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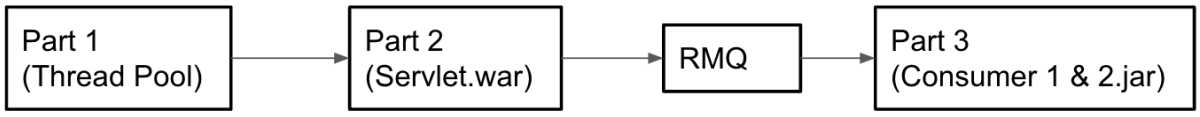
Git repo: https://github.com/june616/CS6650

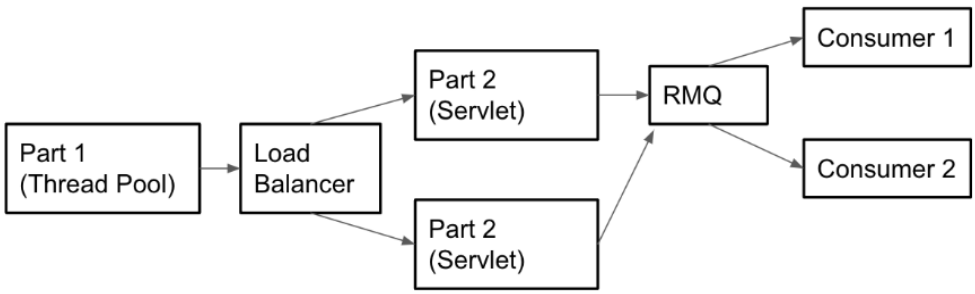
Server design description



Part 1 has been implemented in homework 1.

In Part 2, here are the updates:
(1) Initialize a connection factory to create a channel pool, where we can borrow channels and interact with the RabbitMQ (RMQ)
(2) In the doPost method, the incoming Swipe data will be processed after validation: convert the data to a string, send it as a payload to the remote RMQ, and return success to the client
(3) When publishing the message, a fan-out pattern is implemented.

In Part 3, there are 2 consumers (multi-threaded):
Each consumer will have their own queue. A new channel is created for each thread and message consumption is implemented in a fan-out pattern.
(1) for consumer 1, the major classes include Consumer1, LikeData, Rec1_Single
Create a hashmap (key is the swiper id, value is LikeData object); when the incoming message is “left”, add 1 to the number of dislikes; otherwise, add 1 to the number of likes
(2) for consumer 2, the major classes include Consumer2, MatchData, Rec2_Single
Create a hashmap (key is the swiper id, value is MatchData object); when the incoming message is “right”, add the swipee id to the end of the corresponding queue (if the length of the queue is already 100, pop out the oldest message)



Load balancing: create an application load balancer, and set its target group as instances that host the Servlet. Part 1 will send the requests to the load balancer for routing.

Test result: single servlet

Number of threads in consumers: 50

```
Number of successful requests: 500000
Number of unsuccessful requests: 0
Total run time for all phases to complete (seconds): 908.51
Total throughput in requests per second: 550.3516747201462

Process finished with exit code 0
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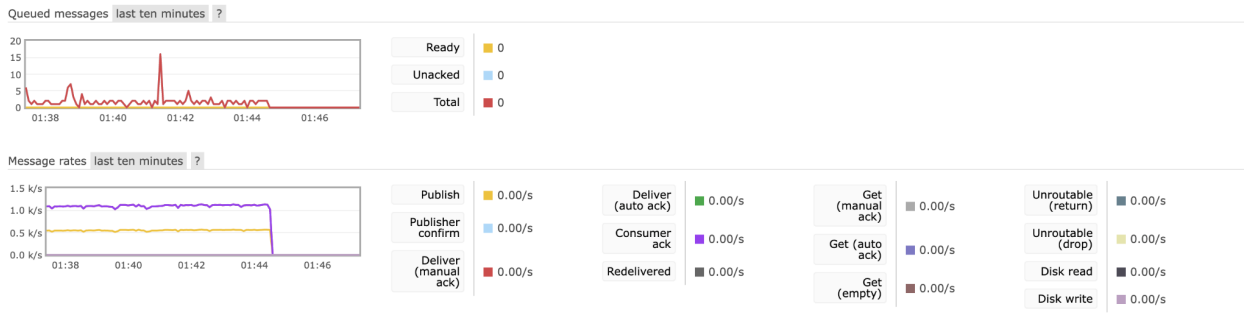

Test result: load-balanced servlet

Number of threads in consumers: 50

```
Number of successful requests: 500000
Number of unsuccessful requests: 0
Total run time for all phases to complete (seconds): 812.956
Total throughput in requests per second: 615.0394363286574

Process finished with exit code 0
```