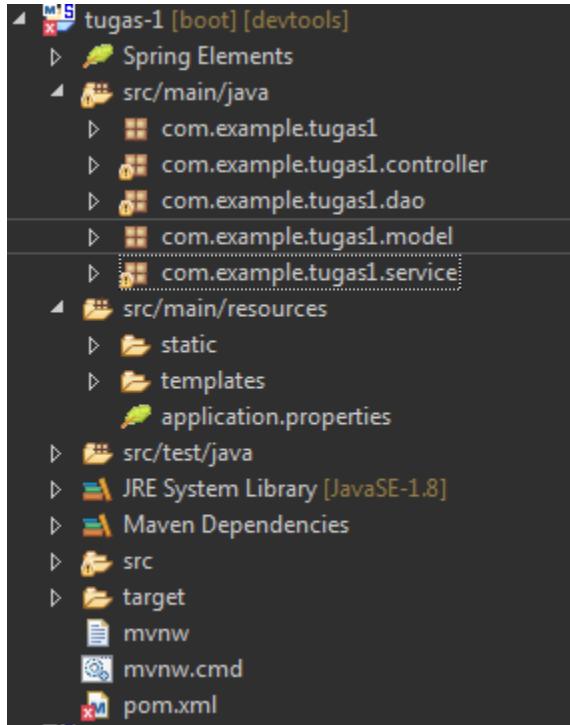


## Write up Tugas 1

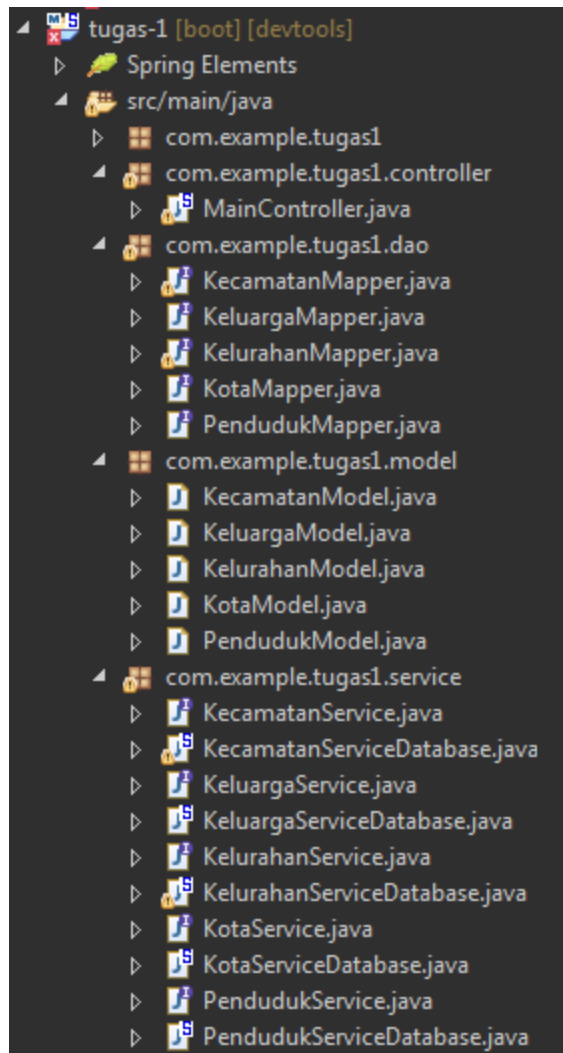
\*note: fitur yang bisa dianggap selesai hanya fitur 1-6

### Struktur Proyek

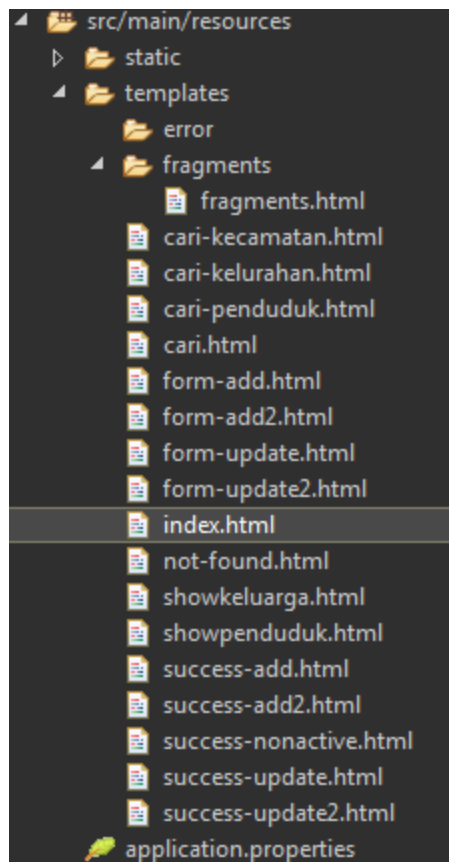
Struktur Proyek yang saya buat adalah berupa MVC, dapat dilihat di gambar berikut



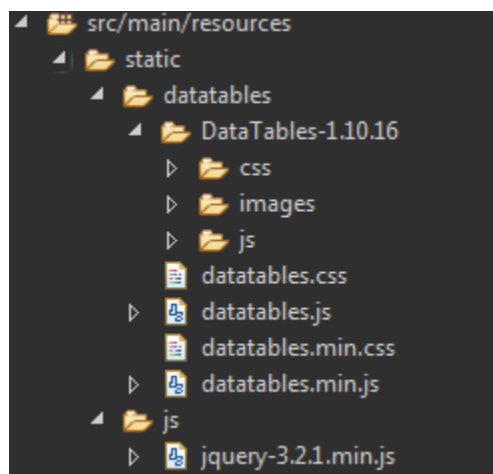
Disana saya sudah membuat package controller yang terdiri dari satu file MainController.java, lalu di package dao saya membuat semua mapper (Keluarga, Kelurahan, Kecamatan, Kota, Penduduk), pun begitu dengan package model. Sementara untuk package service saya membuat interface Service dan java ServiceDatabase untuk masing-masing file mapper.



Untuk struktur template, saya terdapat beberapa file yang sudah self-explanatory dari namanya. Namun khusus untuk file yang berakhiran dengan 2 (seperti form-add2) itu artinya untuk memanipulasi query keluarga. (tambah keluarga, edit keluarga).



Untuk struktur static, saya hanya menggunakan datatables dan jquery karena saya menggunakan cdn untuk bootstrap karena entah mengapa bootstrap yang download tidak bisa saat dicoba digunakan.



## Stress Testing

Percobaan pertama saya mengetes 50 thread dengan 10 ramp up period.

Hasil query mencari data keluarga berdasarkan nkk adalah sebagai berikut

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
1	17:28:10.876	Thread Group ...	HTTP Request	458	✓	1548	216	457	2
2	17:28:11.075	Thread Group ...	HTTP Request	263	✓	1548	216	263	1
3	17:28:11.276	Thread Group ...	HTTP Request	94	✓	1548	216	94	1
4	17:28:11.475	Thread Group ...	HTTP Request	65	✓	1548	216	64	1
5	17:28:11.676	Thread Group ...	HTTP Request	62	✓	1548	216	61	1
6	17:28:12.881	Thread Group ...	HTTP Request	325	✓	1548	216	325	1
7	17:28:13.087	Thread Group ...	HTTP Request	127	✓	1548	216	126	1
8	17:28:12.677	Thread Group ...	HTTP Request	565	✓	1548	216	565	1
9	17:28:12.277	Thread Group ...	HTTP Request	975	✓	1548	216	975	2
10	17:28:11.876	Thread Group ...	HTTP Request	1395	✓	1548	216	1395	1
11	17:28:12.477	Thread Group ...	HTTP Request	809	✓	1548	216	809	1
12	17:28:12.078	Thread Group ...	HTTP Request	1210	✓	1548	216	1209	1
13	17:28:13.282	Thread Group ...	HTTP Request	74	✓	1548	216	73	1
14	17:28:13.478	Thread Group ...	HTTP Request	64	✓	1548	216	64	1
15	17:28:13.682	Thread Group ...	HTTP Request	61	✓	1548	216	61	1
16	17:28:13.878	Thread Group ...	HTTP Request	1323	✓	1548	216	1323	1
17	17:28:14.082	Thread Group ...	HTTP Request	1134	✓	1548	216	1134	1
18	17:28:14.282	Thread Group ...	HTTP Request	957	✓	1548	216	957	1
19	17:28:14.882	Thread Group ...	HTTP Request	394	✓	1548	216	394	1
20	17:28:14.482	Thread Group ...	HTTP Request	802	✓	1548	216	800	1
21	17:28:15.082	Thread Group ...	HTTP Request	209	✓	1548	216	209	1
22	17:28:14.682	Thread Group ...	HTTP Request	614	✓	1548	216	614	1
23	17:28:15.282	Thread Group ...	HTTP Request	86	✓	1548	216	86	1
24	17:28:15.482	Thread Group ...	HTTP Request	60	✓	1548	216	60	1
25	17:28:15.682	Thread Group ...	HTTP Request	61	✓	1548	216	61	1
26	17:28:16.082	Thread Group ...	HTTP Request	1065	✓	1548	216	1065	1
27	17:28:16.683	Thread Group ...	HTTP Request	466	✓	1548	216	466	1
28	17:28:16.283	Thread Group ...	HTTP Request	867	✓	1548	216	867	1
29	17:28:16.883	Thread Group ...	HTTP Request	272	✓	1548	216	272	1
30	17:28:16.483	Thread Group ...	HTTP Request	682	✓	1548	216	682	1
31	17:28:15.883	Thread Group ...	HTTP Request	1291	✓	1548	216	1291	1
32	17:28:17.084	Thread Group ...	HTTP Request	123	✓	1548	216	123	1
33	17:28:17.283	Thread Group ...	HTTP Request	63	✓	1548	216	63	1
34	17:28:18.636	Thread Group ...	HTTP Request	176	✓	1548	216	176	4
35	17:28:18.637	Thread Group ...	HTTP Request	175	✓	1548	216	175	4
36	17:28:18.637	Thread Group ...	HTTP Request	206	✓	1548	216	206	3
37	17:28:18.685	Thread Group ...	HTTP Request	165	✓	1548	216	164	1
38	17:28:18.636	Thread Group ...	HTTP Request	239	✓	1548	216	239	4
39	17:28:18.637	Thread Group ...	HTTP Request	246	✓	1548	216	246	1
40	17:28:18.637	Thread Group ...	HTTP Request	246	✓	1548	216	246	2
41	17:28:18.884	Thread Group ...	HTTP Request	87	✓	1548	216	87	1
42	17:28:19.084	Thread Group ...	HTTP Request	65	✓	1548	216	65	1
43	17:28:19.284	Thread Group ...	HTTP Request	61	✓	1548	216	61	1
44	17:28:20.550	Thread Group ...	HTTP Request	214	✓	1548	216	214	1
45	17:28:20.547	Thread Group ...	HTTP Request	220	✓	1548	216	219	2
46	17:28:20.551	Thread Group ...	HTTP Request	235	✓	1548	216	235	0
47	17:28:20.686	Thread Group ...	HTTP Request	123	✓	1548	216	122	1
48	17:28:20.549	Thread Group ...	HTTP Request	315	✓	1548	216	314	1
49	17:28:20.549	Thread Group ...	HTTP Request	315	✓	1548	216	314	2
50	17:28:20.548	Thread Group ...	HTTP Request	351	✓	1548	216	351	1

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☐ Child samples?

No of Samples 50

Latest Sample 351

Average 409

Deviation 392

View Results in Table

Name: View Results in Table

Comments:

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Configure

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
24	17:28:15.482	Thread Group ...	HTTP Request	60	✓	1548	216	60	1
25	17:28:15.682	Thread Group ...	HTTP Request	61	✓	1548	216	61	1
26	17:28:16.082	Thread Group ...	HTTP Request	1065	✓	1548	216	1065	1
27	17:28:16.683	Thread Group ...	HTTP Request	466	✓	1548	216	466	1
28	17:28:16.283	Thread Group ...	HTTP Request	867	✓	1548	216	867	1
29	17:28:16.883	Thread Group ...	HTTP Request	272	✓	1548	216	272	1
30	17:28:16.483	Thread Group ...	HTTP Request	682	✓	1548	216	682	1
31	17:28:15.883	Thread Group ...	HTTP Request	1291	✓	1548	216	1291	1
32	17:28:17.084	Thread Group ...	HTTP Request	123	✓	1548	216	123	1
33	17:28:17.283	Thread Group ...	HTTP Request	63	✓	1548	216	63	1
34	17:28:18.636	Thread Group ...	HTTP Request	176	✓	1548	216	176	4
35	17:28:18.637	Thread Group ...	HTTP Request	175	✓	1548	216	175	4
36	17:28:18.637	Thread Group ...	HTTP Request	206	✓	1548	216	206	3
37	17:28:18.685	Thread Group ...	HTTP Request	165	✓	1548	216	164	1
38	17:28:18.636	Thread Group ...	HTTP Request	239	✓	1548	216	239	4
39	17:28:18.637	Thread Group ...	HTTP Request	246	✓	1548	216	246	1
40	17:28:18.637	Thread Group ...	HTTP Request	246	✓	1548	216	246	2
41	17:28:18.884	Thread Group ...	HTTP Request	87	✓	1548	216	87	1
42	17:28:19.084	Thread Group ...	HTTP Request	65	✓	1548	216	65	1
43	17:28:19.284	Thread Group ...	HTTP Request	61	✓	1548	216	61	1
44	17:28:20.550	Thread Group ...	HTTP Request	214	✓	1548	216	214	1
45	17:28:20.547	Thread Group ...	HTTP Request	220	✓	1548	216	219	2
46	17:28:20.551	Thread Group ...	HTTP Request	235	✓	1548	216	235	0
47	17:28:20.686	Thread Group ...	HTTP Request	123	✓	1548	216	122	1
48	17:28:20.549	Thread Group ...	HTTP Request	315	✓	1548	216	314	1
49	17:28:20.549	Thread Group ...	HTTP Request	315	✓	1548	216	314	2
50	17:28:20.548	Thread Group ...	HTTP Request	351	✓	1548	216	351	1

Dari sini dapat ditarik kesimpulan bahwa website yang saya buat agak terlalu lama/kurang reliable.

Optimasi yang saya lakukan ialah menambahkan indeks pada database lewat phpmyadmin (yang di screenshot hanya contoh, saya melakukan alter table ke semua kolom)

```
ALTER TABLE `keluarga` ADD INDEX(`RN`);
```

Hasilnya, dengan thread dan ramp up period yang sama, hasilnya menjadi lebih ringan

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
1	17:31:37.392	Thread Group ...	HTTP Request	567	✓	1548	216	567	10
2	17:31:37.592	Thread Group ...	HTTP Request	381	✓	1548	216	381	1
3	17:31:37.795	Thread Group ...	HTTP Request	181	✓	1548	216	181	1
4	17:31:37.992	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
5	17:31:38.194	Thread Group ...	HTTP Request	7	✓	1548	216	7	2
6	17:31:38.393	Thread Group ...	HTTP Request	6	✓	1548	216	6	2
7	17:31:38.595	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
8	17:31:38.793	Thread Group ...	HTTP Request	7	✓	1548	216	7	1
9	17:31:39.000	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
10	17:31:39.194	Thread Group ...	HTTP Request	6	✓	1548	216	6	0
11	17:31:39.397	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
12	17:31:39.869	Thread Group ...	HTTP Request	9	✓	1548	216	9	1
13	17:31:39.868	Thread Group ...	HTTP Request	10	✓	1548	216	10	1
14	17:31:39.994	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
15	17:31:40.202	Thread Group ...	HTTP Request	5	✓	1548	216	5	1
16	17:31:40.395	Thread Group ...	HTTP Request	5	✓	1548	216	5	1
17	17:31:40.602	Thread Group ...	HTTP Request	6	✓	1548	216	5	1
18	17:31:40.800	Thread Group ...	HTTP Request	8	✓	1548	216	7	1
19	17:31:41.001	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
20	17:31:41.201	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
21	17:31:41.402	Thread Group ...	HTTP Request	7	✓	1548	216	7	1
22	17:31:41.601	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
23	17:31:41.802	Thread Group ...	HTTP Request	7	✓	1548	216	6	1
24	17:31:42.001	Thread Group ...	HTTP Request	8	✓	1548	216	8	1
25	17:31:42.202	Thread Group ...	HTTP Request	5	✓	1548	216	5	0
26	17:31:42.401	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
27	17:31:42.601	Thread Group ...	HTTP Request	8	✓	1548	216	7	1
28	17:31:42.802	Thread Group ...	HTTP Request	5	✓	1548	216	5	1

☐ Scroll automatically? ☐ Child samples?

No of Samples 50

Latest Sample 9

Average 30

Deviation 95

Optimasi menggunakan index bisa memperkecil waktu hingga jauh. Pun ketika saya mengganti thread menjadi 500 dengan ramp up period 100, hasilnya tetap sample time sangat jauh lebih kecil.

Langkah optimasi sudah membuat website saya menjadi lebih reliable.

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(...)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
474	17:35:51.791	Thread Group ...	HTTP Request	27	✓	1548	216	27	4
475	17:35:51.792	Thread Group ...	HTTP Request	27	✓	1548	216	27	5
476	17:35:51.789	Thread Group ...	HTTP Request	32	✓	1548	216	31	4
477	17:35:51.790	Thread Group ...	HTTP Request	31	✓	1548	216	31	4
478	17:35:51.907	Thread Group ...	HTTP Request	6	✓	1548	216	5	1
479	17:35:52.107	Thread Group ...	HTTP Request	5	✓	1548	216	5	1
480	17:35:52.307	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
481	17:35:52.507	Thread Group ...	HTTP Request	6	✓	1548	216	5	1
482	17:35:52.708	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
483	17:35:52.908	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
484	17:35:53.108	Thread Group ...	HTTP Request	6	✓	1548	216	5	1
485	17:35:53.308	Thread Group ...	HTTP Request	10	✓	1548	216	9	0
486	17:35:54.933	Thread Group ...	HTTP Request	11	✓	1548	216	10	1
487	17:35:54.934	Thread Group ...	HTTP Request	18	✓	1548	216	18	0
488	17:35:54.932	Thread Group ...	HTTP Request	20	✓	1548	216	20	1
489	17:35:54.933	Thread Group ...	HTTP Request	23	✓	1548	216	23	1
490	17:35:54.932	Thread Group ...	HTTP Request	25	✓	1548	216	25	1
491	17:35:54.939	Thread Group ...	HTTP Request	22	✓	1548	216	22	0
492	17:35:54.936	Thread Group ...	HTTP Request	25	✓	1548	216	25	0
493	17:35:54.937	Thread Group ...	HTTP Request	26	✓	1548	216	26	1
494	17:35:55.109	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
495	17:35:55.309	Thread Group ...	HTTP Request	6	✓	1548	216	6	1
496	17:35:58.032	Thread Group ...	HTTP Request	37	✓	1548	216	37	1
497	17:35:58.034	Thread Group ...	HTTP Request	38	✓	1548	216	38	2
498	17:35:58.032	Thread Group ...	HTTP Request	45	✓	1548	216	45	1
499	17:35:58.032	Thread Group ...	HTTP Request	45	✓	1548	216	44	2
500	17:35:58.033	Thread Group ...	HTTP Request	45	✓	1548	216	45	1

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