Decision Modelling homework
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Calculation of leap year for both task is done as follows:

If year % 4 == 0 && (year % 100 != 0 || year % 400 ==0) then true

Task 1

Except usual case, when we just decrease the day of a date we have 5 more rules in a DMN table:

1. When it's 1st of March. In this case we should return 28th February of same year
2. When it's 1st of March but the year is leap, in this case the output should be 29th February of the same year. That's why we have got extra condition to see if year is leap or not.
3. There is first day of any month, whose previous month has 30 days.
4. There is first day of any month, whose previous month has 31 days.
5. It's first of January. This is the case when the year decreases.

Here is the solution as a DMN decision table. Blue coloured columns are inputs, greens- outputs.

U	Day		Month	Leap year	Day	Month	Year
	[1..31]		{Jan, Feb, Mar, Apr…}	Boolean	[1..31]	{Jan, Feb, Mar, Apr…}	Number
1	=	1	Mar	false	28	Feb	Same year
2	=	1	Mar	true	29	Feb	Same year
3	=	1	{Feb, Apr, June, Sep, Nov}		31	Previous month	Same year
4	=	1	{May, Jul, Aug, Oct, Dec}		30	Previous month	Same year
5	=	1	Jan		31	Dec	Decrease year
6	>	1			Decrease Day	Same month	Same year

Task 2

To get a valid date, we check if one of the combinations for invalid date is met:

1) It is 31. day in a month that has 30 days – day should be changed to 30
2) It is 29.-31. day in February – if it is leap year, day should be 29, else 28
3) Any other combination (day is less than 29 for month 2, day is less than 31 for months [4, 6, 9, 11] or month is in [1, 3, 5, 7, 8, 10, 12]) – date can remain unchanged.

Below is the decision table of these rules

F	Day	Month	Leap year	Day
	[1..31]	[1..12]	Boolean	[1..31]
1	31	= [4, 6, 9, 11]	-	30
2	[29, 30, 31]	2	Y	29
3	[29, 30, 31]	2	N	28
4	-	-	-	Unchanged

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