The following tables show the output of all operations in different cases, all are ordered from left to right sequentially as they were performed.

- ***Read requests with and without cache*:**

Request	GET http://127.0.0.1:6400/lookup/3	GET http://127.0.0.1:6400/lookup/3	GET http://127.0.0.1:6400/search/study advices	GET http://127.0.0.1:6400/search/study advices
Output	{ "id": 3, "name": "RPCs for dumps", "topic": "Distributed Systems", "stock_count": 5, "cost": 20 }	{ "id": 3, "name": "RPCs for dumps", "topic": "Distributed Systems", "stock_count": 5, "cost": 20 }	[{ "id": 4, "name": "How to finish Project 3 on time", "topic": "study advices", "stock_count": 10, "cost": 30 }, { "id": 5, "name": "Why theory classes are so hard", "topic": "study advices", "stock_count": 17, "cost": 40 }]	[{ "id": 4, "name": "How to finish Project 3 on time", "topic": "study advices", "stock_count": 10, "cost": 30 }, { "id": 5, "name": "Why theory classes are so hard", "topic": "study advices", "stock_count": 17, "cost": 40 }]
Response time	118 ms	65 ms	113 ms	43 ms
Frontend status	getting from server ... 127.0.0.1 - - [13/Dec/2020 00:59:41] "GET /lookup/3 HTTP/1.1" 200 -	getting from cache ... 127.0.0.1 - - [13/Dec/2020 01:06:03] "GET /lookup/3 HTTP/1.1" 200 -	getting from server ... 127.0.0.1 - - [13/Dec/2020 01:15:29] "GET /search/study%20advices HTTP/1.1" 200 -	getting from cache ... 127.0.0.1 - - [13/Dec/2020 01:23:03] "GET /search/study%20advices HTTP/1.1" 200 -
Replied server	Leader	Cache	Catalog replica	Cache
Replied status	192.168.1.115 - - [13/Dec/2020 00:59:40] "GET /lookup/3 HTTP/1.1" 200 -		92.168.1.115 - - [13/Dec/2020 01:15:28] "GET /search/study%20advices HTTP/1.1" 200 -	

- ***Buy request and the overhead of it due to invalidating cache*:**

Request	**GET** http://127.0.0.1:6400/lookup/5	**POST** http://127.0.0.1:6400/buy/5			**GET** http://127.0.0.1:6400/lookup/5
Output	{ "id": 5, "name": "Why theory classes are so hard", "topic": "study advices", "stock_count": 17, "cost": 40 }	"Bought Book: Why theory classes are so hard"			{ "id": 5, "name": "Why theory classes are so hard", "topic": "study advices", "stock_count": 16, "cost": 40 }
Response time	50 ms	267 ms			100 ms
Frontend status	getting from cache ... 127.0.0.1 - - [13/Dec/2020 01:25:51] "GET /lookup/5 HTTP/1.1" 200 -	127.0.0.1 - - [13/Dec/2020 01:28:26] "POST /buy/5 HTTP/1.1" 200 -			getting from server ... 127.0.0.1 - - [13/Dec/2020 01:46:16] "GET /lookup/5 HTTP/1.1" 200 -
Replied server	Cache	Log replica	Leader	Catalog replica	Catalog replica
Replied status		127.0.0.1 - - [13/Dec/2020 01:28:26] "POST /buy/5 HTTP/1.1" 200 -	192.168.1.111 - - [13/Dec/2020 01:28:25] "GET /lookup/5 HTTP/1.1" 200 - Replica says: Done 192.168.1.111 - - [13/Dec/2020 01:28:25] "PATCH /update/5 HTTP/1.1" 201 -	192.168.1.118 --[13/Dec/2020 01:28:25]"PATCH /update/5 HTTP/1.1" 201 -	192.168.1.115 - - [13/Dec/2020 01:46:14] "GET /lookup/5 HTTP/1.1" 200 -

- ***Failure scenarios and how they are handled:*** * highlights are edited here to explain

Request	GET http://127.0.0.1:6400/lookup/8 [The leader is down]	POST http://127.0.0.1:6400/buy/8 [The leader is down]	POST http://127.0.0.1:6400/buy/8 [Log replica is down]	GET http://127.0.0.1:6400/lookup/3 [Both leader and its replica are down]
Output	{ "id": 8, "name": "DOS", "topic": "Distributed Systems", "stock_count": 10, "cost": 50 }	"Something went wrong, cannot buy!"	"Bought Book : DOS"	"Failed to connect to servers!!"
Response time	2:15 s	135 ms	2:19 s	4:10 s
Frontend status	getting from server ... // first try from leader getting from server ... // second try from replica 127.0.0.1 - - [13/Dec/2020 02:03:30] "GET /lookup/8 HTTP/1.1" 200 -	127.0.0.1 - - [13/Dec/2020 02:14:57] "POST /buy/8 HTTP/1.1" 200 -	Failed to connect to server, switching ... 127.0.0.1 - - [13/Dec/2020 02:25:36] "POST /buy/8 HTTP/1.1" 200 -	getting from server ... // first try getting from server ... // second try 127.0.0.1 - - [13/Dec/2020 02:31:48] "GET /lookup/3 HTTP/1.1" 500 - // error status 500
Replied server	Catalog replica	Main log	Main log	
Replied status	192.168.1.115 - - [13/Dec/2020 02:03:28] "GET /lookup/8 HTTP/1.1" 200 -	Failed to connect to server... 192.168.1.115 - - [13/Dec/2020 02:14:56] "POST /buy/8?address=http%3A%2F%2F192.168.1.118%3A5000 HTTP/1.1" 200 -	192.168.1.115 - - [13/Dec/2020 02:25:35] "POST /buy/8?address=http%3A%2F%2F192.168.1.108%3A5000 HTTP/1.1" 201 - // and same reply from leader and replica as the previous table	

* *The same applies for the rest scenarios ...*