# *CC LAB 2*

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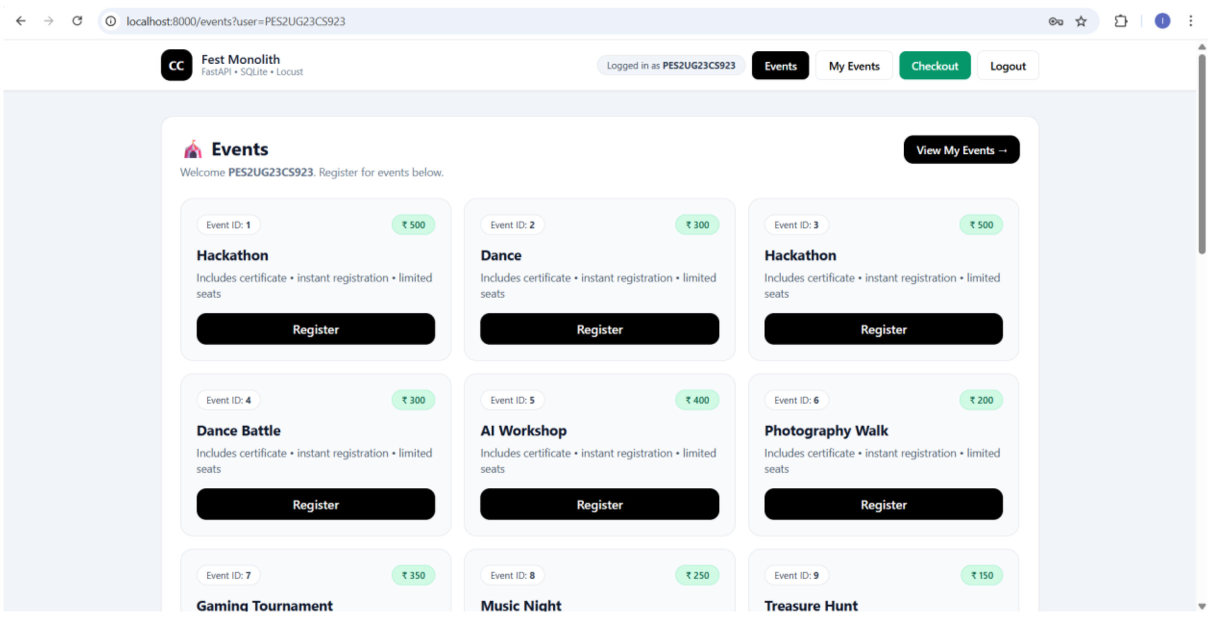
**Sec: J**

**SRN: PES2UG23CS923**

**SS1:**



localhost:8000/events?user=PES2UG23CS923

Fest Monolith
FastAPI • SQLite • Locust

Logged in as PES2UG23CS923 | Events | My Events | Checkout | Logout

Events

Welcome PES2UG23CS923. Register for events below.

View My Events →

Event ID: 1 — ₹ 500 — Hackathon — Includes certificate • instant registration • limited seats — Register

Event ID: 2 — ₹ 300 — Dance — Includes certificate • instant registration • limited seats — Register

Event ID: 3 — ₹ 500 — Hackathon — Includes certificate • instant registration • limited seats — Register

Event ID: 4 — ₹ 300 — Dance Battle — Includes certificate • instant registration • limited seats — Register

Event ID: 5 — ₹ 400 — AI Workshop — Includes certificate • instant registration • limited seats — Register

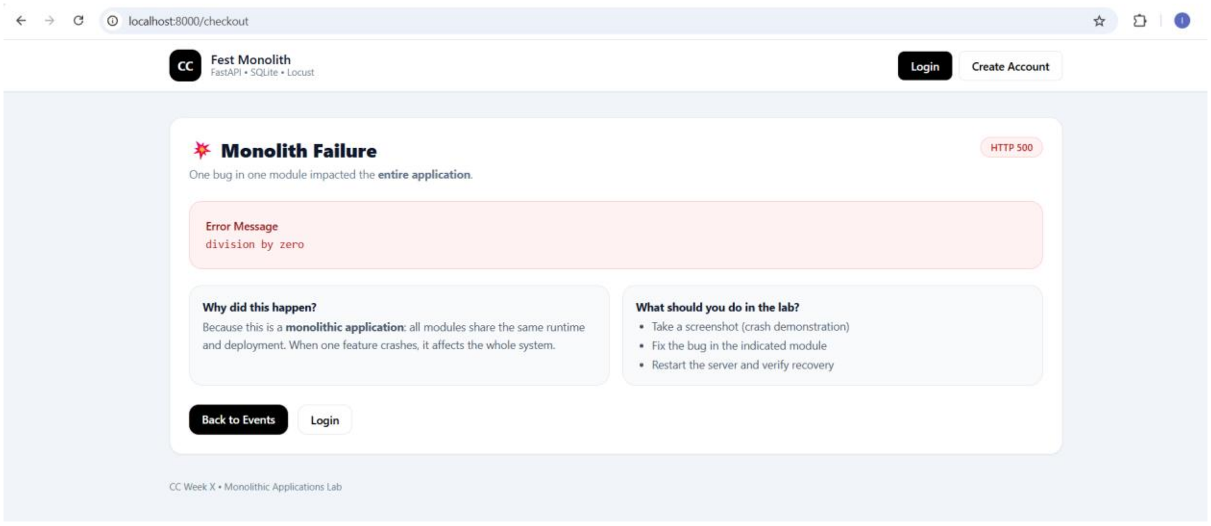
Event ID: 6 — ₹ 200 — Photography Walk — Includes certificate • instant registration • limited seats — Register

Event ID: 7 — ₹ 350 — Gaming Tournament

Event ID: 8 — ₹ 250 — Music Night

Event ID: 9 — ₹ 150 — Treasure Hunt

**SS2:**



localhost:8000/checkout

Fest Monolith
FastAPI • SQLite • Locust

Login | Create Account

Monolith Failure

HTTP 500

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

Error Message

```
division by zero
```

**Why did this happen?**

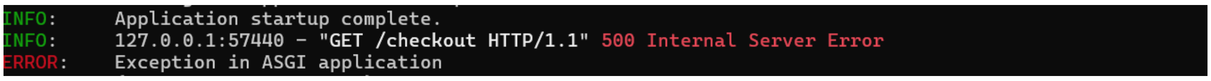
Because this is a **monolithic application**: all modules share the same runtime and deployment. When one feature crashes, it affects the whole system.

**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

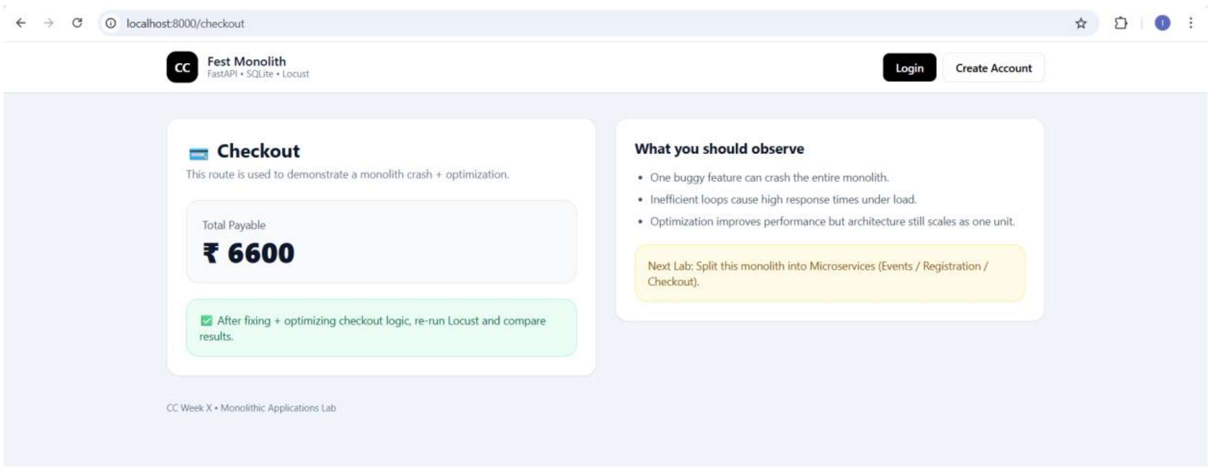
Back to Events | Login

CC Week X • Monolithic Applications Lab



```
INFO:     Application startup complete.
INFO:     127.0.0.1:57440 - "GET /checkout HTTP/1.1" 500 Internal Server Error
ERROR:    Exception in ASGI application
```

**SS3:**



localhost:8000/checkout

**Checkout**

This route is used to demonstrate a monolith crash + optimization.

Total Payable

**₹ 6600**

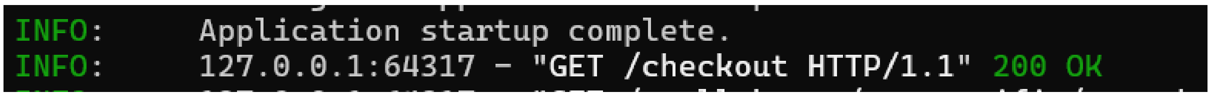
✓ After fixing + optimizing checkout logic, re-run Locust and compare results.

**What you should observe**

- One buggy feature can crash the entire monolith.
- Inefficient loops cause high response times under load.
- Optimization improves performance but architecture still scales as one unit.

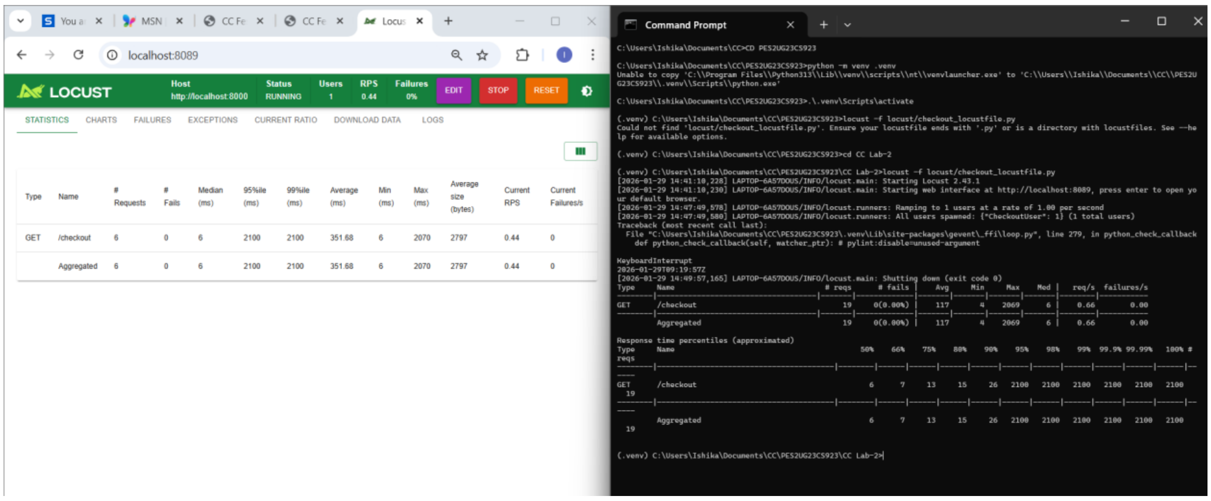
Next Lab: Split this monolith into Microservices (Events / Registration / Checkout).

CC Week X • Monolithic Applications Lab



```
INFO:     Application startup complete.
INFO:     127.0.0.1:64317 - "GET /checkout HTTP/1.1" 200 OK
```

**SS4:**



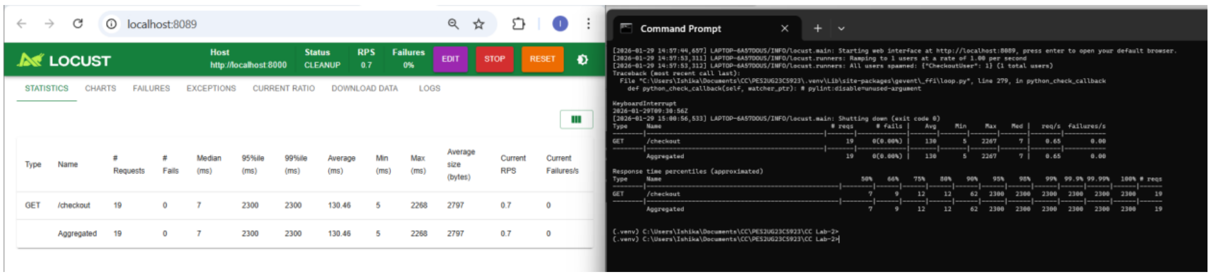
localhost:8089

| Host | Status | Users | RPS | Failures |
|---|---|---|---|---|
| http://localhost:8000 | RUNNING | 1 | 0.44 | 0% |

| 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 | /checkout | 6 | 0 | 6 | 2100 | 2100 | 351.68 | 6 | 2070 | 2797 | 0.44 | 0 |
|  | Aggregated | 6 | 0 | 6 | 2100 | 2100 | 351.68 | 6 | 2070 | 2797 | 0.44 | 0 |

```
Command Prompt

C:\Users\Ishika\Documents\CC>CD PES2UG23CS923

C:\Users\Ishika\Documents\CC\PES2UG23CS923>python -m venv .venv
Unable to copy 'C:\\Program Files\\Python313\\Lib\\venv\\scripts\\nt\\venvlauncher.exe' to 'C:\\Users\\Ishika\\Documents\\CC\\PES2U
G23CS923\\.venv\\Scripts\\python.exe'

C:\Users\Ishika\Documents\CC\PES2UG23CS923>.\.venv\Scripts\activate

(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923>locust -f locust/checkout_locustfile.py
Could not find 'locust/checkout_locustfile.py'. Ensure your locustfile ends with '.py' or is a directory with locustfiles. See --he
lp for available options.

(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923>cd CC Lab-2

(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>locust -f locust/checkout_locustfile.py
[2026-01-29 14:41:10,228] LAPTOP-6A57DOUS/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 14:41:10,230] LAPTOP-6A57DOUS/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open yo
ur default browser.
[2026-01-29 14:47:49,578] LAPTOP-6A57DOUS/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 14:47:49,580] LAPTOP-6A57DOUS/INFO/locust.runners: All users spawned: {"CheckoutUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Ishika\Documents\CC\PES2UG23CS923\.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
2026-01-29T09:19:57Z
[2026-01-29 14:49:57,165] LAPTOP-6A57DOUS/INFO/locust.main: Shutting down (exit code 0)
Type     Name                                  # reqs      # fails |    Avg     Min     Max    Med |   req/s  failures/s
--------|------------------------------------|-------|-------------|-------|-------|-------|-------|--------|-----------
GET      /checkout                                 19     0(0.00%) |    117       4    2069      6 |    0.66        0.00
--------|------------------------------------|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated                                19     0(0.00%) |    117       4    2069      6 |    0.66        0.00

Response time percentiles (approximated)
Type     Name                                          50%    66%    75%    80%    90%    95%    98%    99%  99.9% 99.99%   100% #
reqs
--------|----------------------------------------|--------|------|------|------|------|------|------|------|------|------|------|--
----
GET      /checkout                                       6      7     13     15     26   2100   2100   2100   2100   2100   2100
  19
--------|----------------------------------------|--------|------|------|------|------|------|------|------|------|------|------|--
----
         Aggregated                                      6      7     13     15     26   2100   2100   2100   2100   2100   2100
  19


(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
```

**SS5:**



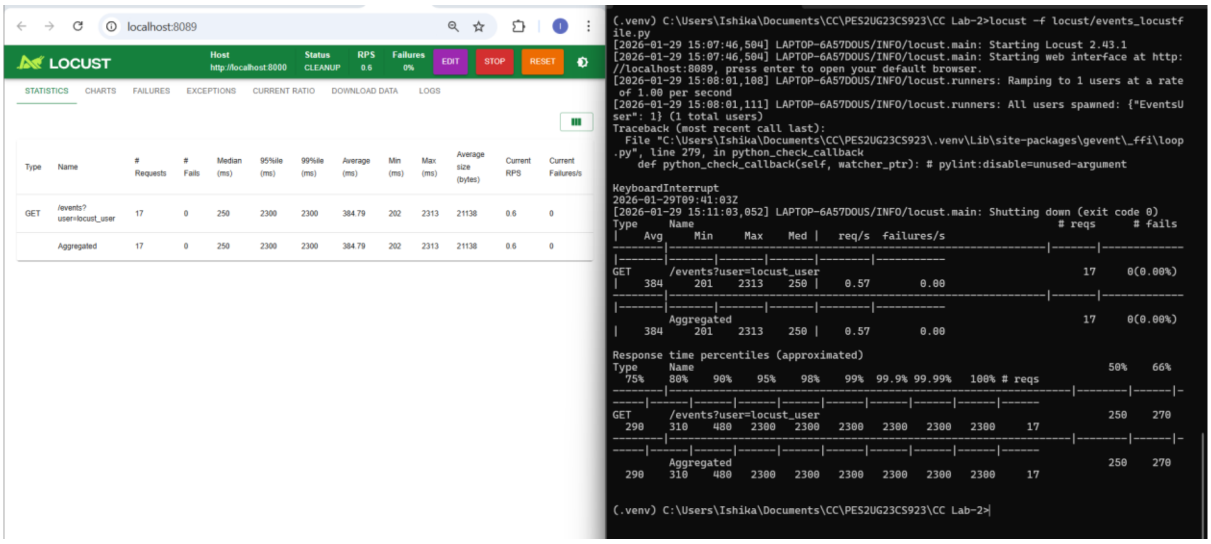
localhost:8089

| Host | Status | RPS | Failures |
|---|---|---|---|
| http://localhost:8000 | CLEANUP | 0.7 | 0% |

| 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 | /checkout | 19 | 0 | 7 | 2300 | 2300 | 130.46 | 5 | 2268 | 2797 | 0.7 | 0 |
|  | Aggregated | 19 | 0 | 7 | 2300 | 2300 | 130.46 | 5 | 2268 | 2797 | 0.7 | 0 |

```
Command Prompt

[2026-01-29 14:57:44,657] LAPTOP-6A57DOUS/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-29 14:57:53,311] LAPTOP-6A57DOUS/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 14:57:53,312] LAPTOP-6A57DOUS/INFO/locust.runners: All users spawned: {"CheckoutUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Ishika\Documents\CC\PES2UG23CS923\.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
2026-01-29T09:30:56Z
[2026-01-29 15:00:56,533] LAPTOP-6A57DOUS/INFO/locust.main: Shutting down (exit code 0)
Type     Name                                            # reqs      # fails |    Avg     Min     Max    Med |   req/s  failures/s
--------|----------------------------------------------|-------|-------------|-------|-------|-------|-------|--------|-----------
GET      /checkout                                           19     0(0.00%) |    130       5    2267      7 |    0.65        0.00
--------|----------------------------------------------|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated                                          19     0(0.00%) |    130       5    2267      7 |    0.65        0.00

Response time percentiles (approximated)
Type     Name                                                    50%    66%    75%    80%    90%    95%    98%    99%  99.9% 99.99%   100% # reqs
--------|--------------------------------------------------|--------|------|------|------|------|------|------|------|------|------|------|------
GET      /checkout                                                 7      9     12     12     62   2300   2300   2300   2300   2300   2300     19
--------|--------------------------------------------------|--------|------|------|------|------|------|------|------|------|------|------|------
         Aggregated                                                7      9     12     12     62   2300   2300   2300   2300   2300   2300     19


(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
```

## SS6:

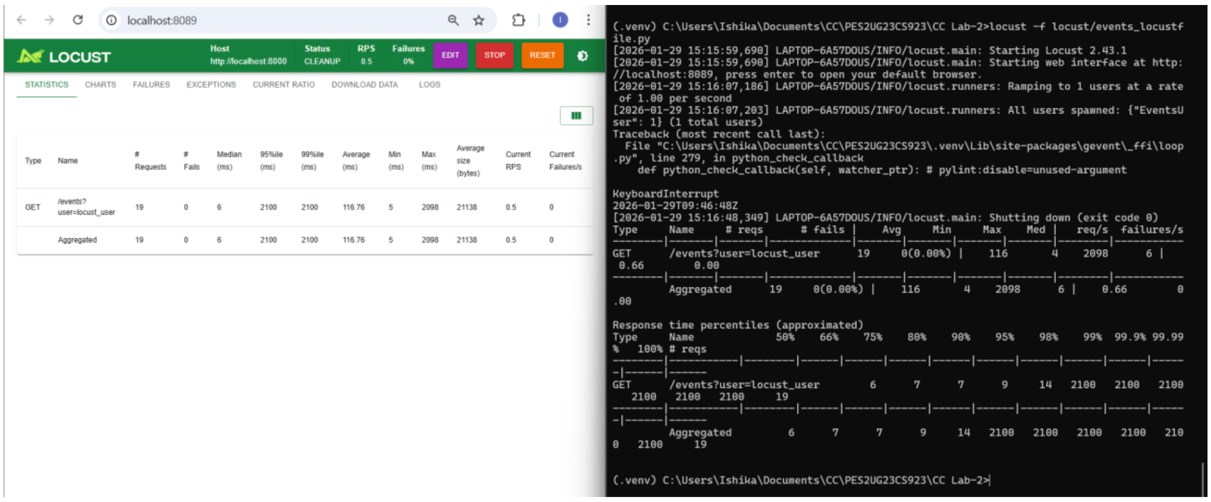


Host http://localhost:8000 | Status CLEANUP | RPS 0.6 | Failures 0%

| 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 | /events?user=locust_user | 17 | 0 | 250 | 2300 | 2300 | 384.79 | 202 | 2313 | 21138 | 0.6 | 0 |
|  | Aggregated | 17 | 0 | 250 | 2300 | 2300 | 384.79 | 202 | 2313 | 21138 | 0.6 | 0 |

```
(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>locust -f locust/events_locustf
ile.py
[2026-01-29 15:07:46,504] LAPTOP-6A57DOUS/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 15:07:46,504] LAPTOP-6A57DOUS/INFO/locust.main: Starting web interface at http:
//localhost:8089, press enter to open your default browser.
[2026-01-29 15:08:01,108] LAPTOP-6A57DOUS/INFO/locust.runners: Ramping to 1 users at a rate
 of 1.00 per second
[2026-01-29 15:08:01,111] LAPTOP-6A57DOUS/INFO/locust.runners: All users spawned: {"EventsU
ser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Ishika\Documents\CC\PES2UG23CS923\.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
2026-01-29T09:41:03Z
[2026-01-29 15:11:03,052] LAPTOP-6A57DOUS/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                                                  17     0(0.00%)
|    384     201    2313     250 |    0.57        0.00
--------|----------------------------------------------------------------------|-------|-------------
|-------|-------|-------|-------|--------|-----------
         Aggregated                                                                17     0(0.00%)
|    384     201    2313     250 |    0.57        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                                                  250    270
  290    310    480   2300   2300   2300   2300   2300   2300     17
--------|------------------------------------------------------------------------|---------|------|-
-----|------|------|------|------|------|------|------|------|------
         Aggregated                                                                250    270
  290    310    480   2300   2300   2300   2300   2300   2300     17


(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
```

## SS7:

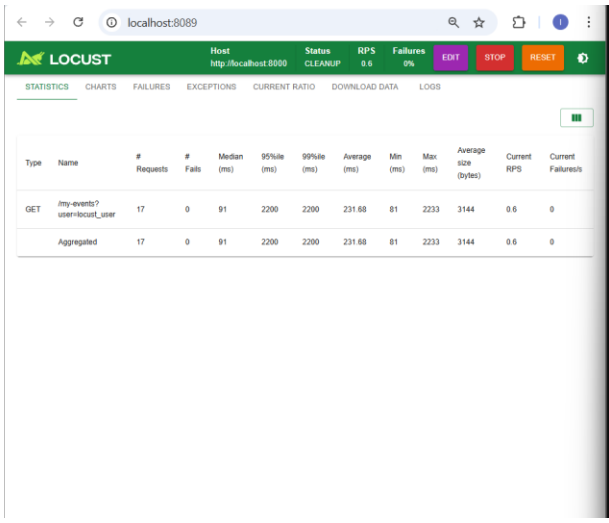


Host http://localhost:8000 | Status CLEANUP | RPS 0.5 | Failures 0%

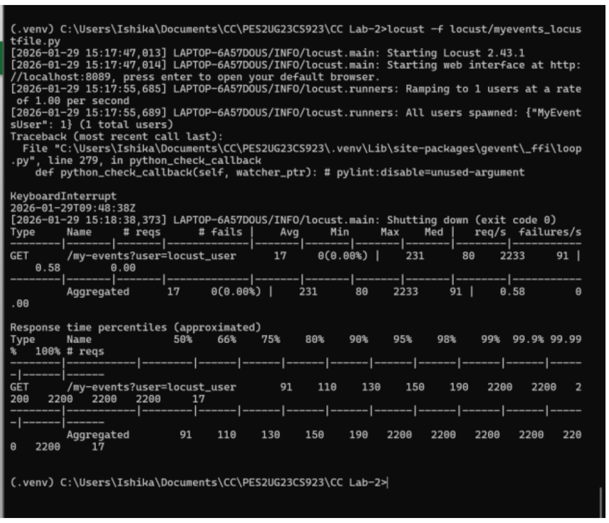
| Type | Name | # Requests | # Fails | Median (ms) | 95%ile (ms) | 99%ile (ms) | Average (ms) | Min (ms) | Max (ms) | Average size (bytes) | Current RPS | Current Failures/s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GET | /events?user=locust_user | 19 | 0 | 6 | 2100 | 2100 | 116.76 | 5 | 2098 | 21138 | 0.5 | 0 |
|  | Aggregated | 19 | 0 | 6 | 2100 | 2100 | 116.76 | 5 | 2098 | 21138 | 0.5 | 0 |

```
(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>locust -f locust/events_locustf
ile.py
[2026-01-29 15:15:59,690] LAPTOP-6A57DOUS/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 15:15:59,690] LAPTOP-6A57DOUS/INFO/locust.main: Starting web interface at http:
//localhost:8089, press enter to open your default browser.
[2026-01-29 15:16:07,186] LAPTOP-6A57DOUS/INFO/locust.runners: Ramping to 1 users at a rate
 of 1.00 per second
[2026-01-29 15:16:07,203] LAPTOP-6A57DOUS/INFO/locust.runners: All users spawned: {"EventsU
ser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Ishika\Documents\CC\PES2UG23CS923\.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
2026-01-29T09:46:48Z
[2026-01-29 15:16:48,349] LAPTOP-6A57DOUS/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      19     0(0.00%) |    116       4    2098       6 |
 0.66        0.00
--------|-------|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      19     0(0.00%) |    116       4    2098       6 |    0.66        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        6      7      7      9     14   2100   2100   2100
   2100   2100   2100     19
--------|----------|--------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated        6      7      7      9     14   2100   2100   2100   2100   210
0   2100     19


(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
```

## SS8:

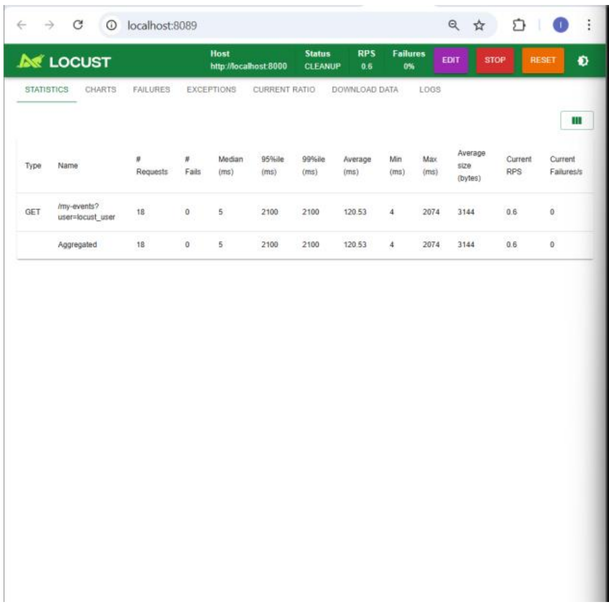


| Type | Name | # Requests | # Fails | Median (ms) | 95%ile (ms) | 99%ile (ms) | Average (ms) | Min (ms) | Max (ms) | Average size (bytes) | Current RPS | Current Failures/s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GET | /my-events?user=locust_user | 17 | 0 | 91 | 2200 | 2200 | 231.68 | 81 | 2233 | 3144 | 0.6 | 0 |
| | Aggregated | 17 | 0 | 91 | 2200 | 2200 | 231.68 | 81 | 2233 | 3144 | 0.6 | 0 |

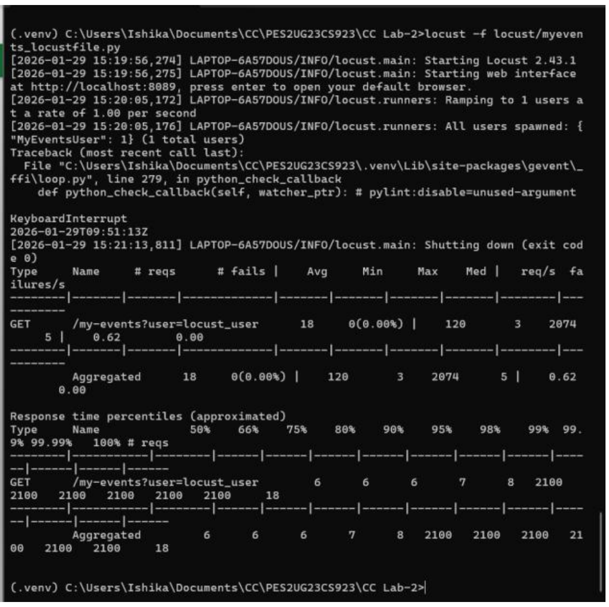


```
(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>locust -f locust/myevents_locus
tfile.py
[2026-01-29 15:17:47,013] LAPTOP-6A57DOUS/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 15:17:47,014] LAPTOP-6A57DOUS/INFO/locust.main: Starting web interface at http:
//localhost:8089, press enter to open your default browser.
[2026-01-29 15:17:55,685] LAPTOP-6A57DOUS/INFO/locust.runners: Ramping to 1 users at a rate
 of 1.00 per second
[2026-01-29 15:17:55,689] LAPTOP-6A57DOUS/INFO/locust.runners: All users spawned: {"MyEvent
sUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Ishika\Documents\CC\PES2UG23CS923\.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
2026-01-29T09:48:38Z
[2026-01-29 15:18:38,373] LAPTOP-6A57DOUS/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      17     0(0.00%) |    231      80    2233      91 |
    0.58       0.00
--------|--------|--------|-------------|--------|--------|--------|--------|---------|-----------
         Aggregated      17     0(0.00%) |    231      80    2233      91 |    0.58          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       91    110    130    150    190   2200   2200   2
200   2200   2200   2200     17
--------|-----------|---------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated       91    110    130    150    190   2200   2200   2200   2200   220
0   2200     17


(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
```

## SS9:



| 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 | 18 | 0 | 5 | 2100 | 2100 | 120.53 | 4 | 2074 | 3144 | 0.6 | 0 |
| | Aggregated | 18 | 0 | 5 | 2100 | 2100 | 120.53 | 4 | 2074 | 3144 | 0.6 | 0 |



```
(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>locust -f locust/myeven
ts_locustfile.py
[2026-01-29 15:19:56,274] LAPTOP-6A57DOUS/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 15:19:56,275] LAPTOP-6A57DOUS/INFO/locust.main: Starting web interface
at http://localhost:8089, press enter to open your default browser.
[2026-01-29 15:20:05,172] LAPTOP-6A57DOUS/INFO/locust.runners: Ramping to 1 users a
t a rate of 1.00 per second
[2026-01-29 15:20:05,176] LAPTOP-6A57DOUS/INFO/locust.runners: All users spawned: {
"MyEventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\Ishika\Documents\CC\PES2UG23CS923\.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
2026-01-29T09:51:13Z
[2026-01-29 15:21:13,811] LAPTOP-6A57DOUS/INFO/locust.main: Shutting down (exit cod
e 0)
Type     Name      # reqs      # fails |    Avg     Min     Max    Med |   req/s  fa
ilures/s
--------|--------|--------|-------------|--------|--------|--------|--------|---------|---
--------
GET      /my-events?user=locust_user      18     0(0.00%) |    120       3    2074
     5 |    0.62       0.00
--------|--------|--------|-------------|--------|--------|--------|--------|---------|---
--------
         Aggregated      18     0(0.00%) |    120       3    2074       5 |    0.62
       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       6      6      6      7      8   2100
2100   2100   2100   2100   2100     18
--------|-----------|---------|------|------|------|------|------|------|------|------|----
--|------|------|------
         Aggregated       6      6      6      7      8   2100   2100   2100   21
00   2100   2100     18


(.venv) C:\Users\Ishika\Documents\CC\PES2UG23CS923\CC Lab-2>
```

## PART 7:

**For both routes:**

- **What was the bottleneck?**
- **What change did you make?**
- **Why did the performance improve?**

**Answer:**

1) Route 1: /events

   **Bottleneck**: It was slow because the original code has unnecessary loop that ran excessive amount of time per request wasting the CPU time.

   **Changes made:** For optimization, we removed the unnecessary loop for computation.

   **Performance improve**: Performance improved because of removal of unnecessary loop made the server process request faster.

2) Route 2: /my-events

   **Bottleneck**: The route used JOIN query between events and registration and filtered it by username which caused database to scan many rows for every request and made it slower.

   **Changes made:** We optimized the code by adding indexes to speed up searching and joining.

   **Performance improve**: With indexes the database was able to find required records faster which reduced the response time.

**GitHub Link:** https://github.com/IshikaRaj1311/Fest-Monolith