

# COMP5111 Assignment 2 Task 3 LLM Report

## Problem

The problem I use LLMs to solve is generating tests for a given method, aiming to achieve high branch coverage.

## Prompt

Please generate 5 tests for the following method with high branch coverage:

```
/**
 * Reverses a portion of the given array.
 *
 * @param array the array to reverse
 * @param from the starting index of the portion to reverse (inclusive)
 * @param to the ending index of the portion to reverse (inclusive)
 * @return the reversed array, or null if the indices are invalid
 */
public int[] reverse(int[] array, int from, int to) {
    if (!(0 <= from && from <= to && to < array.length))
        return null;
    for (--to; from < to; ++from, --to)
        swap(array, from, to);
    return array;
}
```

## Justification

I directly ask GPT to generate tests and emphasize on the branch coverage. Some of the tests fail and help me to locate the errors successfully.

Below is an example of GPT response:

Sure, here are 5 tests for the given method that aim to achieve high branch coverage:

Test 1: Test with valid indices

```
int[] array = {1, 2, 3, 4, 5};
int from = 1;
int to = 3;
int[] expected = {1, 3, 2, 4, 5};
int[] actual = reverse(array, from, to);
assertArrayEquals(expected, actual);
```

Test 2: Test with invalid indices

```
int[] array = {1, 2, 3, 4, 5};
int from = 3;
int to = 1;
int[] expected = null;
int[] actual = reverse(array, from, to);
assertArrayEquals(expected, actual);
```

Test 3: Test with from index at the beginning of the array

```
int[] array = {1, 2, 3, 4, 5};
int from = 0;
int to = 2;
int[] expected = {3, 2, 1, 4, 5};
int[] actual = reverse(array, from, to);
assertArrayEquals(expected, actual);
```

Test 4: Test with to index at the end of the array

```
int[] array = {1, 2, 3, 4, 5};
int from = 2;
int to = 4;
int[] expected = {1, 2, 4, 3, 5};
int[] actual = reverse(array, from, to);
assertArrayEquals(expected, actual);
```

Test 5: Test with single element array

```
int[] array = {1};
int from = 0;
int to = 0;
int[] expected = {1};
int[] actual = reverse(array, from, to);
assertArrayEquals(expected, actual);
```