



Course: Software Engineering

Section: B

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Assignment # 03:

□ J-Unit Testing through Gradle.

Control Flow Graph:

A CFG is the graphic representation of control flow or computation during the execution of programs or application.

Actual Code:

```
package FirstGradle;
public class First {
    public int CarInsurance (int age, char gender, Boolean married, int
points)
    {
        int Premium = 500;
        if ( (age < 25) && (gender == 'M') && (!married))
        {
            Premium += 1500;
        }
        else
        {
            if ( married || gender == 'F')
            {
                Premium -= 200;
            }
            if ( (age >45) && (age < 65))
            {
                Premium -= 100;
            }
        }

        if (points > 5)
        {
            points= 5;
        }
    }
}
```

```

    }
    Premium = Premium + points *20;
    return Premium;
}
}

```

CFG:

Using cyclomatic complexity on this CFG we get the following:

Formula:

$$V(G) = \text{Edges} - \text{Nodes} + 2$$

$$V(G) = 16 - 13 + 2$$

$$V(G) = 5$$

That means there are 5 **linearly independent paths**.

✓ 1 2 3 4 10 12 13

✓ 1 2 3 5 6 7 8 10 12 13 → 1 2 3 5 6 8 9 10 12 13

✓ 1 2 3 5 6 8 10 11 12 13

✓ 1 2 3 5 6 8 10 12 13

Data:

Input.csv File:

24,M,false,0,2000

24,F,true,0,300

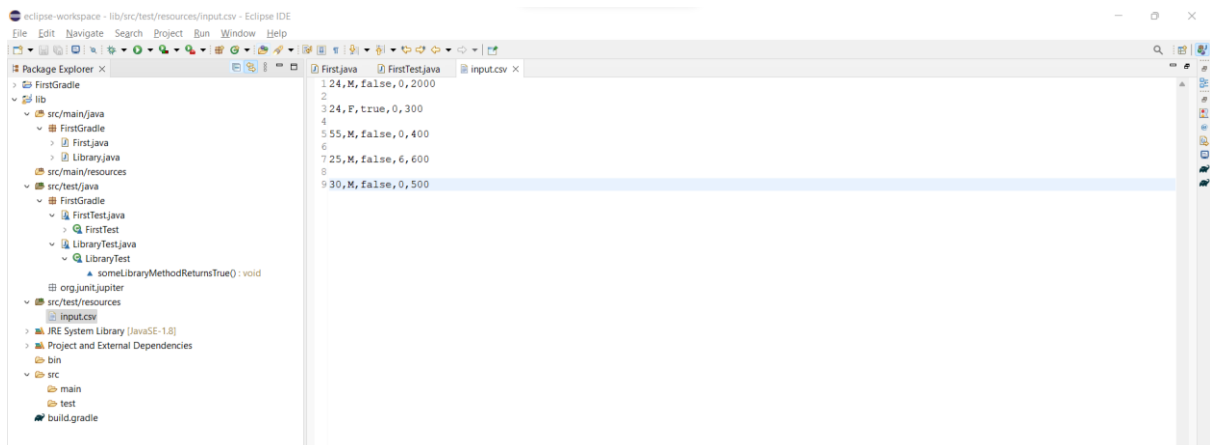
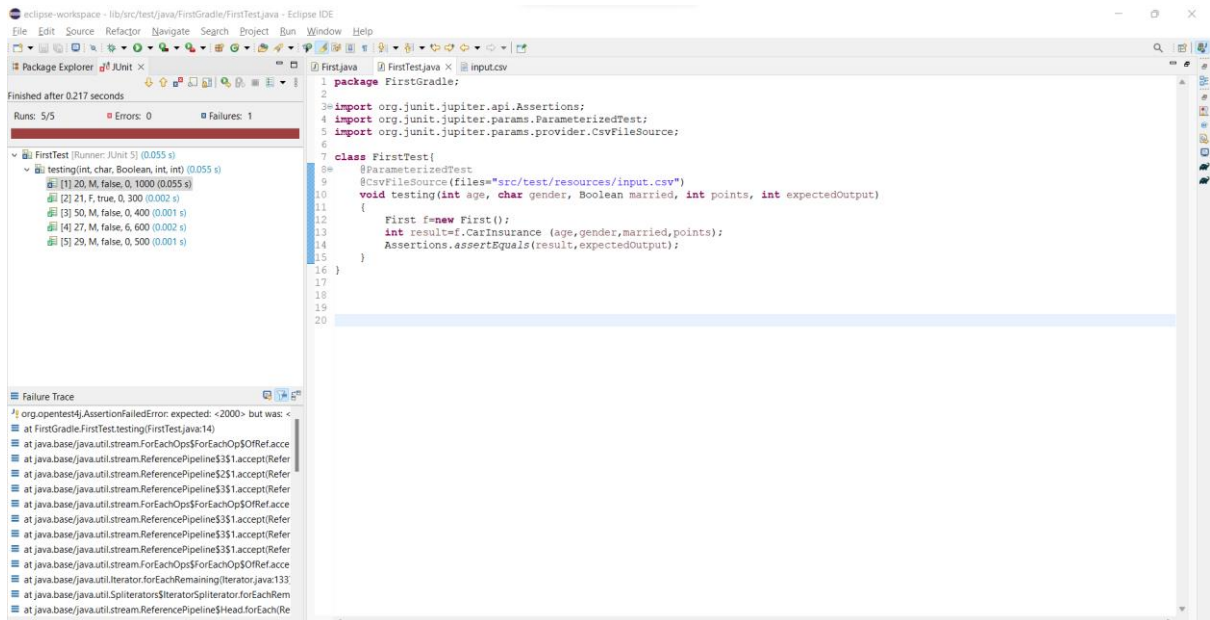
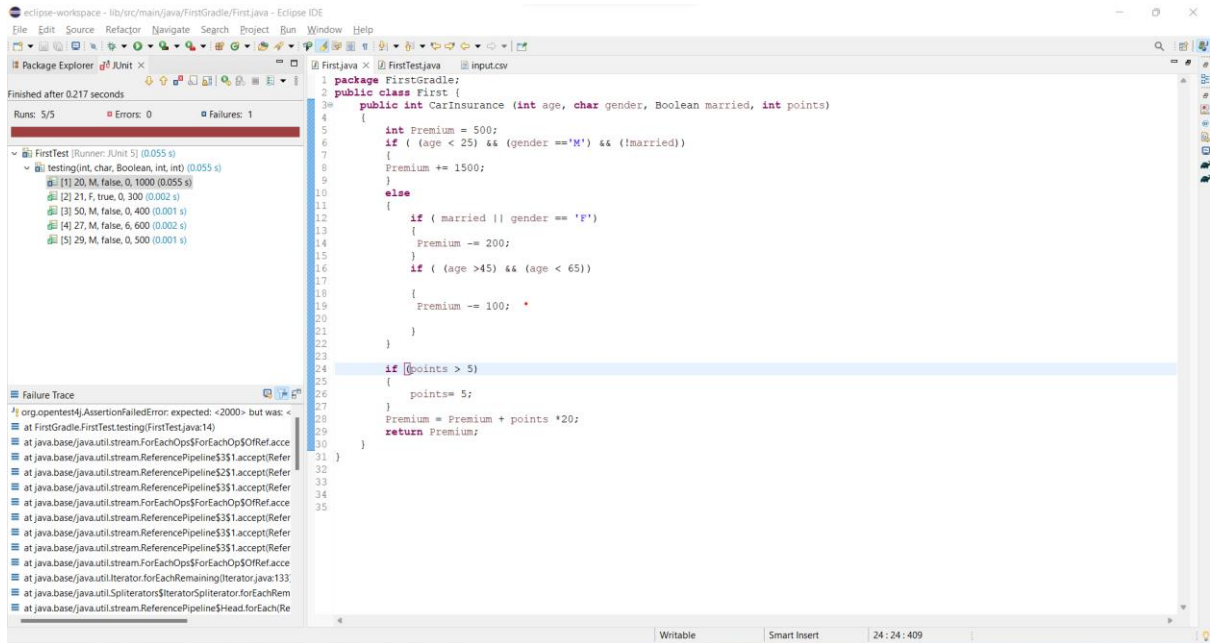
55,M,false,0,400

25,M,false,6,600

30,M,false,0,500

Snippets of CODE:

Test cases & Code file snippets are attached below:



Code:

```
package FirstGradle;

import org.junit.jupiter.api.Assertions;
import org.junit.jupiter.params.ParameterizedTest;
import org.junit.jupiter.params.provider.CsvFileSource;

class FirstTest{
    @ParameterizedTest
    @CsvFileSource(files="src/test/resources/input.csv")
    void testing(int age, char gender, Boolean married, int points, int
expectedOutput)
    {
        First f=new First();
        int result=f.CarInsurance (age,gender,married,points);
        Assertions.assertEquals(result,expectedOutput);
    }
}
```

Final Report:

← → ↺

File | C:/Users/ENVY/eclipse-workspace/FirstGradle/lib/build/reports/tests/test/classes/FirstGradle.FirstTest.html

⌕ 🔍 ⚙️ ⌂

Not syncing ⓘ

FirstTest

all > FirstGradle > FirstTest

5

tests

0

failures

0

ignored

0.056s

duration

100%
successful

Tests

Test	Method name	Duration	Result
[1] 24, M, false, 0, 2000	testing(int, char, Boolean, int, int)[1]	0.049s	passed
[2] 24, F, true, 0, 300	testing(int, char, Boolean, int, int)[2]	0.002s	passed
[3] 55, M, false, 0, 400	testing(int, char, Boolean, int, int)[3]	0.002s	passed
[4] 25, M, false, 6, 600	testing(int, char, Boolean, int, int)[4]	0.002s	passed
[5] 30, M, false, 0, 500	testing(int, char, Boolean, int, int)[5]	0.001s	passed

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LibraryTest

all > FirstGradle > LibraryTest

1
tests

0
failures

0
ignored

0.002s
duration

100%
successful

Tests

Test	Duration	Result
someLibraryMethodReturnsTrue()	0.002s	passed

