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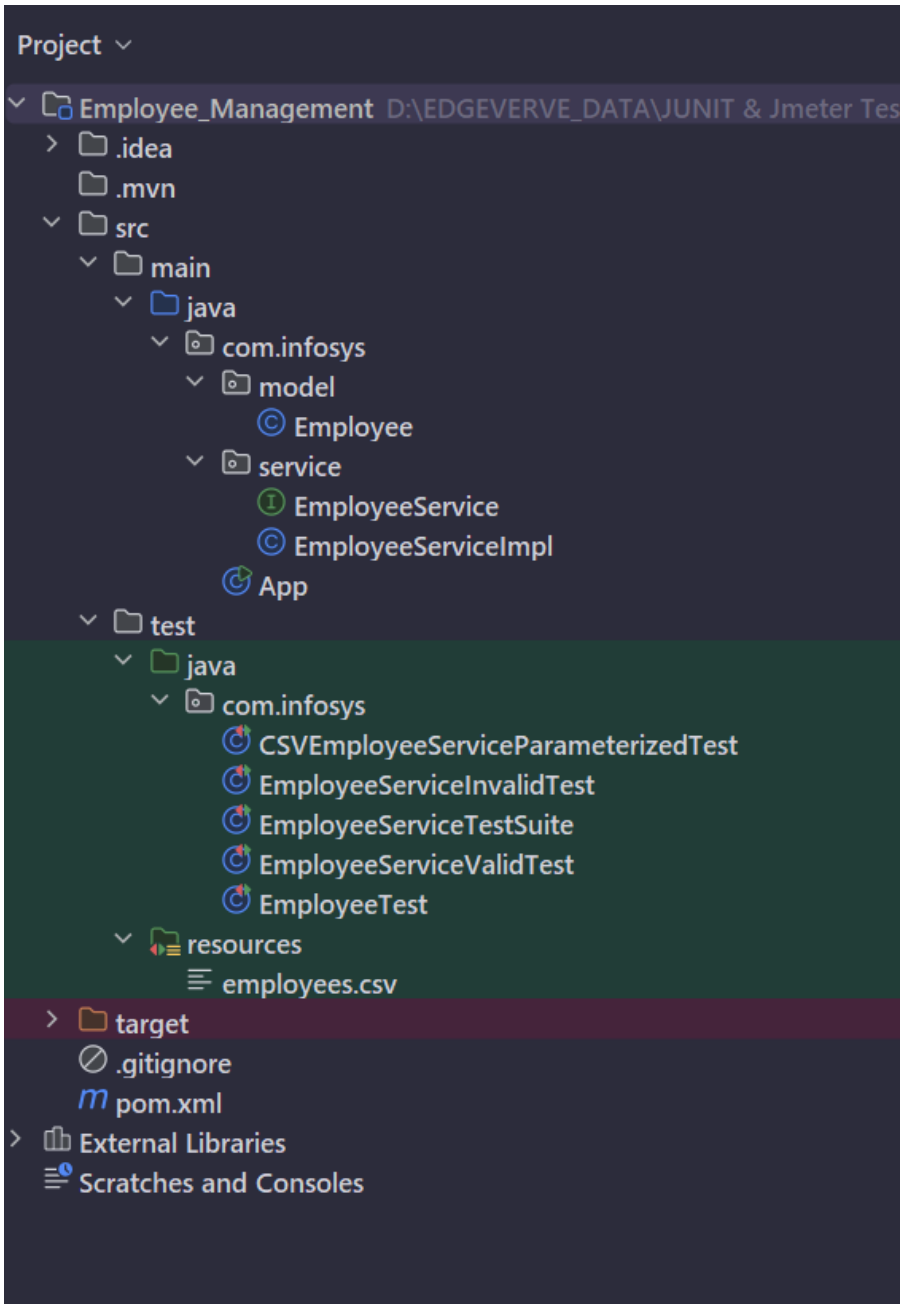
Assignment_1 (Junit Testing)

Folder Structure



pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>

  <groupId>com.infosys</groupId>
  <artifactId>Employee_Management</artifactId>
  <version>1.0-SNAPSHOT</version>
  <packaging>jar</packaging>

  <name>Employee_Management</name>
  <url>http://maven.apache.org</url>

  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
  </properties>

  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>3.8.1</version>
      <scope>test</scope>
    </dependency>

      <!-- https://mvnrepository.com/artifact/org.junit.jupiter/junit-
jupiter-api -->
      <dependency>
        <groupId>org.junit.jupiter</groupId>
        <artifactId>junit-jupiter-api</artifactId>
        <version>5.11.4</version>
        <scope>test</scope>
      </dependency>

      <!-- https://mvnrepository.com/artifact/org.junit.jupiter/junit-
jupiter-engine -->
      <dependency>
        <groupId>org.junit.jupiter</groupId>
        <artifactId>junit-jupiter-engine</artifactId>
        <version>5.11.4</version>
        <scope>test</scope>
      </dependency>

      <!-- https://mvnrepository.com/artifact/org.junit.platform/junit-
platform-suite -->
      <dependency>
        <groupId>org.junit.platform</groupId>
        <artifactId>junit-platform-suite</artifactId>
        <version>1.9.1</version>
        <scope>test</scope>
      </dependency>

      <!-- https://mvnrepository.com/artifact/org.junit.jupiter/junit-
jupiter-params -->
      <dependency>
        <groupId>org.junit.jupiter</groupId>
        <artifactId>junit-jupiter-params</artifactId>
```

```
        <version>5.11.4</version>
        <scope>test</scope>
      </dependency>
  </dependencies>

  <build>
    <plugins>
      <plugin>
        <!--
https://mvnrepository.com/artifact/org.apache.maven.plugins/maven-surefire-
plugin -->
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-surefire-plugin</artifactId>
        <version>3.5.2</version>
      </plugin>
    </plugins>
  </build>
</project>
```

Employee.java

```
package com.infosys.model;

public class Employee {

    private int id;
    private  String name;
    private double monthlySalary;

    public Employee(int id, String name, double monthlySalary) {
        this.id = id;
        this.name = name;
        this.monthlySalary = monthlySalary;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public double getMonthlySalary() {
        return monthlySalary;
    }

    public void setMonthlySalary(double monthlySalary) {
        this.monthlySalary = monthlySalary;
    }
}
```

EmployeeService.java

```
package com.infosys.service;

import com.infosys.model.Employee;

public interface EmployeeService {

    double calculateHike(Employee employee);
    double calculateYearlySalary(Employee employee);
}
```

EmployeeServiceimpl.java

```
package com.infosys.service;

import com.infosys.model.Employee;

public class EmployeeServiceImpl implements EmployeeService{

    @Override
    public double calculateYearlySalary(Employee employee) {

        double yearlySalary = 0;
        yearlySalary = employee.getMonthlySalary()*12;
        return yearlySalary;
    }


    @Override
    public double calculateHike(Employee employee) {

        double hike = 0;
        if(employee.getMonthlySalary() < 10000){
            hike = 2000;
        }
        else {
            hike = 1000;
        }
        return hike;

    }
}
```

Test :

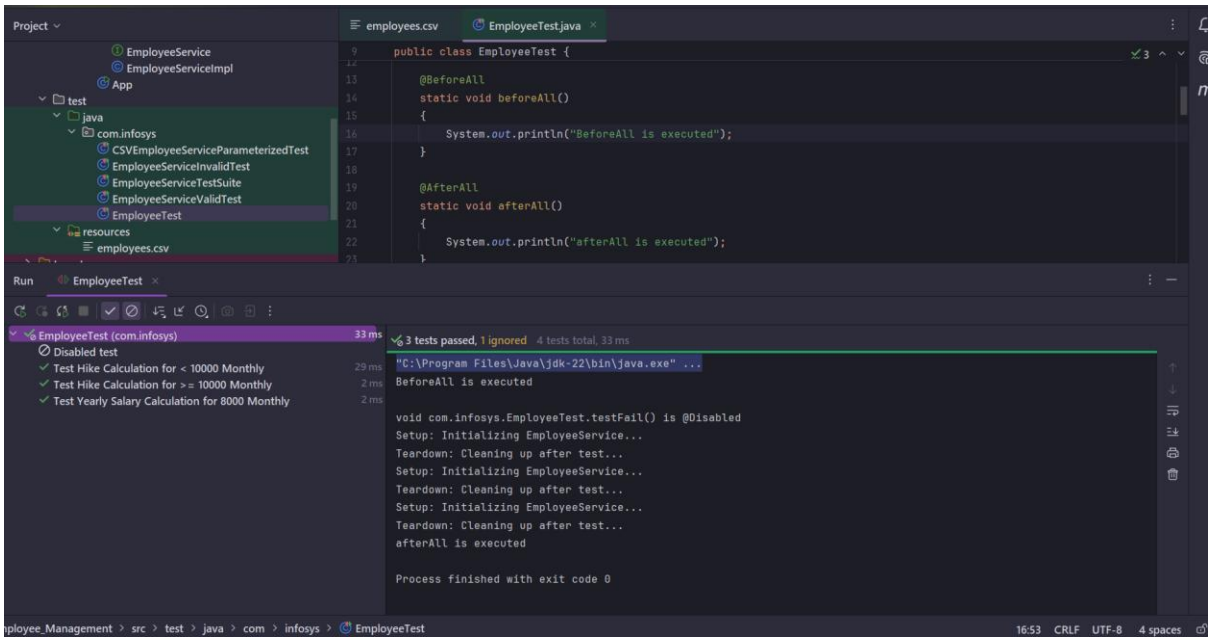
EmployeeTest.java

```
package com.infosys;

import com.infosys.model.Employee;
import com.infosys.service.EmployeeServiceImpl;
import org.junit.jupiter.api.*;

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

```java
public class EmployeeTest {

    private EmployeeServiceImpl employeeService;

    @BeforeAll
    static void beforeAll()
    {
        System.out.println("BeforeAll is executed");
    }

    @AfterAll
    static void afterAll()
    {
        System.out.println("afterAll is executed");
    }

    @BeforeEach
    void init()
    {
        System.out.println("Setup: Initializing EmployeeService...");
        employeeService = new EmployeeServiceImpl();
    }

    @AfterEach
    void cleanupCode()
    {
        System.out.println("Teardown: Cleaning up after test...");
    }


    @Test
    @DisplayName("Test Yearly Salary Calculation for 8000 Monthly")
    void testCalculateYearlySalary() {
        Employee emp = new Employee(1, "Zenitsu", 10000);
        double actual = employeeService.calculateYearlySalary(emp);
        double expected = 120000;
        assertEquals(expected, actual);
    }

    @Test
    @DisplayName("Test Hike Calculation for < 10000 Monthly")
    void testCalculateHike_LowSalary() {
        Employee e = new Employee(2, "Inosuke", 8000);
        double actual = employeeService.calculateHike(e);
        double expected = 2000;
        assertEquals(expected, actual);
    }

    @Test
    @DisplayName("Test Hike Calculation for >= 10000 Monthly")
    void testCalculateHike_HighSalary() {
        Employee e = new Employee(3, "Tanjiro", 12000);
        double actual = employeeService.calculateHike(e);
        double expected = 1000;
        assertEquals(expected, actual);
    }


    @Test
    @Disabled
```

```
    @DisplayName("Disabled test")
    void testFail()
    {
        System.out.println("This test is disabled and should not run.");
    }

}
```

Output

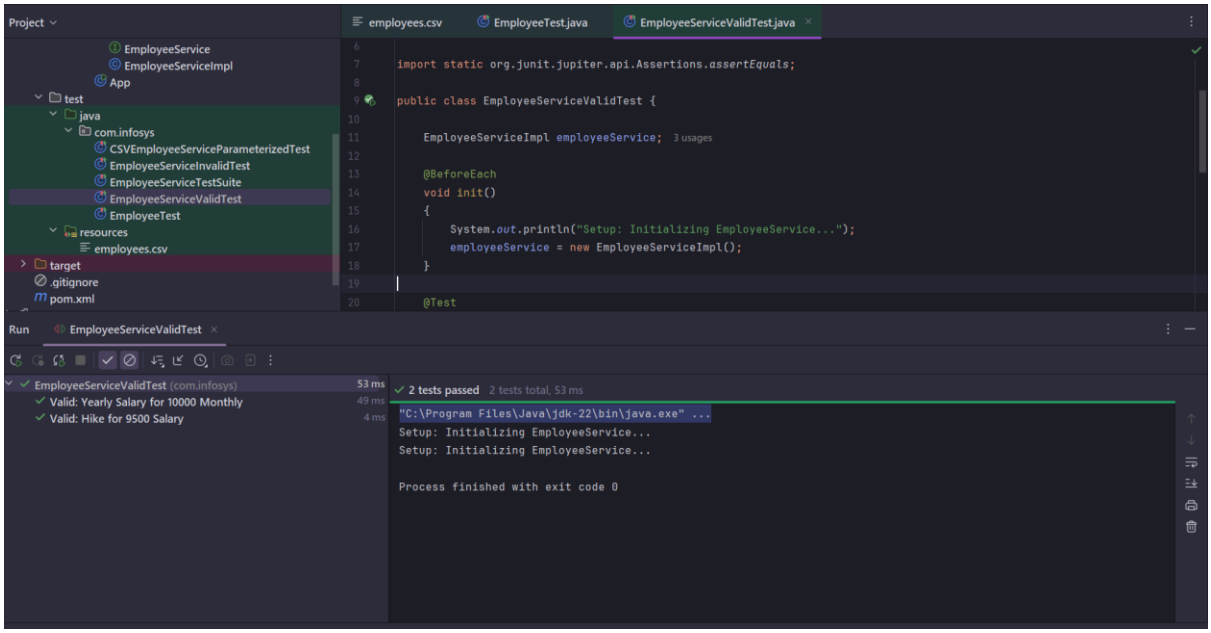


EmployeeServiceValidTest.java

```
package com.infosys;

import com.infosys.model.Employee;
import com.infosys.service.EmployeeServiceImpl;
import org.junit.jupiter.api.*;
import static org.junit.jupiter.api.Assertions.assertEquals;

public class EmployeeServiceValidTest {
```

```
    EmployeeServiceImpl employeeService;

    @BeforeEach
    void init()
    {
        System.out.println("Setup: Initializing EmployeeService...");
        employeeService = new EmployeeServiceImpl();
    }

    @Test
    @Tag("Valid")
    @DisplayName("Valid: Hike for 9500 Salary")
    void validHikeLowSalary() {
        Employee e = new Employee(1, "John", 9500);
        double actual = employeeService.calculateHike(e);
        double expected = 2000;
        assertEquals(expected, actual);
    }

    @Test
    @DisplayName("Valid: Yearly Salary for 10000 Monthly")
    void validYearlySalary() {
        Employee e = new Employee(2, "Jane", 10000);
        double actual = employeeService.calculateYearlySalary(e);
        double expected = 120000;
        assertEquals(expected, actual);
    }
}
```

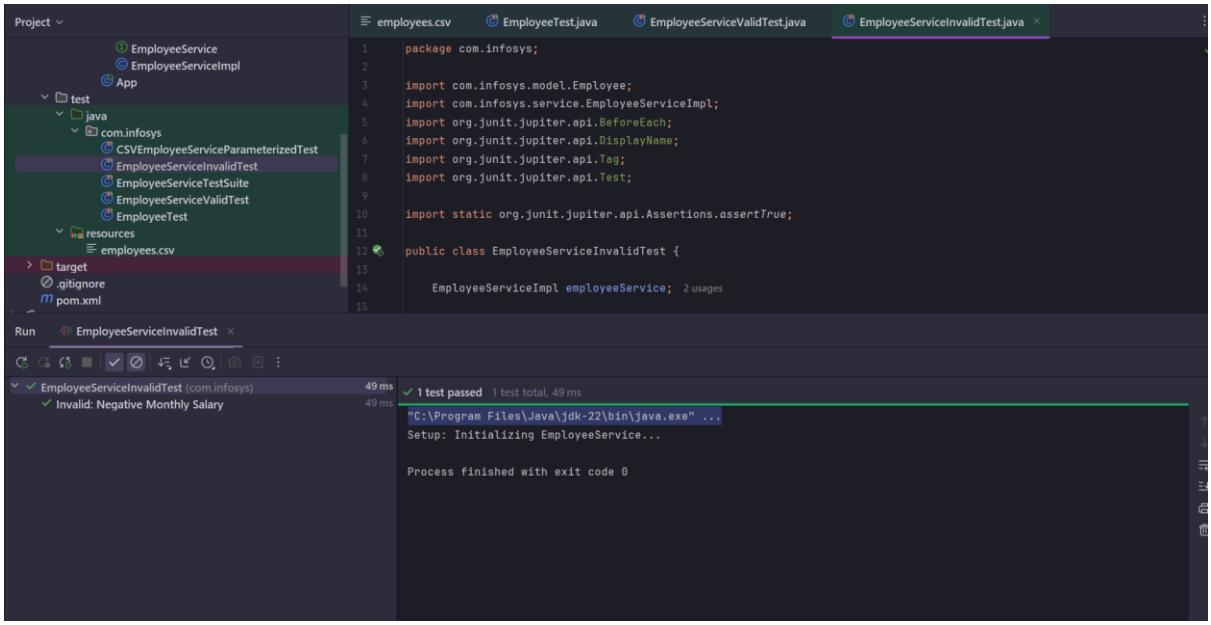
Output



EmployeeServiceInvalidTest.java

```java
package com.infosys;

import com.infosys.model.Employee;
import com.infosys.service.EmployeeServiceImpl;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.DisplayName;
import org.junit.jupiter.api.Tag;
import org.junit.jupiter.api.Test;

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

public class EmployeeServiceInvalidTest {

    EmployeeServiceImpl employeeService;

    @BeforeEach
    void init()
    {
        System.out.println("Setup: Initializing EmployeeService...");
        employeeService = new EmployeeServiceImpl();
    }

    @Test
    @Tag("Invalid")
    @DisplayName("Invalid: Negative Monthly Salary")
    void invalidSalaryTest() {
        Employee e = new Employee(3, "Bob", -5000);
        double yearly = employeeService.calculateYearlySalary(e);
        assertTrue(yearly < 0, "Yearly salary should be negative for
invalid input");
    }
}
```

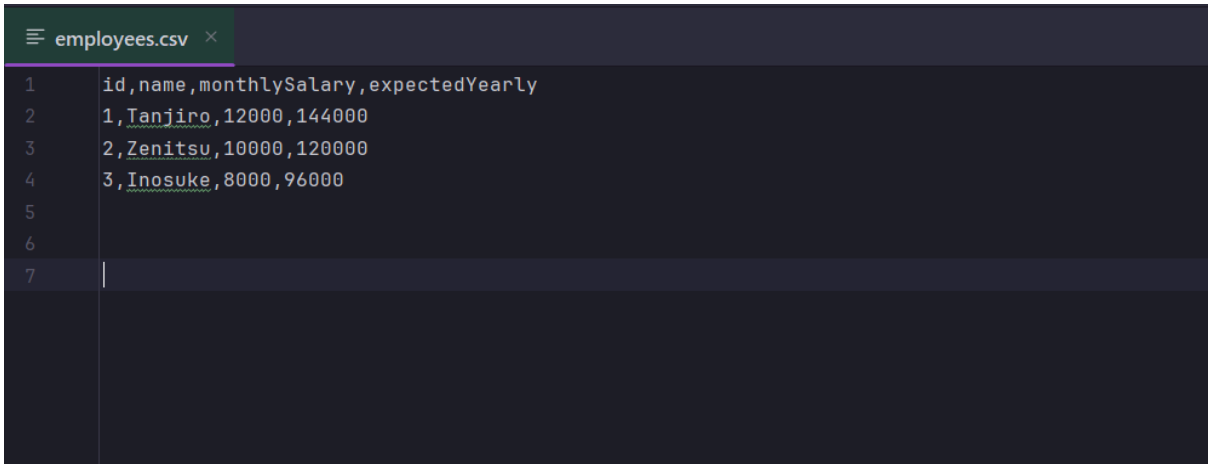
Output

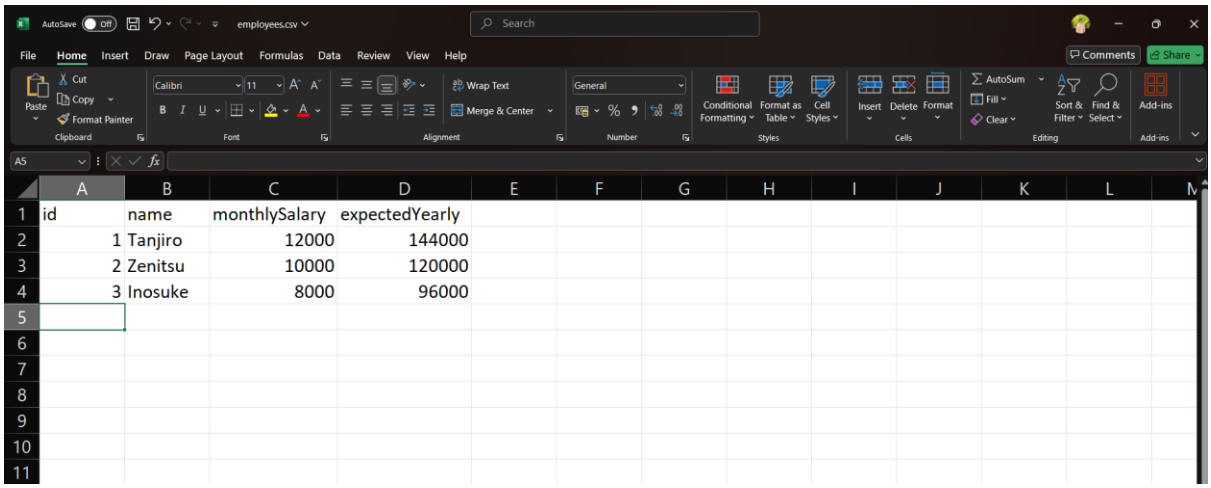


EmployeeServiceParameterizedTest.java

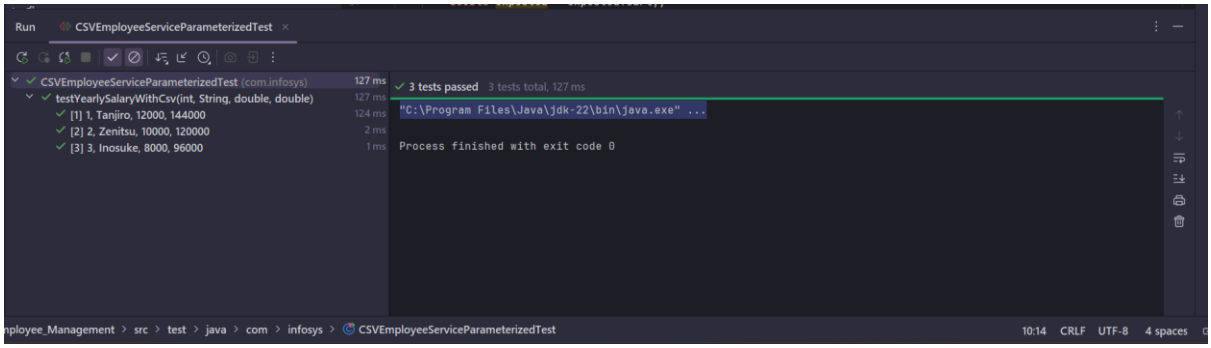
```java
package com.infosys;

import com.infosys.model.Employee;
import com.infosys.service.EmployeeServiceImpl;
import org.junit.jupiter.params.ParameterizedTest;
import org.junit.jupiter.params.provider.CsvFileSource;
import static org.junit.jupiter.api.Assertions.assertEquals;

public class CSVEmployeeServiceParameterizedTest {

    private EmployeeServiceImpl employeeService = new
EmployeeServiceImpl();

    @ParameterizedTest
    @CsvFileSource(files = "src/test/resources/employees.csv",
numLinesToSkip = 1)
    void testYearlySalaryWithCsv(int id, String name, double monthlySalary,
double expectedYearly) {
        Employee e = new Employee(id, name, monthlySalary);
        double actual = employeeService.calculateYearlySalary(e);
        double expected = expectedYearly;
        assertEquals(expected, actual);
    }
}
```

employees.csv





Output



EmployeeServiceTestSuite.java

```java
package com.infosys;

import org.junit.jupiter.api.DisplayName;
import org.junit.platform.suite.api.ExcludeTags;
import org.junit.platform.suite.api.IncludeTags;
import org.junit.platform.suite.api.SelectClasses;
import org.junit.platform.suite.api.Suite;

@Suite
@SelectClasses({EmployeeServiceValidTest.class,
EmployeeServiceInvalidTest.class})
@IncludeTags({"Valid", "Invalid"})
@DisplayName("Employee Service Test Suite")
public class EmployeeServiceTestSuite {
}
```

Output