Tutorial 5

Comment

Tutorial exercises should be done without a computer

1 Test Cases

The following class tracks how many passengers are on a bus.

```
public class Bus {
    public Bus(int capacity) {...}
    // how many on the bus right now
    public int getCurrent() {...}
    // average passengers between stops
    public int getAverageCount() {...}
    // Passenger changeover at a bus stop
    // Passengers get off before any new get on
    public void stop(int on, int off) {...}
}
```

1. What situations and inputs would you test? You don't need to specify expected output, but you should give reasons for choosing each input.

2 Black Box and White Box Testing

Consider the following method[1]:

```java
/**
 * Returns true if and only if numbers is an array of ascending
 * integers.
 *
 * @require numbers != null
 * @ensure \result is true iff for all indices j such that
 * 0 <= j < a.length - 1, a[j] <= a[j + 1]
 */
public boolean ascending(int[] numbers) {
    boolean result = true;
    for (int i = 0; i < numbers.length - 1; i++) {
        if (numbers[i] > numbers[i + 1]) {
            result = false;
        }
    }
    return result;
}
```

1. Provide a set of black-box test cases for the method. Each test case should include the input values, the expected return value or exception thrown, and a brief justification for the test case.

2. Provide a set of white-box test cases for the method. Again, each test case should include the input values, the expected return value or exception thrown, and a brief justification for the test case. It is OK to include test cases that are also listed in the answer to Question 3.1. Path coverage for loops is expected.

[1] Question taken from the 2013 final exam