Textbook Chapter 1, pages 1 through 14 Questions

1. What is a step-by-step description of how to accomplish a task?

An Algorithm is a step-by-step description of how to accomplish a task.

1. What is a list of instructions to be carried out by a computer?  
   A program is a list of instructions to be carried out by a computer
2. What does the CPU (central processing unit) execute?   
   The CPU executes instructions given by the program
3. How is RAM (random access memory) used?   
   RAM is used to store program data during execution
4. What is the difference between an operating system and an application?   
   An operating system runs on top of the hardware of the computer. An application runs on top of the operating system.
5. When the operating system runs an application program on your computer, what 3 items does the operating system do?   
   The instructions are loaded onto the hard disk, the memory is allocated, and the instructions are run through
6. A number composed of only 0s and 1s is called a binary number and is known as a digital number.
7. What is a compiler?   
   A compiler takes source code and converts it to bytecode
8. Java programs compile their high-level language code into an intermediate level known as bytecode. The advantage of not compiling directly to machine code is that it can be executed on many different machines.
9. What is a JVM?   
   The Java virtual Machine is the machine on which the source code is compiled and run
10. What program is needed to actually run a Java program?  
    The Java development Kit contains the compiler.
11. List 4 advantages of using Java, a high level language.   
    Java can run on almost any machine  
    The JVM takes care of low level details, such as garbage collection
12. List the 3 steps associated with programming in the Java environment.   
    The source code is written  
    The code is compiled into bytecode  
    An interpreter runs the bytecode
13. What is the output from the first step listed above? (Name the file extension.)   
    The source code is saved as .java
14. What is the output from the second step listed above? (Name the file extension.) The bytecode is saved as .class
15. To execute a Java program, a compiler and an interpreter are needed. Other languages only use one or the other. Why does Java use both? Java uses both so that there can be the intermediate step of bytecode so that it can be run on multiple machines.
16. In a Java program, all code must be contained within a source file, which contains classes, which contain methods.
17. What is the name of the special method required in all Java programs?  
    The main method:  
    public static void main(String[] args)

For the next two questions, you may need to search the web for an answer.

1. What is a procedural language?  
   Procedural Languages tell the computer what to do step by step.
2. What is an object-oriented language?  
   An object-oriented program contains a hierarchy of classes, and the program includes interaction with objects.