

6th Semester, Academic Year 2025-26

Date: 20/1/26

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CLOUD COMPUTING _LAB 2

SS_1 :-



Events

Welcome PES2UG23CS366. Register for events below.

[View My Events →](#)

<div>Event ID: 1</div> <div>₹ 500</div> <div>Hackathon</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>	<div>Event ID: 2</div> <div>₹ 300</div> <div>Dance</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>	<div>Event ID: 3</div> <div>₹ 500</div> <div>Hackathon</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>
<div>Event ID: 4</div> <div>₹ 300</div> <div>Dance Battle</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>	<div>Event ID: 5</div> <div>₹ 400</div> <div>AI Workshop</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>	<div>Event ID: 6</div> <div>₹ 200</div> <div>Photography Walk</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>
<div>Event ID: 7</div> <div>₹ 350</div> <div>Gaming Tournament</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>	<div>Event ID: 8</div> <div>₹ 250</div> <div>Music Night</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>	<div>Event ID: 9</div> <div>₹ 150</div> <div>Treasure Hunt</div> <div>Includes certificate • instant registration • limited seats</div> <div>Register</div>

<p>Event ID: 10</p> <p>₹ 300</p> <p>Stand-up Comedy</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 11</p> <p>₹ 450</p> <p>Robo Race</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 12</p> <p>₹ 500</p> <p>Hackathon</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>
<p>Event ID: 13</p> <p>₹ 300</p> <p>Dance Battle</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 14</p> <p>₹ 400</p> <p>AI Workshop</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 15</p> <p>₹ 200</p> <p>Photography Walk</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>
<p>Event ID: 16</p> <p>₹ 350</p> <p>Gaming Tournament</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 17</p> <p>₹ 250</p> <p>Music Night</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 18</p> <p>₹ 150</p> <p>Treasure Hunt</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>
<p>Event ID: 19</p> <p>₹ 300</p> <p>Stand-up Comedy</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	<p>Event ID: 20</p> <p>₹ 450</p> <p>Robo Race</p> <p>Includes certificate • instant registration • limited seats</p> <p>Register</p>	

SS_2 :-

Fest Monolith
FastAPI • SQLite • Locust

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[Create Account](#)

Monolith Failure
HTTP 500

One bug in one module impacted the **entire** application.

Error Message

division by zero

Why did this happen?

Because this is a **monolithic application**: all modules share the same runtime and deployment. When one feature crashes, it affects the whole system.

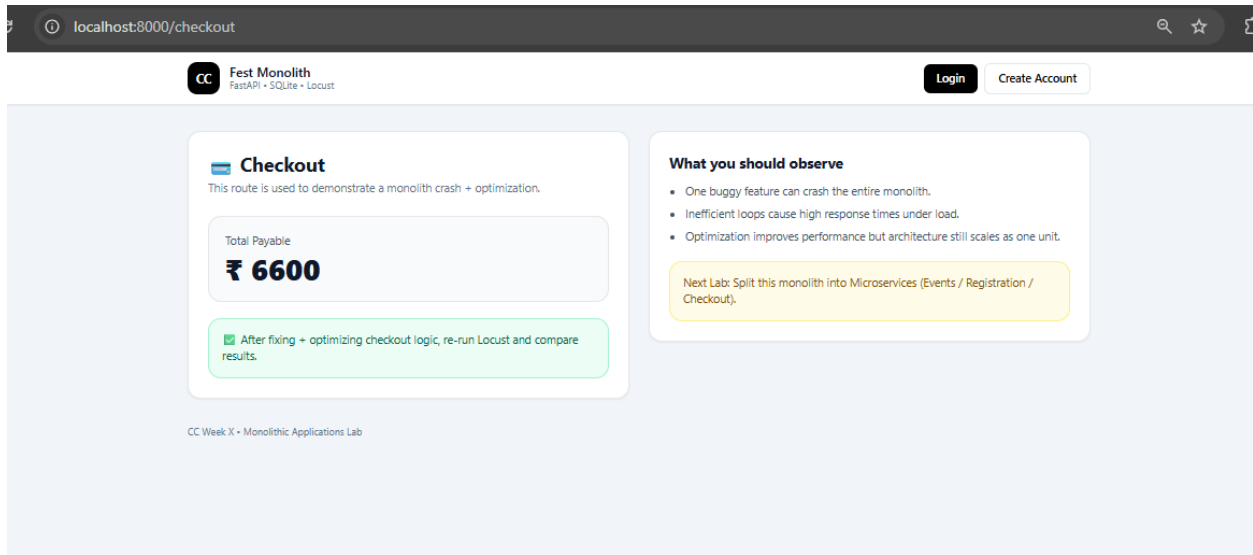
What should you do in the lab?

- Take a screenshot (crash demonstration)
- Fix the bug in the indicated module
- Restart the server and verify recovery

[Back to Events](#)
[Login](#)

CC Week X • Monolithic Applications Lab

SS-3 :



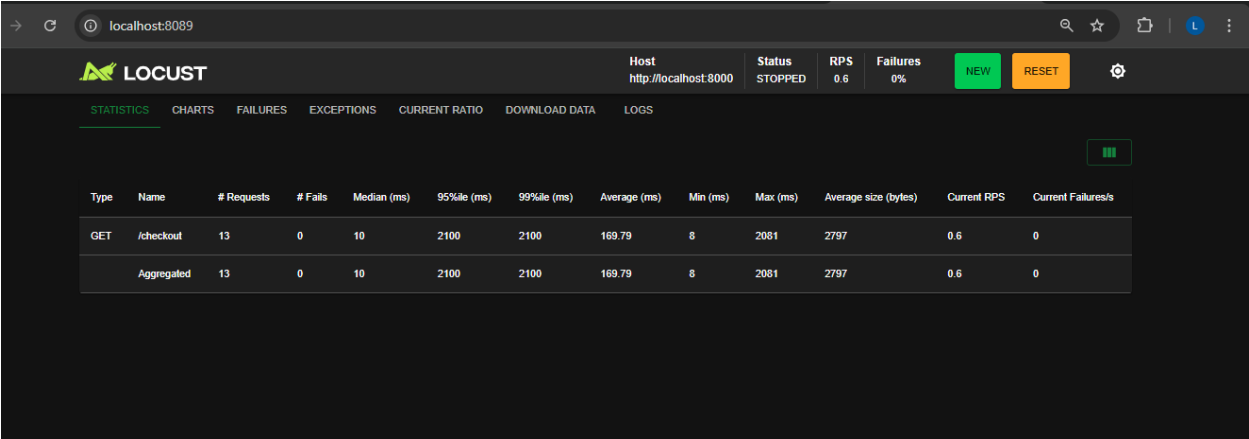
SS-4 (before optimization)

```
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2> locust -f locust/checkout_locustfile.py
>>
[2026-01-20 15:15:19,512] DESKTOP-CNT4U74/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:15:19,513] DESKTOP-CNT4U74/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-20 15:15:40,582] DESKTOP-CNT4U74/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:15:40,586] DESKTOP-CNT4U74/INFO/locust.runners: All users spawned: {"CheckoutUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\.venv\Lib\site-packages\gevent\_ffi\loop.py", line 279, in
python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

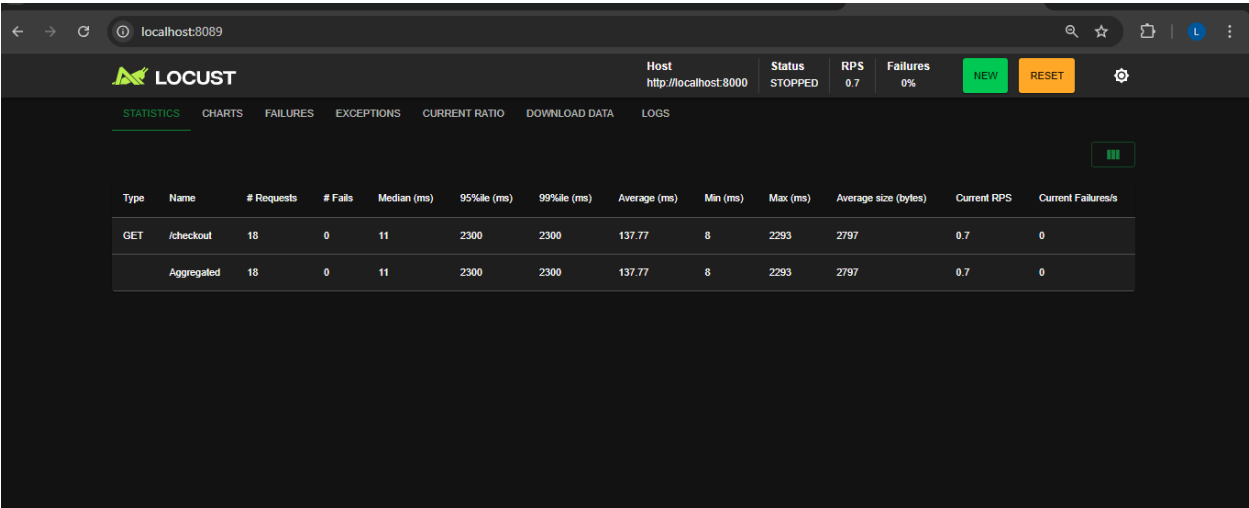
KeyboardInterrupt
2026-01-20T09:46:02Z
[2026-01-20 15:16:02,483] DESKTOP-CNT4U74/INFO/locust.main: Shutting down (exit code 0)

Type      Name                               # reqs   # fails | Avg    Min    Max    Med | req/s  failures/s
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
Type      Name                               50%     66%    75%    80%    90%    95%    98%    99%  99.9%  99.99%  100% # reqs
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
GET       /checkout                          10      11      12      12      13     2100   2100   2100   2100   2100   2100   13
Type      Name                               50%     66%    75%    80%    90%    95%    98%    99%  99.9%  99.99%  100% # reqs
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
GET       /checkout                          10      11      12      12      13     2100   2100   2100   2100   2100   2100   13
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
Aggregated                               10      11      12      12      13     2100   2100   2100   2100   2100   2100   13

(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2> 
```



SS- 5 : (after the change)



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2> locust -f locust/checkout_locustfile.py
>>
def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-20T09:41:51Z
[2026-01-20 15:11:51,801] DESKTOP-CNT4U74/INFO/locust.main: Shutting down (exit code 0)
Type      Name      # reqs      # fails      Avg      Min      Max      Med      req/s      failures/s
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET      /checkout      18      0(0.00%)      137      7      2293      11      0.63      0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated      18      0(0.00%)      137      7      2293      11      0.63      0.00

Response time percentiles (approximated)
Type      Name      50%      66%      75%      80%      90%      95%      98%      99%      99.9%      99.99
% 100% # reqs
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET      /checkout      11      11      12      13      14      2300      2300      2300      2300      2300
0 2300      18
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated      11      11      12      13      14      2300      2300      2300      2300      2300
0 2300      18

(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2>
```

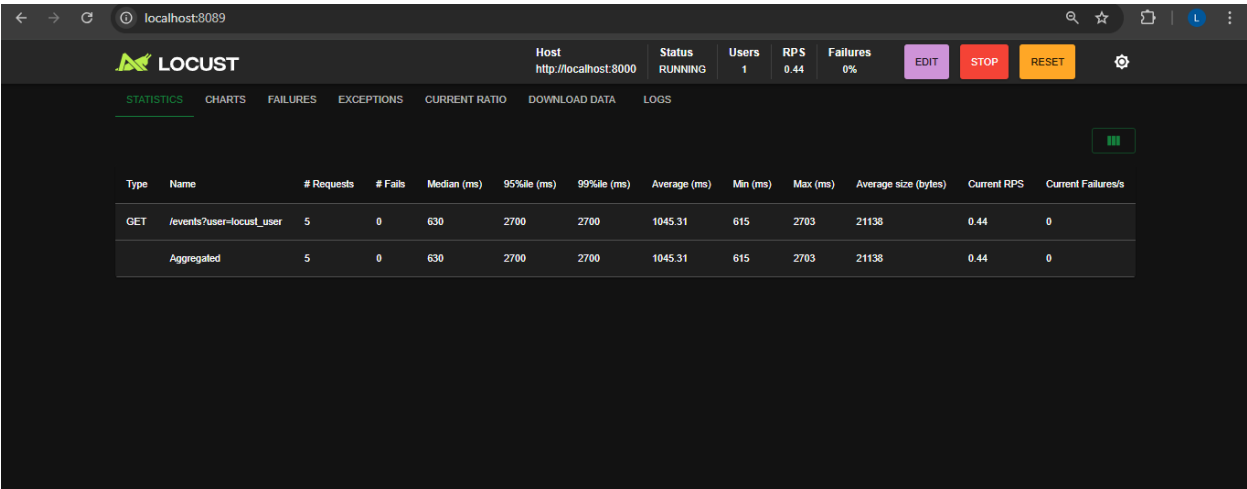
SS-6 :

(before optimization)

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2> locust -f locust/events_locustfile.py
>>
KeyboardInterrupt
2026-01-20T09:50:14Z
[2026-01-20 15:20:14,390] DESKTOP-CNT4U74/INFO/locust.main: Shutting down (exit code 0)
Type      Name      # reqs      # fails      Avg      Min      Max      Med      req/s      failures/s
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET      /events?user=locust_user      6      0(0.00%)      916      272      2702      620      0.47      0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated      6      0(0.00%)      916      272      2702      620      0.47      0.00
Aggregated      6      0(0.00%)      916      272      2702      620      0.47      0.00

Response time percentiles (approximated)
Type      Name      50%      66%      75%      80%      90%      95%      98%      99%      99.9%      99.99
% 100% # reqs
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET      /events?user=locust_user      630      630      660      660      2700      2700      2700      2700      2700      2700
0 2700      6
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated      630      630      660      660      2700      2700      2700      2700      2700      2700
0 2700      6

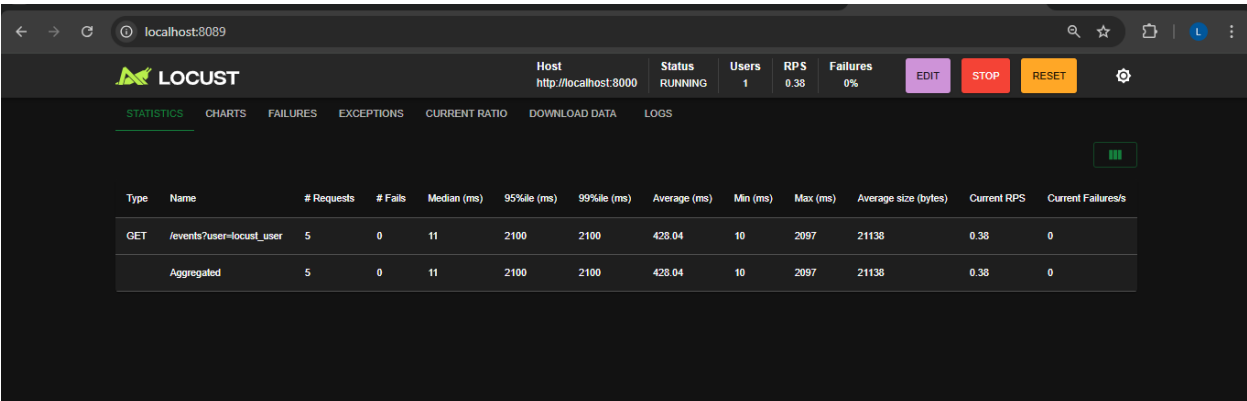
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2>
```



SS7 : (after optimization)

```
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC_Lab-2> locust -f locust/events_locustfile.py
>>
[2026-01-20 15:24:38,493] DESKTOP-CNT4U74/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:24:38,493] DESKTOP-CNT4U74/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your de
fault browser.
[2026-01-20 15:24:50,527] DESKTOP-CNT4U74/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:24:50,531] DESKTOP-CNT4U74/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\.venv\Lib\site-packages\gevent\ffi\loop.py", line 279, in
python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-20T09:55:01Z
[2026-01-20 15:25:01,858] DESKTOP-CNT4U74/INFO/locust.main: Shutting down (exit code 0)
Type      Name                               # reqs  # fails | Avg  Min  Max  Med | req/s  failures/s
-----|-----
GET       /events?user=locust_user                5      0(0.00%) | 428  10  2096  11 | 0.52    0.00
-----|-----
              11   11   11  2100  2100  2100  2100  2100  2100  5
-----|-----
-|-----
Aggregated                11   11   11  2100  2100  2100  2100  2100  2100  2100
0  2100  5
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC_Lab-2>
```



SS8 (before optimization):

```
(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2> locust -f locust/myevents_locustfile.py
>>
fault browser.
[2026-01-20 15:29:53,653] DESKTOP-CNT4U74/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:29:53,655] DESKTOP-CNT4U74/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\.venv\Lib\site-packages\gevent\ffi\loop.py", line 279, in
python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-20T10:00:04Z
[2026-01-20 15:30:04,224] DESKTOP-CNT4U74/INFO/locust.main: Shutting down (exit code 0)
Type      Name                                     # reqs      # fails | Avg      Min      Max      Med | req/s  failures/
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET      /my-events?user=locust_user                    6          0(0.00%) | 521      90     2305     180 | 0.58    0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     6          0(0.00%) | 521      90     2305     180 | 0.58    0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

Response time percentiles (approximated)
Type      Name                                     50%      66%      75%      80%      90%      95%      98%      99%      99.9% 99.9%
% 100% # reqs
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET      /my-events?user=locust_user                    190      190      190      190     2300     2300     2300     2300     2300 2300
0 2300 6
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     190      190      190      190     2300     2300     2300     2300     2300 2300
0 2300 6
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

(.venv) PS C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\CC Lab-2> 
```

LOCUST

Host

http://localhost:8000

Status

RUNNING

Users

1

RPS

0.5

Failures

0%

EDIT

STOP

RESET

STATISTICS

CHARTS

FAILURES

EXCEPTIONS

CURRENT RATIO

DOWNLOAD DATA

LOGS

Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)	Average size (bytes)	Current RPS	Current Failures/s
GET	/my-events?user=locust_user	4	0	190	2300	2300	717.88	182	2305	3144	0.5	0
	Aggregated	4	0	190	2300	2300	717.88	182	2305	3144	0.5	0

SS9 (after change) :

```

fault browser.
[2026-01-20 15:31:50,824] DESKTOP-CNT4U74/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:31:50,827] DESKTOP-CNT4U74/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Sathvik Srivathsav\Downloads\PES2UG23CS366_Monolith_CC_Lab-2\.venv\Lib\site-packages\gevent\_ffi\loop.py", line 279, in
python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-20T10:02:06Z
[2026-01-20 15:32:06,832] DESKTOP-CNT4U74/INFO/locust.main: Shutting down (exit code 0)
Type      Name                                     # reqs      # fails      Avg      Min      Max      Med      req/s      failures/s
-----
GET /my-events?user=locust_user                9          0(0.00%)    243        8      2106       10         0.59         0.00
-----
Aggregated                                   9          0(0.00%)    243        8      2106       10         0.59         0.00
-----

Response time percentiles (approximated)
Type      Name                                     50%      66%      75%      80%      90%      95%      98%      99%      99.9%      99.99
% 100% # reqs
-----
GET /my-events?user=locust_user                10       11       11       11      2100     2100     2100     2100     2100     210
0 2100 9
-----
Aggregated                                   10       11       11       11      2100     2100     2100     2100     2100     210
0 2100 9
-----

```

The screenshot shows the Locust web interface at http://localhost:8000. The status is 'RUNNING' with 1 user, 0.6 RPS, and 0% failures. The 'STATISTICS' tab is active, displaying a table of request metrics.

Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)	Average size (bytes)	Current RPS	Current Failures/s
GET	/my-events?user=locust_user	8	0	10	2100	2100	272.45	9	2106	3144	0.6	0
Aggregated		8	0	10	2100	2100	272.45	9	2106	3144	0.6	0

Optimizations : -

Route: /events

- Bottleneck: Repeated processing of event data on every request.
- Change : Optimised the logic to iterate once and remove unnecessary computations.
- performance after change : Reduced CPU operations led to faster response times.

Route: /my-events

- Bottleneck: Inefficient filtering of user-specific events.
- Change : Simplified filtering logic to avoid redundant iterations.

- performance after change : Lower processing overhead improved average response time.

Route: /checkout : -

- Bottleneck:
The checkout route contained inefficient logic where the total fee was calculated using a loop that decremented the fee value step by step, resulting in unnecessary iterations and increased computation time.
- Change :
The inefficient loop-based calculation was replaced with a direct and optimised summation approach that computes the total fee in a single pass.
- performance after change:
By eliminating unnecessary looping and reducing the number of operations, the response time of the checkout route decreased, leading to improved performance under load.