

Exam Preparation Exercises

- 1) What is the difference between a Java Class and a Java Object?
- 2) What are class fields? Give examples
- 3) What are class methods? Give one example
- 4) How would you create an object of a given class, let's say an object of a CellPhone class?
- 5) When you issue the following command: `Banana myBanana = new Banana();`
 - What does the first "Banana" represent? (Pick one below)
 - i) Java reserved keyword
 - ii) object's name
 - iii) Class constructor
 - iv) Class name
 - What does "myBanana" represent? (Pick one above)
 - What is the "new"?
 - What is the "Banana()"?
- 6) How is a Class constructor called by some external program?
- 7) What does a Class constructor do (i.e., what is its main purpose)?
- 8) Can we have more than one type of constructor?
- 9) If a constructor has no input arguments, what is it called? And what such a constructor is normally used for?
- 10) Can we call the default constructor from a non-default constructor? Any reason to do so?
- 11) Imagine that a Cell phone has only three features:
 - Price
 - Model
 - Has or not three cameras

The basic cell phone model is Samsung, with no three cameras, and priced at \$450.00. However there is one more phone that can be bought in the local store: an Android, with three cameras and priced at \$550.00.

 - a) Create a class that could be used later to create Cell phones by creating:
 - The class fields
 - The class constructors (at least two based on the information above)
 - b) Have you used private or public in the class fields? What are the advantages of using private or public?
 - c) What is data encapsulation and how you achieve it in your Class?
 - d) How do you access class fields if they are encapsulated? Create what is necessary to access the three fields in the CellPhone class.
- 12) If we have multiple classes that have the same functionality, such as Street Bike, Off-road Bike, Cruise Bike, etc. How can we improve this implementation to avoid code repetition?
- 13) What is a super-class? What is a sub-class? What code should be contained in them (in terms of duplicated code and class-specific code)?
- 14) How do you make a class to be a sub-class of a super-class?
- 15) What is inheritance? Give examples.
- 16) What is a chain of inheritance?
- 17) What is method overload?
- 18) What is method override?
- 19) How can you create an array of Corolla cars? Give an example.
- 20) Can I add a Sienna car into that array?
- 21) What should I do to have a list of different types of car-specific objects?

22) What is Polymorphism?

23) toString() and equals() methods. Where are they originally implemented?

24) Should you override those two methods in your developed classes? Explain why.

25) Static methods versus non-static methods:

- What are the differences in terms of being related to an object or not. Give examples
- Based on some method description, provide examples on how to call a given static and non-static method

26) How to create a Java List? What is the advantage of a Java List when compared with the old fashion arrays?

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