

Loops and Arrays

This exercise is comprised of various problems that will give you the opportunity to practice what you have learned related to loops and arrays.

Learning Objectives

After completing this exercise, students will understand:

- How to iterate (loop through) arrays to solve complex problems.
- How to access items in an array with an index.
- How to create arrays.
- How to use loops to execute blocks of code multiple times.

Evaluation Criteria & Functional Requirements

- The project must not have any build errors.
- Unit tests pass as expected.
- Appropriate variable names and data types are being used.
- Code is presented in a clean, organized format.
- Loops and arrays are being used appropriately.

Getting started

- Import the loops-arrays-exercises project into Eclipse.
- Right-click on the project, and select the **Run As -> JUnit Test** menu option.
- Click on the **JUnit** tab to see the results of your tests and which passed / failed.
- Provide enough code to get a test passing.
- Repeat until all tests are passing.

Tips and Tricks

- **Note: If you find yourself stuck on a problem for longer than fifteen minutes, move onto the next, and try again later.**
- Before each method, there is a description of the problem that needs to be solved, as well as examples with expected output. Use these examples to get an idea of the values you need to write your code around. For example, in the comments above the `sum2` method, there is a section that includes the method name, as well as the expected value that will be returned for each method call. The following example signifies that when the method is called with `[1, 2, 3]`, it will return 3, when it is called with `[1, 1]`, it will return 2, and when it is called with `[1, 1, 1, 1]`, it will return 2:

```
sum2([1, 2, 3]) → 3  
sum2([1, 1]) → 2  
sum2([1, 1, 1, 1]) → 2
```

- When you are trying to solve these sorts of problems, it is often helpful to keep track of the state of variables on a piece of paper as you are working through your code.
- The output of the test run can provide helpful clues as to why the tests are failing. Try reading the output of a failing test for more information that could be valuable when troubleshooting.
- You can also run the tests in debug mode when executing the tests. This will allow you to set a "breakpoint", which will then halt the code at certain points in the editor. You can then look at the values of variables while the test is executing, and can also see what code is currently being executed. Don't hesitate to use the debugging capabilities in Eclipse to help resolve issues.