

LAB 2 – KIỂM THỬ NÂNG CAO (SOF3041)

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BÀI 1: THIẾT KẾ UNIT TEST (BLACK BOX)

Mục tiêu: Thiết kế test case cho chức năng đăng nhập bằng kỹ thuật Black Box – Bảng quyết định.

Điều kiện:

C1: Username đúng

C2: Password đúng

Bảng quyết định:

R1: C1 = Có, C2 = Có → Đăng nhập thành công

R2: C1 = Có, C2 = Không → Đăng nhập thất bại

R3: C1 = Không, C2 = Có → Đăng nhập thất bại

R4: C1 = Không, C2 = Không → Đăng nhập thất bại

Test case:

TC01: Username=admin, Password=123 → Thành công

TC02: Username=admin, Password=sai → Thất bại

TC03: Username=sai, Password=123 → Thất bại

TC04: Username=sai, Password=sai → Thất bại

BÀI 2: UNIT TEST VỚI JUNIT

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project Structure:** The project is named "testmaven". It contains a "src" directory with "main" and "test" packages. "main" has "App.java" and "Calculator.java". "test" has "AppTest.java" and "CalculatorTest.java".
- Code Editor:** The "App.java" file is open, showing a simple method `isEvenNumber`.
- Run/Debug Tool Window:** Shows the execution of "AppTest".
 - 2 tests passed.
 - Execution time: 36ms.
 - Test cases: `testEvenNumber2()` (35ms) and `testEvenNumber4()` (1ms).
 - Output log:

```
B:\jde-17.0.0.1\bin\java.exe ...
Connected to the target VM, address: '127.0.0.1:57316', transport: 'socket'
Disconnected from the target VM, address: '127.0.0.1:57316', transport: 'socket'
Process finished with exit code 0
```
- Console:** Displays the same test results and connection logs.

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project Structure:** The project is named "testmaven". It contains a "src" directory with "main" and "test" packages. "main" has "App.java" and "Calculator.java". "test" has "AppTest.java" and "CalculatorTest.java".
- Code Editor:** The "AppTest.java" file is open, showing JUnit Jupiter test cases.
- Run/Debug Tool Window:** Shows the execution of "AppTest".
 - 2 tests passed.
 - Execution time: 36ms.
 - Test cases: `testEvenNumber2()` (35ms) and `testEvenNumber4()` (1ms).
 - Output log:

```
B:\jde-17.0.0.1\bin\java.exe ...
Connected to the target VM, address: '127.0.0.1:57316', transport: 'socket'
Disconnected from the target VM, address: '127.0.0.1:57316', transport: 'socket'
Process finished with exit code 0
```
- Console:** Displays the same test results and connection logs.

BÀI 3: TEST CÁC PHÉP TOÁN CƠ BẢN

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project View:** Shows the project structure with files like `App.java`, `Calculator.java`, and `pom.xml`.
- Code Editor:** Displays the `AppTest.java` file containing test cases for a `Calculator` class.
- Bottom Panel:** Shows the test results for `AppTest`. It indicates 2 tests passed (total 36ms) and provides a log message about connecting to a target VM.

```
package com.main;
import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.*;

public class Calculator {
    public int add(int a, int b) { return a + b; }

    public int subtract(int a, int b) { return a - b; }

    public int multiply(int a, int b) { return a * b; }

    public int divide(int a, int b) {
        if (b == 0) {
            throw new IllegalArgumentException("Không được chia cho 0");
        }
        return a / b;
    }
}

class AppTest {
    @Test
    void testEvenNumber2() {
        assertEquals(2, calculator.add(1, 1));
    }

    @Test
    void testEvenNumber4() {
        assertEquals(4, calculator.add(2, 2));
    }
}
```

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project View:** Shows the project structure with files like `App.java`, `Calculator.java`, and `pom.xml`.
- Code Editor:** Displays the `CalculatorTest.java` file containing test cases for a `Calculator` class using JUnit Jupiter.
- Bottom Panel:** Shows the test results for `CalculatorTest`. It indicates 5 tests passed (total 36ms) and provides a log message about connecting to a target VM.

```
package com.main;
import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.*;

public class CalculatorTest {
    Calculator cal = new Calculator();

    @Test
    void testAdd() {
        // Phép + 2 + 3 = 5 , nếu code trả về đúng là 5 -> pass, sai -> fail
        assertEquals(5, cal.add(2, 3));
    }

    @Test
    void testSubtract() {
        assertEquals(1, cal.subtract(3, 2));
    }

    @Test
    void testMultiply() {
        assertEquals(6, cal.multiply(2, 3));
    }

    @Test
    void testDivide() {
        assertEquals(2, cal.divide(6, 3));
    }
}
```