Programming with Data Structures

Testing and JUnit

Coverage

ntroduction to program testing (JUnit)

ntroduction to the Eclipse development environme

Programming assignment 1

Introduction to Program Testing

What is testing?

Why is it important?

Why should you care?

Your assignments depend on it!

Black-box Testing

esting programs can occur at many different level
and in many different ways.

Input

Output

Black-box testing examines the
functionality of an application without
looking into its internal structure

White-box Testing

esting programs can occur at many different level
and in many different ways.

White-box testing examines the internal structures of an application as opposed to its functionality

Software Testing Process

Black-box and White-box testing can be used by one or more of the software testing methods

Unit Testing

Integration Testing

System Testing

Software Testing Process

Black-box and White-box testing can be used by one or more of the software testing methods

Unit Testing

Integration Testing

System Testing

Tests the *smallest testable parts* of a program.

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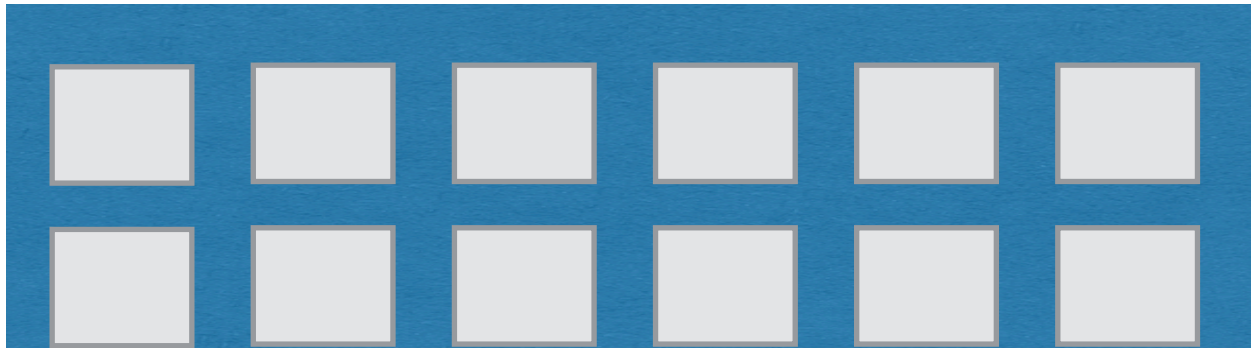

Software Testing Process

Black-box and White-box testing can be used by one or more of the software testing methods

Unit Testing

Integration Testing

System Testing

Tests the *groups of parts* of a program.

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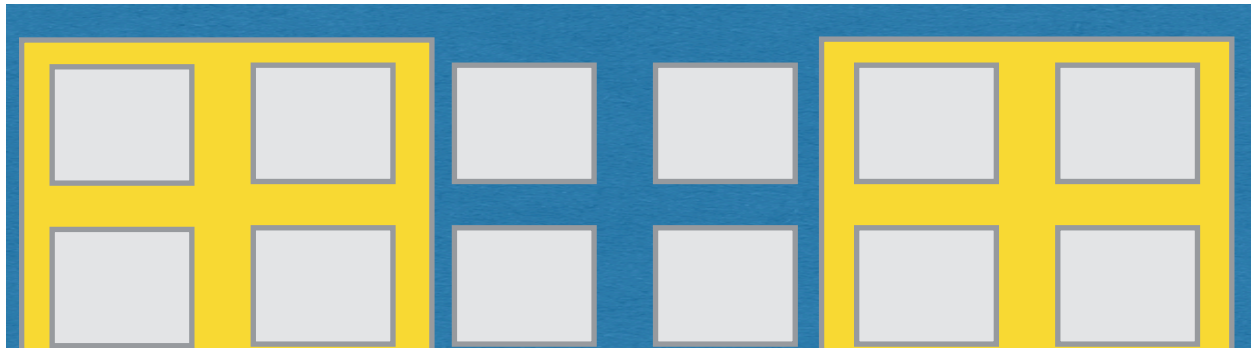

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Software Testing Process

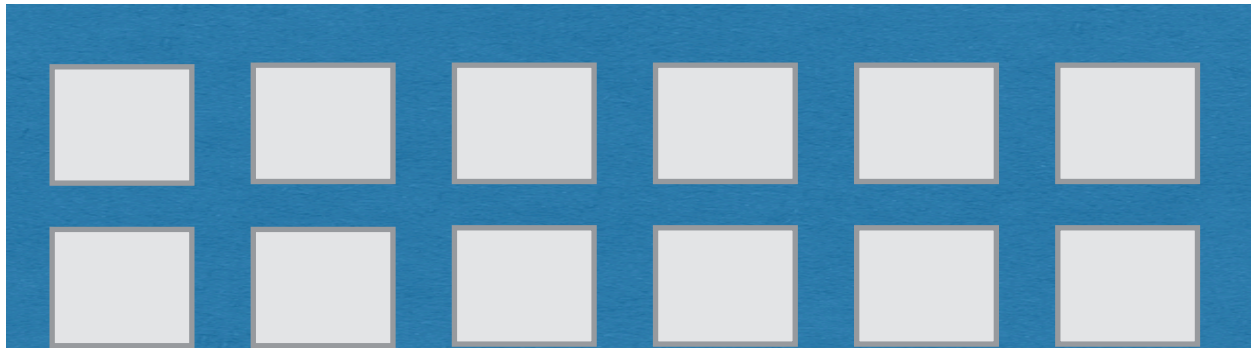
Black-box and White-box testing can be used by one or more of the software testing methods

Unit Testing

Integration Testing

System Testing

Tests the *entirety* of a program.



Software Testing Process

Black-box and White-box testing can be used by one or more of the software testing methods

Unit Testing

Integration Testing

System Testing

Can apply black-box and white-box testing.

Software Testing Process

Black-box and White-box testing can be used by one or more of the software testing methods

Unit Testing

Integration Testing

System Testing

Only black-box testing.

Testing in This Course

This course will use testing to evaluate your assignment submissions.

We will use both white-box and black-box in combination with unit, integration, and system testing.

Test cases are used to test many aspects of your submission. Each test case represents an important testable piece of your programs.

We will provide *public* test cases that you can use to evaluate your implementation before submission. We will also apply *private* tests during the grading process.

JUnit

JUnit is a testing framework for testing Java code both the **unit** and **integration** level of testing.

JUnit test cases focus on individual classes, however, they can be used to test the interaction between groups of classes.

Eclipse supports JUnit directly and provides a visual report of tests that pass/fail.

Eclipse & JUnit

First, let us take a look at Eclipse and how to create a new project and a class we can run.

Next, we will show you how to import the first assignment into Eclipse, run the code, and run the JUnit tests to test your code.