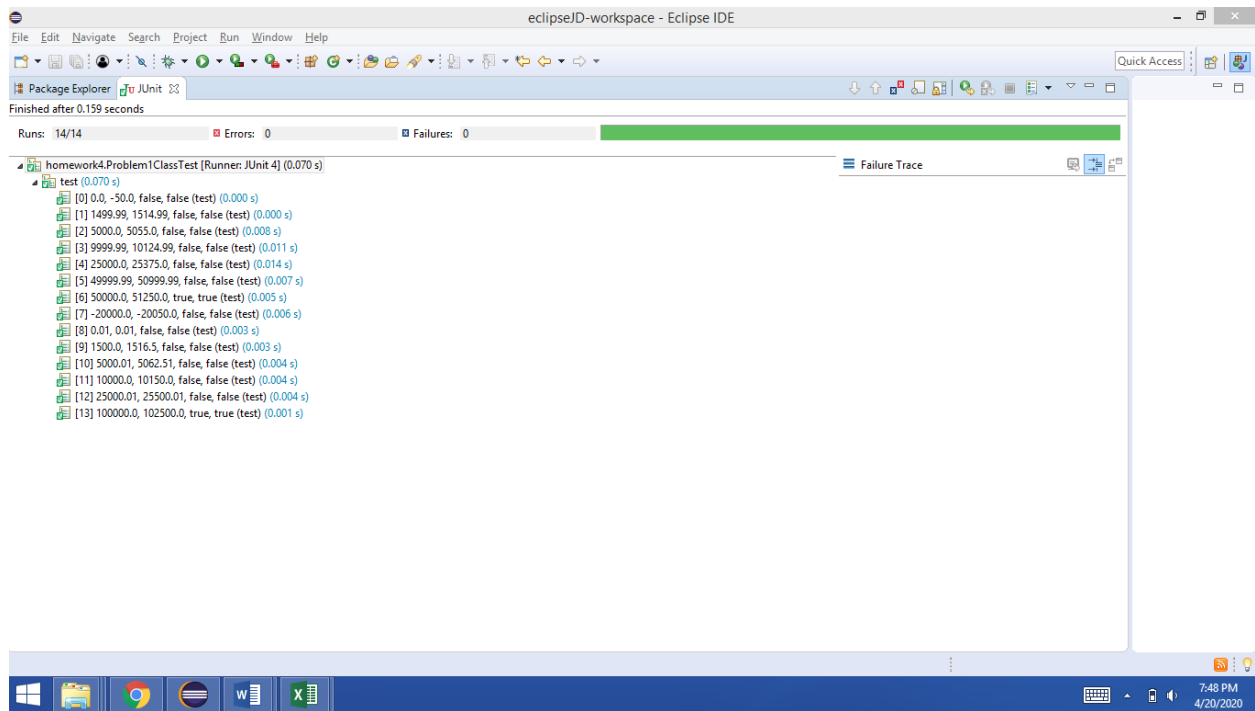


Problem 1



```
eclipseJD-workspace - homework4/src/homework4/Problem1ClassTest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Problem1ClassTest.java
10 @RunWith(JUnit4.class)
11 public class Problem1ClassTest {
12
13     private Problem1Class obl;
14
15     @SuppressWarnings("unused")
16     private static final Object[] parametersForProblem1ClassTest () {
17         return new Object[] {
18             // Test case 1
19             // (0.00,-50.00,false,false),
20             // Test case 2
21             // (1499.99,1514.99,false,false),
22             // Test case 3
23             // (5000.00,5055.00,false,false),
24             // Test case 4
25             // (9999.99,10124.99,false,false),
26             // Test case 5
27             // (25000.00,25375.00,false,false),
28             // Test case 6
29             // (49999.99,50999.99,false,false),
30             // Test case 7
31             // (50000.00,51250.00,true,true),
32             // Test case 8
33             // (-20000.00,-20050.00,false,false),
34             // Test case 9
35             // (0.01,0.01,false,false),
36             // Test case 10
37             // (1500.00,1516.50,false,false),
38             // Test case 11
39             // (5000.01,5062.51,false,false),
40             // Test case 12
41             // (10000.00,10150.00,false,false),
42             // Test case 13
43             // (25000.01,25500.01,false,false),
44             // Test case 14
45             // (100000.00,102500.00,true,true)
46         };
47     }
48 }
```

```
eclipseJD-workspace - homework4/src/homework4/Problem1ClassTest.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Problem1ClassTest.java
31 // Test case 7
32 // (50000.00,51250.00,true,true),
33 // Test case 8
34 // (-20000.00,-20050.00,false,false),
35 // Test case 9
36 // (0.01,0.01,false,false),
37 // Test case 10
38 // (1500.00,1516.50,false,false),
39 // Test case 11
40 // (5000.01,5062.51,false,false),
41 // Test case 12
42 // (10000.00,10150.00,false,false),
43 // Test case 13
44 // (25000.01,25500.01,false,false),
45 // Test case 14
46 // (100000.00,102500.00,true,true)
47
48 }
49
50
51 @Before
52 public void setUp () {
53     obl = new Problem1Class();
54 }
55
56 @Test
57 @Parameters(method="parametersForProblem1ClassTest")
58 public void test(double balance,double ans_balance,boolean giftcard,boolean status) {
59
60     obl.calculateBalance(balance);
61     assertEquals(ans_balance,obl.getBalance(),0.01);
62     assertEquals(giftcard,obl.isGiftCard());
63     assertEquals(status,obl.isHonoredStatus());
64 }
65
66 }
67
68 }
```

A	B	C	D	E	F
Test case number	Inputs	Expected Outputs			Basis Path
	Balance	Balance	Gift Card	Honored Status	
1	\$0.00	-\$50.00	FALSE	FALSE	13-14-32
2	\$1,499.99	\$1,514.99	FALSE	FALSE	13-16-17-32
3	\$5,000.00	\$5,055.00	FALSE	FALSE	13-16-19-20-32
4	\$9,999.99	\$10,124.99	FALSE	FALSE	13-16-19-22-23-32
5	\$25,000.00	\$25,375.00	FALSE	FALSE	13-16-19-22-25-26-32
6	\$49,999.99	\$50,999.99	FALSE	FALSE	13-16-19-22-25-28-29-32
7	\$50,000.00	\$51,250.00	TRUE	TRUE	13-16-19-22-25-28-31-32
8	-\$20,000.00	-\$20,050.00	FALSE	FALSE	-
9	\$0.01	\$0.01	FALSE	FALSE	-
10	\$1,500.00	\$1,516.50	FALSE	FALSE	-
11	\$5,000.01	\$5,062.51	FALSE	FALSE	-
12	\$10,000.00	\$10,150.00	FALSE	FALSE	-
13	\$25,000.01	\$25,500.01	FALSE	FALSE	-
14	\$100,000.00	\$102,500.00	TRUE	TRUE	-

Problem 2

The screenshot shows the Eclipse IDE with the file `Problem2ClassTest.java` open. The code is as follows:

```

1 package homework4;
2 import static junitparams.JUnit4ParamsRunner.*;
3
4 @RunWith(JUnit4ParamsRunner.class)
5 public class Problem2ClassTest {
6
7     private Problem2Class obj;
8
9     @Before
10    public void setUp () {
11        obj = new Problem2Class();
12    }
13
14    @Test
15    @FileParameters("src/Problem2TestCaseTable.csv")
16    public void test(int testCaseNumber, boolean cruiseEngaged, double Distance, int timer, boolean
17    {
18        obj.setTimer(timer);
19        obj.setWarnings(cruiseEngaged, Distance);
20        assertEquals("YellowLight", obj.isYellowLight());
21        assertEquals("RedLight", obj.isRedLight());
22        assertEquals("GreenLight", obj.isGreenLight());
23        assertEquals("timer_result", obj.getTimer());
24    }
25 }

```

The Package Explorer on the left shows the test results for `Problem2ClassTest` (Runner: JUnit 4) (0.001 s). The results are as follows:

Test Case	Inputs	Expected Outputs	Basis Path					
Number	cruiseEngaged	Distance (feet)	timer	Red Light	Yellow Light	Green Light	timer	
1	TRUE	500.1	0	FALSE	FALSE	TRUE	0	10-11-12-29
2	FALSE	500.1	0	FALSE	FALSE	FALSE	0	10-29
3	TRUE	150.0	0	FALSE	TRUE	FALSE	0	11-11-14-15-29
4	TRUE	75.1	0	TRUE	TRUE	FALSE	0	10-11-14-17-18-29
5	TRUE	49.9	1	FALSE	FALSE	FALSE	0	10-11-14-17-22-24-25-29
6	TRUE	50.0	1	TRUE	FALSE	FALSE	1	10-11-14-17-22-29
7	TRUE	49.9	0	TRUE	FALSE	FALSE	1	10-11-14-17-22-24-29
8	TRUE	500.0	0	FALSE	TRUE	FALSE	0	-
9	TRUE	149.9	0	TRUE	TRUE	FALSE	0	-
10	TRUE	75.0	0	TRUE	FALSE	FALSE	0	-
11	TRUE	0.0	0	TRUE	FALSE	FALSE	1	-
12	TRUE	2,000.0	0	FALSE	FALSE	TRUE	0	-

	A	B	C	D	E	F	G	H	I
	Inputs			Expected Outputs					
Test Case Number	cruiseEngaged	Distance (feet)	timer	Red Light	Yellow Light	Green Light	timer	Basis Path	
1	TRUE	500.1	0	FALSE	FALSE	TRUE	0	10-11-12-29	
2	FALSE	500.1	0	FALSE	FALSE	FALSE	0	10-29	
3	TRUE	150.0	0	FALSE	TRUE	FALSE	0	11-11-14-15-29	
4	TRUE	75.1	0	TRUE	TRUE	FALSE	0	10-11-14-17-18-29	
5	TRUE	49.9	1	FALSE	FALSE	FALSE	0	10-11-14-17-22-24-25-29	
6	TRUE	50.0	1	TRUE	FALSE	FALSE	1	10-11-14-17-22-29	
7	TRUE	49.9	0	TRUE	FALSE	FALSE	1	10-11-14-17-22-24-29	
8	TRUE	500.0	0	FALSE	TRUE	FALSE	0	-	
9	TRUE	149.9	0	TRUE	TRUE	FALSE	0	-	
10	TRUE	75.0	0	TRUE	FALSE	FALSE	0	-	
11	TRUE	0.0	0	TRUE	FALSE	FALSE	1	-	
12	TRUE	2,000.0	0	FALSE	FALSE	TRUE	0	-	

Problem 3

The screenshot shows the Eclipse IDE with a Java project named 'homework4'. The main editor displays the file 'Problem3ClassTest.java'. The code is as follows:

```

1 package homework4;
2 import static junitparams.JUnit4Runner.*;
11
12 @RunWith(JUnit4Runner.class)
13 public class Problem3ClassTest
14 {
15 {
16
17     private Problem3Class class3;
18
19     @Before
20     public void setUp () {
21         class3=new Problem3Class();
22     }
23
24     @Test
25     @FileParameters("src/Problem3TestCaseTable.csv")
26     public void test(int testCaseNumber, boolean member, int credit_rating, double cart, boolean approved) {
27         boolean a=class3.approvePurchase(member, credit_rating, cart);
28         assertEquals(a,approved);
29     }
30
31 }
32

```

The Package Explorer on the left shows the test results for 'homework4.Problem3ClassTest [Runner: JUnit 4] (0.051 s)'. The results are as follows:

Test Case	Inputs	Exp Out	Basis path	MCDC
1	TRUE, 650, 2500.01, TRUE, 8-9-10-11-12-20, TTT Stmts 9-12	(0.000 s)	8-9-10-11-12-20	TTT Stmts 9-12
2	FALSE, 700, 3500.01, TRUE, 8-14-15-20, TFT Stmts 14-19	(0.003 s)	8-14-15-20	TFT Stmts 14-19
3	TRUE, 649, 2500.01, FALSE, 8-9-20, FTT Stmts 9-12	(0.005 s)	8-9-20	FTT Stmts 9-12
4	FALSE, 699, 1500.01, TRUE, 8-14-17-18-19-20, FTT Stmts 14-19	(0.007 s)	8-14-17-18-19-20	FTT Stmts 14-19
5	TRUE, 650, 5000.01, FALSE, 8-9-10-20, TFT Stmts 9-12	(0.006 s)	8-9-10-20	TFT Stmts 9-12
6	FALSE, 699, 3500.01, FALSE, 8-14-17-20, FFT Stmts 14-19	(0.004 s)	8-14-17-20	FFT Stmts 14-19
7	TRUE, 650, 2500.00, FALSE, 8-9-10-11-20, TTF Stmts 9-12	(0.003 s)	8-9-10-11-20	TTF Stmts 9-12
8	FALSE, 699, 1500.00, FALSE, 8-14-17-18-20, FTF Stmts 14-19	(0.004 s)	8-14-17-18-20	FTF Stmts 14-19
9	TRUE, 650, 5000.00, TRUE, - Other TT BV for Stmts 10-11	(0.003 s)	-	Other TT BV for Stmts 10-11
10	FALSE, 699, 3500.00, TRUE, - Other TT BV for Stmts 17-18	(0.004 s)	-	Other TT BV for Stmts 17-18
11	TRUE, 0, 2500.01, FALSE, Extreme range creditRating	(0.005 s)	Extreme range creditRating	
12	TRUE, 850, 2500.01, TRUE, Extreme range creditRating	(0.004 s)	Extreme range creditRating	
13	TRUE, 650, 0.00, FALSE, Extreme range cart	(0.002 s)	Extreme range cart	
14	TRUE, 650, 10000.00, FALSE, Extreme range cart	(0.001 s)	Extreme range cart	

A	B	C	D	E	F	G
Test Case	Inputs			Exp Out	Basis path	MCDC
Number	member	creditRating	cart	approved		
1	TRUE	650	\$2,500.01	TRUE	8-9-10-11-12-20	TTT Stmts 9-12
2	FALSE	700	\$3,500.01	TRUE	8-14-15-20	TFT Stmts 14-19
3	TRUE	649	\$2,500.01	FALSE	8-9-20	FTT Stmts 9-12
4	FALSE	699	\$1,500.01	TRUE	8-14-17-18-19-20	FTT Stmts 14-19
5	TRUE	650	\$5,000.01	FALSE	8-9-10-20	TFT Stmts 9-12
6	FALSE	699	\$3,500.01	FALSE	8-14-17-20	FFT Stmts 14-19
7	TRUE	650	\$2,500.00	FALSE	8-9-10-11-20	TTF Stmts 9-12
8	FALSE	699	\$1,500.00	FALSE	8-14-17-18-20	FTF Stmts 14-19
9	TRUE	650	\$5,000.00	TRUE	-	Other TT BV for Stmts 10-11
10	FALSE	699	\$3,500.00	TRUE	-	Other TT BV for Stmts 17-18
11	TRUE	0	\$2,500.01	FALSE	Extreme range creditRating	
12	TRUE	850	\$2,500.01	TRUE	Extreme range creditRating	
13	TRUE	650	\$0.00	FALSE	Extreme range cart	
14	TRUE	650	\$10,000.00	FALSE	Extreme range cart	

Problem 4

The screenshot shows the Eclipse IDE with the following components:

- Package Explorer:** Shows the project structure with 'homework4' and 'Problem4ClassTest.java'.
- JUnit Console:** Displays the test results for 14 test cases, all of which passed. The output shows the test case number, inputs, and the expected output.
- Source Editor:** Shows the source code of 'Problem4ClassTest.java'. The code uses JUnit 4 annotations (@RunWith, @Before, @Test, @FileParameters) and JUnit 5 annotations (@BeforeEach, @Test, @FileParameters) to run tests on the 'Problem4Class'.

A	B	C	D	E	F	G
Test Case	Inputs				Exp Out	
Number	goldStatus	cart	creditRating	yearsMember	approved	Basis path
1	TRUE	\$3,000.00	699	5	TRUE	8-9-10-26
2	FALSE	\$2,000.00	749	7	TRUE	8-18-19-26
3	TRUE	\$3,000.01	700	5	TRUE	8-9-12-13-26
4	FALSE	\$2,000.01	750	7	TRUE	8-18-21-22-26
5	TRUE	\$3,000.01	699	6	TRUE	8-9-12-15-16-26
6	FALSE	\$2,000.01	749	8	TRUE	8-18-21-24-25-26
7	TRUE	\$3,000.01	699	5	FALSE	8-9-12-15-26
8	FALSE	\$2,000.01	749	7	FALSE	8-18-21-24-26
9	TRUE	\$0.00	699	5	TRUE	extreme range cart
10	FALSE	\$10,000.00	699	5	FALSE	extreme range cart
11	TRUE	\$3,000.01	0	5	FALSE	extreme credit rating
12	FALSE	\$3,000.01	850	5	TRUE	extreme credit rating
13	TRUE	\$3,000.01	699	0	FALSE	extreme years member
14	FALSE	\$3,000.01	699	20	TRUE	extreme years member

Problem 5

The screenshot shows the Eclipse IDE with a Java project named 'homework4'. The main editor displays the file 'Problem5ClassTest.java'. The code is as follows:

```

1 package homework4;
2 import static junitparams.JUnit4ParamsRunner.$;
3
11
12 @RunWith(JUnit4ParamsRunner.class)
13 public class Problem5ClassTest
14 {
15 {
16
17     private Problem5Class class5;
18
19     @Before
20     public void setUp () {
21         class5=new Problem5Class();
22     }
23
24     @Test
25     @FileParameters("src/Problem5TestCaseTable.csv")
26     public void test(int testCaseNumber, double var_x, double var_y,String bpNumber) {
27         double a=class5.calcY(var_x);
28         assertEquals(var_y,a,0.01);
29     }
30 }
31
32
33

```

The Package Explorer on the left shows the test results for 'homework4.Problem5ClassTest (Runner: JUnit 4) (0.033 s)'. The results are as follows:

Test Case	Inputs	Exp Out	Basis Path Tested
1	-2.01, 2.00	7/8-20	
2	-0.01, 0.01	7-10-11-20	
3	3.99, 0.04	7-10-13-14-20	
4	5.99, 1.99	7-10-13-16-17-20	
5	6.00, 2.00	7-10-13-16-19-20	
6	-2.00, -	-	
7	0.00, -	-	
8	4.00, -	-	
9	-4.00, 2.00	extreme range	
10	8.00, 2.00	extreme range	
11	-1.00, 1.00	mid-point linear	
12	2.00, 4.00	parabolic mid	
13	3.00, 3.00	parabolic 1	
14	5.00, 1.00	mid-point linear	

	A	B	C	D	E	F
1	Test Case	Inputs	Exp Out			
2	Number	x	y	Basis Path Tested		
3	1	-2.01	2.00	7-8-20		
4	2	-0.01	0.01	7-10-11-20		
5	3	3.99	0.04	7-10-13-14-20		
6	4	5.99	1.99	7-10-13-16-17-20		
7	5	6.00	2.00	7-10-13-16-19-20		
8	6	-2.00	2.00	-		
9	7	0.00	0.00	-		
10	8	4.00	0.00	-		
11	9	-4.00	2.00	extreme range		
12	10	8.00	2.00	extreme range		
13	11	-1.00	1.00	mid-point linear		
14	12	2.00	4.00	parabolic mid		
15	13	3.00	3.00	parabolic 1		
16	14	5.00	1.00	mid-point linear		
17						