

SCREENSHOTS

1. SINGLETON PATTERN:

The image displays two screenshots of the Apache NetBeans IDE interface, showing the development environment for Java projects.

Screenshot 1 (Top): This screenshot shows the IDE with the following details:

- Projects:** FactoryPattern [main], FilterPattern, LAB7/DBO, LabSession_4, MultiThreadedProgramming, MultithreadJavaApplication, SingleObject [main].
- Source Editor:** The code for `MoveForward.java` is visible, containing assertions for state transitions.
- Test Results:** The `SingletonTest` test class has passed all tests, including `SingletonTest passed` and `testinstance passed (0.003 s)`.
- Output:** The build output shows "Hello World!" and "BUILD SUCCESSFUL (total time: 0 seconds)".

Screenshot 2 (Bottom): This screenshot shows the IDE with the following details:

- Projects:** FactoryPattern [main], FilterPattern, LAB7/DBO, LabSession_4, MultiThreadedProgramming, MultithreadJavaApplication, SingleObject [main].
- Source Editor:** The code for `MoveForward.java` is visible, containing assertions for state transitions.
- Output:** The build output shows "Hello World!" and "BUILD SUCCESSFUL (total time: 0 seconds)".

2. FAÇADE PATTERN:

FacadePattern - Apache NetBeans IDE 19

Source

```

76     systemOutRedirect.start();
77
78     // Run the main method
79     rover.main(new String[]{});
80
81     // Stop redirecting System.out and get the captured output
82     systemOutRedirect.stop();
83     String output = systemOutRedirect.getOutput();
84
85     // Verify the output contains the expected state transitions
86     assertEquals("Current State: Move Forward");
87     assertEquals("Current SubState: Accelerate");
88     assertEquals("Current State: Move Forward");
89     assertEquals("Current SubState: Constant Speed");
90     assertEquals("Current State: Move Forward");
91     assertEquals("Current SubState: Decelerate");
92     assertEquals("Current State: At Rest");
93     assertEquals("Current State: Move Backward");
94     assertEquals("Current SubState: Accelerate");
95     assertEquals("Current State: Move Backward");
96     assertEquals("Current SubState: Constant Speed");
97     assertEquals("Current State: At Rest");
98
99     // Additional assertions can be added based on the expected output
100 }

```

Test Results

Tests passed: 100.00 %

- All 3 tests passed. (0.181 s)
- ShapeTester passed
 - testingCircle passed (0.005 s)
 - testingSquare passed (0.0 s)
 - testingRectangle passed (0.001 s)

Output: Finished building FacadePattern (test).

FacadePattern - Apache NetBeans IDE 19

Source

```

76     systemOutRedirect.start();
77
78     // Run the main method
79     rover.main(new String[]{});
80
81     // Stop redirecting System.out and get the captured output
82     systemOutRedirect.stop();
83     String output = systemOutRedirect.getOutput();
84
85     // Verify the output contains the expected state transitions
86     assertEquals("Current State: Move Forward");
87     assertEquals("Current SubState: Accelerate");
88     assertEquals("Current State: Move Forward");
89     assertEquals("Current SubState: Constant Speed");
90     assertEquals("Current State: Move Forward");
91     assertEquals("Current SubState: Decelerate");
92     assertEquals("Current State: At Rest");
93     assertEquals("Current State: Move Backward");
94     assertEquals("Current SubState: Accelerate");
95     assertEquals("Current State: Move Backward");
96     assertEquals("Current SubState: Constant Speed");
97     assertEquals("Current State: At Rest");
98
99     // Additional assertions can be added based on the expected output
100 }

```

Output - FacadePattern (run)

```

run:
Circle::draw()
Rectangle::draw()
BUILD SUCCESSFUL (total time: 0 seconds)

```

3. FACTORY PATTERN:

NetBeans IDE 19 - FactoryPattern - Apache NetBeans IDE 19

Projects x Services

- > 101-app [main]
- > Assignment5
- > Clas_task_1
- > FacadePattern [main]
- > FactoryPattern [main]
 - Source Packages
 - <default package>
 - Circle.java
 - FactoryPatternDemo.java
 - Rectangle.java
 - Shape.java
 - ShapeFactory.java
 - Square.java
 - Test Packages
 - <default package>
 - FactoryTest.java
 - Libraries
 - Test Libraries

Navigator x Members

Source History Start Page MoveForward.java x MoveBackward.java x StateTest.java x

```

76     systemOutRedirect.start();
77
78     // Run the main method
79     rover.main(new String[]{});
80
81     // Stop redirecting System.out and get the captured output
82     systemOutRedirect.stop();
83     String output = systemOutRedirect.getOutput();
84
85     // Verify the output contains the expected state transitions
86     assertEquals(output.contains("Current State: Move Forward"));
87     assertEquals(output.contains("Current SubState: Accelerate"));
88     assertEquals(output.contains("Current State: Move Forward"));
89     assertEquals(output.contains("Current SubState: Constant Speed"));
90     assertEquals(output.contains("Current State: Move Forward"));
91     assertEquals(output.contains("Current SubState: Decelerate"));
92     assertEquals(output.contains("Current State: At Rest"));
93     assertEquals(output.contains("Current SubState: Move Backward"));
94     assertEquals(output.contains("Current State: Accelerate"));
95     assertEquals(output.contains("Current SubState: Move Backward"));
96     assertEquals(output.contains("Current SubState: Constant Speed"));
97     assertEquals(output.contains("Current State: At Rest"));
98
99     // Additional assertions can be added based on the expected output
100 }

```

Test Results x

StateTest x SingletonTest x ShapeTester x FactoryTest x

All 3 tests passed: 0.268 s Tests passed: 100.00 %

 - FactoryTest passed
 - testCircle passed (0.003 s)
 - testSquare passed (0.0 s)
 - testRectangle passed (0.001 s)

Output x Finished building FactoryPattern (test).

NetBeans IDE 19 - FactoryPattern - Apache NetBeans IDE 19

Projects x Services

 - > 101-app [main]
 - > Assignment5
 - > Clas_task_1
 - > FacadePattern [main]
 - > FactoryPattern [main]
 - Source Packages
 - <default package>
 - Circle.java
 - FactoryPatternDemo.java
 - Rectangle.java
 - Shape.java
 - ShapeFactory.java
 - Square.java
 - Test Package
 - <default package>
 - FactoryTest.java
 - Libraries
 - Test Libraries

Navigator x Members

Source History Start Page MoveForward.java x MoveBackward.java x StateTest.java x

```

76     systemOutRedirect.start();
77
78     // Run the main method
79     rover.main(new String[]{});
80
81     // Stop redirecting System.out and get the captured output
82     systemOutRedirect.stop();
83     String output = systemOutRedirect.getOutput();
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86     assertEquals(output.contains("Current State: Move Forward"));
87     assertEquals(output.contains("Current SubState: Accelerate"));
88     assertEquals(output.contains("Current State: Move Forward"));
89     assertEquals(output.contains("Current SubState: Constant Speed"));
90     assertEquals(output.contains("Current State: Move Forward"));
91     assertEquals(output.contains("Current SubState: Decelerate"));
92     assertEquals(output.contains("Current State: At Rest"));
93     assertEquals(output.contains("Current SubState: Move Backward"));
94     assertEquals(output.contains("Current State: Accelerate"));
95     assertEquals(output.contains("Current SubState: Move Backward"));
96     assertEquals(output.contains("Current SubState: Constant Speed"));
97     assertEquals(output.contains("Current State: At Rest"));
98
99     // Additional assertions can be added based on the expected output
100 }

```

Output - FactoryPattern (run)

```

run:
Inside Circle::draw() method.
Inside Rectangle::draw() method.
Inside Square::draw() method.
BUILD SUCCESSFUL (total time: 0 seconds)

```

Output x Finished building FactoryPattern (run).

4. STATE DESIGN PATTERN:

NetBeans IDE 12.1

StatePattern - Apache NetBeans IDE 12.1

Start Page | MoveForward.java | MoveBackward.java | StateTest.java

Source History Tools Window Help 99% 233.4/326.0MB

Projects Services

- > FacadePattern [main]
- > FactoryPattern [main]
- > FilterPattern
- > Lab7JDBC
- > LabSession_4
- > MultiThreadedProgramming
- > MultithreadJavaApplication
- > SingleObject [main]
- > Solution
- > StatePattern [main]
 - > Source Packages
 - > <default package>
 - > Test Packages
 - > <default package>
 - > StateTest.java
- > Libraries
- > Test Libraries
- > StatePattern2

Navigator Members

Members <empty>

StateTest

- StateTest()
- testMain()
- testPressRightPedal()
- testPrintStateAndSubState()

Output

```

76     systemOutRedirect.start();
77
78     // Run the main method
79     rover.main(new String[] {});
80
81     // Stop redirecting System.out and get the captured output
82     systemOutRedirect.stop();
83     String output = systemOutRedirect.getOutput();
84
85     // Verify the output contains the expected state transitions
86     assertEquals("Current State: Move Forward", output);
87     assertEquals("Current SubState: Accelerate", output);
88     assertEquals("Current State: Move Forward", output);
89     assertEquals("Current SubState: Constant Speed", output);
90     assertEquals("Current State: Move Forward", output);
91     assertEquals("Current SubState: Decelerate", output);
92     assertEquals("Current State: At Rest", output);
93     assertEquals("Current SubState: Move Backward", output);
94     assertEquals("Current State: Accelerate", output);
95     assertEquals("Current SubState: Move Backward", output);
96     assertEquals("Current SubState: Constant Speed", output);
97     assertEquals("Current State: At Rest", output);
98
99     // Additional assertions can be added based on the expected output
100 }

```

Test Results

StateTest Tests passed: 100.00 %

All 3 tests passed. (0.043 s)

- StateTest passed
 - testMain passed (0.004 s)
 - testPrintStateAndSubState passed (0.0 s)
 - testPressRightPedal passed (0.0 s)

102:1 INS

NetBeans IDE 12.1

StatePattern - Apache NetBeans IDE 12.1

Start Page | MoveForward.java | MoveBackward.java | StateTest.java

Source History Tools Window Help 99% 240.8/326.0MB

Projects Services

- > MultiThreadedProgramming
- > MultithreadJavaApplication
- > SingleObject [main]
- > Solution
- > StatePattern [main]
 - > Source Packages
 - > <default package>
 - > AtRest.java
 - > MoveBackward.java
 - > MoveForward.java
 - > Rover.java
 - > State.java
 - > SystemOutRedirect.java
- > Test Packages
- > <default package>
- > StateTest.java
- > Libraries
- > Test Libraries

Navigator Members

Members <empty>

Rover

- Rover()
- main(String[] args)

Output

```

76     systemOutRedirect.start();
77
78     // Run the main method
79     rover.main(new String[] {});
80
81     // Stop redirecting System.out and get the captured output
82     systemOutRedirect.stop();
83     String output = systemOutRedirect.getOutput();
84
85     // Verify the output contains the expected state transitions
86     assertEquals("Current State: Move Forward", output);
87     assertEquals("Current SubState: Accelerate", output);
88     assertEquals("Current State: Move Forward", output);
89     assertEquals("Current SubState: Constant Speed", output);
90     assertEquals("Current State: Move Forward", output);
91     assertEquals("Current SubState: Decelerate", output);
92     assertEquals("Current State: At Rest", output);
93     assertEquals("Current SubState: Move Backward", output);
94     assertEquals("Current State: Accelerate", output);
95     assertEquals("Current SubState: Move Backward", output);
96     assertEquals("Current SubState: Constant Speed", output);
97     assertEquals("Current State: At Rest", output);
98
99     // Additional assertions can be added based on the expected output
100 }

```

Output - StatePattern (run)

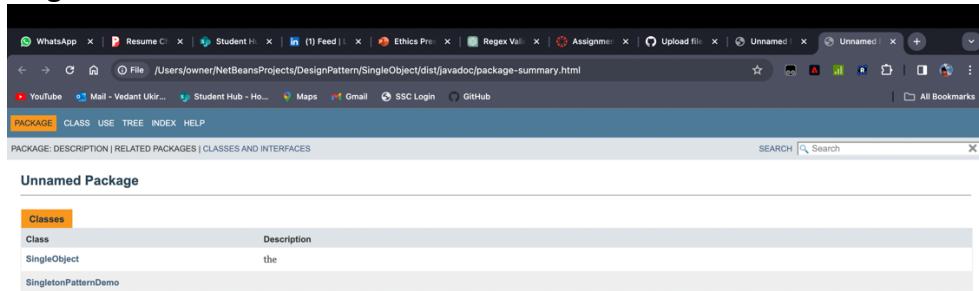
```

Current State: Move Backward
Current SubState: Accelerate
Error: Can only press Left Pedal thrice when in Decelerate State.
Unable to move.
Current State: Move Backward
Current SubState: Accelerate
Transitioning from Accelerate State to Decelerate State...
Current State: Move Backward
Current SubState: Decelerate
Transitioning from Decelerate State to At Rest State...
Current State: At Rest
Current SubState: None
BUILD SUCCESSFUL (total time: 0 seconds)
|
```

102:1 INS

5. JAVA DOC:

i) Singleton Pattern:

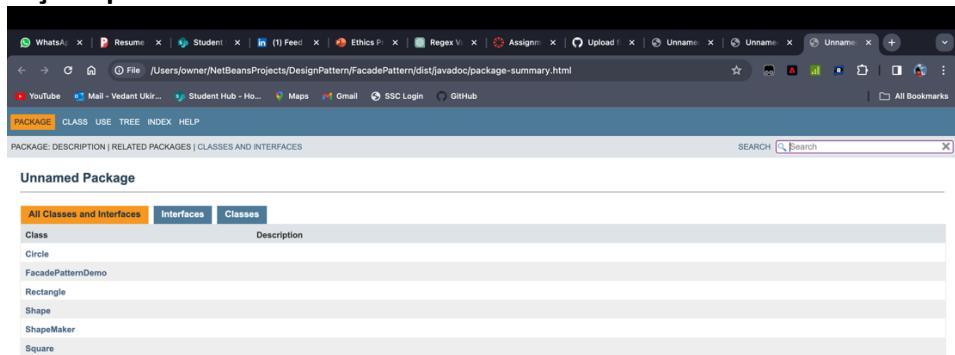


The screenshot shows a JavaDoc interface for the 'Singleton' package. The 'Classes' tab is selected, displaying a table with one entry:

Class	Description
SingleObject	the

Below the table, there is a link to 'SingletonPatternDemo'. The interface includes standard JavaDoc navigation tabs: PACKAGE, CLASS, USE, TREE, INDEX, and HELP.

ii) Façade pattern:



The screenshot shows a JavaDoc interface for the 'Facade' package. The 'All Classes and Interfaces' tab is selected, displaying a table with several entries:

All Classes and Interfaces	Interfaces	Classes	Description
Circle			
FacadePatternDemo			
Rectangle			
Shape			
ShapeMaker			
Square			

Below the table, there is a link to 'FacadePatternDemo'. The interface includes standard JavaDoc navigation tabs: PACKAGE, CLASS, USE, TREE, INDEX, and HELP.

iii) Factory Pattern:

The screenshot shows a Java package summary for the 'FactoryPatternDemo' package. The browser title bar indicates the file is located at '/Users/owner/NetBeansProjects/DesignPattern/FactoryPattern/dist/javadoc/package-summary.html'. The page has a dark blue header with tabs for PACKAGE, CLASS, USE, TREE, INDEX, and HELP. Below the header is a search bar labeled 'SEARCH' with a magnifying glass icon and a 'Search' button. The main content area is titled 'Unnamed Package' and contains a table with three columns: 'All Classes and Interfaces', 'Interfaces', and 'Classes'. The 'Classes' tab is selected, highlighted by an orange border. The table has two columns: 'Class' and 'Description'. The classes listed are Circle, FactoryPatternDemo, Rectangle, Shape, ShapeFactory, and Square.

All Classes and Interfaces	Interfaces	Classes
Class	Description	
Circle		
FactoryPatternDemo		
Rectangle		
Shape		
ShapeFactory		
Square		

iv) State Design Pattern:

The screenshot shows a Java package summary for the 'State' package. The browser title bar indicates the file is located at '/Users/owner/NetBeansProjects/DesignPattern/StatePattern/dist/javadoc/package-summary.html'. The page has a dark blue header with tabs for PACKAGE, CLASS, USE, TREE, INDEX, and HELP. Below the header is a search bar labeled 'SEARCH' with a magnifying glass icon and a 'Search' button. The main content area is titled 'Unnamed Package' and contains a table with three columns: 'All Classes and Interfaces', 'Interfaces', and 'Classes'. The 'Classes' tab is selected, highlighted by an orange border. The table has two columns: 'Class' and 'Description'. The classes listed are AtRest, MoveBackward, MoveForward, Rover, State, and SystemOutRedirect.

All Classes and Interfaces	Interfaces	Classes
Class	Description	
AtRest		
MoveBackward		
MoveForward		
Rover		
State		
SystemOutRedirect		