Chirayu Batra
21BCE5756

[This assignment is done with my team partner Jay Hansraj Khania 21BCE1394]

EXPERIMENT 9 - JUnit test cases for our Online Medicine Delivery App (MediNet)

Aim:

To develop JUnit test cases for a given Java Class and generate unit test report.

Steps Involved:

Steps in creating a JUnit Test case and Executing it in NetBeans and Eclipse Enviornment

A unit test is to test a smaller unit of code, e.g. methods. Writing a unit test to test the individual unit of code is one of the best development practices and helps to find bug earlier in the development cycle. Though there is another unit testing framework available in Java e.g. TestNG, JUnit has its own place among Java developers

The main difference between JUnit 4 and JUnit 3 is that, JUnit4 is based on annotation feature of Java 1.5 and easy to write, while JUnit 3 uses "test" keyword, to identify test methods.

Codes:

Java code:

```java
import java.util.ArrayList;
import java.util.List;

public class MedicineDeliverySoftware {

    private List<Medicine> medicines;

    public MedicineDeliverySoftware() {
        this.medicines = new ArrayList<>();
    }

    public void addMedicine(Medicine medicine) {
        this.medicines.add(medicine);
    }

    public List<Medicine> getMedicines() {
        return this.medicines;
    }

    public void placeOrder(String medicineName, int quantity) {
        Medicine medicine = this.getMedicineByName(medicineName);
        if (medicine == null) {
            throw new IllegalArgumentException("Medicine not found");
```

```java
        }

        if (quantity <= 0) {
            throw new IllegalArgumentException("Quantity must be greater than 0");
        }

        medicine.setQuantity(medicine.getQuantity() - quantity);
    }

    private Medicine getMedicineByName(String medicineName) {
        for (Medicine medicine : this.medicines) {
            if (medicine.getName().equals(medicineName)) {
                return medicine;
            }
        }

        return null;
    }
}
```

Testing code:

```java
import org.junit.Test;

public class MedicineDeliverySoftwareTest {

    @Test
    public void testAddMedicine() {
```

```java
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();
        Medicine medicine = new Medicine("Advil", 10);
        software.addMedicine(medicine);

        List<Medicine> medicines = software.getMedicines();
        assertEquals(1, medicines.size());
        assertEquals("Advil", medicines.get(0).getName());
        assertEquals(10, medicines.get(0).getQuantity());
    }

    @Test
    public void testPlaceOrder() {
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();
        Medicine medicine = new Medicine("Advil", 10);
        software.addMedicine(medicine);

        software.placeOrder("Advil", 5);

        assertEquals(5, medicine.getQuantity());
    }

    @Test
    public void testPlaceOrderWithInvalidMedicine() {
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();

        try {
            software.placeOrder("Tylenol", 5);
        } catch (IllegalArgumentException e) {
            assertEquals("Medicine not found", e.getMessage());
        }
    }

    @Test
    public void testPlaceOrderWithInvalidQuantity() {
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();
        Medicine medicine = new Medicine("Advil", 10);
        software.addMedicine(medicine);
```

```
    try {
        software.placeOrder("Advil", -5);
    } catch (IllegalArgumentException e) {
        assertEquals("Quantity must be greater than 0", e.getMessage());
    }
  }
}
```
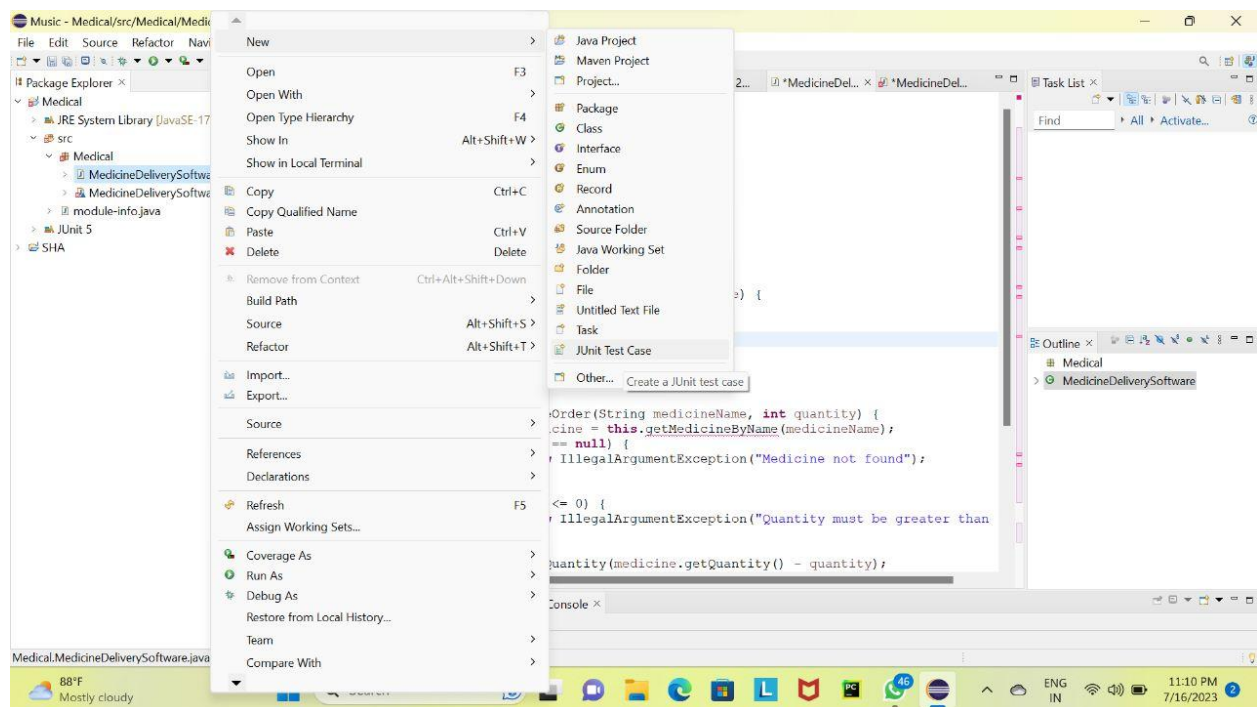
Output screenshots from Eclipse software:

Screenshot 1 — Eclipse context menu:

Music - Medical/src/Medical/MedicineD... — □ ✕
File Edit Source Refactor Navigate

Package Explorer
Medical
 JRE System Library [JavaSE-17]
 src
  Medical
   MedicineDeliverySoftware.ja
   MedicineDeliverySoftwareTe
  module-info.java
 JUnit 5
SHA

New ▸
Open   F3
Open With   ▸
Open Type Hierarchy   F4
Show In   Alt+Shift+W ▸
Show in Local Terminal
Copy   Ctrl+C
Copy Qualified Name
Paste   Ctrl+V
Delete   Delete
Remove from Context   Ctrl+Alt+Shift+Down
Build Path
Source   Alt+Shift+S ▸
Refactor   Alt+Shift+T ▸
Import...
Export...
Source   ▸
References   ▸
Declarations   ▸
Refresh   F5
Assign Working Sets...
Coverage As   ▸
Run As   ▸
Debug As   ▸
Restore from Local History...
Team   ▸
Compare With   ▸

Medical.MedicineDeliverySoftwareTest.java

Code visible:
```
st;

liverySoftware {
e> medicines;

erySoftware() {
new ArrayList<>();

ine(Medicine medicine) {
dd(medicine);

> getMedicines() {
cines;

(String medicineName, int quantity) {
e = this.getMedicineByName(medicineName);
null) {
llegalArgumentException("Medicine not found");

0) {
llegalArgumentException("Quantity must be greater than

tity(medicine.getQuantity() - quantity);
```

Outline
 Medical
 MedicineDeliverySoftware

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Screenshot 2 — Eclipse with New submenu:

Music - Medical/src/Medical/Medic...
File Edit Source Refactor Navi

New ▸   Java Project
Open   F3   Maven Project
Open With   ▸   Project...
Open Type Hierarchy F4   Package
Show In   Alt+Shift+W ▸ Class
Show in Local Terminal   Interface
Copy   Ctrl+C   Enum
Copy Qualified Name   Record
Paste   Ctrl+V   Annotation
Delete   Delete   Source Folder
Remove from Context   Java Working Set
   Ctrl+Alt+Shift+Down   Folder
Build Path   File
Source   Alt+Shift+S ▸ Untitled Text File
Refactor   Alt+Shift+T ▸ Task
Import...   JUnit Test Case
Export...   Other...   Create a JUnit test case
Source   ▸
References   ▸
Declarations   ▸
Refresh   F5
Assign Working Sets...
Coverage As   ▸
Run As   ▸
Debug As   ▸
Restore from Local History...
Team   ▸
Compare With   ▸

Package Explorer
Medical
 JRE System Library [JavaSE-17
 src
  Medical
   MedicineDeliverySoftw
   MedicineDeliverySoftwa
  module-info.java
 JUnit 5
SHA

Code visible:
```
) {

Order(String medicineName, int quantity) {
cine = this.getMedicineByName(medicineName);
== null) {
 IllegalArgumentException("Medicine not found");

<= 0) {
 IllegalArgumentException("Quantity must be greater than

uantity(medicine.getQuantity() - quantity);
```

Outline
 Medical
 MedicineDeliverySoftware

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First window — MedicineDeliverySoftware.java:

```java
package Medical;

import java.util.ArrayList;
import java.util.List;

public class MedicineDeliverySoftware {

    private List<Medicine> medicines;

    public MedicineDeliverySoftware() {
        this.medicines = new ArrayList<>();
    }

    public void addMedicine(Medicine medicine) {
        this.medicines.add(medicine);
    }

    public List<Medicine> getMedicines() {
        return this.medicines;
    }

    public void placeOrder(String medicineName, int quantity) {
        Medicine medicine = this.getMedicineByName(medicineName);
        if (medicine == null) {
            throw new IllegalArgumentException("Medicine not found");
        }

        if (quantity <= 0) {
            throw new IllegalArgumentException("Quantity must be greater than
        }

        medicine.setQuantity(medicine.getQuantity() - quantity);
```

Outline: Medical — MedicineDeliverySoftware

Problems · Javadoc · Declaration · Console ×
No consoles to display at this time.

Medical.MedicineDeliverySoftware.java - Medical/src

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Second window — MedicineDeliverySoftwareTest.java:

```java
package Medical;

import static org.junit.jupiter.api.Assertions.*;

class MedicineDeliverySoftwareTest {

    @Test
    public void testAddMedicine() {
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();
        Medicine medicine = new Medicine("Advil", 10);
        software.addMedicine(medicine);

        List<Medicine> medicines = software.getMedicines();
        assertEquals(1, medicines.size());
        assertEquals("Advil", medicines.get(0).getName());
        assertEquals(10, medicines.get(0).getQuantity());
    }

    @Test
    public void testPlaceOrder() {
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();
        Medicine medicine = new Medicine("Advil", 10);
        software.addMedicine(medicine);

        software.placeOrder("Advil", 5);

        assertEquals(5, medicine.getQuantity());
    }
    @Test
    public void testPlaceOrderWithInvalidMedicine() {
        MedicineDeliverySoftware software = new MedicineDeliverySoftware();
```
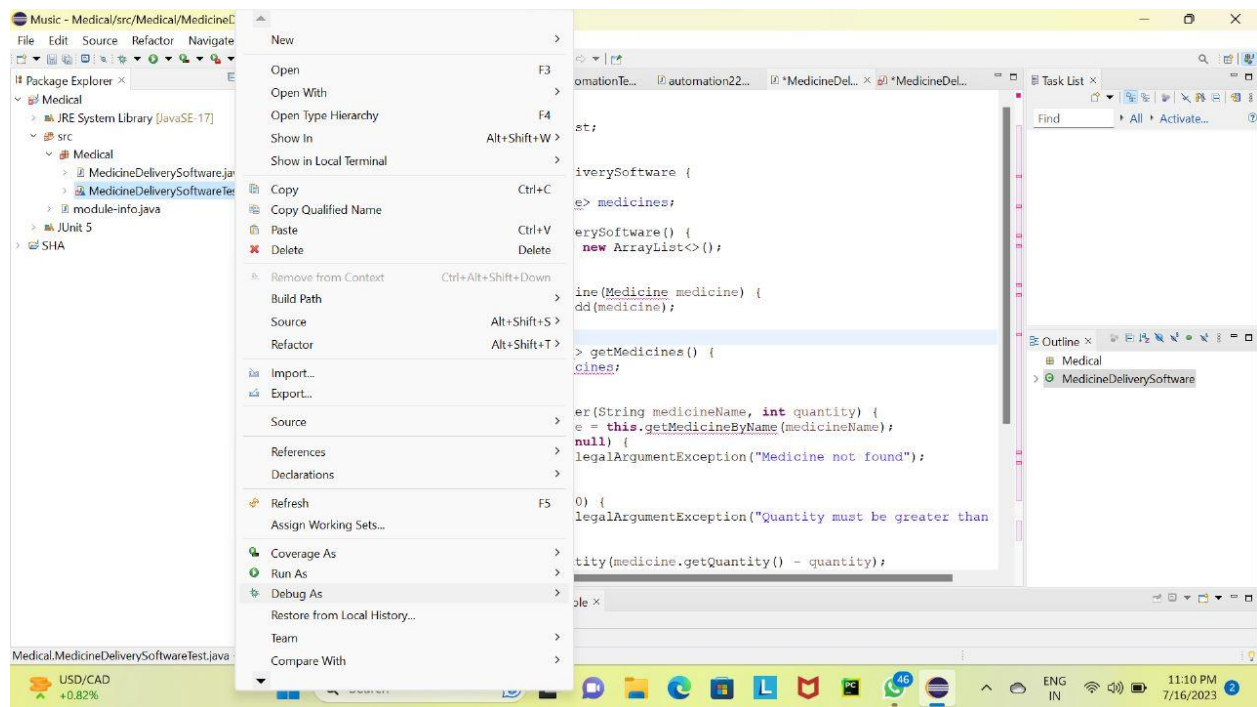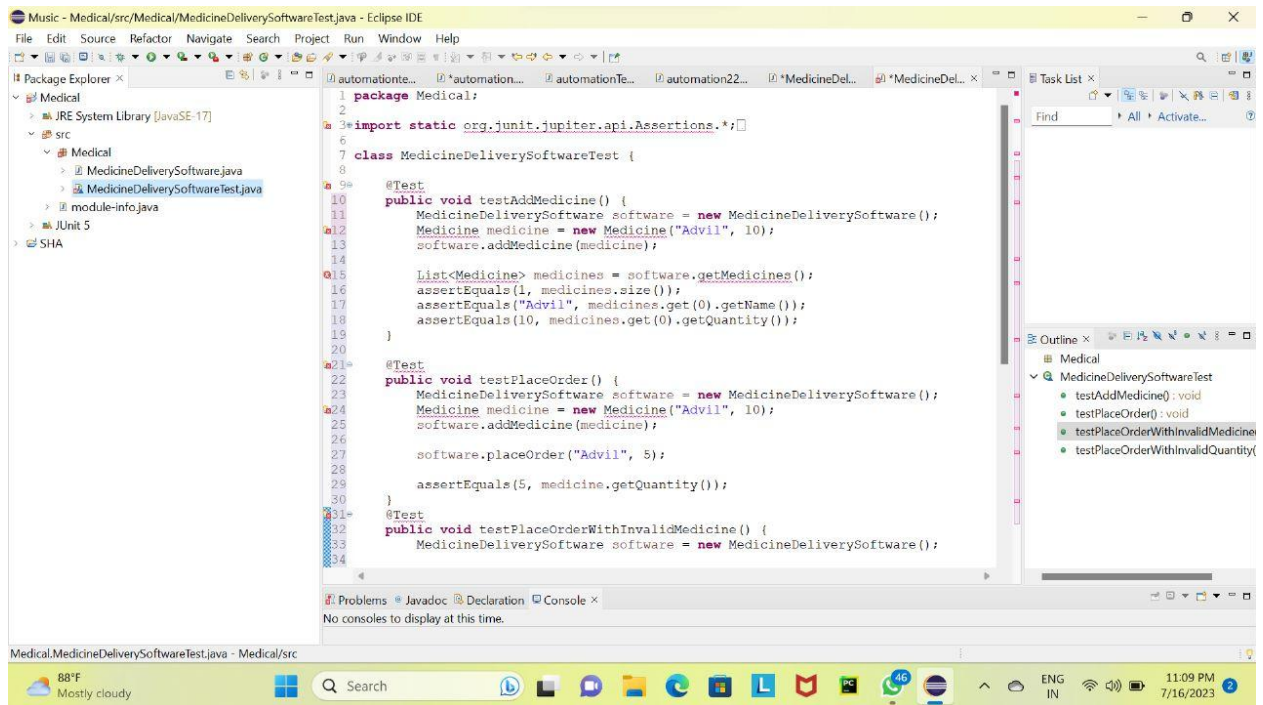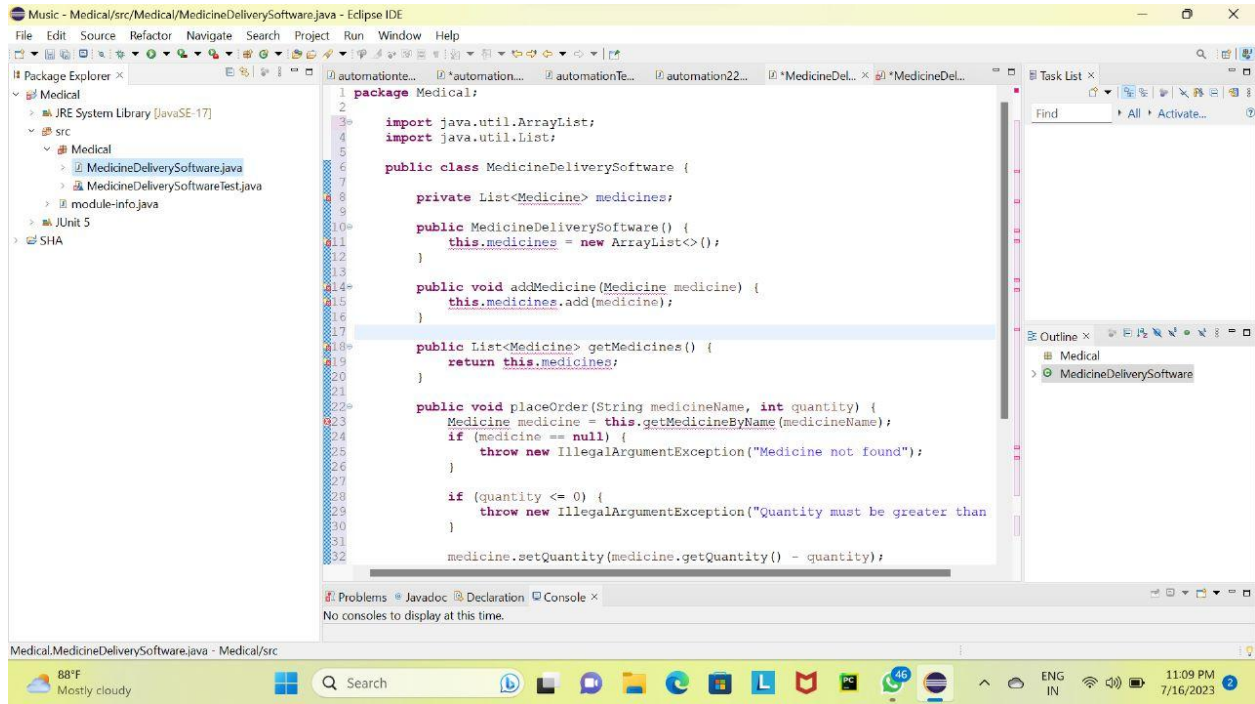
Outline: Medical — MedicineDeliverySoftwareTest
- testAddMedicine() : void
- testPlaceOrder() : void
- testPlaceOrderWithInvalidMedicine
- testPlaceOrderWithInvalidQuantity(

Problems · Javadoc · Declaration · Console ×
No consoles to display at this time.

Medical.MedicineDeliverySoftwareTest.java - Medical/src

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Next task-

Implement Regression testing using Selenium-Object Finder

Website chosen: Vtop (VIT Vellore)

Result: Hence, the recording screenshot has been displayed above about the login portal of VIT Vellore.