ANSWER TO NO.1.7 and 1.8:

1.7. Explain the two compilation phases of Java programs.

Ans:

The two compilation phases of Java programs:  
  
1. Compilation Phase:  
  
The Java source code (.java file) is compiled using the javac compiler.  
  
The compiler translates the Java code into bytecode stored in a .class file.  
  
  
  
2. Execution Phase:  
  
The JVM loads the .class file.  
  
The bytecode verifier checks the bytecode for security issues.  
  
The Java interpreter (JVM) executes the bytecode line by line or optimizes it using Just-In-Time (JIT) compilation.

1.8. One of the world’s most common objects is a wrist watch. Discuss how each of the following terms and concepts applies to the notion of a watch: object, attributes, behaviors, class, inheritance (consider, for example, an alarm clock), modeling, messages, encapsulation, interface and information hiding.9

Ans:

Applying object-oriented concepts to a wristwatch:  
  
Object: A wristwatch is an object.  
  
Attributes: Color, size, material, brand, battery life.  
  
Behaviors: Telling time, setting an alarm, displaying date.  
  
Class: A general category of watches (e.g., digital watches, analog watches).  
  
Inheritance: An alarm clock is a subclass of a watch with additional features.  
  
Modeling: Designing different types of watches before production.  
  
Messages: User interactions, such as setting the time.  
  
Encapsulation: The internal mechanism of the watch is hidden from the user.  
  
Interface: The display and buttons that allow interaction.  
  
Information Hiding: The battery mechanism is not visible to the user.