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Software Testing

CSC13003

Decision Table Testing

Example: Open Credit Card Discount

- If you want to open a credit card account then there are three conditions
  1. If you are a new customer, you will get a 15% discount on all your purchases today
  2. If you are an existing customer and you hold a loyalty card, you get a 10% discount
  3. If you have a coupon, you can get 20% off today (but it can not be used with the new customer discount).
  - Discount amounts are added, if applicable.

➔ Different input combinations?

➔ Need how many Test Cases?

Decision Table Testing

- A software testing technique based on Decision Table, a tabular representation of inputs versus rules/cases/test conditions.
- Helps to test different combinations of conditions and provide better test coverage for complex business logic
- Disadvantage: when the number of input increases the table will become more complex

		Combinations							
Causes	**Values**	1	2	3	4	5	6	7	8
Cause 1	*Y, N*	Y	Y	Y	Y	N	N	N	N
Cause 2	*Y, N*	Y	Y	N	N	Y	Y	N	N
Cause 3	*Y, N*	Y	N	Y	N	Y	N	Y	N
Effects									
Effect 1		X			X				X
Effect 2			X				X		X

Decision Table Testing

- 4 steps
  1. Identify Causes and Effects
  2. Create Decision Table
  3. Reduce Decision Table
  4. Transform each column in Decision table into a Test Case

1. Identify Causes & Effects

- Causes
  - C1: you are a new customer
  - C2: you are an existing customer and you hold a loyalty card
  - C3: you have a coupon
- Effects
  - E1: 15% discount
  - E2: 10% discount
  - E3: 20% discount

2. Create Decision Table

Cause	1	2	3	4	5	6	7	8
C1 (new)	T	T	T	T	F	F	F	F
C2 (loyalty)	T	T	F	F	T	T	F	F
C3 (coupon)	T	F	T	F	T	F	T	F
Effect								
E1 (15%)			X	X				
E2 (10%)					X	X		
E3 (20%)					X		X	
E4 (impossible)	X	X						
Discount	-	-	15%	15%	30%	10%	20%	0%

3. Reduced Decision Table

Cause	3	5	6	7	8
C1 (new)	T	F	F	F	F
C2 (VIP)	F	T	T	F	F
C3 (coupon)	_	T	F	T	F
Effect					
E1 (15%)	X				
E2 (10%)		X	X		
E3 (20%)		X		X	
Chiết khấu	15%	30%	10%	20%	0%

Each column in Decision Table is a Test Case

4. Generate Test Cases

#TC	Input			Expected Output
	New	VIP	Coupon	Chiết khấu
TC1	Y	N	Y	15%
TC2	N	Y	Y	30%
TC3	N	Y	N	10%
TC4	N	N	Y	20%
TC5	N	N	N	0%

Each column in Decision Table is a Test Case

Next Date Problem

- M1= {month | month has 30 days}
- M2= {month | month has 31 days}
- M3= {month | month is December}
- M4= {month | month is February}
- D1= {day | 1 ≤ day ≤ 27}
- D2= {day | day = 28}
- D3= {day | day = 29}
- D4= {day | day = 30}
- D5= {day | day=31}
- Y1= {year | year is a leap year}
- Y2= {year | year is a common year}

Decision Table

Cause	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
C1: month in	M1	M1	M1	M1	M1	M2	M2	M2	M2	M2
C2: day in	D1	D2	D3	D4	D5	D1	D2	D3	D4	D5
C3: year in	-	-	-	-	-	-	-	-	-	-
Effect										
E1: Impossible					X					
E2: Increment day	X	X	X			X	X	X	X	
E3: Reset day				X						X
E4: Increment month				X						X
E5: reset month										
E6: Increment year										

Decision Table (tt)

Cause	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
C1: month in	M3	M3	M3	M3	M3	M4	M4	M4	M4	M4	M4	M4
C2: day in	D1	D2	D3	D4	D5	D1	D2	D2	D3	D3	D4	D5
C3: year in	-	-	-	-	-	-	Y1	Y2	Y1	Y2	-	-
Effect												
E1: Impossible										X	X	X
E2: Increment day	X	X	X	X		X	X					
E3: Reset day					X			X	X			
E4: Increment month								X	X			
E5: reset month					X							
E6: Increment year					X							

Test Cases

#TC	Input			Expected Output
	Day	Month	Year	Next Date
TC1	2	4	2013	4/3/2013
TC2	28	4	2013	4/29/2013
TC3	29	4	2013	4/30/213
TC4	30	4	2013	5/1/2013
TC5	31	2	2013	Error
TC6	2	5	2013	5/3/2013
TC7	28	5	2013	5/29/2013
TC8	29	5	2013	5/30/2013

Test Cases (tt)

#TC	Input			Expected Output
	Day	Month	Year	Next Date
TC9	30	5	2013	5/31/2013
TC10	31	5	2013	6/1/2013
TC11	2	12	2013	12/3/2013
TC12	28	12	2013	12/29/2013
TC13	29	12	2013	12/30/213
TC14	30	12	2013	12/31/2013
TC15	31	12	2013	1/1/2014

Test Cases (tt)

#TC	Input			Expected Output
	Day	Month	Year	Next Date
TC16	2	2	2013	2/3/2013
TC17	28	2	2000	2/29/2000
TC18	28	2	2013	3/1/2013
TC19	29	2	2000	3/1/2000
TC20	29	2	2013	Error
TC21	30	2	2013	Error
TC22	31	2	2013	Error


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