Answer 1 -

The Equivalence Class Partitions with Boundary Values look like the following (Note: $ and trailing zeroes are omitted to save space):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| -∞ 0 | 0.01 2000 | 2000.01 7500 | 7500.01 14999.99 | 15000 25000 | 25000.01 29999.99 | 30000.00 ∞ |

There are 7 ECPs and 14BVs, means there should be 14 test cases. The test cases are below

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Inputs** | **Expected Output** | | |
| **Test Case** | **Current Balance** | **Interest Paid** | **Gift Card** | **Status** |
| Case 1 | -$500.00 | -$35.00 | No | Low Balance |
| Case 2 | $0.00 | -$35.00 | No | Low Balance |
| Case 3 | $0.01 | $0.00 | No | Normal Balance |
| Case 4 | $2,000.00 | $43.00 | No | Normal Balance |
| Case 5 | $2,000.01 | $47.00 | No | Normal Balance |
| Case 6 | $7,500.00 | $176.25 | No | Normal Balance |
| Case 7 | $7,500.01 | $191.25 | No | Normal Balance |
| Case 8 | $14,999.99 | $382.50 | No | Normal Balance |
| Case 9 | $15,000.00 | $442.50 | No | Normal Balance |
| Case 10 | $25,000.00 | $737.50 | No | Normal Balance |
| Case 11 | $25,000.01 | $787.50 | No | Normal Balance |
| Case 12 | $29,999.99 | $945.00 | No | Normal Balance |
| Case 13 | $30,000.00 | $975.00 | Yes | Honored Customer |
| Case 14 | $50,000.00 | $1,625.00 | Yes | Honored Customer |

Answer 2 -

The significance for volume of people will be 1 and we have taken it as an integer.

We have only been given the average and the peak volume. We need to calculate the low volume. There are 7 hours of peak traffic and 17 hours of low volume.

A factor of 2.33 means the volume at peak hours is 2.33\*500 = 1165. To calculate the low volume we use (500\*12 - 1165\*7) / 17 = 226 people/hour.

The significance of time is 1 second. The day starts at 12:00:00AM and goes up to 11:59:59PM the same day.

The Equivalence Class Partition with Boundary Values are as under -

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 12:00:00AM 5:00:00AM | 5:00:01AM 8:59:59AM | 9:00:00AM 2:59:59PM | 3:00:00PM 5:59:59PM | 6:00:00PM 11:59:59PM |

There are 5 ECPs and 10BVs. There are thus 10 test cases as below-

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Input** | | **Expected Output** | |
| **Test Case** | **Time** | **Type Day** | **Passengers/Hr** | **Volume Type** |
| Case 1 | 12:00:00 AM | Weekday | 226 | Low |
| Case 2 | 05:00:00 AM | Weekday | 226 | Low |
| Case 3 | 05:00:01 AM | Weekday | 1165 | High |
| Case 4 | 08:59:59 AM | Weekday | 1165 | High |
| Case 5 | 09:00:00 AM | Weekday | 226 | Low |
| Case 6 | 02:59:59 PM | Weekday | 226 | Low |
| Case 7 | 03:00:00 PM | Weekday | 1165 | High |
| Case 8 | 05:59:59 PM | Weekday | 1165 | High |
| Case 9 | 06:00:00 PM | Weekday | 226 | Low |
| Case 10 | 11:59:59 AM | Weekday | 226 | Low |
| Case 11 | 12:00:00 AM | Weekend | 180 | Low |
| Case 12 | 05:00:00 AM | Weekend | 180 | Low |
| Case 13 | 05:00:01 AM | Weekend | 932 | High |
| Case 14 | 08:59:59 AM | Weekend | 932 | High |
| Case 15 | 09:00:00 AM | Weekend | 180 | Low |
| Case 16 | 02:59:59 PM | Weekend | 180 | Low |
| Case 17 | 03:00:00 PM | Weekend | 932 | High |
| Case 18 | 05:59:59 PM | Weekend | 932 | High |
| Case 19 | 06:00:00 PM | Weekend | 180 | Low |
| Case 20 | 11:59:59 AM | Weekend | 180 | Low |
| Case 21 | 12:00:00 AM | Holiday | 814 | Low |
| Case 22 | 05:00:00 AM | Holiday | 814 | Low |
| Case 23 | 05:00:01 AM | Holiday | 4194 | High |
| Case 24 | 08:59:59 AM | Holiday | 4194 | High |
| Case 25 | 09:00:00 AM | Holiday | 810 | Low |
| Case 26 | 02:59:59 PM | Holiday | 810 | Low |
| Case 27 | 03:00:00 PM | Holiday | 4194 | High |
| Case 28 | 05:59:59 PM | Holiday | 4194 | High |
| Case 29 | 06:00:00 PM | Holiday | 810 | Low |
| Case 30 | 11:59:59 AM | Holiday | 810 | Low |

Answer 3 -

The Equivalence Class Partition of this problem with Boundary Values are as under -

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 500.0 100.1 | 100.0 75.1 | 75.0 50.1 | 50.0 25.1 | 25.0 0.1 | 0.0 -0.1 |

There are 6 ECPs and 12 BVs. There are 12 test cases as below -

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Input** | **Expected Output** | | | |
| **Test Case** | **Distance** | **Red** | **Yellow** | **Green** | **Buzzer** |
| Case 1 | 500 | off | off | off | off |
| Case 2 | 100.1 | off | off | off | off |
| Case 3 | 100 | on | off | off | off |
| Case 4 | 75.1 | on | off | off | off |
| Case 5 | 75 | on | on | off | off |
| Case 6 | 50.1 | on | on | off | off |
| Case 7 | 50 | on | on | on | off |
| Case 8 | 25.1 | on | on | on | off |
| Case 9 | 25 | on | on | on | on |
| Case 10 | 0.1 | on | on | on | on |
| Case 11 | 0 | on | on | on | on |
| Case 12 | -0.1 | off | off | off | off |

Answer 4 -

The Equivalence Class Partitions are as below -

|  |  |
| --- | --- |
| 45000.01 54999.99 | 55000.00 ∞ |

There are two ECPs and 4 BVs, and there are 4 test cases

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Inputs** | **Expected Output** | | |
| **Test Case** | **Current Balance** |  | **Gift Card** | **Status** |
| Case 1 | $45,000.01 |  | 100 | Honored |
| Case 2 | $54,999.99 |  | 100 | Honored |
| Case 3 | $55,000.00 |  | 135 | Top |
| Case 4 | $100,000.00 |  | 135 | Top |