

Setup Fixture Fixture

3. JUnit

JUnit ("Patterns Generate Architectures", Kent Beck Ralph Johnson, ECOOP 94) 가 JUnit

3.1 - TestCase

TestCase 가 (Gamma, E., et al. Design Patterns : Elements of Reusable Object-Oriented Software, Addison-Wesley, Reading, MA, 1995) " " " ..."

```
public abstract class TestCase implements Test {
    ...
}
```

TestCase TestCase 가

```
public abstract class TestCase implements Test {
    private final String fName;
    public TestCase (String name) {
        fName = name;
    }
}
```

```

public abstract void run ();
...
}

```

JUnit
가

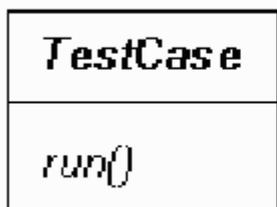
가

가

(Gamma, E., Applying

Design Patterns in Java, in Java Gems, SIGS Reference Library, 1997).

1 TestCase



3.2 in-run ()

TestCase

가

TestCase

가

가

가

가

가

"

가

가

"

()

가

가

```

public void run()
{
    setUp ();
    runTest ();
    tearDown ();
}

```

```
}
```

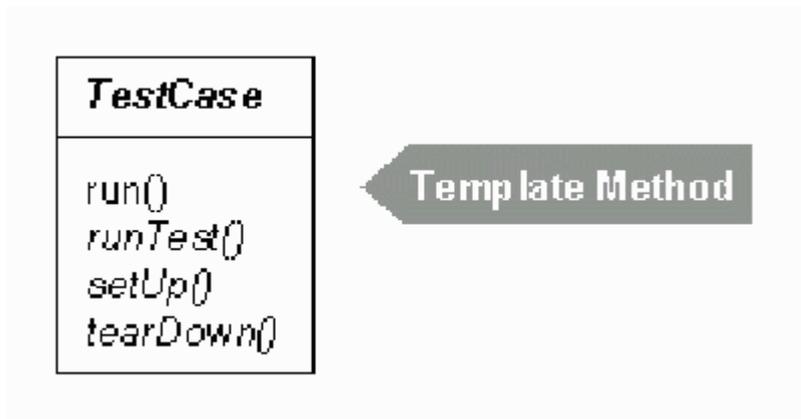
```
protected void runTest ()  
{  
    ...  
}
```

```
protected void setUp ()  
{  
    ...  
}
```

```
protected void tearDown ()  
{  
    ...  
}
```

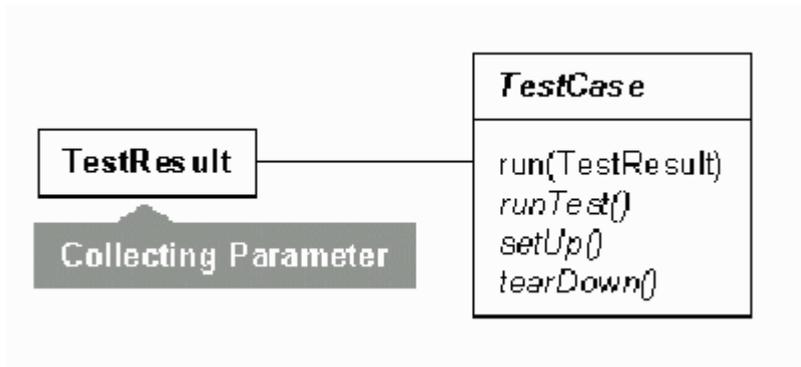
```
setUp    tearDown
```

2



3.3

TestCase가 가 ?
가
가 TestCase
가
Smalltalk (Beck, K. Smalltalk , Prentice Hall, 1996)
) 가
가
TestResult



가

```

JUnit
가
    ArrayIndexOutOfBoundsException
    AssertionError
        가 catch (1)
        (2)
    
```

```

public void run (TestResult result) {
    result.startTest (this);
    {
        runTest ();
    }
    catch (AssertionFailedError e) { // 1
        result.addFailure (this, e);
    }
    catch (Throwable e) { // 2
        result.addError (this, e);
    }
    {
        tearDown ();
    }
}
    
```

```

AssertionFailedError TestCase assert
JUnit assert
가
    
```

```

protected void assertTrue (boolean condition) {
    if (! condition)
        throw new AssertionError ();
}
    
```

```
AssertionFailedError (TestCase)가
TestCase.run () AssertionFailedError
```

```
AssertionFailedError {
public AssertionFailedError () {}
}
```

```
. TestResult
```

```
addError (, Throwable t) {
fErrors.addElement (new TestFailure (test, t));
}
```

```
addFailure (, Throwable t) {
fFailures.addElement (new TestFailure (test, t));
}
```

TestFailure

```
TestFailure Object {
protected Test fFailedTest
Throwable fThrownException;
}
```

```

                TestResult
                가
                TestResult
throw
    MoneyTest
    TestResult
    가
```

```
public void testMoneyEquals () {
    assertTrue (! f12CHF.equals (null));
    assertEquals (f12CHF, f12CHF);
    assertEquals (f12CHF, new Money (12, "CHF"));
    assertTrue (! f12CHF.equals (f14CHF));
}
```

```
JUnit TestResult
TextTestResult
UITestResult
JUnit Test Runner
TestResult
TestResult
HTMLTestResult
HTML
```

3.4 -TestCase

```
Command  
execute () (TestCase run () )
```

가

```
testMoneyEquals testMoneyAdd
```

Command

가

"

가

"

가

```
testMoneyEquals runTest MoneyTest  
runTest testMoneyEquals
```

```
TestMoneyEquals MoneyTest {  
public TestMoneyEquals () {super ( "testMoneyEquals"); }  
runTest () {testMoneyEquals (); }  
}
```

```
가  
가 가 가 JUnit  
가 가  
Java Java
```

```
TestCase test = new MoneyTest ( "testMoneyEquals" ) {  
protected void runTest () {testMoneyEquals (); }  
};
```

가
Pluggable Selector

Smalltalk
. Java



```

protected void runTest () throws Throwable {
  Method runMethod = null;
  try {
    runMethod = getClass (). getMethod (fName, new Class [0]);
  } catch (NoSuchMethodException e) {
    assertTrue ( "Method \" " + fName + "\" " " ", false);
  }
  try {
    runMethod.invoke (this, new Class [0]);
  }
  // InvocationTargetException IllegalAccessException
}
  
```

JDK 1.1 API

 public

 NoSuchMethodException

 가 가


```

TestCase Composite Leaf
가
TestSuite
TestSuite

```

```

TestSuite Test {
private Vector fTests = new Vector ();
}

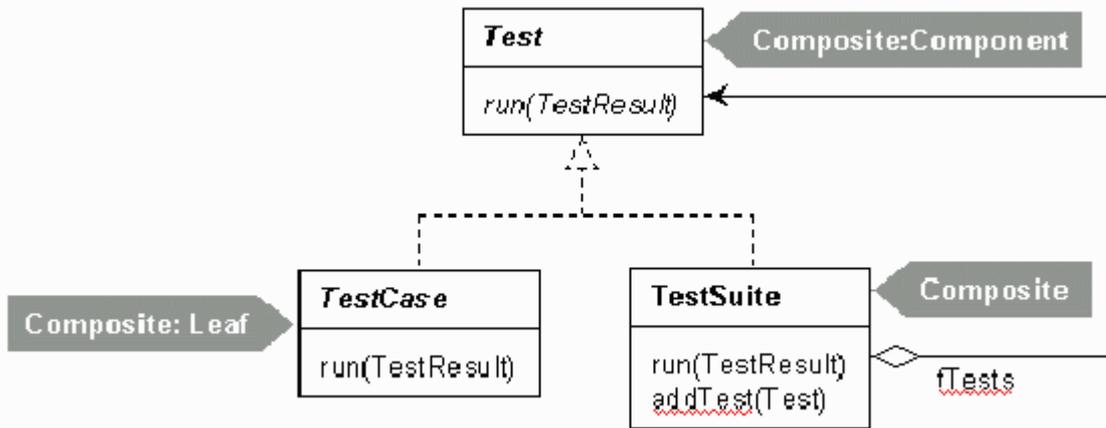
```

```
run ()
```

```

public void run (TestResult result) {
for (Enumeration e = fTests.elements (); e.hasMoreElements ();) {
Test test = (Test) e.nextElement ();
test.run ();
}
}

```



```
가 addTest
```

```

public void addTest ( ) {
fTests.addElement (test);
}

```

```

가
TestCase TestSuite Test
TestSuite
TestSuite
TestSuite

```

```

public static Test suite()
{
TestSuite suite = new TestSuite ();
suite.addTest (new MoneyTest ( "testMoneyEquals"));
}

```

```

suite.addTest (new MoneyTest ( "testSimpleAdd"));
}
    
```

```

JUnit
    static suite ()
        TestSuite
            "test"
    가
    
```

```

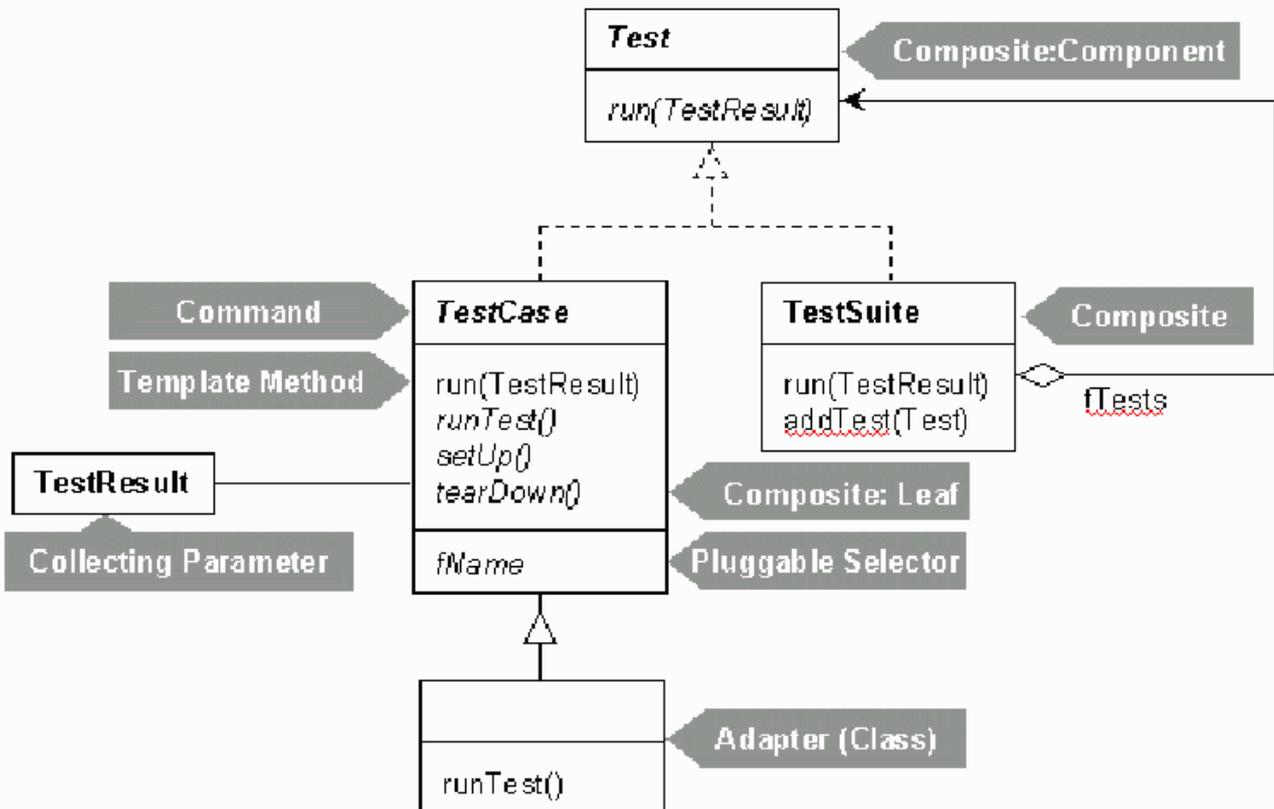
public static Test suite ()
{
    return new TestSuite (MoneyTest.class);
}
    
```

The original way is still useful when you want to run a subset of the test cases only.

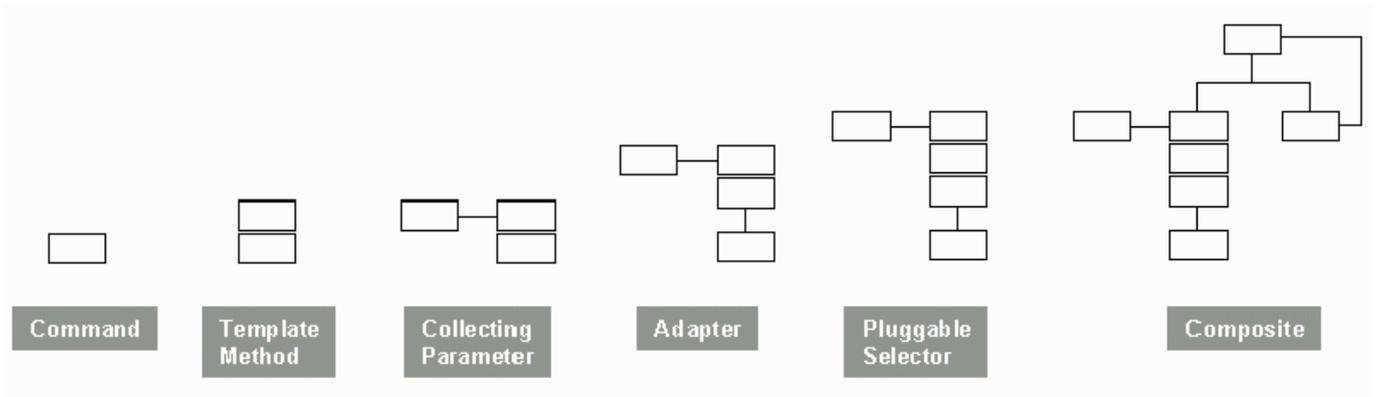
3.6

JUnit A Cook's Tour

JUnit



TestCase가 4
 “ ”
 JUnit
 Command TestCase , Template Method
 run .(가 6)

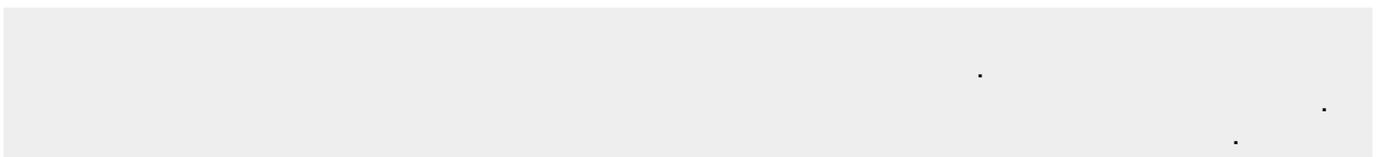


가 Composite
 , “ Composite ”

4.

가

Patterns



Pattern density

JUnit TestCase " "가
 가 가 가
 가 " "

Eat your own dog food

TestTest 가 ,
 JUnit 가

Intersection, not union

```
JUnit
(test.extensions)
TestDecorator
```

```
JUnit
JUnit, monomania
(
```

JUnit <http://www.junit.org>

5.

John Vlissides, Ralph Johnson, Nick Edgar

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