

Pencil & Paper 02

1. What is a method?

In Java functions are referred to as *methods*. *Methods* are nested within classes and typically perform operations on associated fields. Generally speaking, *methods* accept arguments, perform various operations, and return data types. Our textbook succinctly states that "the actions an object can take are called *methods*" (36).

2. What is a class? What is an object?

A *class* is the skeleton of a data type. An *object* is an instantiation of a particular *class*. According to our textbook a *class* is "the name for a type whose values are objects" while *objects* are "entities that store data and can take actions" (36).

3. Do all objects of the same class have the same methods?

Yes, this is what allows the same operations to be performed on different instances of the same class.

4. Explain encapsulation.

Encapsulation essentially refers to the fundamental advantages offered by object-oriented programming languages. Data and the actions performed on data are available to objects of a class, but are typically hidden from objects of other classes. This promotes better programming practices while it also protects data from being modified by external sources.

5. What is an algorithm?

A computation that modifies data in an intended manner. According to our textbook, and algorithm is "a set of precise instructions that leads to a solution" (134).

6. What is pseudocode?

Pseudocode describes through basic syntax and comments what the program should be doing. *Pseudocode* is eventually replaced by actual code that performs the described actions. According to our textbook, *pseudocode* is "a mixture of programming language and human language" (134).

7. What attributes would you want for a class that represents a movie? List a minimum of three (3) attributes.

A number of attributes could be used to describe a class for movies, such as:

```
String name;  
String director;  
String importantActor01;  
String importantActor02;  
String importantActor03;  
int yearOfRelease;  
float averageRating;  
float currentPrice;  
boolean availableOnDVD;  
boolean availableOnVHS;  
boolean availableOnBetamax;  
boolean availableOnBluRay;
```

```
boolean availableOnHDDVD;  
boolean availableOnYouTube;
```

8. What is a syntax error?

A *syntax error* is a statement within ones code that has been typed incorrectly, such as:

```
string myString;
```

The above would cause a syntax error because a string is an object and therefore must be capitalized. Our textbook describes the syntax error as a "grammatical mistake in [a] program" (12).

9. What is a run-time error?

A *runtime error* is an unhandled exception thrown somewhere within the program. *Run-time errors* can cause programs to terminate prematurely. Our textbook says that *run-time errors* are "not detected until [a] program is run" (12).

10. What would be three (3) sets of inputs that you would use to test a program that computes the difference (i.e., subtracts one from another) between two numbers?

Assuming that this question is referring to using a method within a class to perform a computation, three different variables could be used: two for each number for the subtraction and a one to store and then return the result. For example:

```
public int subtractNumbers(int firstNumber, int secondNumber) {  
    int answer;  
    answer = firstNumber - secondNumber;  
    return answer;  
}
```