Handout 3

Strings and String Class

Examples: objects of class string:

- “This is a short string”
- “a”
- “”
- “123.5”
- “”

Examples: Declaring a variable of class String, assigning values to string variables, Concatenation (+).

1. String name, lastName;
   name = “John”;  
   lastName = “Lennon”;  
   String theBeatle = name + “ ” + lastName;

2. Java converts primitive type values that are concatenated with a string into strings automatically.

   What does the following segment print?

   String resOne = “5 and 3” + 5 + 3;
   String resTwo = “5 and 3” + (5 + 3);
   System.out.println (resOne);
   System.out.println (resTwo);

Variables of class type store references to the object. Consider Example 1 from above.

name   →   John

lastName   →   Lennon

The index of a character within a string is an integer starting at 0 for the first character and gives the position of the character.
String **methods** (see chart on page 71) include methods for:

- finding out the length (i.e. number of characters in a string) - `length()`
- extracting a character at a certain position – `charAt(position)`
- extracting substrings from a string – `substring(start), substring(Start, End)`
- checking if a string contains another as a substring – `indexOf(aStr), indexOf(aStr, Start)`
- string comparison – `equals(anotherStr), compareTo(anotherString)`

Most of these methods require parameters to be passed, and return a certain value.

**Example: Notice the syntax of invoking a method:**

```java
String theBeatle = "John Lennon";
String theStone = "Keith Richards";

int len;
len = theBeatle.length();
System.out.println("length: " + len); // prints 11

char theCharAtPos3 = theBeatle.charAt(3);
System.out.println("the character is" + theCharAtPos3); // prints n

String nameOfBeatle = theBeatle.substring(0,4);
System.out.println (nameOfBeatle); // prints John

int pos; // check if theStone contains substring "John"
pos = theStone.indexOf ("John");
System.out.println(pos); // prints -1, i.e. "John" not found

pos = theStone.indexOf ("Richard");
System.out.println(pos); // prints 6
System.out.println (theBeatle.equals(theStone)); // prints false
```

**Practice problems:**

- A course ID is a string that has the following format: it starts with two letters followed by the dash (`-`) and any number of digits, e.g. CS-230, MA-1220, CH-12. Write a program that reads in a course ID from the user and prints out the number part of the ID separately.

- How would you extract the letter and the number parts of a course ID that may have any number of letters, followed by a single dash and any number of digits, e.g. COMP-230, LIT-31, MATH-645?