

## 27) QUESTION 1:

## Code Coverage, Test Cases &amp; Time Stamp:

```
package Homework3;

public class Problem1Class {

    private double balance;
    private boolean giftCard, honoredStatus;

    public void calculateBalance (double balance ) {
        int index;
        final double [] interest= { 0.0, 0.01, 0.011, 0.0125, 0.015, 0.02, 0.025};
        final double [] fees= { 50.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0};
        final boolean [] card = { false, false, false, false, false, false, true};
        if (balance <= 0.0)
            index=0;
        else
            if (balance < 1500.0)
                index=1;
            else
                if (balance <= 5000.0)
                    index=2;
                else
                    if (balance < 10000.0)
                        index=3;
                    else
                        if (balance <= 25000.0)
                            index=4;
                        else
                            if (balance < 50000.0)
                                index = 5;
                            else
                                index = 6;
                setBalance(balance*(1+interest[index])-fees[index]);
                setGiftCard(card[index]);
                setHonoredStatus(isGiftCard());
            }
        public double getBalance() {
            return balance;
        }
        public void setBalance(double balance) {
            this.balance = balance;
        }
    }
}
```

```
package Homework3;

public class Problem1ClassTest {

    private double balance;
    private boolean giftCard, honoredStatus;

    public void calculateBalance (double balance ) {
        int index;
        final double [] interest= { 0.0, 0.01, 0.011, 0.0125, 0.015, 0.02, 0.025};
        final double [] fees= { 50.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0};
        final boolean [] card = { false, false, false, false, false, false, true};
        if (balance <= 0.0)
            index=0;
        else
            if (balance < 1500.0)
                index=1;
            else
                if (balance <= 5000.0)
                    index=2;
                else
                    if (balance < 10000.0)
                        index=3;
                    else
                        if (balance <= 25000.0)
                            index=4;
                        else
                            if (balance < 50000.0)
                                index = 5;
                            else
                                index = 6;
                setBalance(balance*(1+interest[index])-fees[index]);
                setGiftCard(card[index]);
                setHonoredStatus(isGiftCard());
            }
        public double getBalance() {
            return balance;
        }
        public void setBalance(double balance) {
            this.balance = balance;
        }
    }
}
```

## QUESTION 2:

### Code Coverage, Test Cases & Time Stamp:

eclipse-workspace - Homework3/src/Homework3/Problem2Class.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit

Finished after 0.121 seconds

Runs: 12/12 Errors: 0 Failures: 0

Homework3.Problem2ClassTest [Runner: JUnit 4] (0.000 s)

- testDetermine (0.000 s)
  - [0] 1.TRUE,500.10,0.FALSE,TRUE,0.10-11-12-29 (testDetermine) (0.000 s)
  - [1] 2.FALSE,500.10,0.FALSE,TRUE,0.10-29 (testDetermine) (0.000 s)
  - [2] 3.TRUE,150.00,0.FALSE,TRUE,0.11-11-14-15-29 (testDetermine) (0.000 s)
  - [3] 4.TRUE,75.10,0.TRUE,TRUE,0.10-11-14-17-18-29 (testDetermine) (0.000 s)
  - [4] 5.TRUE,49.90,1.FALSE,TRUE,0.10-11-14-17-22-24-25-29 (testDetermine) (0.000 s)
  - [5] 6.TRUE,50.00,1.TRUE,TRUE,0.10-11-14-17-22-29 (testDetermine) (0.000 s)
  - [6] 7.TRUE,49.90,0.TRUE,TRUE,0.10-11-14-17-22-24-29 (testDetermine) (0.000 s)
  - [7] 8.TRUE,500.00,0.FALSE,TRUE,0.0- (testDetermine) (0.000 s)
  - [8] 9.TRUE,149.90,0.TRUE,TRUE,0.0- (testDetermine) (0.000 s)
  - [9] 10.TRUE,75.00,0.TRUE,TRUE,0.0- (testDetermine) (0.000 s)
  - [10] 11.TRUE,0.00,0.TRUE,TRUE,0.0- (testDetermine) (0.000 s)
  - [11] 12.TRUE,2000.00,0.FALSE,TRUE,0.0- (testDetermine) (0.000 s)

Failure Trace

```
1 package Homework3;
2
3 public class Problem2Class {
4
5     boolean redLight, yellowLight, greenLight;
6     int timer;
7
8     public void setWarnings (boolean cruiseEngaged, double distance) {
9         // redLight=yellowLight=greenLight=false;
10        if (cruiseEngaged) {
11            if (distance > 500.0)
12                greenLight=true;
13        }
14        else
15            if (distance >= 150.0)
16                yellowLight=true;
17        else
18            if (distance > 75.0) {
19                yellowLight=true;
20                redLight=true;
21            }
22        else {
23            redLight=true;
24            if (distance < 50.0) {
25                timer++;
26                if (timer > 1) {
27                    redLight = false;
28                    timer=0;
29                }
30            }
31        }
32    }
33
34    public boolean isRedLight() {
35        return redLight;
36    }
37
38    public void setRedLight(boolean redLight) {
39        this.redLight = redLight;
40    }
41
42    public boolean isYellowLight() {
43        return yellowLight;
44    }
45 }
```

eclipse-workspace - Homework3/src/Homework3/Problem2Class.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit

Finished after 0.121 seconds

Runs: 12/12 Errors: 0 Failures: 0

Homework3.Problem2ClassTest [Runner: JUnit 4] (0.000 s)

- testDetermine (0.000 s)
  - [0] 1.TRUE,500.10,0.FALSE,TRUE,0.10-11-12-29 (testDetermine) (0.000 s)
  - [1] 2.FALSE,500.10,0.FALSE,TRUE,0.10-29 (testDetermine) (0.000 s)
  - [2] 3.TRUE,150.00,0.FALSE,TRUE,0.11-11-14-15-29 (testDetermine) (0.000 s)
  - [3] 4.TRUE,75.10,0.TRUE,TRUE,0.10-11-14-17-18-29 (testDetermine) (0.000 s)
  - [4] 5.TRUE,49.90,1.FALSE,TRUE,0.10-11-14-17-22-24-25-29 (testDetermine) (0.000 s)
  - [5] 6.TRUE,50.00,1.TRUE,TRUE,0.10-11-14-17-22-29 (testDetermine) (0.000 s)
  - [6] 7.TRUE,49.90,0.TRUE,TRUE,0.10-11-14-17-22-24-29 (testDetermine) (0.000 s)
  - [7] 8.TRUE,500.00,0.FALSE,TRUE,0.0- (testDetermine) (0.000 s)
  - [8] 9.TRUE,149.90,0.TRUE,TRUE,0.0- (testDetermine) (0.000 s)
  - [9] 10.TRUE,75.00,0.TRUE,TRUE,0.0- (testDetermine) (0.000 s)
  - [10] 11.TRUE,0.00,0.TRUE,TRUE,0.0- (testDetermine) (0.000 s)
  - [11] 12.TRUE,2000.00,0.FALSE,TRUE,0.0- (testDetermine) (0.000 s)

Failure Trace

```
21 redLight=true;
22 if (distance < 50.0) {
23     timer++;
24     if (timer > 1) {
25         redLight = false;
26         timer=0;
27     }
28 }
29
30 }
31
32 public boolean isRedLight() {
33     return redLight;
34 }
35
36 public void setRedLight(boolean redLight) {
37     this.redLight = redLight;
38 }
39
40 public boolean isYellowLight() {
41     return yellowLight;
42 }
43
44 public void setYellowLight(boolean yellowLight) {
45     this.yellowLight = yellowLight;
46 }
47
48 public boolean isGreenLight() {
49     return greenLight;
50 }
51
52 public void setGreenLight(boolean greenLight) {
53     this.greenLight = greenLight;
54 }
55
56 public int getTimer() {
57     return timer;
58 }
59
60 public void setTimer(int timer) {
61     this.timer = timer;
62 }
63 }
```

## QUESTION 3:

### Code Coverage, Test Cases & Time Stamp:

eclipse-workspace - Homework3/src/Homework3/Problem3Class.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit

Finished after 0.061 seconds

Runs: 14/14 Errors: 0 Failures: 0

Homework3.Problem3ClassTest [Runner: JUnit 4] (0.000 s)

- [0] 1.TRUE,650,2500.01.TRUE,8-9-10-11-12-20.TTT StmtS 9-12 (test) (0.000 s)
- [1] 2.FALSE,700,3500.01.TRUE,8-14-15-20.TTF StmtS 14-19 (test) (0.000 s)
- [2] 3.TRUE,649,1500.01.FALSE,8-9/2020.FTT StmtS 9-12 (test) (0.000 s)
- [3] 4.FALSE,699,1500.01.TRUE,8-14-17-18-19-20.FTT StmtS 14-19 (test) (0.000 s)
- [4] 5.TRUE,650,5000.01.FALSE,8-9-10-20.TTF StmtS 9-12 (test) (0.000 s)
- [5] 6.FALSE,699,3500.01.FALSE,8-14-17-20.FTT StmtS 14-19 (test) (0.000 s)
- [6] 7.TRUE,650,2500.FALSE,8-9-10-11-20.TTF StmtS 9-12 (test) (0.000 s)
- [7] 8.FALSE,699,1500.FALSE,8-14-17-18-20.FTT StmtS 14-19 (test) (0.000 s)
- [8] 9.TRUE,650,5000.TRUE,-Other TT BV for StmtS 10-11 (test) (0.000 s)
- [9] 10.FALSE,699,3500.TRUE,-Other TT BV for StmtS 17-18 (test) (0.000 s)
- [10] 11.TRUE,0,2500.01.FALSE,Extreme range creditRating, (test) (0.000 s)
- [11] 12.TRUE,850,2500.01.TRUE,Extreme range creditRating, (test) (0.000 s)
- [12] 13.TRUE,650,0.FALSE,Extreme range cart, (test) (0.000 s)
- [13] 14.TRUE,650,10000.FALSE,Extreme range cart, (test) (0.000 s)

Failure Trace

```
1 package Homework3;
2
3 public class Problem3Class {
4
5     public boolean approvePurchase (boolean member, int creditRating, double cart) {
6         boolean approved=false;
7
8         if (member) {
9             if (creditRating >= 650)
10                 if (cart <= 5,000.0)
11                     if (cart > 2,500.0)
12                         approved = true;
13
14             else {
15                 if (creditRating >= 700)
16                     approved = true;
17
18                 else
19                     if (cart <= 3,500.0)
20                         if (cart > 1,500.0)
21                             approved = true;
22
23                 return approved;
24             }
25 }
```

23:01 20-04-2020

## QUESTION 4:

### Code Coverage, Test Cases & Time Stamp:

eclipse-workspace - Homework3/src/Homework3/Problem4Class.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit

Finished after 0.057 seconds

Runs: 14/14 Errors: 0 Failures: 0

Homework3.Problem4ClassTest [Runner: JUnit 4] (0.001 s)

- [0] 1.TRUE,3000,699,5.TRUE,8-9-10-26 (test) (0.001 s)
- [1] 2.FALSE,2000,749,7.TRUE,8-18-19-26 (test) (0.000 s)
- [2] 3.TRUE,3000.01,700,5.TRUE,8-9-12-13-26 (test) (0.000 s)
- [3] 4.FALSE,2000.01,750,7.TRUE,8-18-21-22-26 (test) (0.000 s)
- [4] 5.TRUE,3000.01,699,6.TRUE,8-9-12-15-16-26 (test) (0.000 s)
- [5] 6.FALSE,2000.01,749,8.TRUE,8-18-21-24-25-26 (test) (0.000 s)
- [6] 7.TRUE,3000.01,699,5.FALSE,8-9-12-15-26 (test) (0.000 s)
- [7] 8.FALSE,2000.01,749,7.FALSE,8-18-21-24-26 (test) (0.000 s)
- [8] 9.TRUE,0,699,5.TRUE,Extreme range cart (test) (0.000 s)
- [9] 10.FALSE,10000,699,5.FALSE,Extreme range cart (test) (0.000 s)
- [10] 11.TRUE,3000.01,0,5.FALSE,Extreme credit rating (test) (0.000 s)
- [11] 12.FALSE,3000.01,850,5.TRUE,Extreme credit rating (test) (0.000 s)
- [12] 13.TRUE,3000.01,699,0.FALSE,Extreme years member (test) (0.000 s)
- [13] 14.FALSE,3000.01,699,20.TRUE,Extreme years member (test) (0.000 s)

Failure Trace

```
1 package Homework3;
2
3 public class Problem4Class {
4
5     public boolean checkOut (double cart, int creditRating, int yearsMember, boolean goldStatus) {
6         boolean approved=false;
7
8         if (goldStatus) {
9             if (cart <= 3,000.00)
10                 approved = true;
11
12             else
13                 if (creditRating >= 700)
14                     approved = true;
15
16                 else
17                     if (yearsMember > 5)
18                         approved = true;
19
20             else {
21                 if (cart <= 2,000.00)
22                     approved = true;
23
24                 else
25                     if (creditRating >= 750)
26                         approved = true;
27
28                     else
29                         if (yearsMember > 7)
30                             approved = true;
31
32                 return true;
33             }
34 }
```

All 2 branches covered.

23:03 20-04-2020

## QUESTION 5:

### Code Coverage, Test Cases & Time Stamp:

The screenshot displays the Eclipse IDE interface. The Package Explorer on the left shows the test results for `Homework3.Problem5ClassTest` using JUnit 4. The test suite consists of 14 individual test cases, all of which passed successfully. The main editor window shows the source code for `Problem5Class.java`, which includes a `calcY` method. The code is annotated with green highlights, indicating the lines of code that were executed during the test runs. The bottom status bar shows the system date and time as 20-04-2020, 23:04.

```
1 package Homework3;
2
3 public class Problem5Class {
4
5     public double calcY (double x) {
6         double y;
7         if (x<=-2.0)
8             y=2;
9         else
10            if (x<0.0)
11                y=-x;
12            else
13                if (x<4.0)
14                    y=-x*x+4*x;
15                else
16                    if (x<6.0)
17                        y=x-4;
18                    else
19                        y=2.0;
20            return y;
21        }
22    }
```

Package Explorer: `JUnit`  
Runs: 14/14 Errors: 0 Failures: 0  
Finished after 0.061 seconds

Homework3.Problem5ClassTest [Runner: JUnit 4] (0.000 s)

- test (0.000 s)
- [0] 1,-2.01,2.00,7-9-20 (test) (0.000 s)
- [1] 2,-0.01,0.01,7-10-11-20 (test) (0.000 s)
- [2] 3,3.99,0.04,7-10-13-14-20 (test) (0.000 s)
- [3] 4,5.99,1.99,7-10-13-16-17-20 (test) (0.000 s)
- [4] 5,6.00,2.00,7-10-13-16-19-20 (test) (0.000 s)
- [5] 6,-2.00,2.00,- (test) (0.000 s)
- [6] 7,0.00,0.00,- (test) (0.000 s)
- [7] 8,4.00,0.00,- (test) (0.000 s)
- [8] 9,-4.00,2.00,extreme range (test) (0.000 s)
- [9] 10,8.00,2.00,extreme range (test) (0.000 s)
- [10] 11,-1.00,1.00,mid-point linear (test) (0.000 s)
- [11] 12,2.00,4.00,parabolic mid (test) (0.000 s)
- [12] 13,3.00,3.00,parabolic 1 (test) (0.000 s)
- [13] 14,5.00,1.00,mid-point linear (test) (0.000 s)

Failure Trace

23:04  
20-04-2020