UE23CS351B - CLOUD COMPUTING LAB 2 -> MONOLITHIC ARCHITECTURE

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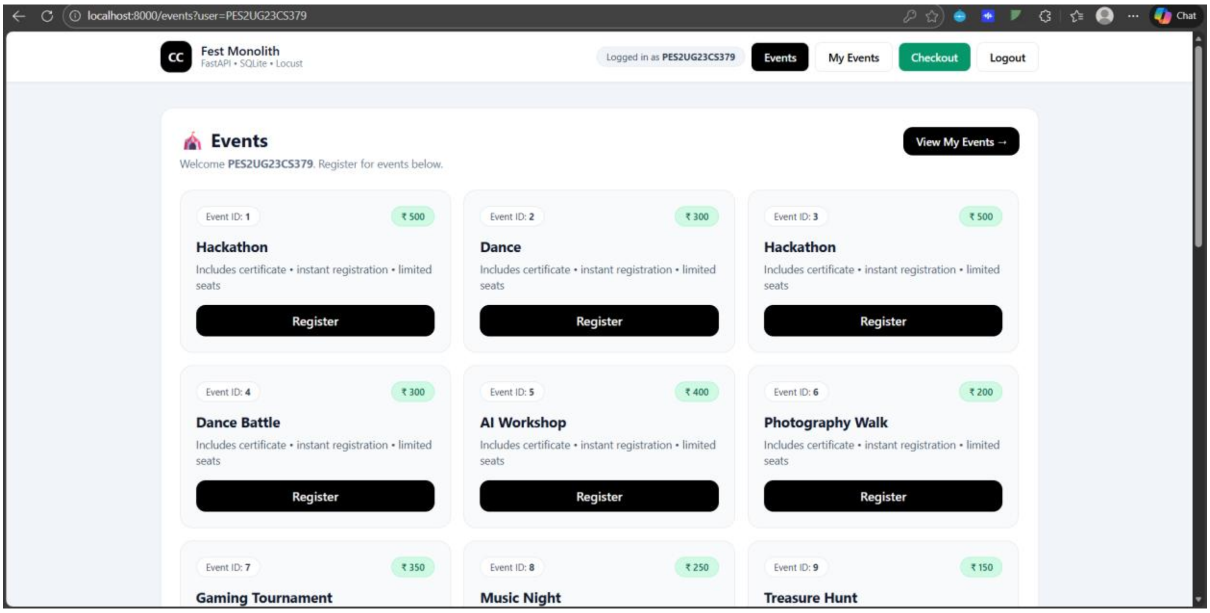
SRN: PES2UG23CS379

Sec: F



localhost:8000/events?user=PES2UG23CS379

CC Fest Monolith
FastAPI • SQLite • Locust

Logged in as PES2UG23CS379 | Events | My Events | Checkout | Logout

Events

View My Events →

Welcome **PES2UG23CS379**. Register for events below.

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

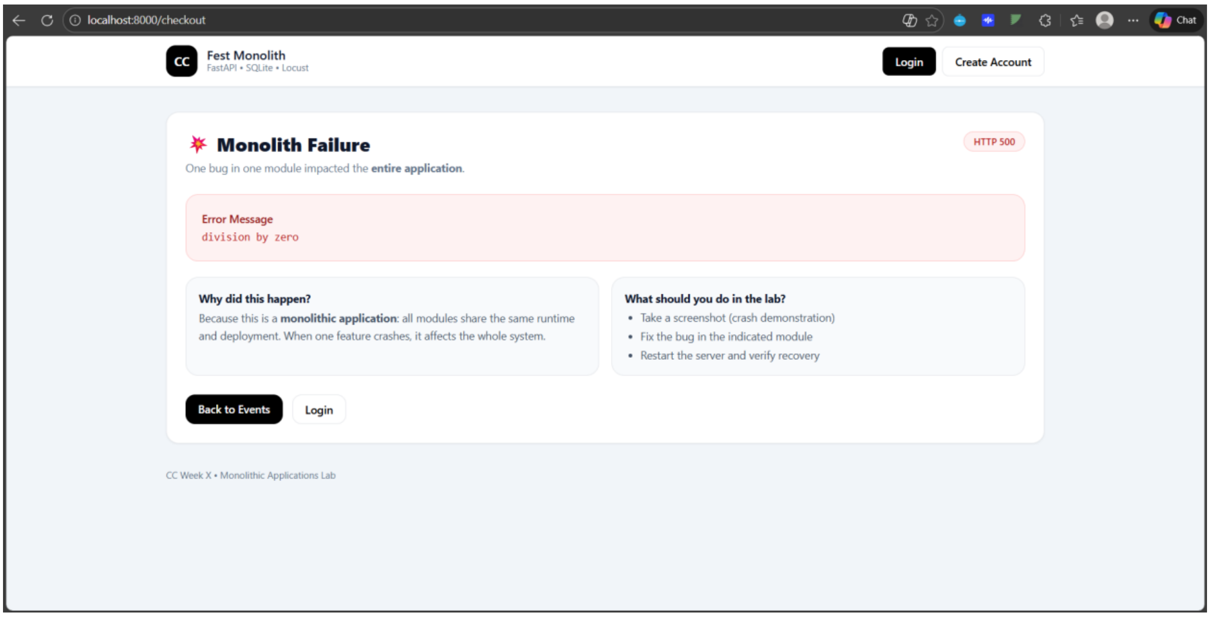
Event ID: 5 — ₹ 400
AI Workshop
Includes certificate • instant registration • limited seats
Register

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



localhost:8000/checkout

CC Fest Monolith
FastAPI • SQLite • Locust

Login | Create Account

Monolith Failure

HTTP 500

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

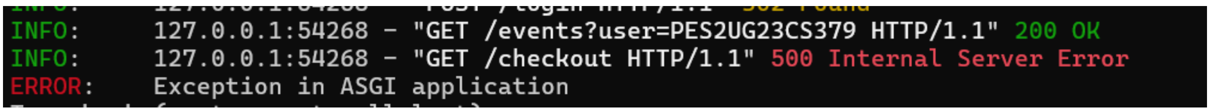
Error Message
`division by zero`

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.

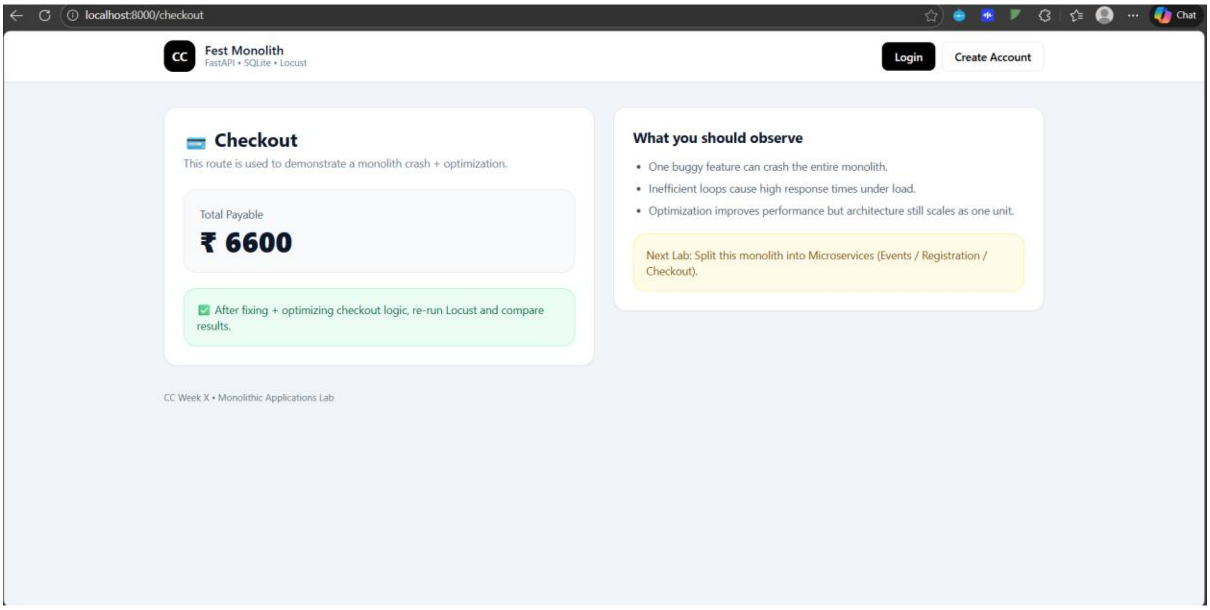
What should you do in the lab?
- Take a screenshot (crash demonstration)
- Fix the bug in the indicated module
- Restart the server and verify recovery

Back to Events | Login

CC Week X • Monolithic Applications Lab



```
INFO:     127.0.0.1:54268 - "POST /login HTTP/1.1" 302 Found
INFO:     127.0.0.1:54268 - "GET /events?user=PES2UG23CS379 HTTP/1.1" 200 OK
INFO:     127.0.0.1:54268 - "GET /checkout HTTP/1.1" 500 Internal Server Error
ERROR:    Exception in ASGI application
Traceback (most recent call last):
```



Checkout

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

Total Payable

₹ 6600

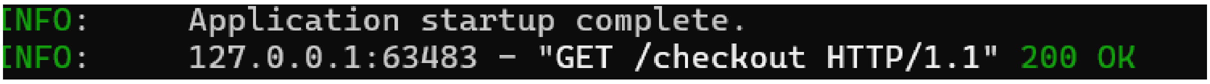
☑ After fixing + optimizing checkout logic, re-run Locust and compare results.

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.

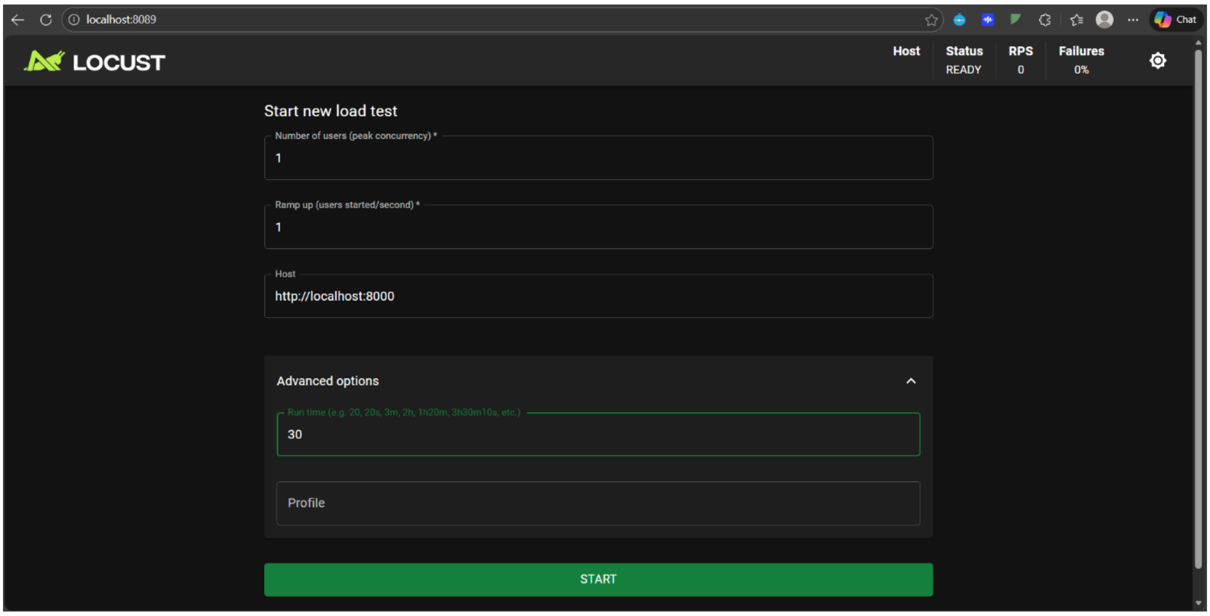
Next Lab: Split this monolith into Microservices (Events / Registration / Checkout).

CC Week X • Monolithic Applications Lab



```
INFO:     Application startup complete.
INFO:     127.0.0.1:63483 - "GET /checkout HTTP/1.1" 200 OK
```

Load Testing using Locust



Start new load test

Number of users (peak concurrency) *: 1

Ramp up (users started/second) *: 1

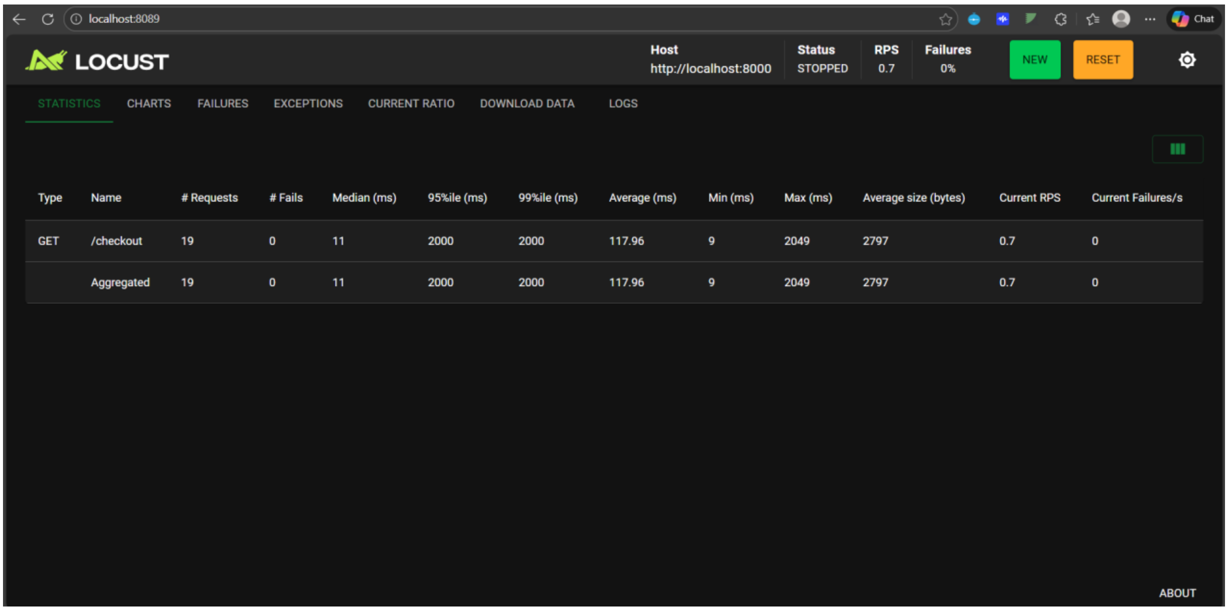
Host: http://localhost:8000

Advanced options

Run time (e.g. 20, 20s, 3m, 2h, 1h20m, 3h30m10s, etc.): 30

Profile

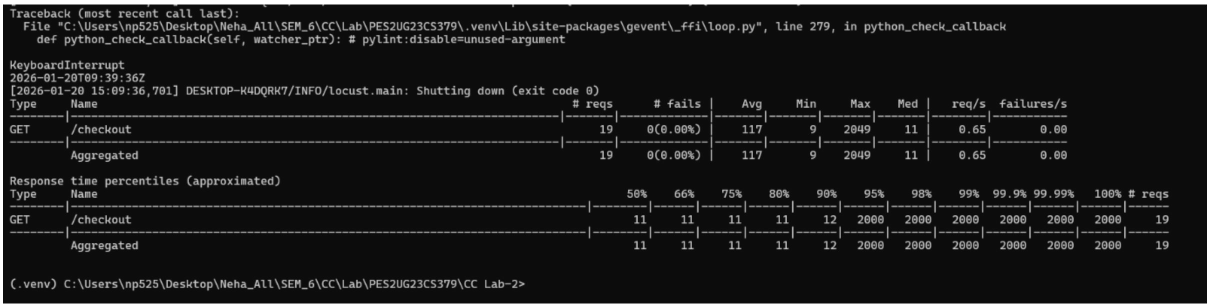
START



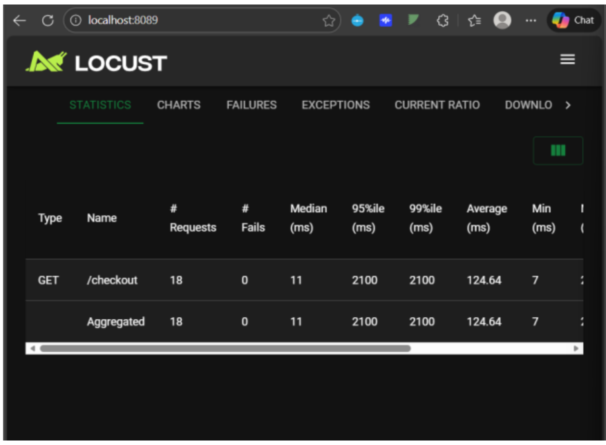
Host	Status	RPS	Failures
http://localhost:8000	STOPPED	0.7	0%

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	11	2000	2000	117.96	9	2049	2797	0.7	0
	Aggregated	19	0	11	2000	2000	117.96	9	2049	2797	0.7	0

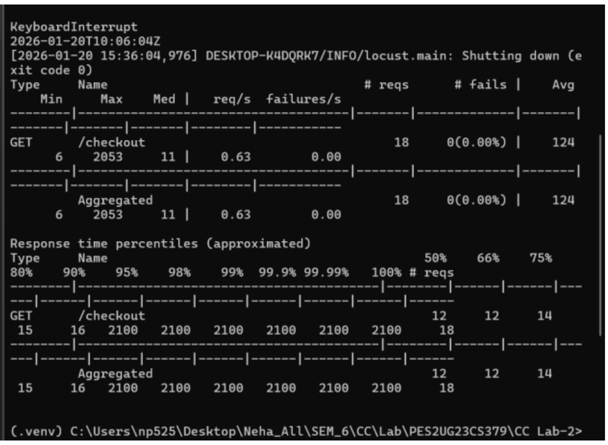
Optimize the Checkout Route



```
Traceback (most recent call last):
  File "C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\.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
2026-01-20T09:39:36Z
[2026-01-20 15:09:36,701] DESKTOP-K4DQRK7/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       9    2049     11 |    0.65        0.00
--------|----------------------------------------------------------------------------|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated                                                                        19     0(0.00%) |    117       9    2049     11 |    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                                                                              11     11     11     11     12   2000   2000   2000   2000   2000   2000     19
--------|--------------------------------------------------------------------------------|--------|------|------|------|------|------|------|------|------|------|------|------
         Aggregated                                                                             11     11     11     11     12   2000   2000   2000   2000   2000   2000     19


(.venv) C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\CC Lab-2>
```

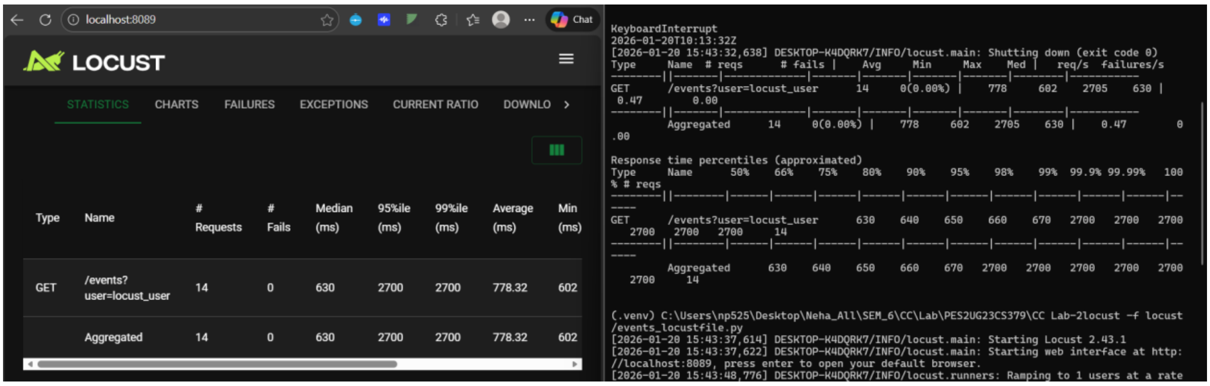


Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)
GET	/checkout	18	0	11	2100	2100	124.64	7
	Aggregated	18	0	11	2100	2100	124.64	7



```
KeyboardInterrupt
2026-01-20T10:06:04Z
[2026-01-20 15:36:04,976] DESKTOP-K4DQRK7/INFO/locust.main: Shutting down (e
xit code 0)
Type     Name                                          # reqs      # fails |    Avg
    Min     Max    Med |   req/s  failures/s
--------|--------------------------------------------|-------|-------------|-------|
-------|-------|-------|--------|-----------
GET      /checkout                                         18     0(0.00%) |    124
      6    2053     11 |    0.63        0.00
--------|--------------------------------------------|-------|-------------|-------|
-------|-------|-------|--------|-----------
         Aggregated                                        18     0(0.00%) |    124
      6    2053     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                                                 12     12     14
 15     16   2100   2100   2100   2100   2100   2100     18
--------|------------------------------------------------|--------|------|------|---
---|------|------|------|------|------|------|------|------
         Aggregated                                                12     12     14
 15     16   2100   2100   2100   2100   2100   2100     18


(.venv) C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\CC Lab-2>
```

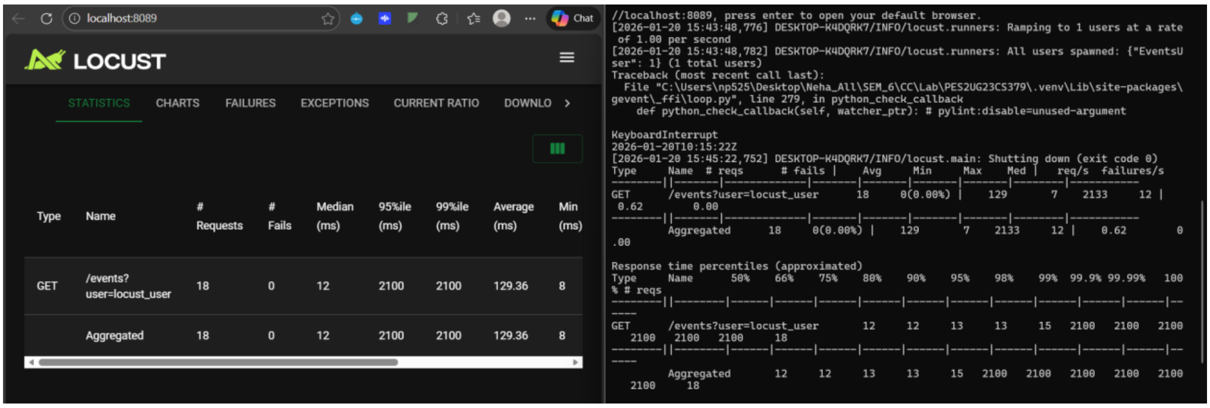
Route 1: /events BEFORE optimization



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)
GET	/events?user=locust_user	14	0	630	2700	2700	778.32	602
	Aggregated	14	0	630	2700	2700	778.32	602

```
KeyboardInterrupt
2026-01-20T10:13:32Z
[2026-01-20 15:43:32,638] DESKTOP-K4DQRK7/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      14     0(0.00%) |    778     602    2705    630 |
 0.47       0.00
--------||-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      14     0(0.00%) |    778     602    2705    630 |    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    640    650    660    670   2700   2700   2700
   2700   2700   2700     14
--------||--------|------|------|------|------|------|------|------|------|------|------|--
----
         Aggregated      630    640    650    660    670   2700   2700   2700   2700   2700
   2700    14


(.venv) C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\CC Lab-2locust -f locust
/events_locustfile.py
[2026-01-20 15:43:37,614] DESKTOP-K4DQRK7/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:43:37,622] DESKTOP-K4DQRK7/INFO/locust.main: Starting web interface at http:
//localhost:8089, press enter to open your default browser.
[2026-01-20 15:43:48,776] DESKTOP-K4DQRK7/INFO/locust.runners: Ramping to 1 users at a rate
```

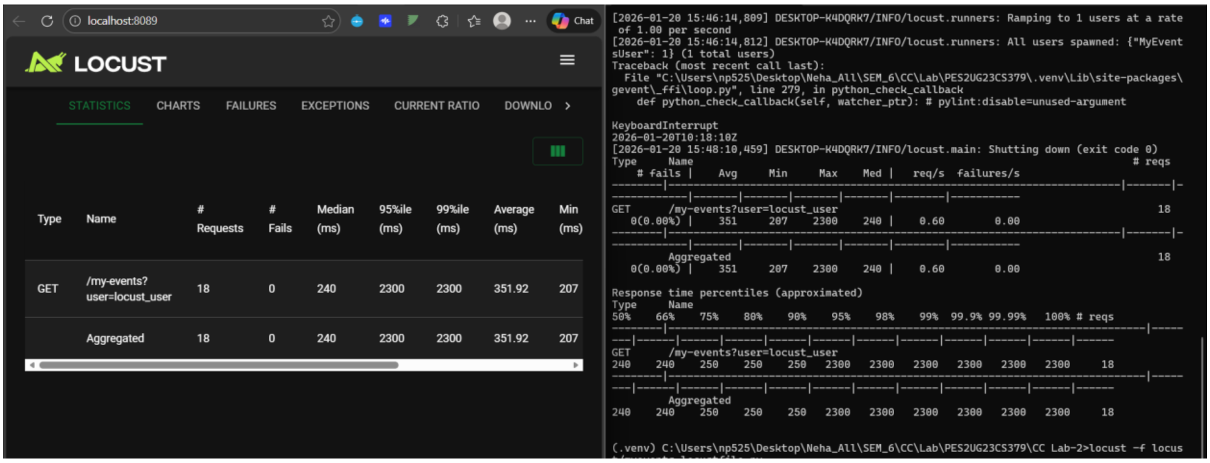
AFTER optimization



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)
GET	/events?user=locust_user	18	0	12	2100	2100	129.36	8
	Aggregated	18	0	12	2100	2100	129.36	8

```
//localhost:8089, press enter to open your default browser.
[2026-01-20 15:43:48,776] DESKTOP-K4DQRK7/INFO/locust.runners: Ramping to 1 users at a rate
 of 1.00 per second
[2026-01-20 15:43:48,782] DESKTOP-K4DQRK7/INFO/locust.runners: All users spawned: {"EventsU
ser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\.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
2026-01-20T10:15:22Z
[2026-01-20 15:45:22,752] DESKTOP-K4DQRK7/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      18     0(0.00%) |    129       7    2133     12 |
 0.62       0.00
--------||-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      18     0(0.00%) |    129       7    2133     12 |    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      /events?user=locust_user       12     12     13     13     15   2100   2100   2100
   2100   2100   2100     18
--------||--------|------|------|------|------|------|------|------|------|------|------|--
----
         Aggregated       12     12     13     13     15   2100   2100   2100   2100   2100
   2100     18
```

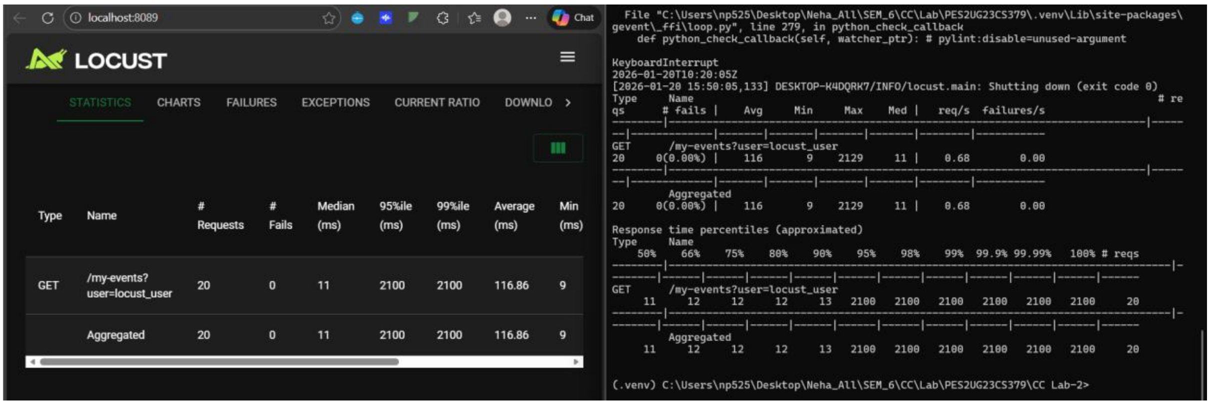
Route 2: /my-events BEFORE optimization



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)
GET	/my-events?user=locust_user	18	0	240	2300	2300	351.92	207
	Aggregated	18	0	240	2300	2300	351.92	207

```
[2026-01-20 15:46:14,809] DESKTOP-K4DQRK7/INFO/locust.runners: Ramping to 1 users at a rate
 of 1.00 per second
[2026-01-20 15:46:14,812] DESKTOP-K4DQRK7/INFO/locust.runners: All users spawned: {"MyEvent
sUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\.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
2026-01-20T10:18:10Z
[2026-01-20 15:48:10,459] DESKTOP-K4DQRK7/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                                                 18
   0(0.00%) |    351     207    2300    240 |    0.60        0.00
--------|-------------------------------------------------------------------------|-------|-
-----------|-------|-------|-------|-------|--------|-----------
         Aggregated                                                                  18
   0(0.00%) |    351     207    2300    240 |    0.60        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
240    240    250    250    250   2300   2300   2300   2300   2300   2300     18
--------|------------------------------------------------------------------------------|-----
---|------|------|------|------|------|------|------|------|------|------|------
         Aggregated
240    240    250    250    250   2300   2300   2300   2300   2300   2300     18


(.venv) C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\CC Lab-2>locust -f locus
```

AFTER optimization



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)
GET	/my-events? user=locust_user	20	0	11	2100	2100	116.86	9
	Aggregated	20	0	11	2100	2100	116.86	9

```
  File "C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\.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
2026-01-20T10:20:05Z
[2026-01-20 15:50:05,133] DESKTOP-K4DQRK7/INFO/locust.main: Shutting down (exit code 0)
Type     Name                                                                          # re
qs       # fails |    Avg     Min     Max     Med |   req/s  failures/s
--------|----------------------------------------------------------------------------|------
--|-------------|-------|-------|-------|-------|--------|-----------
GET      /my-events?user=locust_user
20      0(0.00%) |    116       9    2129      11 |    0.68        0.00
--------|----------------------------------------------------------------------------|------
--|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated
20      0(0.00%) |    116       9    2129      11 |    0.68        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
     11     12     12     12     13   2100   2100   2100   2100   2100   2100     20
--------|------------------------------------------------------------------------------|-
-------|------|------|------|------|------|------|------|------|------|------|------
         Aggregated
     11     12     12     12     13   2100   2100   2100   2100   2100   2100     20


(.venv) C:\Users\np525\Desktop\Neha_All\SEM_6\CC\Lab\PES2UG23CS379\CC Lab-2>
```