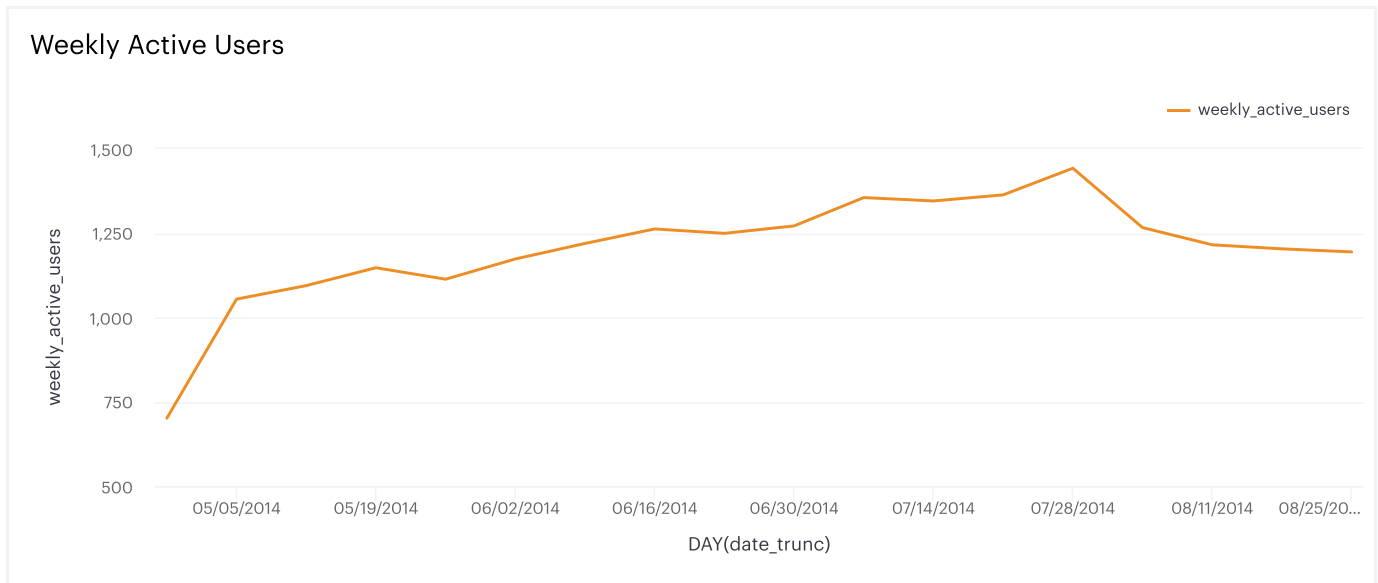


Yammer SQL Project by Kausik Chattapadhyay

Investigating a Drop in User Engagement

Yammer is a social network for communicating with coworkers (<https://www.yammer.com/>). In September 2, 2014, a Tuesday morning, the Product Team Head came to me to ask me what I think about the latest activity on user engagement dashboard. Using SQL, I looked at weekly active users and saw a dip from July 28, 2014 to August 25, 2015.



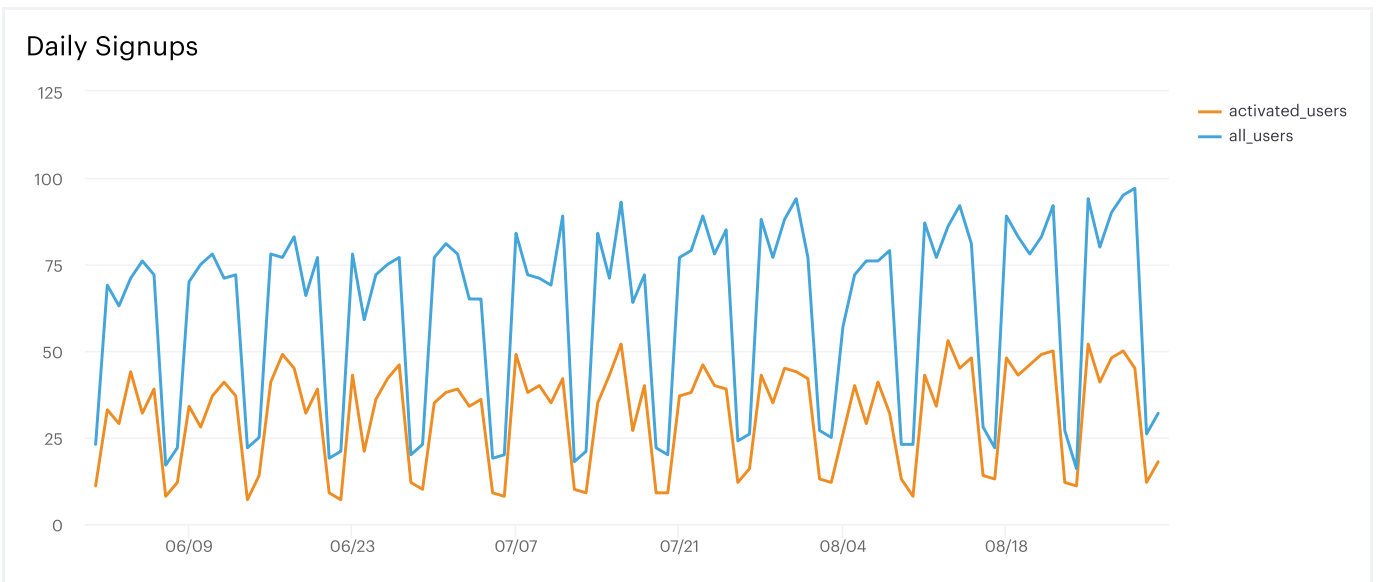
Here is my hypothesis of the possible reasons for the dip:

1. Clients moved to a competitor
2. Broken feature that wasn't fixed immediately
3. Email marketing not as effective as before

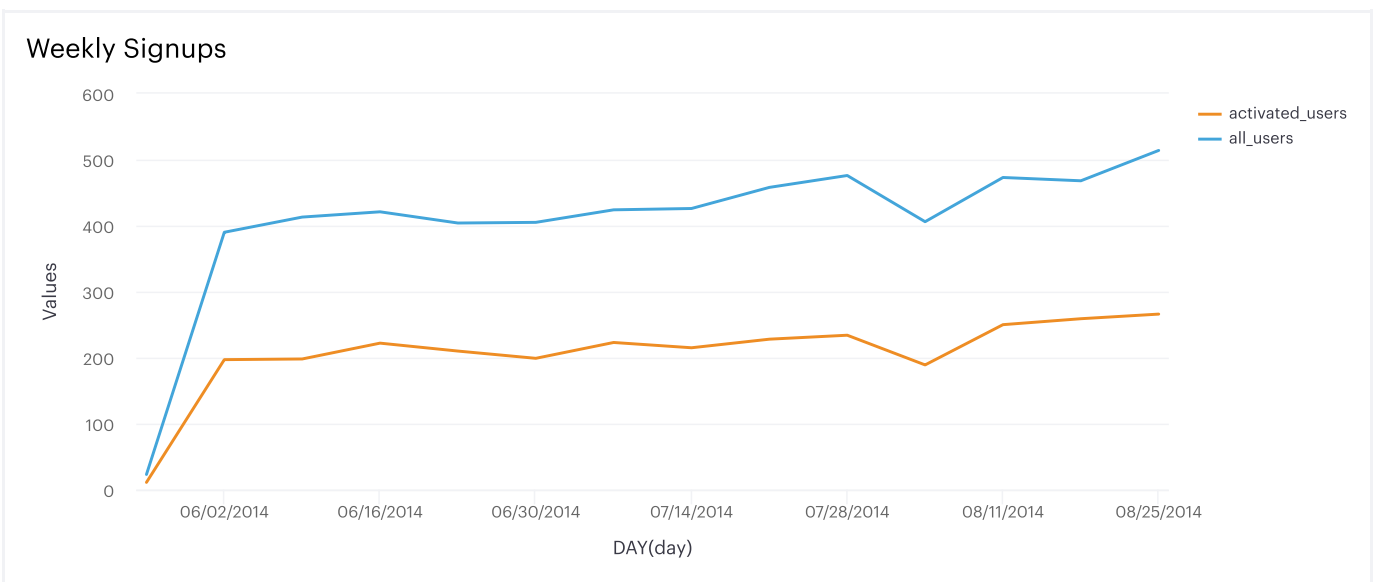
Here are how I plan to test the hypothesis above

1. Check user growth
 - a. Daily user growth
 - b. Weekly user growth of all users
 - c. Weekly engagement of users of different age (age=how long they are using yammer)
2. Check for Broken features
 - a. Weekly engagement by device category
 - b. Weekly engagement by device brand
3. Check for email marketing results
 - a. Weekly email action

USER GROWTH

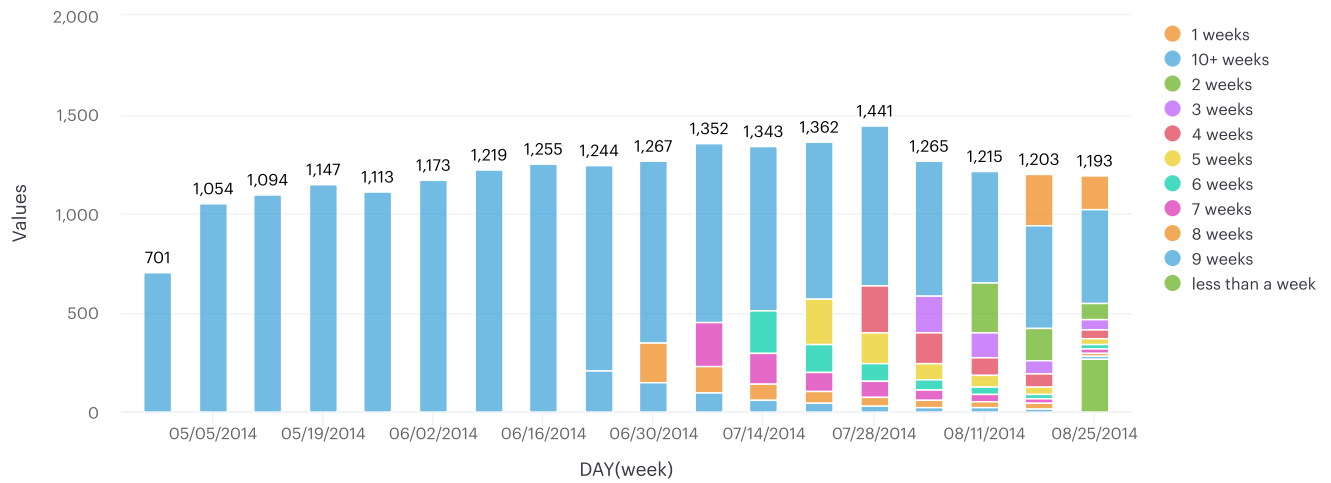


Daily growth of Yammer users seems to be normal from June 1 to August 31, 2014. This can imply that the dip may be coming from older users. Looking at the weekly sign ups the drop of users and active users is seen between the weeks of July 27 to Aug 10.



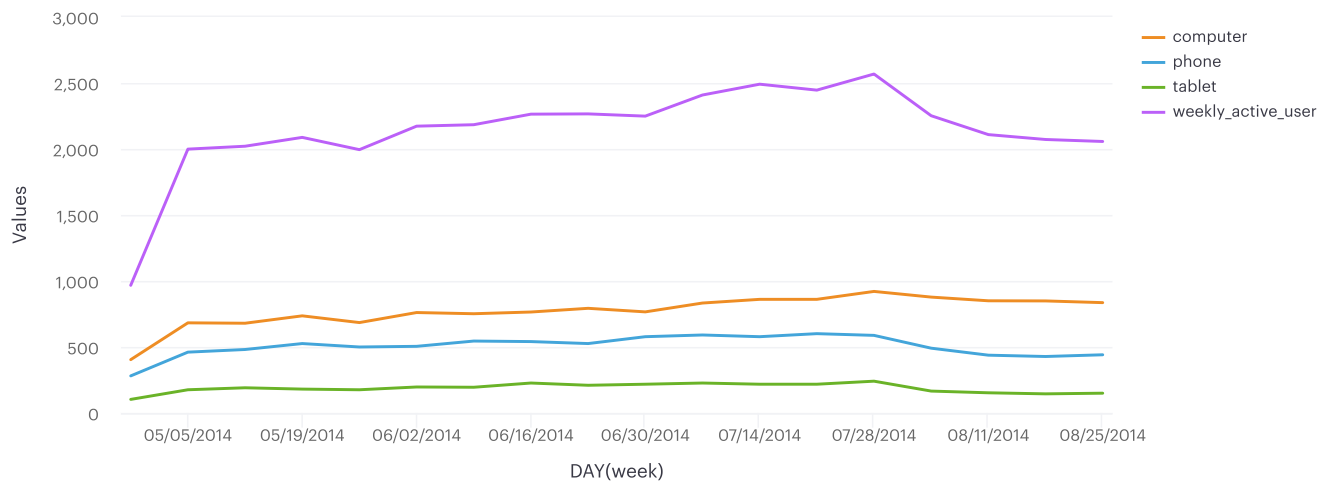
Engagement by User Cohorts graph shows that majority of active users are over 10 weeks old in which cohort also have a decrease in user engagement that started from last week of June to the end of August. This confirms that drop in user engagement is coming from older users specifically users that are over 10 weeks old.

Engagement by User Age Cohort

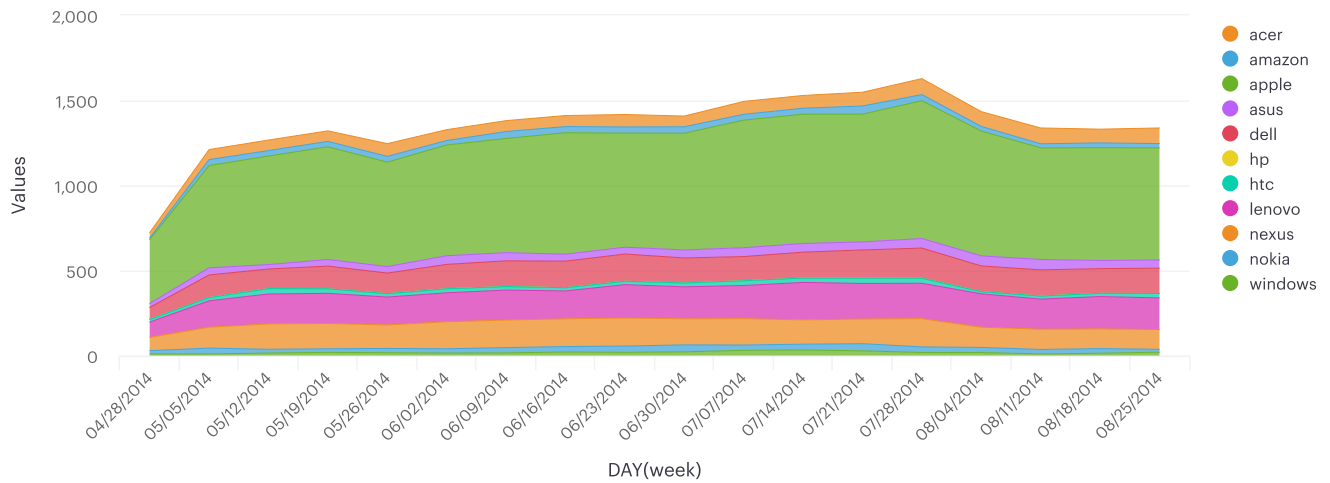


BROKEN FEATURES

Weekly Engagement by Device Category

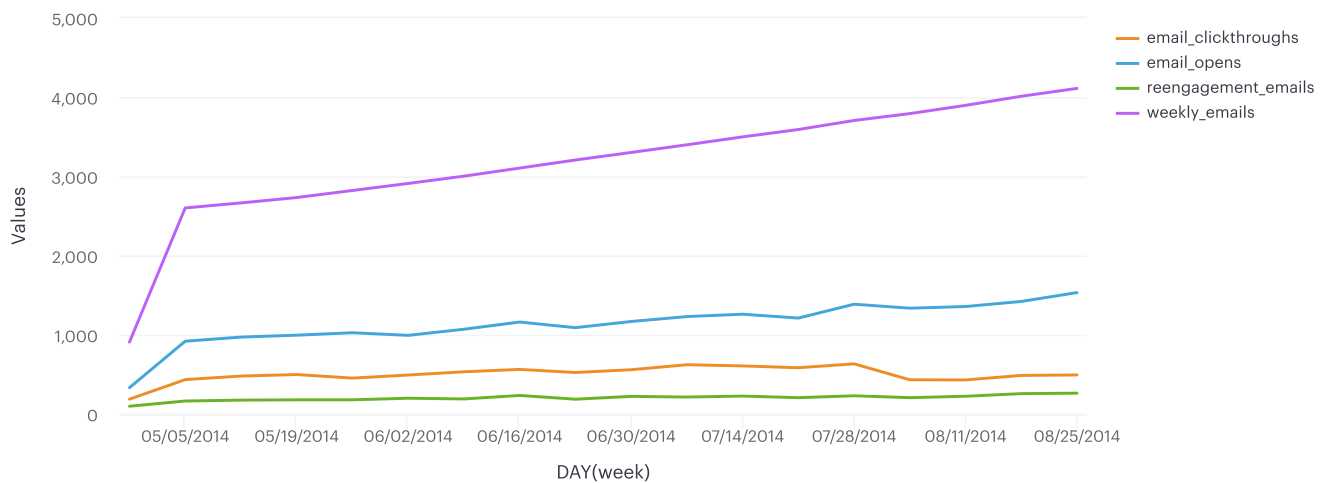


Weekly Engagement by Device Brand



Looking at the Weekly Engagement by Device Category graph, steepest drop in user engagement is observed on phone app users first and tablet app the second. To check if device brand affected user engagement I graphed Weekly Engagement by Device Brand and it reveals that most users has apple brand devices and that there is a dip of engagement of apple users from the last week of July to the first week of August 2014.

Weekly Email Action



To check if email action has something to do with the dip of user engagement a graph of Weekly Email Action was made. This graph shows that there is a steep dip of users that click through email links from the last week of June to the first week of August 2014.

CONCLUSIONS

To sum it up, daily growth of yammer users is normal, weekly growth of all users and active users drop between the last week of July to the second week of August. This drop in active users is attributed to yammer users that are over 10 weeks old. The dip in user engagement is also attributed to the possibility of broken features in the phone app first and the tablet app second. Most users have apple devices it will make sense checking broken features on apple devices app first. Lastly email click through dropped from last week of July to first week of August 2014 contributed to the dropped user engagement and can be connected to the dropped of engagement using the apple phone app and tablet app.

RECOMMENDATIONS

My recommendation to the Head of Product is to start with checking broken features on apple devices phone app first and then tablet app since most user have apple devices and a steep drop of user engagement is detected on phone apps first and tablet apps second.

Checking email click throughs must be investigated further if it is connected to the broken feature of phone app or tablet app or if the email click through links are just not working.

Lastly, I will recommend preventive measures on drop on user engagement such as checking and making sure that all features of application for all devices are working before launching and emailing anything to the existing users.

All SQL queries and graphs are done using mode analytics and can be found in this link below
<https://modeanalytics.com/editor/conizant/reports/09be372f891d#>

Query 1

	date_trunc	weekly_active_users
1	2014-04-28 00:00:00	701
2	2014-05-05 00:00:00	1054
3	2014-05-12 00:00:00	1094
4	2014-05-19 00:00:00	1147
5	2014-05-26 00:00:00	1113
6	2014-06-02 00:00:00	1173
7	2014-06-09 00:00:00	1219
8	2014-06-16 00:00:00	1262
9	2014-06-23 00:00:00	1249
10	2014-06-30 00:00:00	1271
11	2014-07-07 00:00:00	1355
12	2014-07-14 00:00:00	1345
13	2014-07-21 00:00:00	1363
14	2014-07-28 00:00:00	1442
15	2014-08-04 00:00:00	1266
16	2014-08-11 00:00:00	1215
17	2014-08-18 00:00:00	1203
18	2014-08-25 00:00:00	1194

Query 2

	day	all_users	activated_users
1	2014-06-01 00:00:00	23	11
2	2014-06-02 00:00:00	69	33
3	2014-06-03 00:00:00	63	29
4	2014-06-04 00:00:00	71	44
5	2014-06-05 00:00:00	76	32
6	2014-06-06 00:00:00	72	39
7	2014-06-07 00:00:00	17	8
8	2014-06-08 00:00:00	22	12
9	2014-06-09 00:00:00	70	34
10	2014-06-10 00:00:00	75	28
11	2014-06-11 00:00:00	78	37
12	2014-06-12 00:00:00	71	41
13	2014-06-13 00:00:00	72	37
14	2014-06-14 00:00:00	22	7
15	2014-06-15 00:00:00	25	14
16	2014-06-16 00:00:00	78	41
17	2014-06-17 00:00:00	77	49
18	2014-06-18 00:00:00	83	45
19	2014-06-19 00:00:00	66	32
20	2014-06-20 00:00:00	77	39
21	2014-06-21 00:00:00	19	9
22	2014-06-22 00:00:00	21	7

23	2014-06-23 00:00:00	78	43
24	2014-06-24 00:00:00	59	21
25	2014-06-25 00:00:00	72	36
26	2014-06-26 00:00:00	75	42
27	2014-06-27 00:00:00	77	46
28	2014-06-28 00:00:00	20	12
29	2014-06-29 00:00:00	23	10
30	2014-06-30 00:00:00	77	35
31	2014-07-01 00:00:00	81	38
32	2014-07-02 00:00:00	78	39
33	2014-07-03 00:00:00	65	34
34	2014-07-04 00:00:00	65	36
35	2014-07-05 00:00:00	19	9
36	2014-07-06 00:00:00	20	8
37	2014-07-07 00:00:00	84	49
38	2014-07-08 00:00:00	72	38
39	2014-07-09 00:00:00	71	40
40	2014-07-10 00:00:00	69	35
41	2014-07-11 00:00:00	89	42
42	2014-07-12 00:00:00	18	10
43	2014-07-13 00:00:00	21	9
44	2014-07-14 00:00:00	84	35
45	2014-07-15 00:00:00	71	43
46	2014-07-16 00:00:00	93	52
47	2014-07-17 00:00:00	64	27
48	2014-07-18 00:00:00	72	40
49	2014-07-19 00:00:00	22	9
50	2014-07-20 00:00:00	20	9
51	2014-07-21 00:00:00	77	37
52	2014-07-22 00:00:00	79	38
53	2014-07-23 00:00:00	89	46
54	2014-07-24 00:00:00	78	40
55	2014-07-25 00:00:00	85	39
56	2014-07-26 00:00:00	24	12
57	2014-07-27 00:00:00	26	16
58	2014-07-28 00:00:00	88	43
59	2014-07-29 00:00:00	77	35
60	2014-07-30 00:00:00	88	45
61	2014-07-31 00:00:00	94	44
62	2014-08-01 00:00:00	77	42
63	2014-08-02 00:00:00	27	13
64	2014-08-03 00:00:00	25	12
65	2014-08-04 00:00:00	57	26
66	2014-08-05 00:00:00	72	40
67	2014-08-06 00:00:00	76	29
68	2014-08-07 00:00:00	76	41

69	2014-08-08 00:00:00	79	32
70	2014-08-09 00:00:00	23	13
71	2014-08-10 00:00:00	23	8
72	2014-08-11 00:00:00	87	43
73	2014-08-12 00:00:00	77	34
74	2014-08-13 00:00:00	86	53
75	2014-08-14 00:00:00	92	45
76	2014-08-15 00:00:00	81	48
77	2014-08-16 00:00:00	28	14
78	2014-08-17 00:00:00	22	13
79	2014-08-18 00:00:00	89	48
80	2014-08-19 00:00:00	83	43
81	2014-08-20 00:00:00	78	46
82	2014-08-21 00:00:00	83	49
83	2014-08-22 00:00:00	92	50
84	2014-08-23 00:00:00	27	12
85	2014-08-24 00:00:00	16	11
86	2014-08-25 00:00:00	94	52
87	2014-08-26 00:00:00	80	41
88	2014-08-27 00:00:00	90	48
89	2014-08-28 00:00:00	95	50
90	2014-08-29 00:00:00	97	45
91	2014-08-30 00:00:00	26	12
92	2014-08-31 00:00:00	32	18

Query 3

	day	all_users	activated_users
1	2014-05-26 00:00:00	23	11
2	2014-06-02 00:00:00	390	197
3	2014-06-09 00:00:00	413	198
4	2014-06-16 00:00:00	421	222
5	2014-06-23 00:00:00	404	210
6	2014-06-30 00:00:00	405	199
7	2014-07-07 00:00:00	424	223
8	2014-07-14 00:00:00	426	215
9	2014-07-21 00:00:00	458	228
10	2014-07-28 00:00:00	476	234
11	2014-08-04 00:00:00	406	189
12	2014-08-11 00:00:00	473	250
13	2014-08-18 00:00:00	468	259
14	2014-08-25 00:00:00	514	266

Query 4

	week	Average age during week	10+ weeks	9 weeks	8 weeks	7 weeks	6 weeks	5 weeks	4 weeks	3 weeks
1	2014-04-28 00:00:00	124.007238883	701	0	0	0	0	0	0	0
2	2014-05-05 00:00:00	124.381690845	1054	0	0	0	0	0	0	0
3	2014-05-12 00:00:00	131.938644236	1094	0	0	0	0	0	0	0
4	2014-05-19 00:00:00	132.326628352	1147	0	0	0	0	0	0	0
5	2014-05-26 00:00:00	132.345363409	1113	0	0	0	0	0	0	0
6	2014-06-02 00:00:00	131.831109066	1173	0	0	0	0	0	0	0
7	2014-06-09 00:00:00	131.042582418	1219	0	0	0	0	0	0	0
8	2014-06-16 00:00:00	136.480565371	1255	0	0	0	0	0	0	0
9	2014-06-23 00:00:00	136.27890556	1034	210	0	0	0	0	0	0
10	2014-06-30 00:00:00	136.419297466	917	151	199	0	0	0	0	0
11	2014-07-07 00:00:00	135.888750519	899	100	130	223	0	0	0	0
12	2014-07-14 00:00:00	143.448815737	832	62	82	152	215	0	0	0
13	2014-07-21 00:00:00	141.702780049	791	44	60	95	144	228	0	0
14	2014-07-28 00:00:00	144.078660436	805	30	43	83	91	155	234	0
15	2014-08-04 00:00:00	140.732238011	678	24	34	52	52	82	154	189
16	2014-08-11 00:00:00	125.9943101	562	19	33	39	33	59	94	126
17	2014-08-18 00:00:00	128.021718147	522	15	26	26	19	40	64	69
18	2014-08-25 00:00:00	128.269810404	474	15	14	23	20	31	47	48

Query 5

	week	weekly_active_user	computer	phone	tablet
1	2014-04-28 00:00:00	967	404	281	103
2	2014-05-05 00:00:00	1999	683	461	176
3	2014-05-12 00:00:00	2021	680	481	191
4	2014-05-19 00:00:00	2088	736	526	181
5	2014-05-26 00:00:00	1995	685	500	176
6	2014-06-02 00:00:00	2173	761	505	197
7	2014-06-09 00:00:00	2184	752	545	195
8	2014-06-16 00:00:00	2264	765	541	227
9	2014-06-23 00:00:00	2266	793	526	210
10	2014-06-30 00:00:00	2249	766	578	218
11	2014-07-07 00:00:00	2409	833	591	227
12	2014-07-14 00:00:00	2491	861	578	218
13	2014-07-21 00:00:00	2446	861	601	218
14	2014-07-28 00:00:00	2568	921	588	241
15	2014-08-04 00:00:00	2252	878	491	166
16	2014-08-11 00:00:00	2109	850	438	153
17	2014-08-18 00:00:00	2072	849	428	145
18	2014-08-25 00:00:00	2057	836	441	150

Query 6

	week	weekly_active_user	apple	samsung	nexus	lenovo	asus	hp	htc	acer	dell	nokia
1	2014-04-28 00:00:00	967	376	63	78	90	23	0	16	31	70	19
2	2014-05-05 00:00:00	1999	601	95	123	155	42	0	19	59	133	34
3	2014-05-12 00:00:00	2021	638	101	149	176	26	0	32	62	115	22
4	2014-05-19 00:00:00	2088	662	110	149	177	39	0	27	62	133	21
5	2014-05-26 00:00:00	1995	614	104	138	164	38	0	20	75	121	25
6	2014-06-02 00:00:00	2173	651	122	159	170	51	0	24	64	143	25
7	2014-06-09 00:00:00	2184	671	107	162	176	48	0	21	64	151	31
8	2014-06-16 00:00:00	2264	714	121	163	164	41	0	19	65	156	32
9	2014-06-23 00:00:00	2266	671	114	165	196	40	0	20	73	160	37
10	2014-06-30 00:00:00	2249	686	124	153	188	47	0	23	63	147	41
11	2014-07-07 00:00:00	2409	750	133	155	195	52	0	28	76	142	31
12	2014-07-14 00:00:00	2491	760	130	143	220	51	0	26	75	152	34
13	2014-07-21 00:00:00	2446	751	134	145	209	47	0	32	81	165	42
14	2014-07-28 00:00:00	2568	810	119	166	208	56	0	30	94	177	33
15	2014-08-04 00:00:00	2252	734	113	119	196	59	0	13	87	151	30
16	2014-08-11 00:00:00	2109	656	97	119	177	61	0	18	93	154	26
17	2014-08-18 00:00:00	2072	663	89	116	190	48	0	19	81	145	27
18	2014-08-25 00:00:00	2057	659	102	116	186	48	0	26	92	149	17

Query 7

	week	weekly_emails	reengagement_emails	email_opens	email_clickthroughs
1	2014-04-28 00:00:00	908	98	332	187
2	2014-05-05 00:00:00	2602	164	919	434
3	2014-05-12 00:00:00	2665	175	971	479
4	2014-05-19 00:00:00	2733	179	995	498
5	2014-05-26 00:00:00	2822	179	1026	453
6	2014-06-02 00:00:00	2911	199	993	492
7	2014-06-09 00:00:00	3003	190	1070	533
8	2014-06-16 00:00:00	3105	234	1161	563
9	2014-06-23 00:00:00	3207	187	1090	524
10	2014-06-30 00:00:00	3302	222	1168	559
11	2014-07-07 00:00:00	3399	214	1230	622
12	2014-07-14 00:00:00	3499	226	1260	607
13	2014-07-21 00:00:00	3592	206	1211	584
14	2014-07-28 00:00:00	3706	230	1386	633
15	2014-08-04 00:00:00	3793	206	1336	432
16	2014-08-11 00:00:00	3897	224	1357	430
17	2014-08-18 00:00:00	4012	257	1421	487
18	2014-08-25 00:00:00	4111	263	1533	493

Query 8

	week	weekly_emails	reengagement_emails	email_opens	email_clickthroughs
1	2014-04-28 00:00:00	908	98	332	187
2	2014-05-05 00:00:00	2602	164	919	434
3	2014-05-12 00:00:00	2665	175	971	479
4	2014-05-19 00:00:00	2733	179	995	498
5	2014-05-26 00:00:00	2822	179	1026	453
6	2014-06-02 00:00:00	2911	199	993	492
7	2014-06-09 00:00:00	3003	190	1070	533
8	2014-06-16 00:00:00	3105	234	1161	563
9	2014-06-23 00:00:00	3207	187	1090	524
10	2014-06-30 00:00:00	3302	222	1168	559
11	2014-07-07 00:00:00	3399	214	1230	622
12	2014-07-14 00:00:00	3499	226	1260	607
13	2014-07-21 00:00:00	3592	206	1211	584
14	2014-07-28 00:00:00	3706	230	1386	633
15	2014-08-04 00:00:00	3793	206	1336	432
16	2014-08-11 00:00:00	3897	224	1357	430
17	2014-08-18 00:00:00	4012	257	1421	487
18	2014-08-25 00:00:00	4111	263	1533	493