**Chapter 3**

**Knowledge Goals**

* To learn the basics of object-oriented programming
* To learn how to read the Application Programming Interface (API) of a predefined class in order to instantiate objects and call methods.
* To understand how classes are organized in the Java Class Library.
* To learn how to use some popular classes in the Java Class Library.
* To understand what the garbage collector is and how it works.
* To learn how to call static methods and use static data.
* To learn how to call factory methods to create objects.
* To understand the purpose of the wrapper classes.
* To understand the concepts of autoboxing and unboxing.

**Skill Goals**

*To be able to:*

* List the advantages of object-oriented programming.
* Instantiate an object of a predefined class, given its API.
* Call methods of a predefined class, given its API.
* Create String objects and call methods to retrieve the length of a String, search Strings, extract substrings or characters, or convert String objects to uppercase or lowercase.
* Create and use DecimalFormat objects to format numbers for output.
* Create and use a Random object to generate a random number.
* Create and use a Scanner object to input data from the keyboard.
* Call methods and use static constants of the Math class to perform calculations.
* Create and use a NumberFormat object to format numbers for output.
* Input data and output messages using JOptionPane dialog boxes.
* Convert a String to an int, a float, or a double using the Integer, Float and Double wrapper classes.