

LAB 08

❖ Q1.

Equivalence classes

- Day
 - $D_1 = 1$ to 28
 - $D_2 = 29$
 - $D_3 = 30$
 - $D_4 = 31$
 - $D_5 \leq 0$
 - $D_6 \geq 32$
- Month
 - M_1 = Months with 31 days: [Jan(01), Mar(03), May(05), Jul(07), Aug(08), Oct(10), Dec(12)]
 - M_2 = Months with 30 days: [Apr(04), Jun(06), Sept(09), Nov(11)]
 - M_3 = Month with 28 or 29 days: [Feb(02)]
 - M_4 = Month < 1
 - M_5 = Month > 12
- Year
 - Y_1 : Leap years from 1900 to 2015
 - Y_2 : Non-Leap years from 1900 to 2015
 - Y_3 : year > 2015
 - Y_4 : year < 1900

Test Cases:

There would be total $6*5*4 = 120$ equivalent classes possible.

Seq. No	Day	Month	Year	Output
1.	D ₁ (25)	M ₁ (01)	Y ₁ (2000)	Previous Date
2.	D ₂ (29)	M ₁ (03)	Y ₁ (1987)	Previous Date
3.	D ₃ (30)	M ₁ (05)	Y ₁ (1995)	Previous Date
4.	D ₄ (31)	M ₁ (07)	Y ₁ (1965)	Previous Date
5.	D ₅ (36)	ANY	ANY	Invalid
6.	D ₆ (50)	ANY	ANY	Invalid
7.	D ₁ (03)	M ₁ (03)	Y ₂ (1999)	Previous Date
8.	D ₂ (29)	M ₁ (07)	Y ₂ (2013)	Previous Date
9.	ANY	M ₄ (06)	ANY	Invalid
10.	D ₂ (29)	M ₃ (29)	Y ₄ (1899)	Invalid
11.	ANY	ANY	Y ₄ (1899)	Invalid
12.	D ₁ (01)	M ₂ (04)	Y ₁ (1900)	Previous Date
13.	D ₂ (29)	M ₂ (06)	Y ₁ (1905)	Previous Date
14.	D ₃ (30)	M ₂ (09)	Y ₁ (2015)	Previous Date
15.	D ₄ (31)	M ₂ (11)	Y ₁ (2014)	Invalid
16.	ANY	ANY	Y ₃ (2016)	Invalid
17.	D ₁ (01)	M ₂ (04)	Y ₂ (1900)	Previous Date
18.	D ₂ (29)	M ₂ (04)	Y ₂ (2015)	Previous Date
19.	D ₃ (30)	M ₂ (11)	Y ₂ (1999)	Previous Date

20.	$D_4(31)$	$M_2(10)$	$Y_2(2015)$	Invalid
21.	$D_1(28)$	$M_3(02)$	$Y_1(1904)$	Previous Date
22.	$D_2(29)$	$M_3(02)$	$Y_1(2008)$	Previous Date
23.	$D_3(30)$	$M_3(02)$	ANY	Invalid
24.	$D_4(31)$	$M_3(02)$	ANY	Invalid
25.	$D_1(24)$	$M_3(02)$	$Y_2(2003)$	Previous Date
26.	$D_2(29)$	$M_3(02)$	$Y_2(2015)$	Invalid
27.	ANY	$M_4(00)$	ANY	Invalid
28.	ANY	$M_5(13)$	ANY	Invalid

❖ Q2

You are testing an e-commerce system that sells products like caps and jackets. The problem is to create functional tests using boundary-value analysis and equivalence class partitioning techniques for the web page that accepts the orders. A screen prototype for the order-entry web page is shown below.

The system accepts a five-digit numeric item ID number from 00000 to 99999. The system accepts a quantity to be ordered, from 1 to 99. If the user enters a previously ordered item ID and a 0 quantity to be ordered, that item is removed from the shopping cart. Based on these inputs, the system retrieves the item price, calculates the item total (quantity times item price), and adds the item total to the cart total. Due to limits on credit card orders that can be processed, the maximum cart total is \$999.99.

Item ID	<input type="text"/>	Item thumbnail goes here
Quantity	<input type="text"/>	
Item Price	<input type="text"/>	Animated shopping cart graphic showing contents goes here
Item Total	<input type="text"/>	
<input type="button" value="Continue Shopping"/> <input type="button" value="Checkout"/>		Cart Total <input type="text"/>

Solution:

Constraints available (as mentioned in the problem statement):

1. Item ID: 00000-99999
2. Quantity to be ordered: 1-99
3. Max cart total: less than or equal to \$999.99 i.e $\leq \$999.99$

Equivalence Classes:

1. Pertaining to ID:

1. Item ID is between 00000-99999(both inclusive) i.e. $00000 \leq ID \leq 99999$
2. Item ID is less than 00000(00000 exclusive) i.e. $ID < 00000$
3. Item ID is greater than 99999 (99999 exclusive) i.e. $ID > 99999$

2. Pertaining to Quantity:

1. Quantity between 0 and 99 i.e. $0 \leq quantity \leq 99$
2. Quantity is less than 0 i.e. $quantity < 0$
3. Quantity is greater than 99 i.e. $quantity > 99$

3. Pertaining to the cart total:

1. Cart total is between 0 - 999.99 (both inclusive) i.e. $0 \leq \text{cart} \leq \text{total}$
999.99
2. Cart total is greater than 999.99 (999.99 exclusive) cart total >
999.99

Equivalence Class Partition

Test Case	Data input	Expected Outcome
ID<00000	-10000	Invalid
ID>99999	100001	Invalid
Quantity<0	-5	Invalid
Quantity>99	101	Invalid
Valid ID	11111	Item price - \$100
Cart total is valid	Id - 11111 Quantity - 5	Cart Total - \$800
Cart total is invalid	Id - 11111 Quantity - 8	Cart Total - \$1000 (error since cart total>999.99)
Quantity = 0	Id - 11111	Item with ID 11111 was removed from shopping cart(if item with ID 11111 was purchased previously)
Quantity = 0	Id - 11111	Error (if item with ID - 11111 was NOT purchased previously)

Boundary-value analysis:

Boundary Value	Expected Outcome
Item ID: -1	error
Item ID: 00000	Item price \$15
Item ID: 99999	Item price \$716
Item ID: 100000	error
Quantity : -1	error
Quantity: 0	Remove from cart, if item previously ordered, otherwise error
Quantity: 99, item ID: 452	Cart total: $99 \times 21 = \$2079$
Quantity: 100	Error
cart total : -1	Not possible
Cart total: 0	Possible if free item
Cart total: \$999.99	Possible
Cart total: \$1000	Item id: 101, price: \$502, quantity: 2 Error: since total exceeded