JMeter Analysis Report:

Introduction:

Load/Performance Test with **JMeter** engine. **Mercury Tours** website is being tested.
URL: http://newtours.demoaut.com/index.php

Pages being tested:

- Home page

- Sign up

- Sign in

- Booking a flight (3 Pages)

Website is being tested with **four** different thread groups:

1. 1 user

2. 10 users

3. 50 users

4. 100 users

Results:

After executing numerous performance tests on Mercury Tours, here are the results that have been captured by the JMeter engine:

Browse Home	1 User	10 Users	50 Users	100 Users
response code	200	200	200	200
min	637	633	634	656
max	637	633	634	656
throughput/min	17.898	308.129	261.814	326.444
throughput/sec	3.182	5.135	41.600	5.441

Sign Up	1 User	10 Users	50 Users	100 Users
response code	200	200	200	200
min	492	501	507	582
max	526	1987	33732	9024
throughput/min	39.779	316.064	309.822	279.252
throughput/sec	11.811	5.268	39.300	4.654

Login	1 User	10 Users	50 Users	100 Users
response code	200	200	200	200
min	293	303	399	3512
max	3501	853	31946	8482
throughput/min	29.888	312.583	240.089	248.973
throughput/sec	7.203	5.210	26.700	4.150

Book Flight 1	1 User	10 Users	50 Users	100 Users
response code	200	200	200	200
min	959	987	958	4785
max	36845	16397	6867	27909
throughput/min	25.119	25.002	249.732	209.424
throughput/sec	0.419	0.417	4.162	3.490

Book Flight 2	1 User	10 Users	50 Users	100 Users
response code	200	200	200	200
min	755	587	1143	10997
max	8049	16520	7268	22794
throughput/min	23.354	34.503	198.838	101.106
throughput/sec	0.389	0.575	3.314	1.685

Book Flight 3	1 User	10 Users	50 Users	100 Users
response code	200	200	200	200
min	558	707	2918	999
max	998	25933	7554	13462
throughput/min	25.059	18.642	151.926	583.592
throughput/sec	0.418	0.311	2.532	9.727

These results were taken from the Aggregate Report and recorded into a spreadsheet, then uploaded to SpiraTeam.

Browse Home Page:

Label	# Sampl...	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Through...	Rece...	Sent ...
Browse Home Page_50	216	3283	2651	4434	5040	20652	634	32463	0.00%	41.6/min	10.75	0.09
Browse Home Page_100	144	5565	6516	7304	8088	8725	656	8938	0.00%	5.4/sec	84.28	0.71
Browse Home Page_10	105	765	726	864	1059	1498	633	1853	0.00%	5.1/sec	79.55	0.67
Browse Home Page_1	7	2200	667	1880	10275	10275	637	10275	0.00%	17.9/min	4.62	0.04

Looking at the results for browsing home page, the minimum for each thread group are almost identical, however the maximum is varied between them. Each thread group's minimum and maximum values are large in terms of range, indicating that the deviation is large. This means that the system isn't very stable, due to the large deviation.

Analysing the number of samples, 1 User, 10 Users, 50 Users, and 100 Users recorded numbers of: 7, 105, 216, 144 respectively. It is understood that 1 thread and 10 threads will not have large number of samples due to the number of threads. However, 50 threads were able to execute 216 samples whereas 100 threads were able to execute 144 samples. This may be caused by the stability of the system maintaining the requests. In this case, it had low stability for 100 users.

The throughput for each thread group is varied. 1 User recorded 17.9/min, 10 Users recorded 5.1/sec, 50 Users recorded 41.6/min, and 100 Users recorded 5.4/sec. 100 threads and 10 threads performed worse than 1 and 50, however this may have been affected by other testers testing the website simultaneously, therefore altering and affecting the results.

Register:

Label	# Sampl...	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Through...	Rece...	Sent ...
Register_50	204	7663	3408	26975	30702	33333	507	33732	0.00%	39.3/min	17.96	0.32
Register_100	121	6363	6613	8085	8442	8943	582	9024	0.00%	4.7/sec	127....	2.25
Register_10	103	655	599	794	850	1899	501	1987	0.00%	5.3/sec	144....	2.54
Register_1	6	508	505	516	526	526	492	526	0.00%	39.8/min	18.17	0.32

The number of samples in this test were like the results within the home page request, as 100 threads had the least samples in comparison to 50 threads. This may indicate that the system handles 50 threads better than 100 threads.

Furthermore, the minimum time for each thread are similar, however the maximum is varied. Also, 50 threads had a maximum time of 33732ms, yet it recorded 204 samples. But looking at the throughput, 50 threads performed poorly compared to 100 threads (39.3/min and 4.7/sec). Further

looking into throughput, 50 threads performed worse than 1 thread (39.3/min and 39.8/min respectively).

Login:

Label	# Sampl...	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Through...	Rece...	Sent ...
Login_50	138	4520	3275	6343	7926	26556	399	31946	0.00%	26.7/min	3.92	0.14
Login_100	101	6505	6501	7323	7971	8261	3512	8482	0.00%	4.1/sec	36.58	1.28
Login_10	98	412	373	586	652	785	303	853	0.00%	5.2/sec	45.93	1.61
Login_1	6	833	299	307	3501	3501	293	3501	0.00%	29.9/min	4.39	0.15

Looking at the other results and the login results, there is a pattern in the number of samples. However, the minimum and maximum values show different results. 1, 10 and 50 threads show a similar minimum result, whereas 100 threads show a much larger minimum time taken. This can also be seen in the maximum and none of the threads have a correlation. Maximum times are varied, with 1 thread having a maximum of 3501, which was higher than the maximum for 10 threads.

Similarly, comparing other results, throughputs for 1 and 50 threads show that they perform poorly in comparison to 10 and 100 threads.

Book Flight:

Book Flight (1):

Label	# Sampl...	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Through...	Rece...	Sent ...
BookFlight1_50-1	101	2117	2219	3338	3512	3722	508	3939	0.00%	4.2/sec	65.31	2.02
BookFlight1_50-0	101	1906	1809	3205	3536	3915	448	4095	0.00%	4.4/sec	2.21	2.83
BookFlight1_50	101	4024	4136	5747	6038	6713	958	6867	0.00%	4.2/sec	66.19	4.66
BookFlight1_1-1	11	2341	538	7462	7462	9357	510	9357	0.00%	.9/hour	0.00	0.00
BookFlight1_10-1	75	911	601	833	3798	4525	498	5065	0.00%	24.5/min	6.28	0.19
BookFlight1_100-1	100	14568	15432	21333	22109	22862	2883	22918	0.00%	4.2/sec	64.76	2.00
BookFlight1_100-0	100	3906	3702	5211	5400	5666	1902	5667	0.00%	15.7/sec	7.89	10.11
BookFlight1_10-0	75	1385	566	1195	11034	12592	459	12661	0.00%	24.9/min	0.21	0.27
BookFlight1_100	100	18475	19454	25555	26190	27647	4785	27909	0.00%	3.5/sec	55.50	3.91
BookFlight1_1-0	11	3638	477	14284	14284	17676	445	17676	0.00%	.9/hour	0.00	0.00
BookFlight1_10	75	2296	1202	2123	15559	16137	987	16397	0.00%	24.4/min	6.47	0.46
BookFlight1_1	12	8553	1016	22406	22406	36845	959	36845	8.33%	1.0/hour	0.00	0.00

Book Flight (2):

Label	# Sampl...	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Through...	Rece...	Sent ...
BookFlight2_50-1	77	2334	2301	3435	3624	4071	773	4102	0.00%	3.4/sec	52.00	1.61
BookFlight2_50-0	77	2214	2264	3321	3476	3683	369	4354	0.00%	3.5/sec	1.75	2.47
BookFlight2_50	77	4548	4682	5792	6220	6577	1143	7268	0.00%	3.3/sec	52.70	3.92
BookFlight2_1-1	9	774	535	562	2723	2723	510	2723	0.00%	.7/hour	0.00	0.00
BookFlight2_10-1	68	1086	609	828	5019	9043	313	10324	0.00%	24.5/min	6.28	0.19
BookFlight2_100-1	41	5287	5220	7727	8119	8660	2903	8660	0.00%	4.0/sec	61.90	1.92
BookFlight2_100-0	41	10678	9875	14624	17185	18101	4474	18101	0.00%	2.0/sec	0.97	1.40
BookFlight2_10-0	68	563	379	543	644	5486	252	7476	0.00%	25.3/min	0.21	0.30
BookFlight2_100	41	15966	15537	20761	21382	22794	10997	22794	0.00%	1.7/sec	26.74	1.99
BookFlight2_1-0	9	814	256	257	5325	5325	243	5325	0.00%	.7/hour	0.00	0.00
BookFlight2_10	68	1650	1002	1360	8004	10766	587	16520	0.00%	24.4/min	6.47	0.48
BookFlight2_1	9	1589	792	806	8049	8049	755	8049	0.00%	.7/hour	0.00	0.00

Book Flight (3):

Label	# Sampl...	Average	Median	90% Line	95% Line	99% Line	Min	Maximum	Error %	Through...	Rece...	Sent ...
BookFlight3_50-1	56	2611	2605	3641	3828	4241	1240	4897	0.00%	2.8/sec	42.47	1.31
BookFlight3_50-0	56	2340	2060	3674	4313	4361	852	4432	0.00%	2.7/sec	1.35	3.12
BookFlight3_50	56	4952	4897	5984	6638	7122	2918	7554	0.00%	2.5/sec	40.26	4.13
BookFlight3_1-1	8	572	716	729	750	750	314	750	0.00%	25.4/min	6.52	0.20
BookFlight3_10-1	63	1751	717	5483	6065	13049	417	13410	0.00%	20.8/min	5.34	0.16
BookFlight3_100-1	276	4318	4172	6717	7690	8489	526	8900	0.00%	9.9/sec	152....	4.68
BookFlight3_100-0	276	3912	3917	6405	6893	7975	452	9334	0.00%	10.1/sec	5.08	11.72
BookFlight3_10-0	63	2021	530	9773	10286	12597	249	12874	0.00%	21.1/min	0.18	0.41
BookFlight3_100	276	8231	8506	11241	11803	12923	999	13462	0.00%	9.7/sec	154....	15.85
BookFlight3_1-0	8	252	248	258	258	258	244	258	0.00%	26.0/min	0.22	0.50
BookFlight3_10	63	3773	1207	15839	16876	21220	707	25933	0.00%	20.7/min	5.50	0.56
BookFlight3_1	8	824	974	987	998	998	558	998	0.00%	25.1/min	6.64	0.68

All book flight requests showed drastic results. These were conducted during testers finalising their tests. Throughputs for 1 thread performed the worst compared to the other threads, which is an odd result, as generally this would be the best performing thread.

The minimum was varied between all threads, as well as maximum. During the test, pages 1 and 2 would send a request but page 3 did not, which may affect results significantly. Therefore, I isolated the test and ran that request, which showed better performing results. This was executed when traffic was low, hence showing better performing results.