Software Testing – Session 9

Agenda:

- Test Design Techniques: Boundary value analysis, Decision table, pairwise

- Regular Expressions

- Test Execution – automatic filling test data in browser: Form Filler

- Cross Browser Testing in cloud: Browser Stack

The NextDate problem

There are 3 fields in an application where one can enter a day, a month and a year.

Upon the input of a certain date it returns the date of the day after that of the input.

The input variables have the obvious conditions:

$1 \leq Day \leq 31$

$1 \leq month \leq 12$

$1812 \leq Year \leq 2012$.

There are more complicated issues to consider due to the dependencies between variables. For example there is never a 31st of April no matter what year we are in

Let's consider only "positive" cases first and use the boundary value analysis:

The values used to test the extremities are:

- Min : Minimal
- Min+ : Just above Minimal
- Nom : Average
- Max- : Just below Maximum
- Max : Maximum

Standard Boundary Value Analysis test cases:

month	day	year
min = 1	min = 1	min = 1812
min+ = 2	min+ = 2	min+ = 1813
nom = 6	nom = 15	nom = 1912
max- = 11	max- = 30	max- = 2011
max = 12	max = 31	max = 2012

Boundary Value Analysis Test Cases

Case	month	day	year	Expected Output
1	6	15	1812	June 16, 1812
2	6	15	1813	June 16, 1813
3	6	15	1912	June 16, 1912
4	6	15	2011	June 16, 2011
5	6	15	2012	June 16, 2012
6	6	1	1912	June 2, 1912
7	6	2	1912	June 3, 1912
8	6	30	1912	July 1, 1912
9	6	31	1912	error
10	1	15	1912	January 16, 1912
11	2	15	1912	February 16, 1912
12	11	15	1912	November 16, 1912
13	12	15	1912	December 16, 1912

Worst Case Analysis:

Worst Case Test Cases (60 of 125)

Case	month	day	year	Expected Output	Case	month	day	year	Expected Output
1	1	1	1812	January 2, 1812	31	2	2	1812	February 3, 1812
2	1	1	1813	January 2, 1813	32	2	2	1813	February 3, 1813
3	1	1	1912	January 2, 1912	33	2	2	1912	February 3, 1912
4	1	1	2011	January 2, 2011	34	2	2	2011	February 3, 2011
5	1	1	2012	January 2, 2012	35	2	2	2012	February 3, 2012
6	1	2	1812	January 3, 1812	36	2	15	1812	February 16, 1812
7	1	2	1813	January 3, 1813	37	2	15	1813	February 16, 1813
8	1	2	1912	January 3, 1912	38	2	15	1912	February 16, 1912
9	1	2	2011	January 3, 2011	39	2	15	2011	February 16, 2011
10	1	2	2012	January 3, 2012	40	2	15	2012	February 16, 2012
11	1	15	1812	January 16, 1812	41	2	30	1812	error
12	1	15	1813	January 16, 1813	42	2	30	1813	error
13	1	15	1912	January 16, 1912	43	2	30	1912	error
14	1	15	2011	January 16, 2011	44	2	30	2011	error
15	1	15	2012	January 16, 2012	45	2	30	2012	error
16	1	30	1812	January 31, 1812	46	2	31	1812	error
17	1	30	1813	January 31, 1813	47	2	31	1813	error
18	1	30	1912	January 31, 1912	48	2	31	1912	error
19	1	30	2011	January 31, 2011	49	2	31	2011	error
20	1	30	2012	January 31, 2012	50	2	31	2012	error
21	1	31	1812	February 1, 1812	51	6	1	1812	June 2, 1812
22	1	31	1813	February 1, 1813	52	6	1	1813	June 2, 1813
23	1	31	1912	February 1, 1912	53	6	1	1912	June 2, 1912
24	1	31	2011	February 1, 2011	54	6	1	2011	June 2, 2011
25	1	31	2012	February 1, 2012	55	6	1	2012	June 2, 2012
26	2	1	1812	February 2, 1812	56	6	2	1812	June 3, 1812
27	2	1	1813	February 2, 1813	57	6	2	1813	June 3, 1813
28	2	1	1912	February 2, 1912	58	6	2	1912	June 3, 1912
29	2	1	2011	February 2, 2011	59	6	2	2011	June 3, 2011
30	2	1	2012	February 2, 2012	60	6	2	2012	June 3, 2012

"Pairwise" Analysis:

case	day	month	year
1	1	1	1812
2	1	2	1813
3	1	6	1912
4	1	11	2011
5	1	12	2012
6	2	1	1813
7	2	2	1812
8	2	6	2011
9	2	11	1912
10	2	12	1812
11	15	1	1912
12	15	2	2011
13	15	6	1812
14	15	11	1813
15	15	12	1813
16	30	1	2011
17	30	2	1912
18	30	6	1813
19	30	11	1812
20	30	12	1912
21	31	1	2012
22	31	2	1812
23	31	6	1813
24	31	11	1912
25	31	12	2011
26	2	2	2012
27	15	6	2012
28	30	11	2012

Decision table – credit card app

Credit card discount rules

- If you are a new customer and you want to open a credit card account then there are three conditions first you will get a 15% discount on all your purchases today

- If you are an existing customer and you hold a loyalty card, you get a 10% discount

- If you have a coupon, you can get 20% off today (but it can't be used with the 'new customer' discount). Discount amounts are added, if applicable.

More than one discount type can be used if the customer is eligible for it.

Decision table – credit card app

Conditions	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8
New customer (15%)	T	T	T	T	F	F	F	F
Loyalty card (10%)	T	T	F	F	T	T	F	F
Coupon (20%)	T	F	T	F	T	F	T	F
Actions								
Discount (%)	X	X	20	15	30	10	20	0

Regular Expressions

Find all email addresses in a given document:

[A-Z0-9a-z._%+-]+@[A-Za-z0-9.-]+\.[A-Za-z]+

Generate a "valid" email address:

[0-9a-z._%+-]{3,5}@[a-z0-9.-]{3,5}\.[a-z]{3}

Extract all email addresses from a given doc:

([A-Z0-9a-z._%+-]+@[A-Za-z0-9.-]+\.[A-Za-z]+) -> \n#\1\n

^[^#] ->