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CSE-4321-002

1/28/2019

Homework 1

1.

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| **Test Cases** | **Input** | **Expected Outputs** | |
| **Number of Shares** | **Portfolio Amount** | **Customer Status** |
| Test Case 1 | 0 | $0.00 | Regular |
| Test Case 2 | 150 | $20,408.96 | Regular |
| Test Case 3 | 151 | $20,614.33 | Regular |
| Test Case 4 | 374 | $51,058.01 | Regular |
| Test Case 5 | 375 | $51,548.90 | Regular |
| Test Case 6 | 500 | $68,731.87 | Regular |
| Test Case 7 | 501 | $68,769.33 | Regular |
| Test Case 8 | 600 | $82,378.25 | Regular |
| Test Case 9 | 601 | $82,726.66 | Regular |
| Test Case 10 | 800 | $110,151.80 | Regular |
| Test Case 11 | 801 | $110,684.30 | Regular |
| Test Case 12 | 1,250 | $172,784.37 | Regular |
| Test Case 13 | 1,251 | $174,611.53 | Regular |
| Test Case 14 | 5,000 | $698,187.50 | Regular |
| Test Case 15 | 5,001 | $698,327.15 | Prime |
| Test Case 16 | 10,000 | $1,396,475.00 | Prime |

2.

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| **Test Cases** | **Input** | **Expected Outputs** | |
| **Altitude Above Ground (ft)** | **Forward Velocity (fps)** | **Motor Status** |
| Test Case 1 | 0.0 | 0.0 | Off |
| Test Case 2 | 9.9 | 0.0 | Off |
| Test Case 3 | 10.0 | 2.0 | On |
| Test Case 4 | 49.9 | 2.0 | On |
| Test Case 5 | 50.0 | 5.0 | On |
| Test Case 6 | 100.0 | 5.0 | On |
| Test Case 7 | 100.1 | 7.5 | On |
| Test Case 8 | 149.9 | 7.5 | On |
| Test Case 9 | 150.0 | 10.0 | On |
| Test Case 10 | 200.0 | 10.0 | On |
| Test Case 11 | 200.1 | 20.0 | On |
| Test Case 12 | 300.0 | 20.0 | On |

3.

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| **Test Cases** | **Input** | **Expected Outputs** | | | | |
| **Distance (ft)** | **Green** | **Yellow** | **Red** | **Buzzer** | **Brakes** |
| Test Case 1 | 1,000.0 | ON | OFF | OFF | OFF | OFF |
| Test Case 2 | 200.1 | ON | OFF | OFF | OFF | OFF |
| Test Case 3 | 200.0 | OFF | ON | OFF | OFF | OFF |
| Test Case 4 | 100.0 | OFF | ON | OFF | OFF | OFF |
| Test Case 5 | 99.9 | OFF | OFF | ON | OFF | OFF |
| Test Case 6 | 75.0 | OFF | OFF | ON | OFF | OFF |
| Test Case 7 | 74.9 | OFF | OFF | OFF | ON | OFF |
| Test Case 8 | 50.1 | OFF | OFF | OFF | ON | OFF |
| Test Case 9 | 50.0 | OFF | OFF | OFF | OFF | ON |
| Test Case 10 | 0.0 | OFF | OFF | OFF | OFF | ON |

4.

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| **Test Cases** | **Input** | **Expected Outputs** | |
| **Number of Shares** | **Portfolio Amount** | **Customer Status** |
| Test Case 1 | 0 | $0.00 | Regular |
| Test Case 2 | 150 | $20,408.96 | Regular |
| Test Case 3 | 151 | $20,614.33 | Regular |
| Test Case 4 | 374 | $51,058.01 | Regular |
| Test Case 5 | 375 | $51,548.90 | Regular |
| Test Case 6 | 500 | $68,731.87 | Regular |
| Test Case 7 | 501 | $68,769.33 | Regular |
| Test Case 8 | 600 | $82,378.25 | Regular |
| Test Case 9 | 601 | $82,726.66 | Regular |
| Test Case 10 | 800 | $110,151.80 | Regular |
| Test Case 11 | 801 | $110,684.30 | Regular |
| Test Case 12 | 1,250 | $172,784.37 | Regular |
| Test Case 13 | 1,251 | $174,611.53 | Regular |
| Test Case 14 | 2,148 | $299,884.31 | Regular |
| Test Case 15 | 2,149 | $300,023.96 | Silver |
| Test Case 16 | 2,864 | $399,879.08 | Silver |
| Test Case 17 | 2,865 | $400,018.73 | Gold |
| Test Case 18 | 5,000 | $698,187.50 | Gold |
| Test Case 19 | 5,001 | $698,327.15 | Gold |
| Test Case 20 | 5,370 | $749,860.77 | Gold |
| Test Case 21 | 5,371 | $750,000.43 | Platinum |
| Test Case 22 | 10,000 | $1,396,475.00 | Platinum |

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a)

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|  | Rule 1 | Rule 2 | Rule 3 | Rule 4 | Rule 5 | Rule 6 | Rule 7 | Rule 8 |
| **Conditions** | | | | | | | | |
| 0 <= Number of Shares <= 150 | Y |  |  |  |  |  |  |  |
| 151 <= Number of Shares <= 374 |  | Y |  |  |  |  |  |  |
| 375 <= Number of Shares <= 500 |  |  | Y |  |  |  |  |  |
| 501 <= Number of Shares <= 600 |  |  |  | Y |  |  |  |  |
| 601 <= Number of Shares <= 800 |  |  |  |  | Y |  |  |  |
| 801 <= Number of Shares <= 1,250 |  |  |  |  |  | Y |  |  |
| 1,251 <= Number of Shares <= 5,000 |  |  |  |  |  |  | Y |  |
| 5,001 <= Number of Shares <= 10,000 |  |  |  |  |  |  |  | Y |
| **Actions** | | | | | | | | |
| Dividend | 0.785% | 1.125% | 1.825% | 1.825% | 2.085% | 2.450% | 3.450% | 3.450% |
| Fee | $0.00 | $0.00 | $0.00 | $100.00 | $100.00 | $100.00 | $100.00 | $100.00 |
| Status | Regular | Regular | Regular | Regular | Regular | Regular | Regular | Prime |

Number of tests Required: 16

Does this agree with number of tests developed: Yes

b)

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|  | Rule 1 | Rule 2 | Rule 3 | Rule 4 | Rule 5 | Rule 6 |
| **Conditions** | | | | | | |
| 0.0 <= Altitude Above Ground <= 9.9 | Y |  |  |  |  |  |
| 10.0 <= Altitude Above Ground <= 49.9 |  | Y |  |  |  |  |
| 50.0 <= Altitude Above Ground <= 100.0 |  |  | Y |  |  |  |
| 100.1 <= Altitude Above Ground <= 149.9 |  |  |  | Y |  |  |
| 150.0 <= Altitude Above Ground <= 200.0 |  |  |  |  | Y |  |
| 200.1 <= Altitude Above Ground <= 300.0 |  |  |  |  |  | Y |
| **Actions** | | | | | | |
| Forward Velocity (fps) | 0.0 | 2.0 | 5.0 | 7.5 | 10.0 | 20.0 |
| Motor Status | Off | On | On | On | On | On |

Number of tests required: 12

Does this agree with number of tests developed: Yes

c)

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|  | Rule 1 | Rule 2 | Rule 3 | Rule 4 | Rule 5 |
| **Conditions** | | | | | |
| 200.1 <= Distance from Vehicle Ahead <= 1,000.0 | Y |  |  |  |  |
| 100.0 <= Distance from Vehicle Ahead <= 200.0 |  | Y |  |  |  |
| 75.0 <= Distance from Vehicle Ahead <= 99.9 |  |  | Y |  |  |
| 50.1 <= Distance from Vehicle Ahead <= 74.9 |  |  |  | Y |  |
| 0 <= Distance from Vehicle Ahead <= 50 |  |  |  |  | Y |
| **Actions** | | | | | |
| Green Light | ON | OFF | OFF | OFF | OFF |
| Yellow Light | OFF | ON | OFF | OFF | OFF |
| Red Light | OFF | OFF | ON | OFF | OFF |
| Buzzer | OFF | OFF | OFF | ON | OFF |
| Brakes | OFF | OFF | OFF | OFF | ON |

Number of tests required: 10

Does this agree with number of tests developed: Yes

6.

**S2**

**S3**

**S4**

Increase  
Fan Speed: Off  
Light: Off/On

Decrease  
Fan Speed: Off  
Light: Off/On

Decrease  
Fan Speed: Off  
Light: Off/On

Increase  
Fan Speed: Low  
Light: Off/On

Increase  
Fan Speed: High  
Light: Off/On

Increase  
Fan Speed: Med  
Light: Off/On

Decrease  
Fan Speed: Low  
Light: Off/On

**S1**

Start/S0  
Fan Speed: Off  
Light: Off

Light: Off/On

Light: Off/On

Decrease  
Fan Speed: Med  
Light: Off/On

Light: Off/On

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| **Current State** | **Inputs** | | | | | **Expected Outputs** | | **Next State** |
| **I** | **D** | **O** | **X** | **L** | **S** | **L** |
| S0 | - | - | - | - | - | Off | Off | S1 |
| S1 | T | - | - | - | F | Low | Off | S2 |
| S1 | T | - | - | - | T | Low | On | S2 |
| S1 | - | T | - | - | F | Off | Off | S1 |
| S1 | - | T | - | - | T | Off | On | S1 |
| S1 | - | - | T | - | - | Off | On | S1 |
| S1 | - | - | - | T | - | Off | Off | S1 |
| S2 | T | - | - | - | F | Med | Off | S3 |
| S2 | T | - | - | - | T | Med | On | S3 |
| S2 | - | T | - | - | F | Off | Off | S1 |
| S2 | - | T | - | - | T | Off | On | S1 |
| S2 | - | - | T | - | - | Low | On | S2 |
| S2 | - | - | - | T | - | Low | Off | S2 |
| S3 | T | - | - | - | F | High | Off | S4 |
| S3 | T | - | - | - | T | High | On | S4 |
| S3 | - | T | - | - | F | Low | Off | S2 |
| S3 | - | T | - | - | T | Low | On | S2 |
| S3 | - | - | T | - | - | Med | On | S3 |
| S3 | - | - | - | T | - | Med | Off | S3 |
| S4 | T | - | - | - | F | Off | Off | S1 |
| S4 | T | - | - | - | T | Off | On | S1 |
| S4 | - | T | - | - | F | Med | Off | S3 |
| S4 | - | T | - | - | T | Med | On | S3 |
| S4 | - | - | T | - | - | High | On | S4 |
| S4 | - | - | - | T | - | High | Off | S4 |