

# Recursion - Practicing Recursion

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## 1 SUMMARY

For this homework, you will be practicing writing recursive methods by implementing four methods. Your summary this week:

1. Create a project in Eclipse and make a class called *Recursion*
2. Implement the four methods described below. Your methods **MUST** be recursive.
3. Write your own test cases to ensure your four methods work.
4. **FILES TO DOWNLOAD:** None
5. **FILES TO SUBMIT:** Recursion.java

### 1.1 FOUR RECURSIVE METHODS

Once you have your Recursion.java file set up, implement the four methods described below. All of your methods must be recursive. You will fail this homework assignment if your methods are not recursive. You may add additional helper recursive methods (as we saw in class) or other useful methods to make your implementation easier.

```

1    /**
      * This method takes in an array a and reverses
3    * the order of its contents
      * example: if a is {1,2,3,4,5} it will become {5,4,3,2,1}
5    */
    static void reverse(int[] a);
7
9    /**
      * This method takes in an array a, and returns
11   * the sum of the EVEN ELEMENTS only
      * example: if a is {1,2,3,4,5} the method return 2+4=6
13   */
    static int sum(int[] a);
15
17   /**
      * This method accepts a number n and a target.
19   * Prints out all of the numbers that contain
      * exactly n digits (leading 0s included)
21   * whose digits sum to the target.
      * example: n=2 and target=2 prints out 2 (really 02), 20, and 11
23   */
    static void targetSum(int n, int target);
25
27   /**
      * This method accepts an integer value and
      * converts the value x into a binary string of 1s and 0s
29   * example: x=5 would return "101"
      */
31   static String decToBinary(int x);

```

After implementing each method, make sure to write your own test cases to ensure your methods work. The grader will run your code with their own test cases.