CS291A: Scalable Internet Services

gTrack: Track Prices of Games on Steam

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Outline

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Introduction

1. gTrack is a website built using Ruby on Rails.
2. gTrack is designed for users to get information related to the games available on Steam.
3. Logged in users can comment and express their like or dislike about any game.
4. gTrack users are presented with a highly specialized search feature.

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1. Steam is the largest PC game distribution platform, yet its search functionalities are inadequate in meeting specialized queries.
2. Items such as emotes, cards and background to a game are not presented in an organised manner in Steam.
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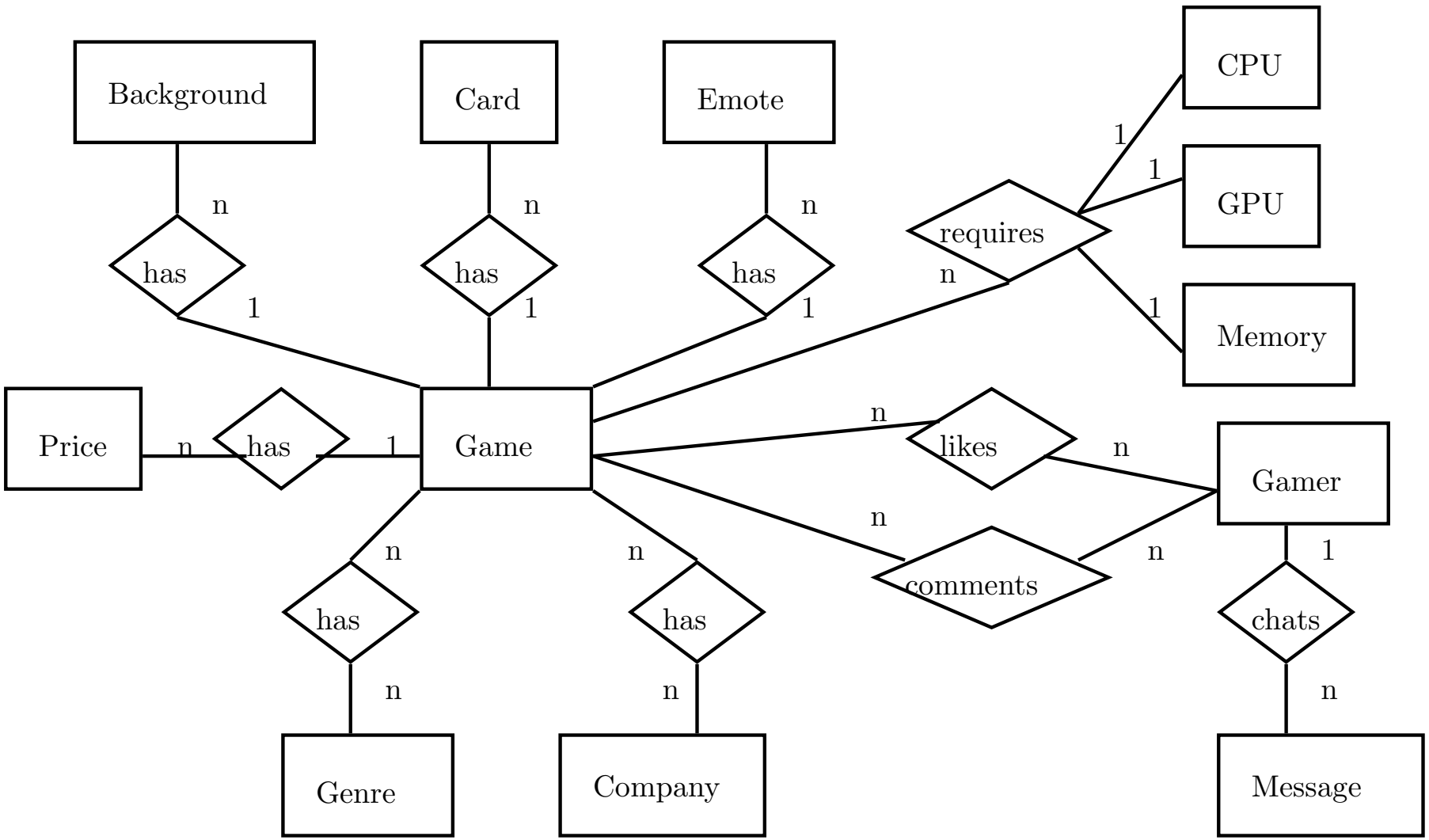
Entity Relationship Diagram



Overview of Seed Data

- In total **389 MB** worth of data
- Major tables:
  - 15450 games
  - 775510 comments (50 comments/game on average)
  - 436322 price history (28 histories/game on average)
  - 26066 backgrounds, 79133 cards, 33157 emotes

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1. User arrival rates were modelled in 8 phases.
2. The work flow consisted of 4 distinct sessions with various probabilities.
3. Interspersed waiting within sessions.
4. Specialized tests were set up to test caching.

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Session 1

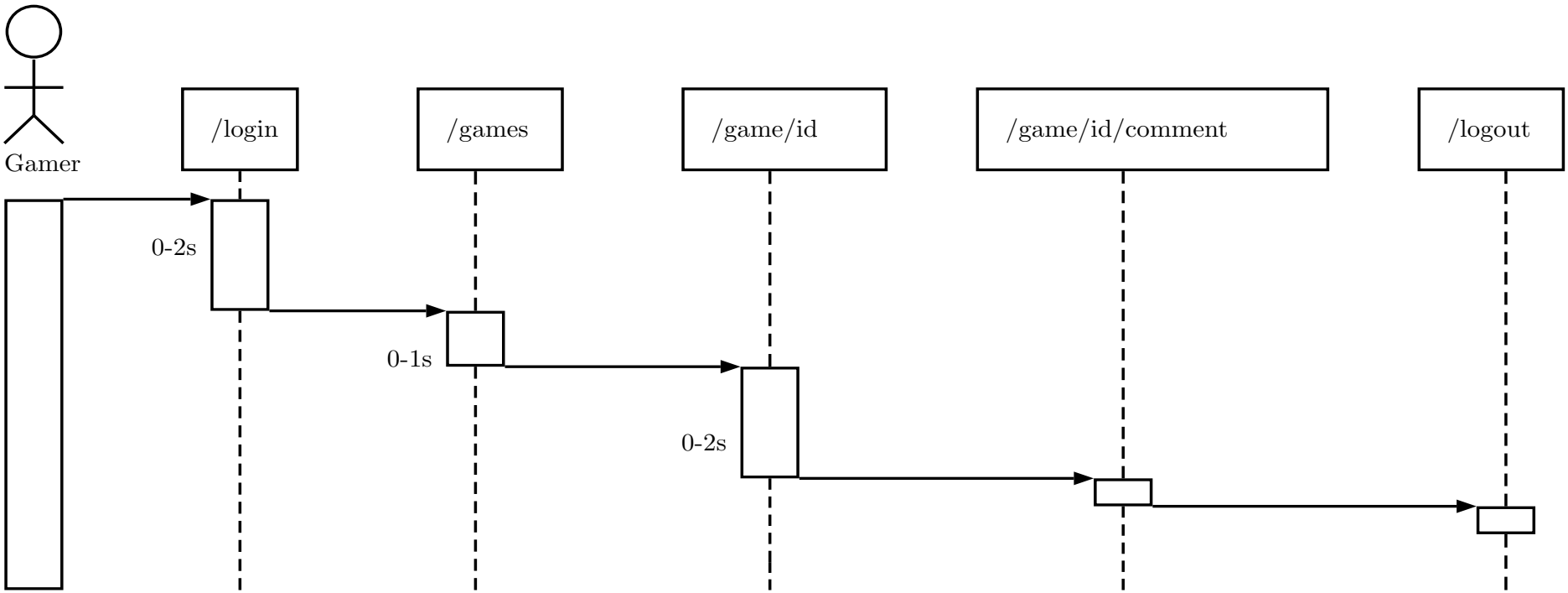

Figure: First Session

Session 2

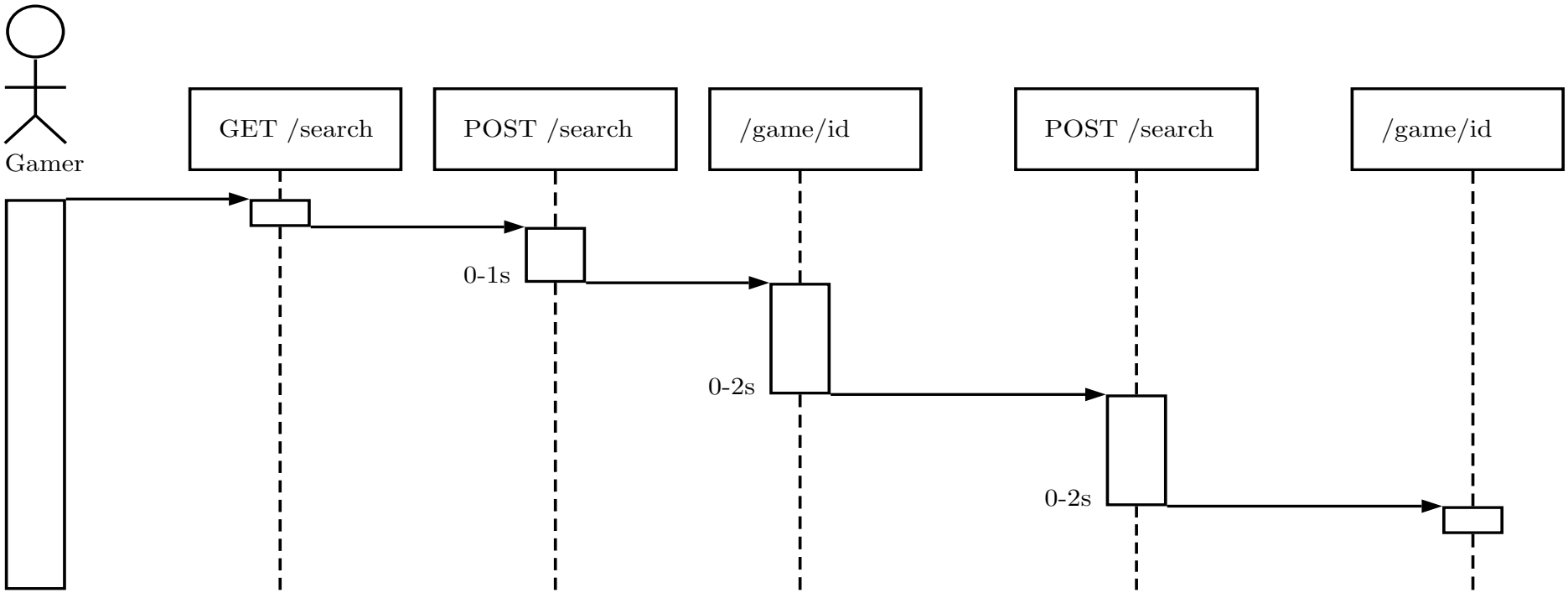

Figure: Second Session

Session 3

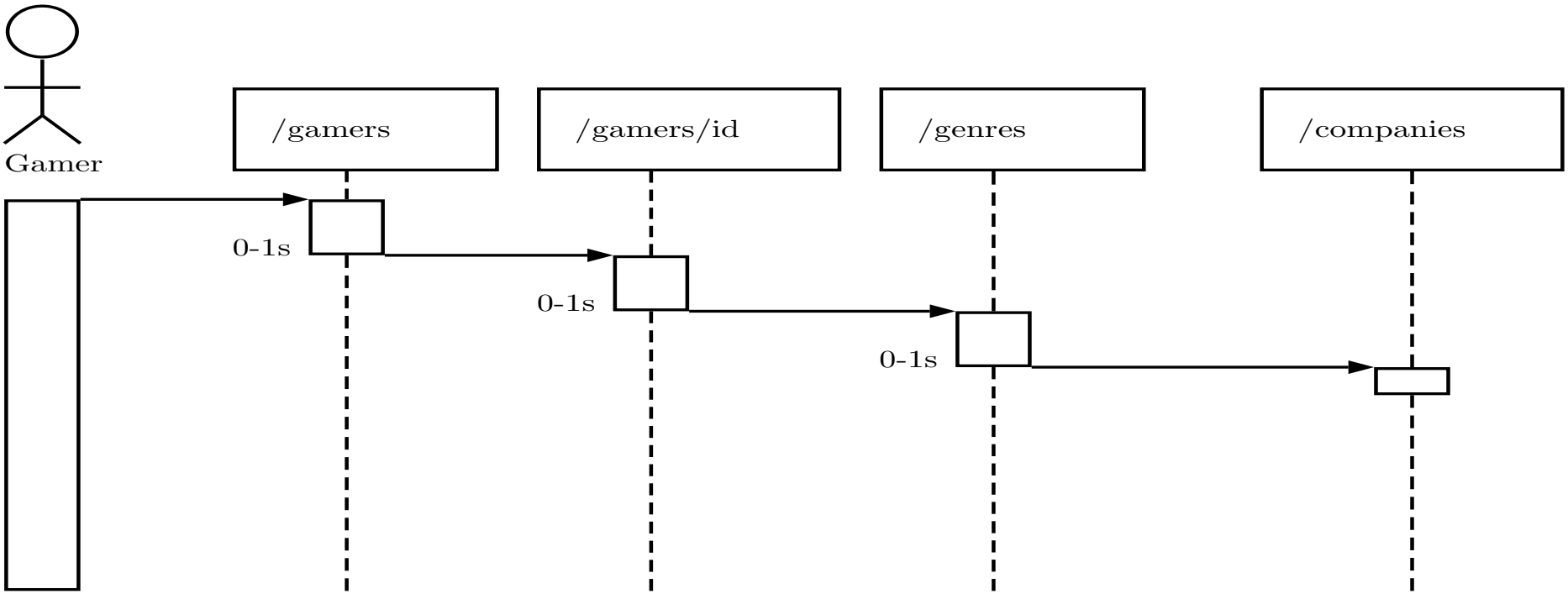

Figure: Third Session

Session 4

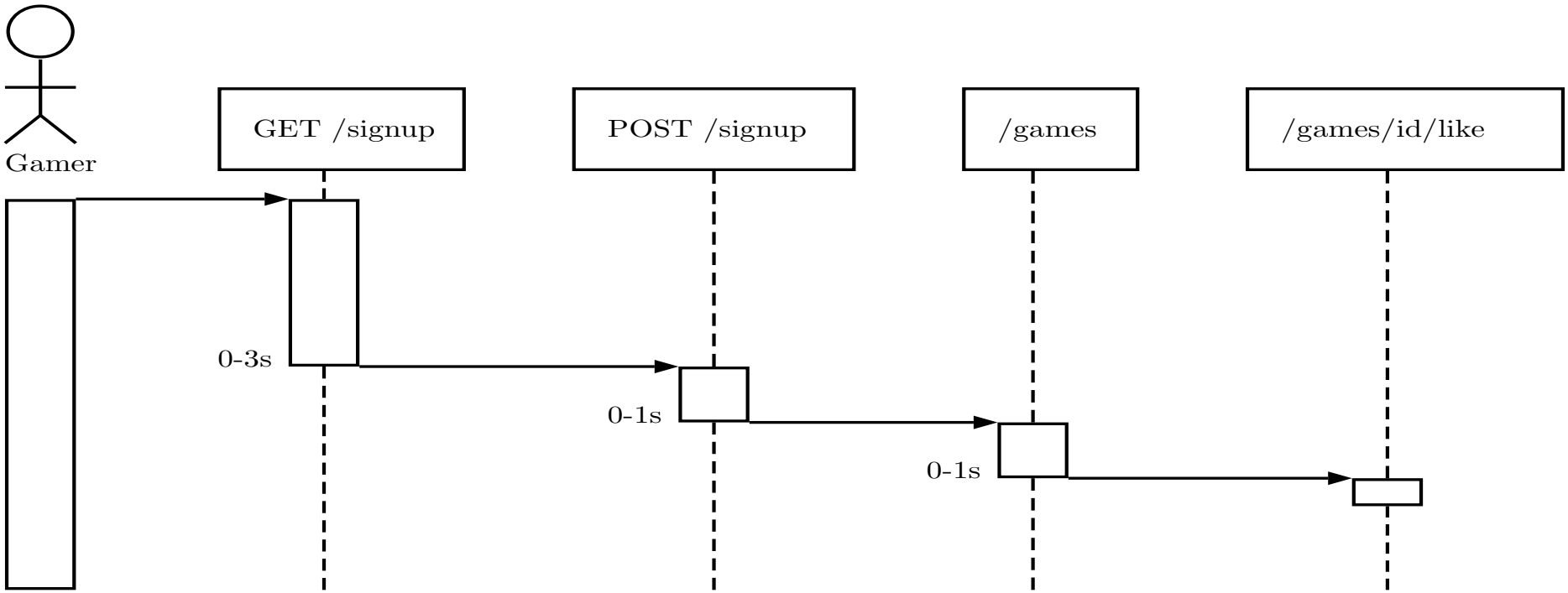

Figure: Fourth Session

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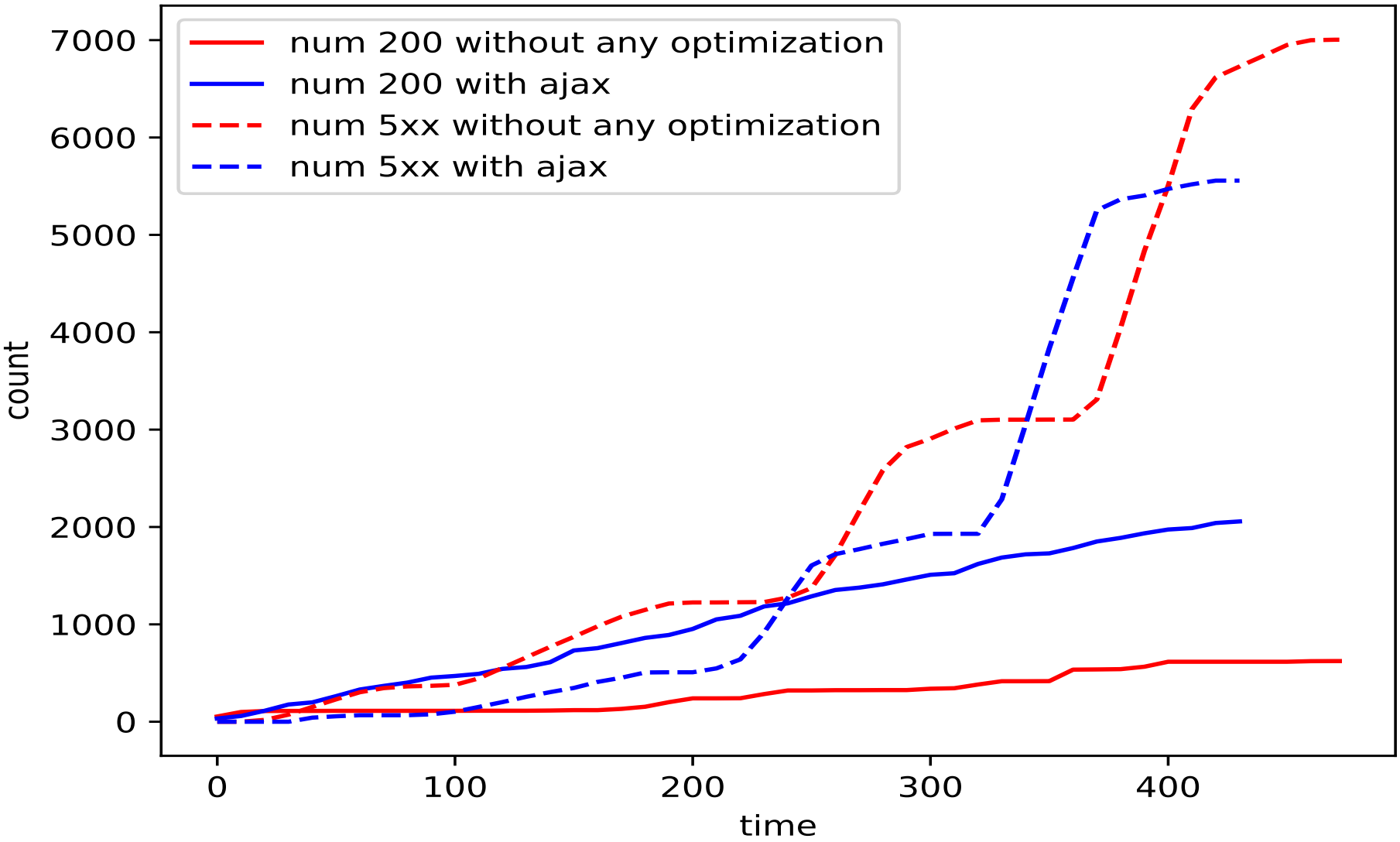
Optimization 1: AJAX



Optimization 2: Indexing

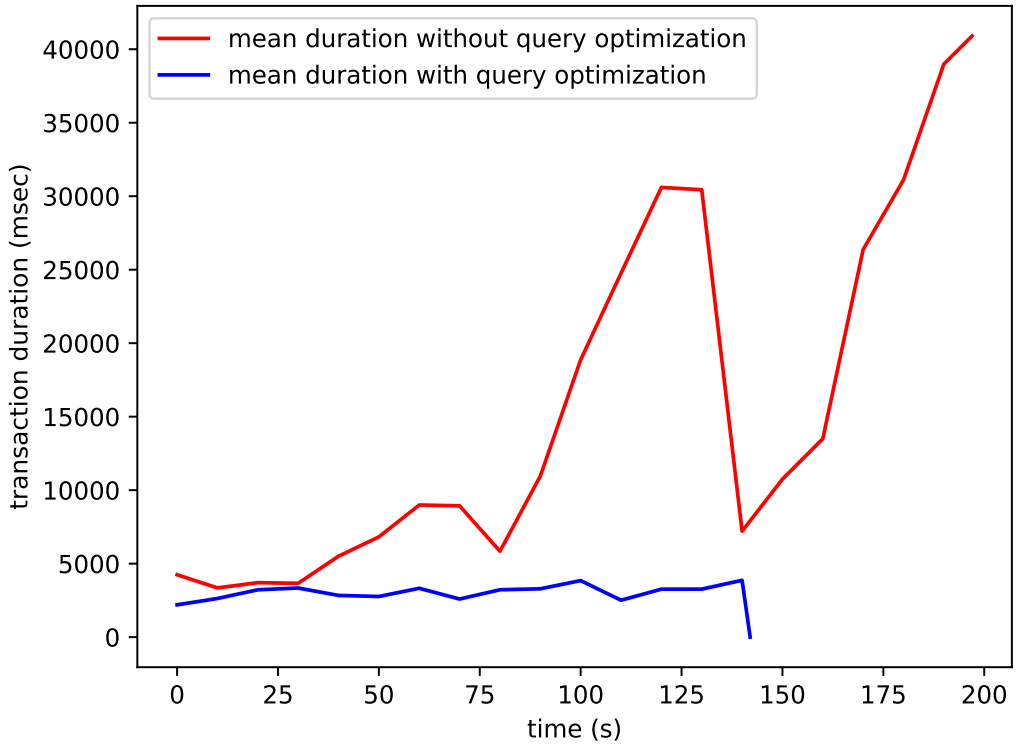


Figure: Mean duration for index page transaction without and with indexing.

Optimization 3: Caching

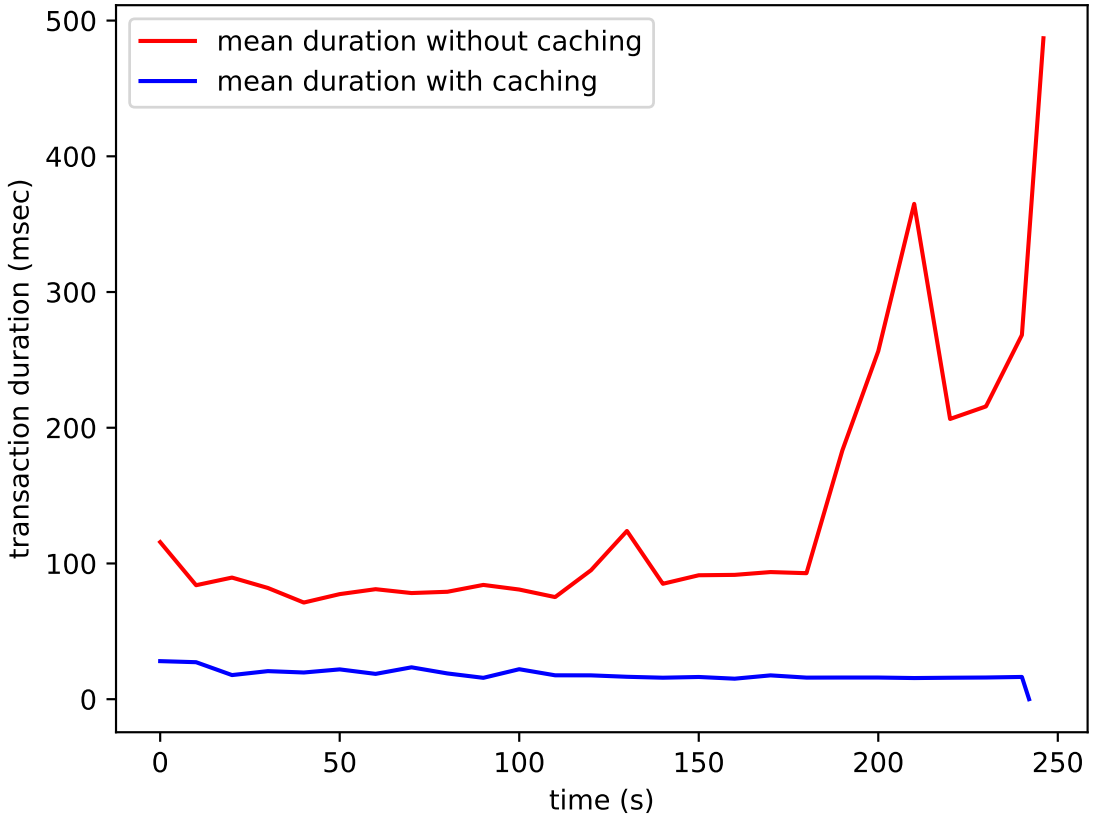


Figure: Mean duration for system requirement search transaction with and without caching.

Horizontal and Vertical Scaling

1. The website was load tested with various hardware configuration.
2. It was detected very early that the major bottleneck lay with the database.
3. The app server used was c5 with various database servers.

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16 users/second arrival rate

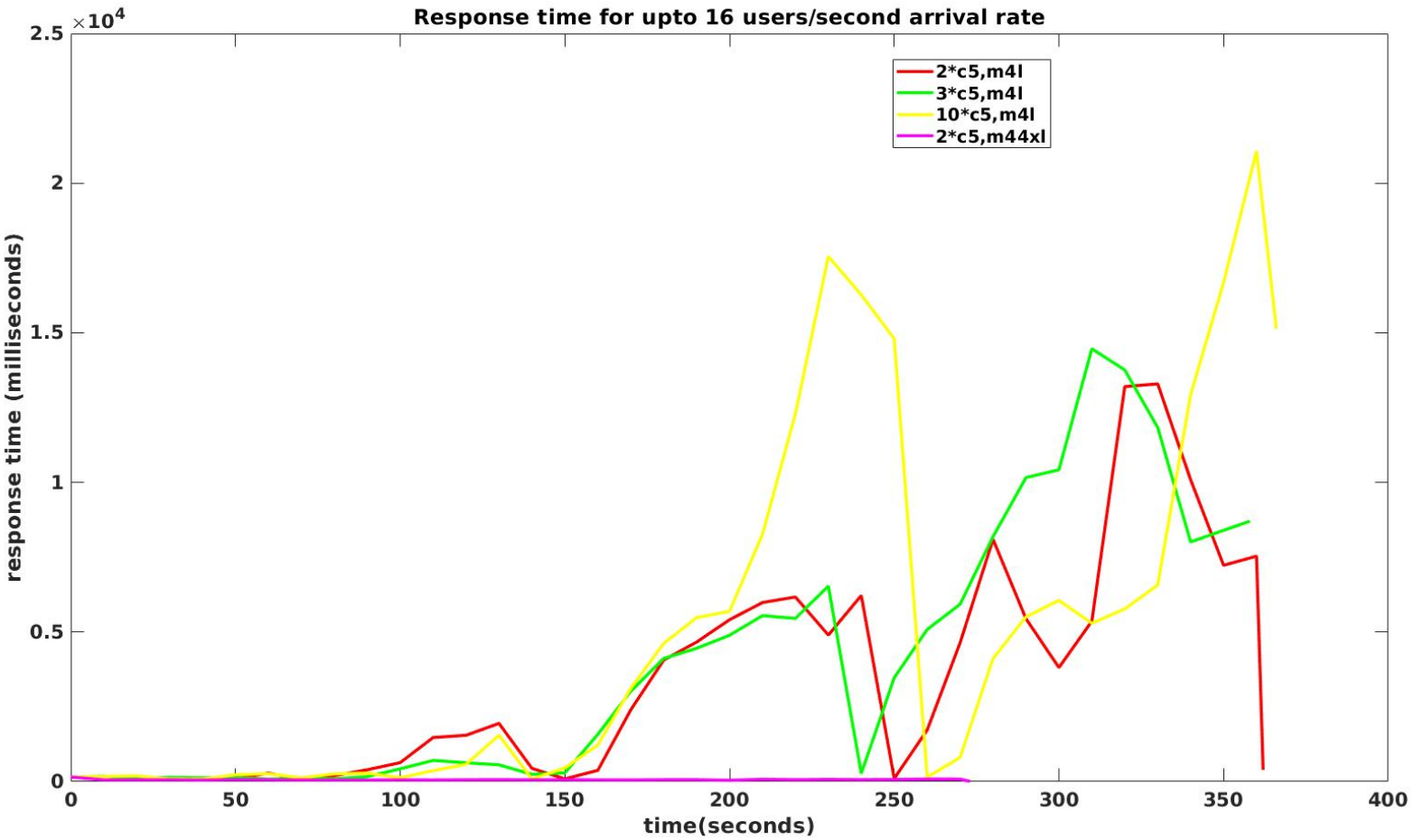

Figure: Mean response time while handling up to 16 users/second

32 users/second arrival rate

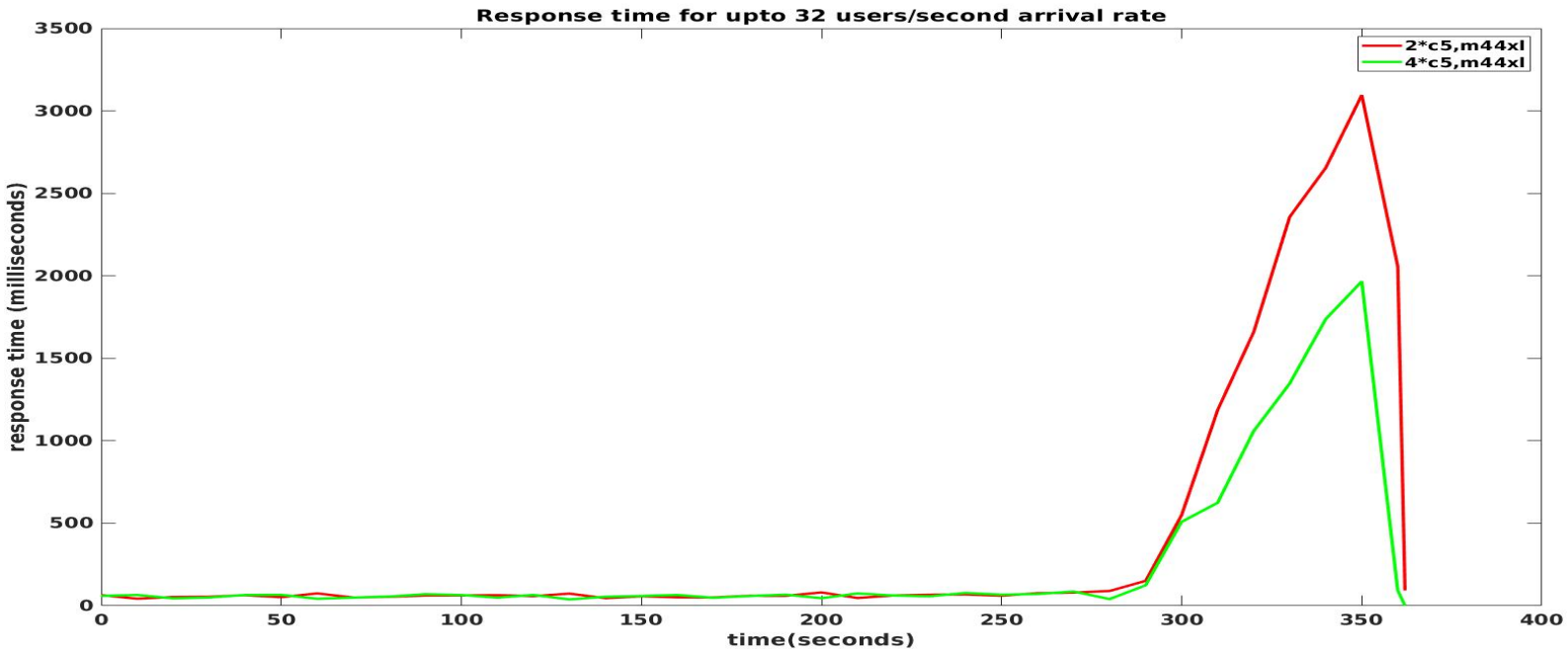

Figure: Mean response time while handling up to 32 users/second

64 users/second arrival rate

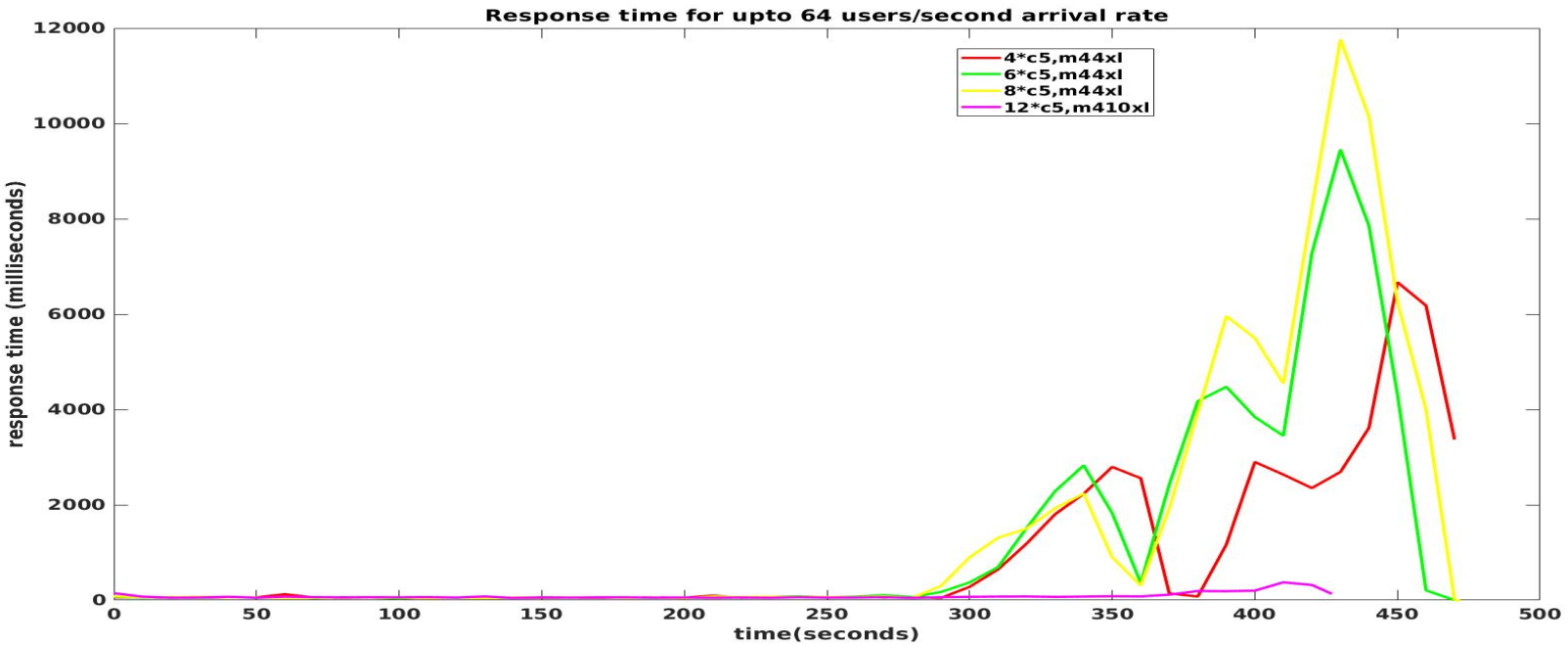

Figure: Mean response time while handling up to 64 users/second

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1. Global chat
2. Watchlist for users
3. Request system
4. Extensive application of AJAX
5. Different types of caching

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