Programming Assignment 3: Internet of Things - Fault tolerance, Replication, and Consistency

PERFORMANCE DOCUMENTS

SUBMITTED BY: RAHUL RAJ AND OLENKA DEY

We evaluated the system using 3 different metrics namely elapsed time of the program, cache size and cache hit number. In all our evaluation we have considered that the replicas doesn't crashes in between. We have explicitly mentioned whenever any replica crashes. And for consistency same sequence of events are considered in all the cases.

Cache Size vs. Elapsed time vs. #hits (Without Crash Faults)

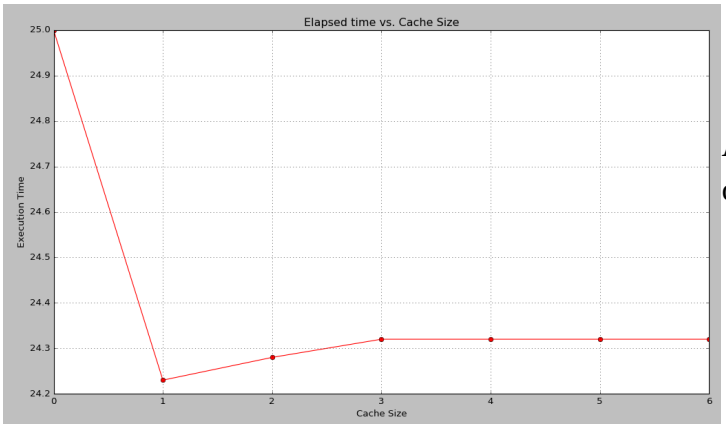
GATEWAY-1

CACHE SIZE	ELAPSED TIME	#hits
0	25	0
1	24.23	21
2	24.28	22
3	24.32	22

GATEWAY-2

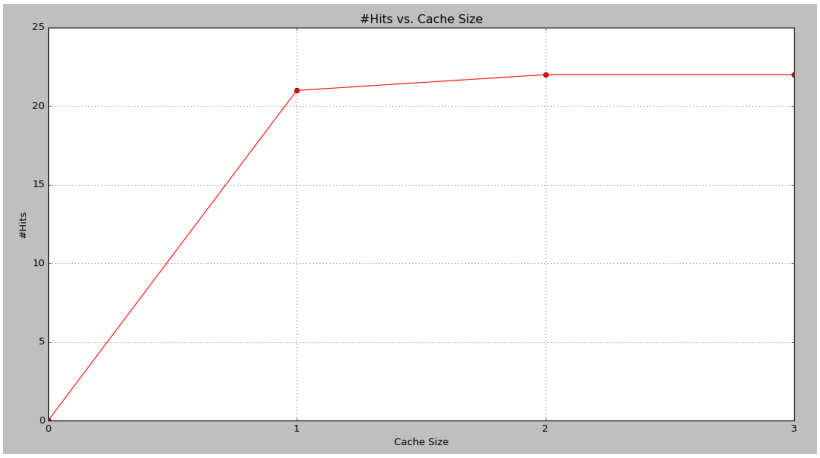
CACHE SIZE	ELAPSED TIME	#hits
0	25.64	0
1	24.68	24
2	24.81	29
3	24.84	30

Cache size vs. Elapsed Time plot GATEWAY - 1

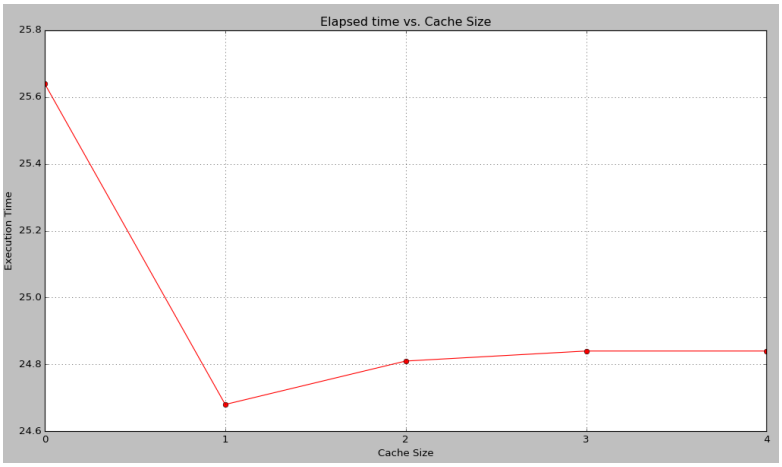


As the cache size increases the Elapsed time becomes constant as total number of cache access is constant.

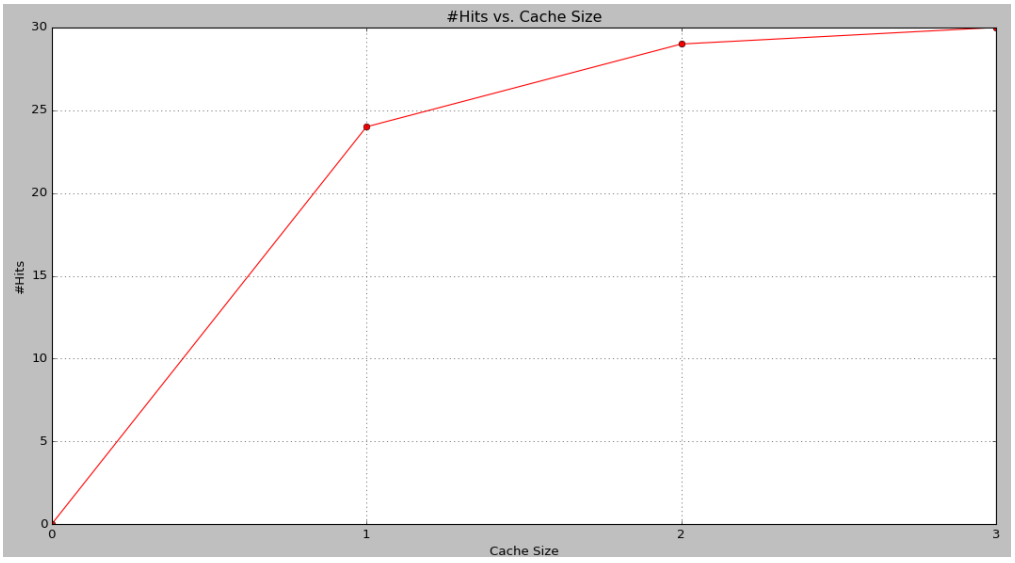
Cache size vs. Cache hits GATEWAY-1



Cache size vs. Elapsed Time plot GATEWAY – 2



Cache size vs. Cache hits GATEWAY-2

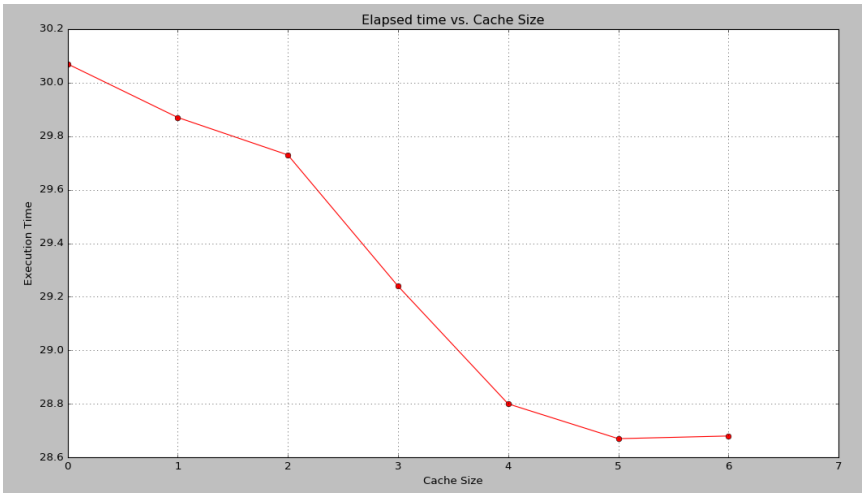


Cache Size vs. Elapsed time vs. #hits (With Crash Faults)

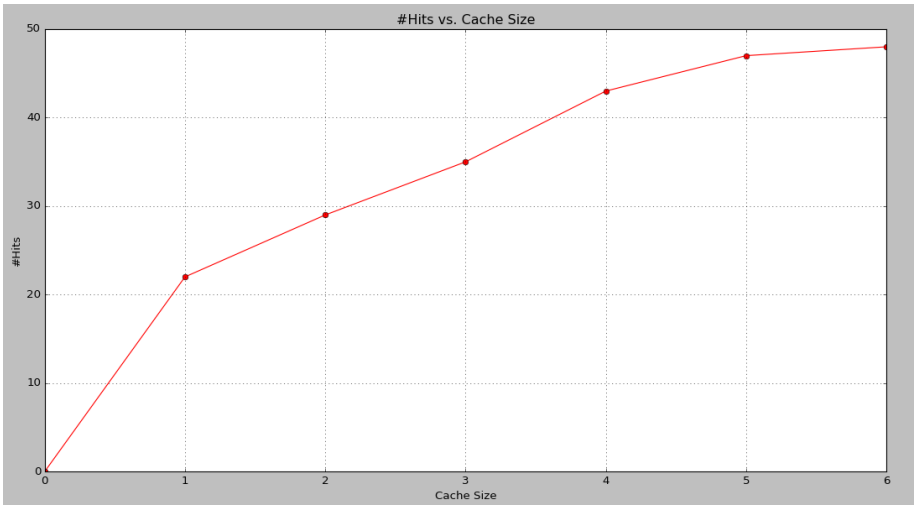
GATEWAY-1, Assuming GATEWAY-2 Crashes as soon as program starts.

CACHE SIZE	ELAPSED TIME	#hits	#miss
0	30.07	0	0
1	29.87	22	49
2	29.73	29	42
3	29.24	35	26
4	28.802	43	8
5	28.67	47	1
6	28.68	48	0

Cache size vs. Elapsed time



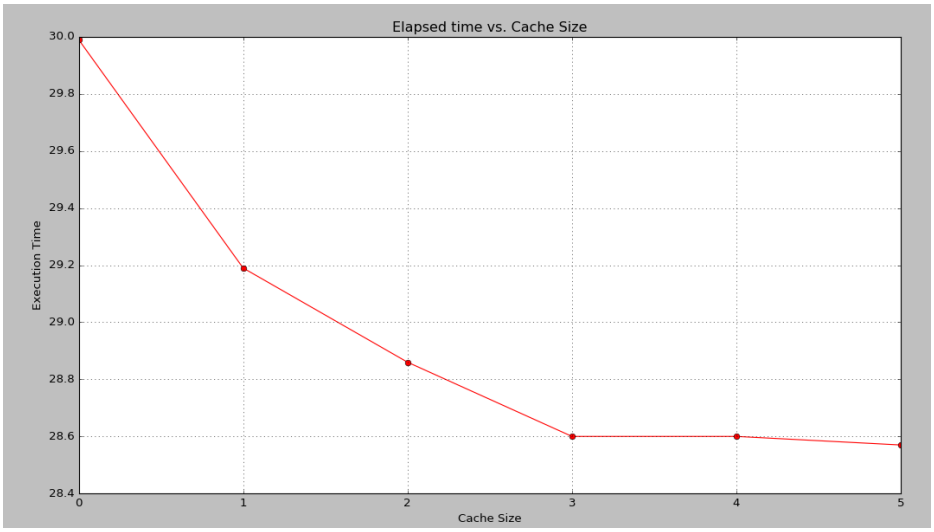
Cache size vs. Cache Hits



GATEWAY-2, Assuming GATEWAY-1 Crashes as soon as program starts.

CACHE SIZE	ELAPSED TIME	#hits	#miss
0	29.99	0	0
1	29.19	38	20
2	28.86	42	10
3	28.60	47	0

Cache size vs. Elapsed time



Cache size vs. Cache hits.