Reading Material

- The String data type. pp 179-183 in section 3.3 of the text.
- Command line arguments. Class notes.
- Conditionals. Chapter 4 of textbook.

Exercises

1. **Reverse.** Write a method printReverse that accepts a string as argument and prints the characters in opposite order. The signature of the method should be:
   ```
   public static void printReverse(String str)
   ```
   Use the method to write a program that takes an integer command line argument N followed by N strings and prints each of the strings in its reverse order.

2. **Reverse2.** Write a method stringReverse that accepts a string as argument and returns a string with the characters in opposite order (the method should not print anything to the console). The signature of the method should be:
   ```
   public static String stringReverse(String str)
   ```
   Hint: The method should build a string one character at a time using the + operator, starting with the empty string "". Use this method to rewrite the program above that takes an integer command line argument N followed by N strings and prints each of the string in its reverse order.

3. **Vowels.** Write a static method isVowel that returns true or false depending on whether its argument is a vowel or a consonant:
   ```
   public static boolean isVowel(char c)
   ```
   Use the method above to write a program Vowels.java that takes a string argument on the command line and prints the number of vowels in the string.

4. **Quadrant.** Write a program Quadrant that takes the x-y coordinates of a point in a Cartesian plane (assumed to be integers). The program should output a message indicating whether the point is the origin, is located on the x axis, is located on the y axis, or appears in a particular quadrant. Examples:
   ```
   (0,0) is the origin
   (4,0) is on the x-axis
   (0,-3) is on the y-axis
   (-2,3) is in the second quadrant
   ```

5. **LeapYear.** Write a program LeapYear that takes a positive integer command line argument representing a year number and prints true if the year is leap and false otherwise. A leap year is a year divisible by 4 but not by 100, or is divisible by 400. You may *not* use a conditional statement in your program. You will need to write an appropriate Boolean expression that evaluates to the correct true/false answer.

6. **Leap5.** Write a method that returns a boolean value if its argument is a leap year:
   ```
   public static boolean isLeap(int year)
   ```
   and use it to write a program Leap5 that takes 5 positive integers as command line arguments and prints only the years that are not leap.

7. **BMI.** The body mass index (BMI) is the ratio of the weight of a person (in kilograms) to the square of the height (in meters). Write a program BMI.java that takes two command-line arguments, weight and height, computes the BMI, and prints out the corresponding BMI category:
   - Starvation: less than 15
   - Anorexic: less than 17.5
   - Underweight: less than 18.5

- Ideal: greater than or equal to 18.5 but less than 25
- Overweight: greater than or equal to 25 but less than 30
- Obese: greater than or equal to 30 but less than 40
- Morbidly Obese: greater than or equal to 40

8. **SumPrimes.** Write a program that takes a command line argument N and a sequence of N positive integers and prints the numbers that are prime only, followed by their sum. Hint: Write a method with the following signature, that returns a boolean value indicating whether an integer is prime or not.

```
public static boolean isPrime(int n)
```

Submission Instructions and Notes

- As usual, submit your commented source code and sample runs in a zip file named s#_asst3_*netid*, where *#* is your section number (between 1 and 9) and *netid* stands for your AUBnet user name.