Homework Assignment 1

Basic Java and `if` statements

Directions: Please complete as many of the following as possible. If you can't complete all of them, it's alright. These questions are meant to be difficult. At the minimum, complete the first 3 questions. Feel free to collaborate with your peers on the problems, but please note that all submitted work must be your own work. Also if you don't know a certain method, (for example, you want to know what `Math.pow(a,b)` is) feel free to look it up online. That being said, plagiarism will not tolerated. Also as a note to parents, I would appreciate it if you did not help your children (give them the answer). Feel free to give them advice, but please do not straight out give them the answer.

Q1. `compareTo(int a, int b)`: Your goal is to compare `a` to `b` and return a number that represents the relationship between the two. If `a` is greater than `b` return 1. If `a` is less than `b`, return -1. If `a` is equal to `b` return 0.

Q2. `evenAndMultiple(int x)`: If a number is both even and a multiple of 7, then return `true`. Otherwise, return `false`.

Q3. `isSpecial(double a)`: A number is special if $\frac{a^2}{3}$ is even or if $a + \frac{a}{2} * 3$ is even. You may assume that $a < 1000$. Test cases will not be provided for this method and you will need to test them on your own.

Q4. `calcValue(String a)`: The value of a string is determined by the length of the string and a variety of other factors. If the length of a string is even, then the value of the string is calculated by multiplying the length of the string by 7. If this value is divisible by 3, then divide the value of the string by 3. If both of these conditions are met, return the value of the number. Otherwise, just return 0.

Q5. `reverseNumber(int x)`: Given `x`, you need to reverse the number. For example, if the input is 1992, you need to return 2991. Note that `x` will always be less than 10,000 and greater than 1,000.

Note: All of these problems can be solved without the use of a loop. You may use a loop if you wish, but know that adding a loop may make the problem more complex.