Since degrees is a double, the result of the expression } (\text{degrees}-32) \times \frac{5}{9} \text{ is a double. Because operators of equal precedence evaluate from left to right, the former expression then multiplies a double by the integer constant 5, promoting the result to a double, and then again to divide the result by the integer constant 9.}

\text{In the latter expression, because } \frac{5}{9} \text{ is the left-most portion of the expression, the division is performed with the two integer operands, resulting in an integer result of 0.}