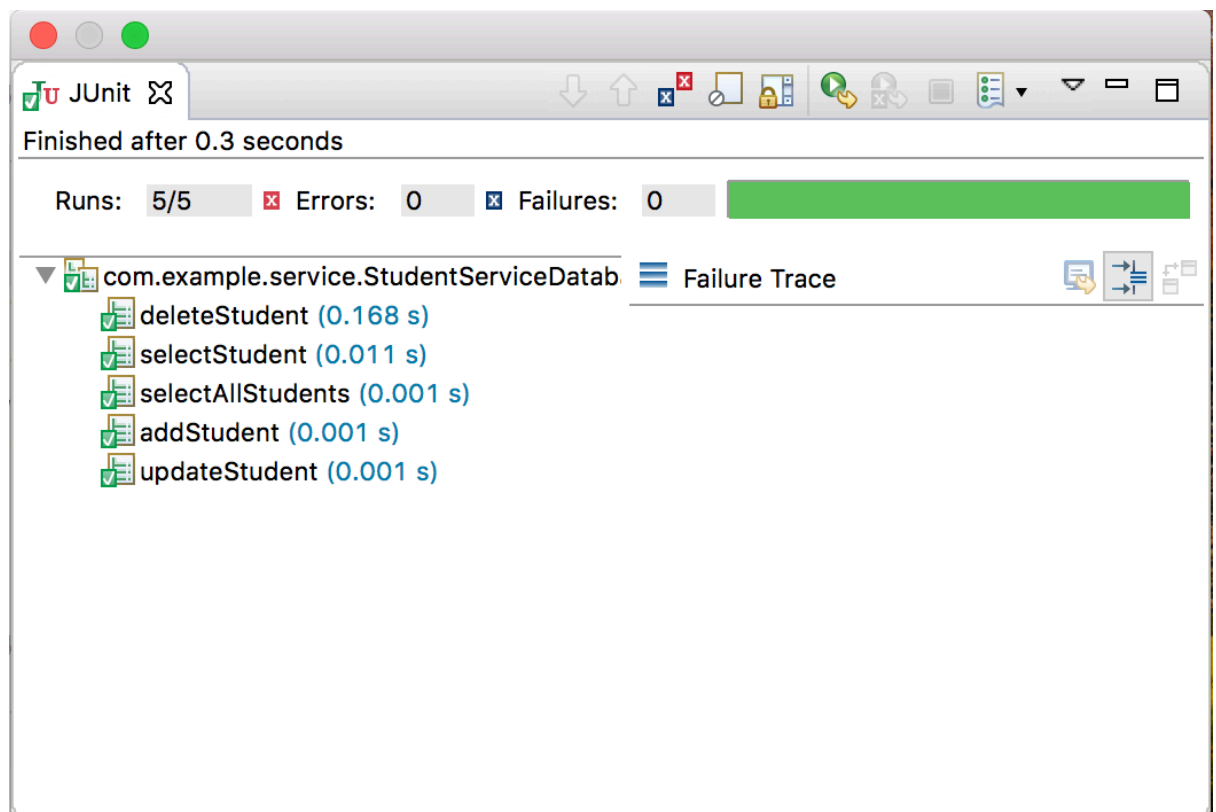


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Latihan Unit Testing

1. Tidak terdapat error ataupun failure pada hasil test yang telah dilakukan. Method mengembalikan nilai yang sesuai dengan yang diharapkan. Nilai kembalian tidak bernilai null, tidak kosong, size sama dengan 1 dan berisi value yang sama dengan variable check.
2. Tidak terdapat error ataupun failure, method berhasil menambahkan data student yang sama dengan test case yang telah dibuat.
- 3.



Load Testing

Setelah dilakukan optimisasi dengan cara menggunakan server side datatables pada halaman viewall dan menerapkan range select pada query database. Uji coba dilakukan dengan Number of Threads sama dengan 100 dan Ramp-up period 10 detik.

Average = 7, Deviation = 2;

View Results in Table.jmx (/Users/fpamungkas/View Results in Table.jmx) - Apache JMeter (4.0 r1823414)

Comments:

Write results to file / Read from file

Filename Browse... Log/Display Only: ☐ Errors ☒ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
76	23:16:41.410	Thread Grou...	HTTP Request	5	✓	1289	133	5	0
77	23:16:41.512	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
78	23:16:41.612	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
79	23:16:41.712	Thread Grou...	HTTP Request	10	✓	1289	133	9	2
80	23:16:41.812	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
81	23:16:41.912	Thread Grou...	HTTP Request	5	✓	1289	133	5	1
82	23:16:42.013	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
83	23:16:42.114	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
84	23:16:42.213	Thread Grou...	HTTP Request	7	✓	1289	133	7	1
85	23:16:42.315	Thread Grou...	HTTP Request	6	✓	1289	133	6	0
86	23:16:42.412	Thread Grou...	HTTP Request	7	✓	1289	133	7	1
87	23:16:42.512	Thread Grou...	HTTP Request	6	✓	1289	133	6	2
88	23:16:42.616	Thread Grou...	HTTP Request	6	✓	1289	133	6	3
89	23:16:42.715	Thread Grou...	HTTP Request	8	✓	1289	133	8	1
90	23:16:42.812	Thread Grou...	HTTP Request	5	✓	1289	133	5	2
91	23:16:42.912	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
92	23:16:43.016	Thread Grou...	HTTP Request	5	✓	1289	133	5	1
93	23:16:43.112	Thread Grou...	HTTP Request	4	✓	1289	133	4	0
94	23:16:43.214	Thread Grou...	HTTP Request	6	✓	1289	133	6	0
95	23:16:43.316	Thread Grou...	HTTP Request	5	✓	1289	133	5	0
96	23:16:43.412	Thread Grou...	HTTP Request	7	✓	1289	133	7	1
97	23:16:43.513	Thread Grou...	HTTP Request	6	✓	1289	133	6	2
98	23:16:43.616	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
99	23:16:43.718	Thread Grou...	HTTP Request	11	✓	1289	133	11	2
100	23:16:43.818	Thread Grou...	HTTP Request	6	✓	1289	133	6	1

☐ Scroll automatically? ☐ Child samples? No of Samples 100 Latest Sample 6 Average 7 Deviation 2

Load testing pada halaman view/{npm} untuk method selectStudent data yang ditemukan.

Average = 8, Deviation = 7.

view Results in Table.jmx (/Users/fpamungkas/View Results in Table.jmx) - Apache JMeter (4.0 r1823414)

Comments:

Write results to file / Read from file

Filename Browse... Log/Display Only: ☐ Errors ☒ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
76	23:16:03.021	Thread Grou...	HTTP Request	6	✓	371	141	6	1
77	23:16:03.119	Thread Grou...	HTTP Request	5	✓	371	141	5	1
78	23:16:03.221	Thread Grou...	HTTP Request	4	✓	371	141	4	1
79	23:16:03.327	Thread Grou...	HTTP Request	4	✓	371	141	4	1
80	23:16:03.429	Thread Grou...	HTTP Request	5	✓	371	141	5	1
81	23:16:03.529	Thread Grou...	HTTP Request	11	✓	371	141	11	1
82	23:16:03.629	Thread Grou...	HTTP Request	6	✓	371	141	6	1
83	23:16:03.731	Thread Grou...	HTTP Request	10	✓	371	141	10	4
84	23:16:03.833	Thread Grou...	HTTP Request	9	✓	371	141	9	2
85	23:16:03.931	Thread Grou...	HTTP Request	5	✓	371	141	5	1
86	23:16:04.037	Thread Grou...	HTTP Request	13	✓	371	141	13	2
87	23:16:04.136	Thread Grou...	HTTP Request	6	✓	371	141	6	1
88	23:16:04.236	Thread Grou...	HTTP Request	7	✓	371	141	7	1
89	23:16:04.335	Thread Grou...	HTTP Request	6	✓	371	141	6	1
90	23:16:04.435	Thread Grou...	HTTP Request	4	✓	371	141	4	0
91	23:16:04.538	Thread Grou...	HTTP Request	13	✓	371	141	13	4
92	23:16:04.638	Thread Grou...	HTTP Request	5	✓	371	141	5	1
93	23:16:04.739	Thread Grou...	HTTP Request	10	✓	371	141	10	2
94	23:16:04.838	Thread Grou...	HTTP Request	10	✓	371	141	10	1
95	23:16:04.941	Thread Grou...	HTTP Request	10	✓	371	141	10	2
96	23:16:05.040	Thread Grou...	HTTP Request	19	✓	371	141	19	2
97	23:16:05.135	Thread Grou...	HTTP Request	4	✓	371	141	4	1
98	23:16:05.241	Thread Grou...	HTTP Request	4	✓	371	141	4	0
99	23:16:05.337	Thread Grou...	HTTP Request	10	✓	371	141	10	1
100	23:16:05.436	Thread Grou...	HTTP Request	6	✓	371	141	6	1

☐ Scroll automatically? ☐ Child samples? No of Samples 100 Latest Sample 6 Average 8 Deviation 7

Load testing pada halaman view/{npm} untuk method selectStudent data yang tidak ditemukan. Average = 5, Deviation = 1.

View Results in Table.jmx (/Users/fpamungkas/View Results in Table.jmx) - Apache JMeter (4.0 r1823414)

Comments:

Write results to file / Read from file

Filename Browse... Log/Display Only: ☐ Errors ☒ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
75	23:14:51.478	Thread Grou...	HTTP Request	5	✓	335	134	5	1
76	23:14:51.574	Thread Grou...	HTTP Request	5	✓	335	134	5	1
77	23:14:51.679	Thread Grou...	HTTP Request	6	✓	335	134	6	0
78	23:14:51.775	Thread Grou...	HTTP Request	4	✓	335	134	4	0
79	23:14:51.879	Thread Grou...	HTTP Request	5	✓	335	134	5	1
80	23:14:51.978	Thread Grou...	HTTP Request	5	✓	335	134	5	1
81	23:14:52.080	Thread Grou...	HTTP Request	5	✓	335	134	5	1
82	23:14:52.181	Thread Grou...	HTTP Request	5	✓	335	134	5	1
83	23:14:52.281	Thread Grou...	HTTP Request	5	✓	335	134	5	1
84	23:14:52.381	Thread Grou...	HTTP Request	5	✓	335	134	5	1
85	23:14:52.480	Thread Grou...	HTTP Request	5	✓	335	134	5	1
86	23:14:52.578	Thread Grou...	HTTP Request	5	✓	335	134	5	1
87	23:14:52.683	Thread Grou...	HTTP Request	4	✓	335	134	4	1
88	23:14:52.781	Thread Grou...	HTTP Request	5	✓	335	134	5	1
89	23:14:52.880	Thread Grou...	HTTP Request	6	✓	335	134	6	1
90	23:14:52.981	Thread Grou...	HTTP Request	6	✓	335	134	5	1
91	23:14:53.081	Thread Grou...	HTTP Request	6	✓	335	134	6	1
92	23:14:53.181	Thread Grou...	HTTP Request	6	✓	335	134	6	1
93	23:14:53.280	Thread Grou...	HTTP Request	7	✓	335	134	7	2
94	23:14:53.383	Thread Grou...	HTTP Request	5	✓	335	134	5	1
95	23:14:53.481	Thread Grou...	HTTP Request	5	✓	335	134	5	1
96	23:14:53.584	Thread Grou...	HTTP Request	5	✓	335	134	5	1
97	23:14:53.685	Thread Grou...	HTTP Request	4	✓	335	134	4	1
98	23:14:53.784	Thread Grou...	HTTP Request	4	✓	335	134	4	1
99	23:14:53.882	Thread Grou...	HTTP Request	4	✓	335	134	4	1

☐ Scroll automatically? ☐ Child samples? No of Samples 100 Latest Sample 3 Average 5 Deviation 1

Load testing pada halaman student/viewall untuk method selectAllStudent(). Average = 5, Deviation = 2;

View Results in Table.jmx (/Users/fpamungkas/View Results in Table.jmx) - Apache JMeter (4.0 r1823414)

Comments:

Write results to file / Read from file

Filename Browse... Log/Display Only: ☐ Errors ☒ Successes

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time...
76	23:18:12.915	Thread Grou...	HTTP Request	3	✓	1289	133	3	1
77	23:18:13.015	Thread Grou...	HTTP Request	2	✓	1289	133	2	0
78	23:18:13.116	Thread Grou...	HTTP Request	4	✓	1289	133	4	0
79	23:18:13.220	Thread Grou...	HTTP Request	8	✓	1289	133	8	1
80	23:18:13.321	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
81	23:18:13.416	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
82	23:18:13.521	Thread Grou...	HTTP Request	4	✓	1289	133	4	1
83	23:18:13.618	Thread Grou...	HTTP Request	4	✓	1289	133	4	1
84	23:18:13.717	Thread Grou...	HTTP Request	4	✓	1289	133	4	1
85	23:18:13.820	Thread Grou...	HTTP Request	4	✓	1289	133	4	1
86	23:18:13.918	Thread Grou...	HTTP Request	3	✓	1289	133	3	0
87	23:18:14.021	Thread Grou...	HTTP Request	3	✓	1289	133	3	1
88	23:18:14.122	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
89	23:18:14.218	Thread Grou...	HTTP Request	10	✓	1289	133	10	1
90	23:18:14.320	Thread Grou...	HTTP Request	9	✓	1289	133	9	1
91	23:18:14.424	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
92	23:18:14.523	Thread Grou...	HTTP Request	4	✓	1289	133	3	1
93	23:18:14.625	Thread Grou...	HTTP Request	6	✓	1289	133	6	2
94	23:18:14.726	Thread Grou...	HTTP Request	9	✓	1289	133	9	2
95	23:18:14.825	Thread Grou...	HTTP Request	6	✓	1289	133	6	1
96	23:18:14.925	Thread Grou...	HTTP Request	8	✓	1289	133	8	2
97	23:18:15.026	Thread Grou...	HTTP Request	8	✓	1289	133	8	1
98	23:18:15.125	Thread Grou...	HTTP Request	4	✓	1289	133	4	1
99	23:18:15.226	Thread Grou...	HTTP Request	4	✓	1289	133	4	0
100	23:18:15.326	Thread Grou...	HTTP Request	6	✓	1289	133	6	1

☐ Scroll automatically? ☐ Child samples? No of Samples 100 Latest Sample 6 Average 5 Deviation 2

Setelah Optimisasi

Optimiasasi dilakukan dengan menambahkan index pada table student.

```
ALTER TABLE `student` ADD INDEX(`npm`);
```

Load testing pada halaman view/{npm} untuk method selectStudent data yang ditemukan.

Average = 7, Deviation = 4.

View Results in Table.jmx (/Users/fpamungkas/View Results in Table.jmx) - Apache JMeter (4.0 r1823414)

00:00:10 0 0/100

Name: VIEW RESULTS IN TABLE

Comments:

Write results to file / Read from file

Filename Browse... Log/Display Only: ☐ Errors ☒ Successes ☐ Configuration

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
76	23:25:31.211	Thread Grou...	HTTP Request	6	✓	371	141	6	1
77	23:25:31.315	Thread Grou...	HTTP Request	8	✓	371	141	8	1
78	23:25:31.417	Thread Grou...	HTTP Request	7	✓	371	141	7	1
79	23:25:31.515	Thread Grou...	HTTP Request	9	✓	371	141	9	2
80	23:25:31.615	Thread Grou...	HTTP Request	8	✓	371	141	8	1
81	23:25:31.716	Thread Grou...	HTTP Request	3	✓	371	141	3	0
82	23:25:31.817	Thread Grou...	HTTP Request	11	✓	371	141	11	2
83	23:25:31.915	Thread Grou...	HTTP Request	6	✓	371	141	6	1
84	23:25:32.016	Thread Grou...	HTTP Request	10	✓	371	141	10	3
85	23:25:32.117	Thread Grou...	HTTP Request	8	✓	371	141	8	2
86	23:25:32.216	Thread Grou...	HTTP Request	9	✓	371	141	9	1
87	23:25:32.317	Thread Grou...	HTTP Request	7	✓	371	141	7	2
88	23:25:32.418	Thread Grou...	HTTP Request	5	✓	371	141	5	0
89	23:25:32.515	Thread Grou...	HTTP Request	6	✓	371	141	6	1
90	23:25:32.615	Thread Grou...	HTTP Request	6	✓	371	141	6	1
91	23:25:32.712	Thread Grou...	HTTP Request	4	✓	371	141	4	1
92	23:25:32.815	Thread Grou...	HTTP Request	8	✓	371	141	8	1
93	23:25:32.916	Thread Grou...	HTTP Request	8	✓	371	141	8	1
94	23:25:33.018	Thread Grou...	HTTP Request	8	✓	371	141	8	1
95	23:25:33.115	Thread Grou...	HTTP Request	6	✓	371	141	6	1
96	23:25:33.217	Thread Grou...	HTTP Request	6	✓	371	141	6	1
97	23:25:33.316	Thread Grou...	HTTP Request	6	✓	371	141	6	1
98	23:25:33.414	Thread Grou...	HTTP Request	7	✓	371	141	7	2
99	23:25:33.518	Thread Grou...	HTTP Request	10	✓	371	141	10	1
100	23:25:33.617	Thread Grou...	HTTP Request	7	✓	371	141	7	1

☐ Scroll automatically? ☐ Child samples? No of Samples 100 Latest Sample 7 Average 7 Deviation 4

Load testing pada halaman view/{npm} untuk method selectStudent data yang tidak ditemukan. Average = 7, Deviation = 4.

View Results in Table.jmx (/Users/tpamungkas/View Results in Table.jmx) - Apache JMeter (4.0 r1823414)

Filename: Browse... Log/Display Only: ☐ Errors ☒ Successes ☐ Configured

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(...)
76	23:27:05.763	Thread Grou...	HTTP Request	3	✓	335	134	3	0
77	23:27:05.866	Thread Grou...	HTTP Request	6	✓	335	134	6	1
78	23:27:05.966	Thread Grou...	HTTP Request	8	✓	335	134	7	1
79	23:27:06.067	Thread Grou...	HTTP Request	5	✓	335	134	5	1
80	23:27:06.167	Thread Grou...	HTTP Request	7	✓	335	134	6	2
81	23:27:06.266	Thread Grou...	HTTP Request	7	✓	335	134	7	2
82	23:27:06.365	Thread Grou...	HTTP Request	4	✓	335	134	4	1
83	23:27:06.466	Thread Grou...	HTTP Request	3	✓	335	134	3	0
84	23:27:06.565	Thread Grou...	HTTP Request	4	✓	335	134	4	1
85	23:27:06.665	Thread Grou...	HTTP Request	4	✓	335	134	4	1
86	23:27:06.765	Thread Grou...	HTTP Request	5	✓	335	134	5	1
87	23:27:06.866	Thread Grou...	HTTP Request	8	✓	335	134	8	1
88	23:27:06.966	Thread Grou...	HTTP Request	4	✓	335	134	4	1
89	23:27:07.067	Thread Grou...	HTTP Request	3	✓	335	134	3	0
90	23:27:07.167	Thread Grou...	HTTP Request	3	✓	335	134	3	1
91	23:27:07.264	Thread Grou...	HTTP Request	4	✓	335	134	4	0
92	23:27:07.367	Thread Grou...	HTTP Request	7	✓	335	134	7	0
93	23:27:07.464	Thread Grou...	HTTP Request	4	✓	335	134	3	1
94	23:27:07.564	Thread Grou...	HTTP Request	4	✓	335	134	4	1
95	23:27:07.663	Thread Grou...	HTTP Request	5	✓	335	134	5	1
96	23:27:07.765	Thread Grou...	HTTP Request	4	✓	335	134	4	0
97	23:27:07.869	Thread Grou...	HTTP Request	6	✓	335	134	6	2
98	23:27:07.967	Thread Grou...	HTTP Request	8	✓	335	134	8	1
99	23:27:08.069	Thread Grou...	HTTP Request	8	✓	335	134	8	2
100	23:27:08.167	Thread Grou...	HTTP Request	8	✓	335	134	8	2

☐ Scroll automatically? ☐ Child samples? No of Samples 100 Latest Sample 8 Average 7 Deviation 4

Load testing pada halaman student/viewall untuk method selectAllStudent(). Average = 6, Deviation = 1;

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(μs)
1	23:28:29.373	Thread Grou...	HTTP Request	7		1289	133	6	2
1	23:28:29.476	Thread Grou...	HTTP Request	6		1289	133	6	1
3	23:28:29.577	Thread Grou...	HTTP Request	8		1289	133	7	1
4	23:28:29.678	Thread Grou...	HTTP Request	8		1289	133	8	1
5	23:28:29.780	Thread Grou...	HTTP Request	7		1289	133	7	1
6	23:28:29.883	Thread Grou...	HTTP Request	5		1289	133	5	1
7	23:28:29.980	Thread Grou...	HTTP Request	8		1289	133	7	1
8	23:28:30.082	Thread Grou...	HTTP Request	6		1289	133	6	1
9	23:28:30.182	Thread Grou...	HTTP Request	5		1289	133	5	1
10	23:28:30.278	Thread Grou...	HTTP Request	5		1289	133	5	1
11	23:28:30.383	Thread Grou...	HTTP Request	5		1289	133	5	2
12	23:28:30.479	Thread Grou...	HTTP Request	7		1289	133	7	1
13	23:28:30.581	Thread Grou...	HTTP Request	7		1289	133	7	1
14	23:28:30.683	Thread Grou...	HTTP Request	5		1289	133	5	1
15	23:28:30.783	Thread Grou...	HTTP Request	5		1289	133	5	1
16	23:28:30.878	Thread Grou...	HTTP Request	7		1289	133	7	1
17	23:28:30.984	Thread Grou...	HTTP Request	5		1289	133	5	1
18	23:28:31.084	Thread Grou...	HTTP Request	5		1289	133	5	1
19	23:28:31.184	Thread Grou...	HTTP Request	5		1289	133	5	1
20	23:28:31.284	Thread Grou...	HTTP Request	5		1289	133	5	1
21	23:28:31.382	Thread Grou...	HTTP Request	5		1289	133	5	1
22	23:28:31.484	Thread Grou...	HTTP Request	5		1289	133	5	1
23	23:28:31.584	Thread Grou...	HTTP Request	5		1289	133	5	1
24	23:28:31.684	Thread Grou...	HTTP Request	5		1289	133	5	1
25	23:28:31.785	Thread Grou...	HTTP Request	4		1289	133	4	0

Rangkuman

- Mempelajari mengenai penggunaan Library Junit untuk mempermudah developer untuk menguji coba method ataupun class yang telah dibuat apakah sesuai dengan yang diharapkan atau tidak.
- Mempelajari penggunaan JMeter sebagai tools untuk menguji coba kecepatan load dari halaman yang dibuat.