Assignment3 Report

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GitHub Repo Link

https://github.com/xianhe-zhang/CS6650-22Fall/tree/main/Assignment3

Database Design

As described in question, I choose **Redis** for my project, because it provides unrivaled speed, reliability, and performance given memory-level saved data rather than saved on a disk or SSD. And for each request and object, I store SkierID as key, and other attributes as value. In this case, we can solve those queries with a little more work.

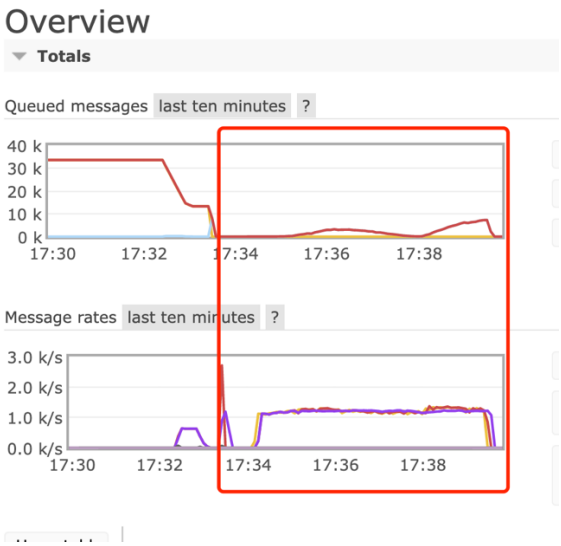
```
<!-- https://mvnrepository.com/artifact/redis.clients/jedis -->
<dependency>
    <groupId>redis.clients</groupId>
    <artifactId>jedis</artifactId>
    <version>2.8.1</version>
</dependency>
```

```
JedisPoolConfig poolConfig = new JedisPoolConfig();
poolConfig.setMaxTotal(512);
pool = new JedisPool(poolConfig, host: "[redacted]", port: 6379);
```

The above code shows how to connect to our Redis database.
To setup and deploy Redis on EC2, I just followed the guidance shown on the assignment page. 👇
https://shawn-shi.medium.com/how-to-install-redis-on-ec2-server-for-fast-in-memory-database-f30c3ef8c35e

Screenshots

In this assignment, I have increased the number of requests so as to simulate a high concurrency state.
As you can see from the graph of RMQ, the publish rate and consume rate remain largely parallel and there is no significant message backlog. The message queue has a peak of 7k messages.



Duration is reasonable given my EC2 instances are only free tiers.

```
phase1 has already completed 96000 requests
phase2 has already completed 288000 requests

Client Part 1 Result:
-----------------------------------------------
Number of successful requests sent: 384000
Number of unsuccessful requests: 0
The total run time(wall time): 316767 milliseconds
The total throughput per Sec: 1212

Client Part 2 Result:
-----------------------------------------------
384000
2.0064577E7
Mean response time: 52.25150260416667
Median response time: 46.0
Throughput: 19.138205604832834
99th response time: 214.0
min and max response time: min: 12.0 , max: 544.0
The total throughput per Sec: 1212
phase duration: 316767
```