CC LAB-2

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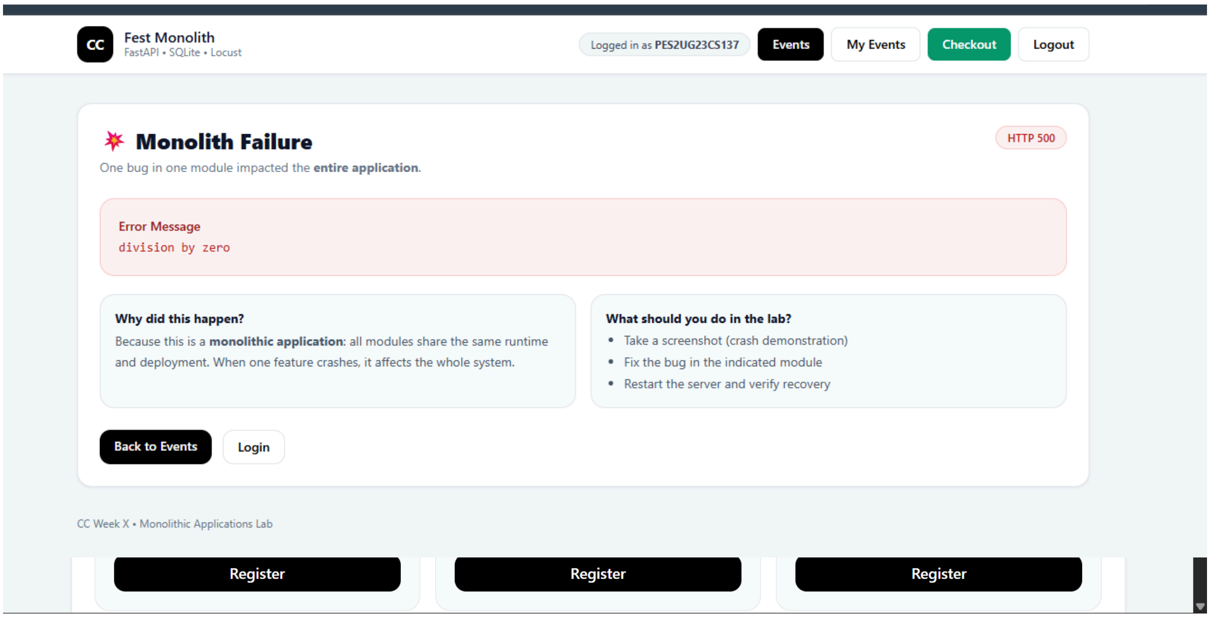
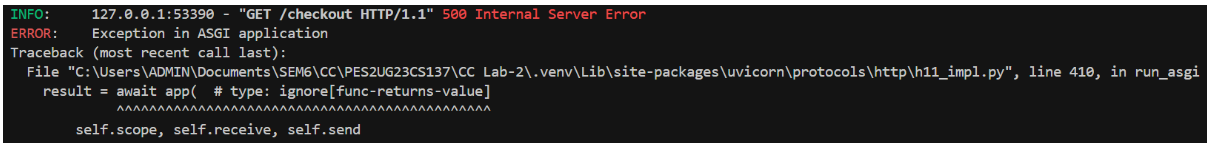
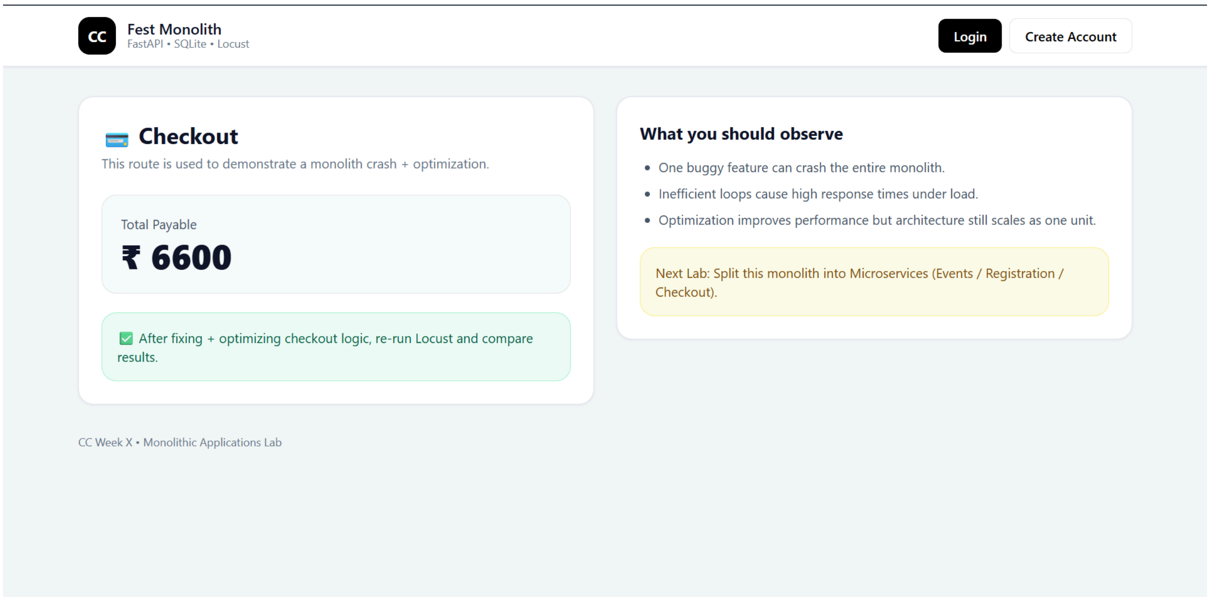
Section: C

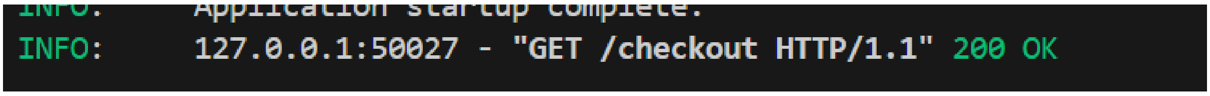
SS1



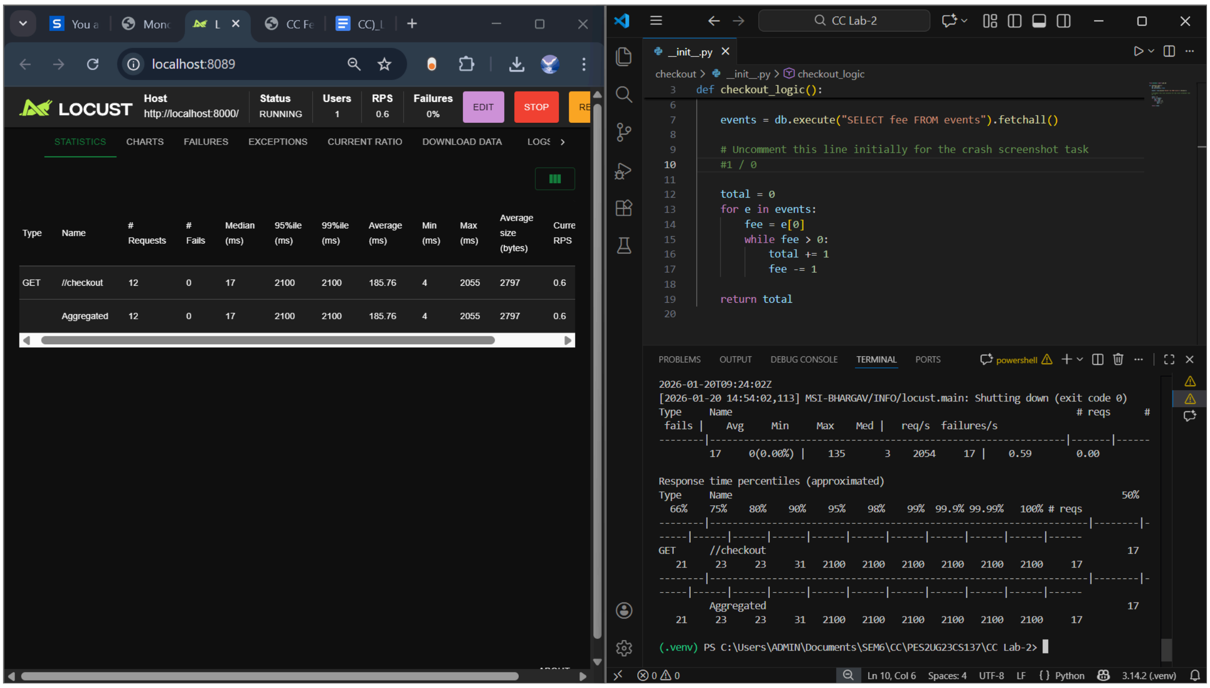


<u>SS2</u>

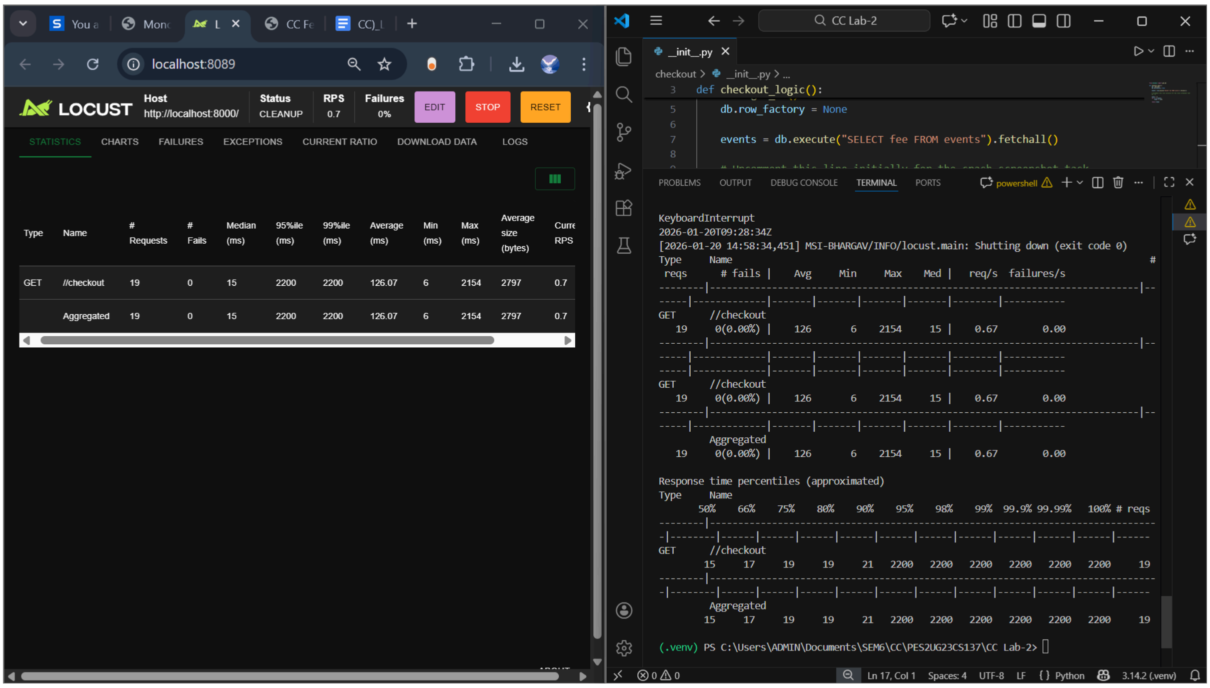




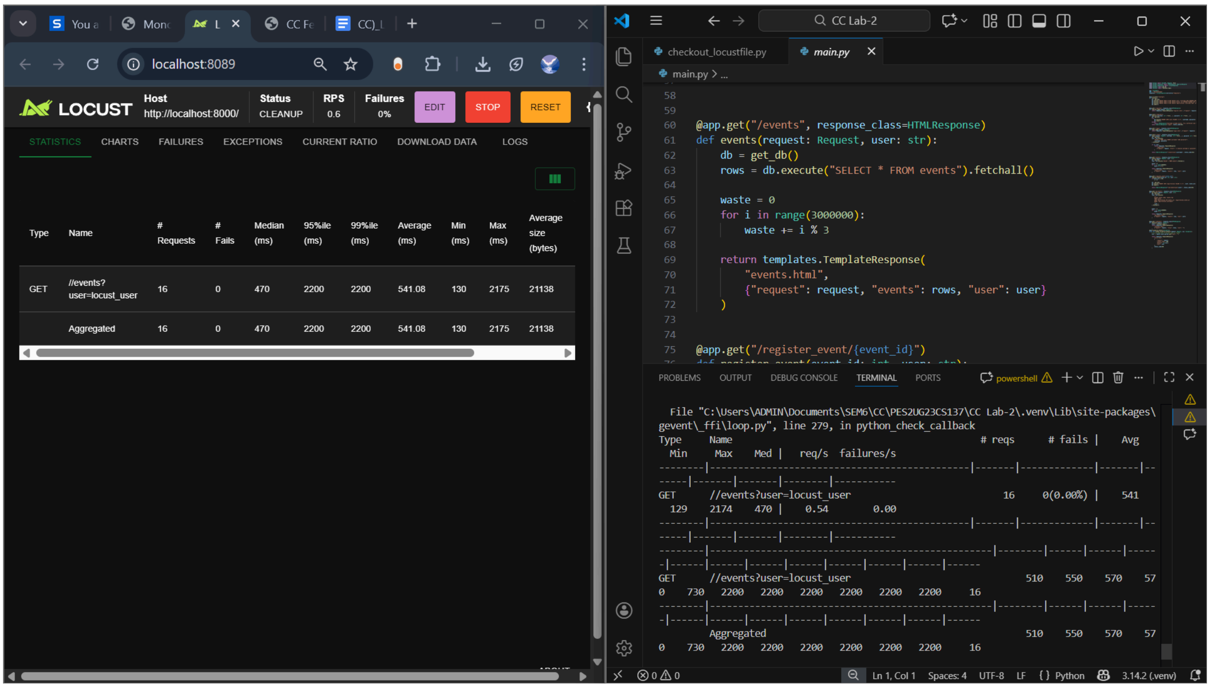
<u>SS4(before)</u>



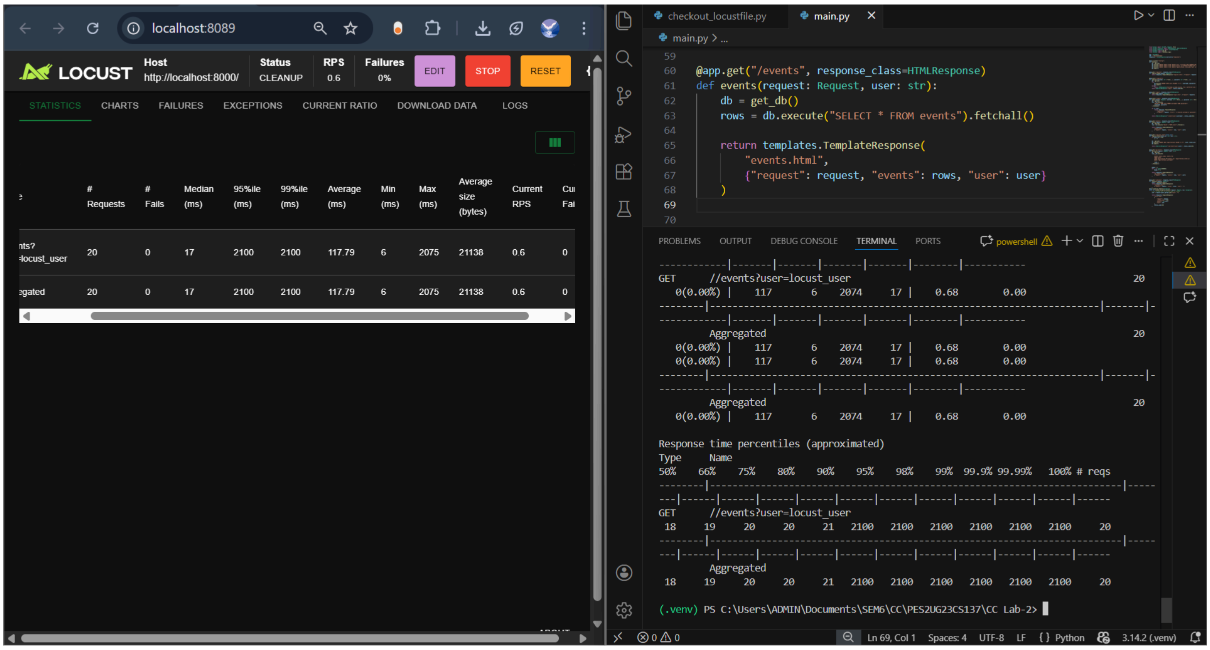
SS5(After)



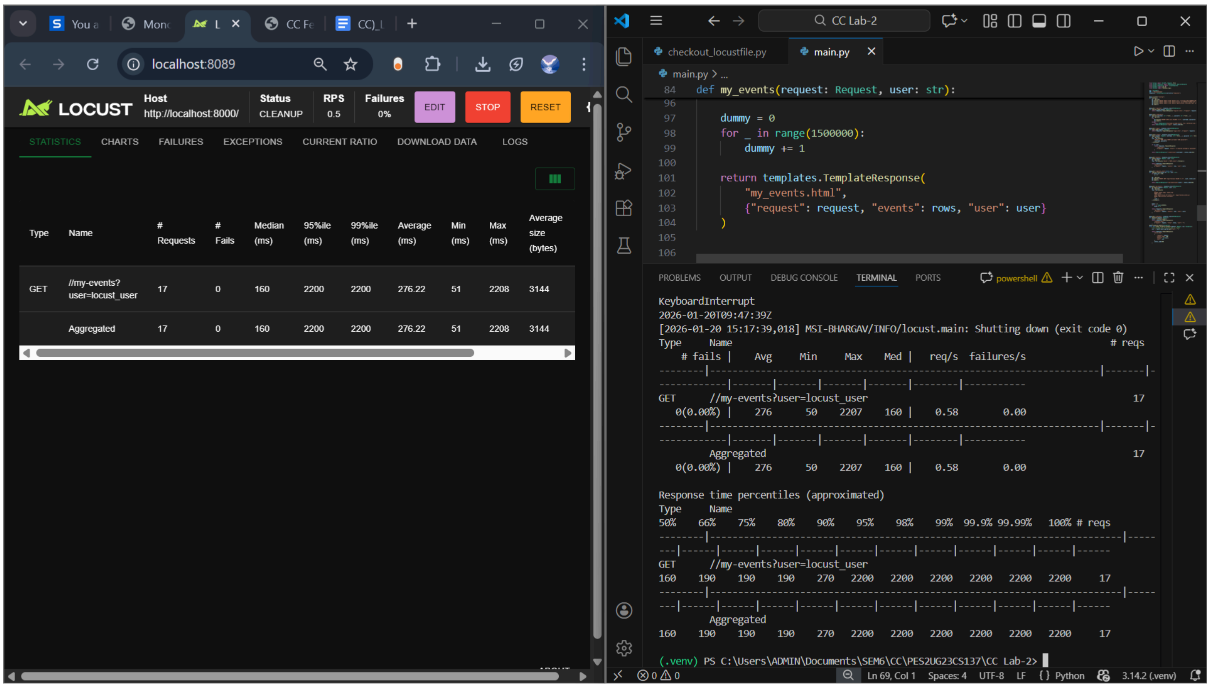
SS6 (Before)



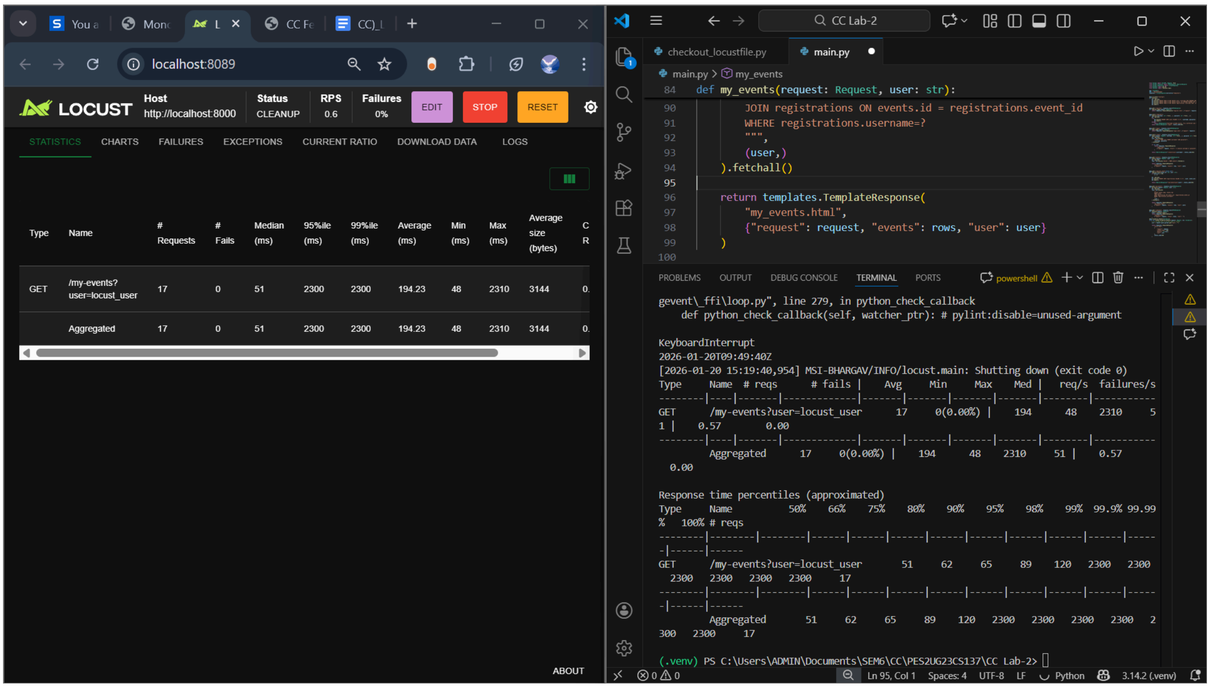
SS7 (After)



SS8(Before)



SS9 (After)



Performance Optimization Explanations

Route 1: /events

Bottleneck:
A wasteful CPU computation loop executing 3,000,000 iterations with modulo and addition operations (waste += i % 3) that blocked every request.

Change Made:
Removed the entire wasteful computation loop (lines 65-67).

Why Performance Improved:
The synchronous loop was performing 3 million unnecessary arithmetic operations before sending the response. Eliminating this CPU-bound work allowed the server to respond immediately after the database query, reducing median response time from 470ms to 17ms (96% improvement).

Before Optimization (SS6):

Median response time was 470ms
Average response time was 541ms
95th percentile hit 2200ms
99th percentile reached 2200ms
Throughput: 0.6 requests per second

After Optimization (SS7):

Median dropped to just 17ms (96.4% faster)
Average improved to 118ms (78.2% faster)
95th percentile: 2100ms
99th percentile: 2100ms
Throughput remained at 0.6 RPS

Route 2: /my-events

Bottleneck:
A dummy computation loop executing 1,500,000 iterations of simple increment operations (dummy += 1) that delayed every response.

Change Made:
Removed the entire dummy computation loop (lines 97-99).

Why Performance Improved:
The blocking loop performed 1.5 million unnecessary increment operations on every request. Removing this CPU-bound work freed the server to respond immediately after fetching user events from the database, reducing median response time from 160ms to 51ms (68% improvement).

Before Optimization (SS8):

Median response time was 160ms
Average response time was 276ms
95th percentile was 2200ms
99th percentile reached 2200ms
Throughput: 0.5 requests per second

After Optimization (SS9):

Median decreased to 51ms (68.1% faster!)
Average improved to 194ms (29.7% faster)
95th percentile: 2300ms
99th percentile: 2300ms
Throughput increased to 0.6 RPS (20% improvement)

Github Link: https://github.com/BHARGAVC27/CC_LAB2/tree/main