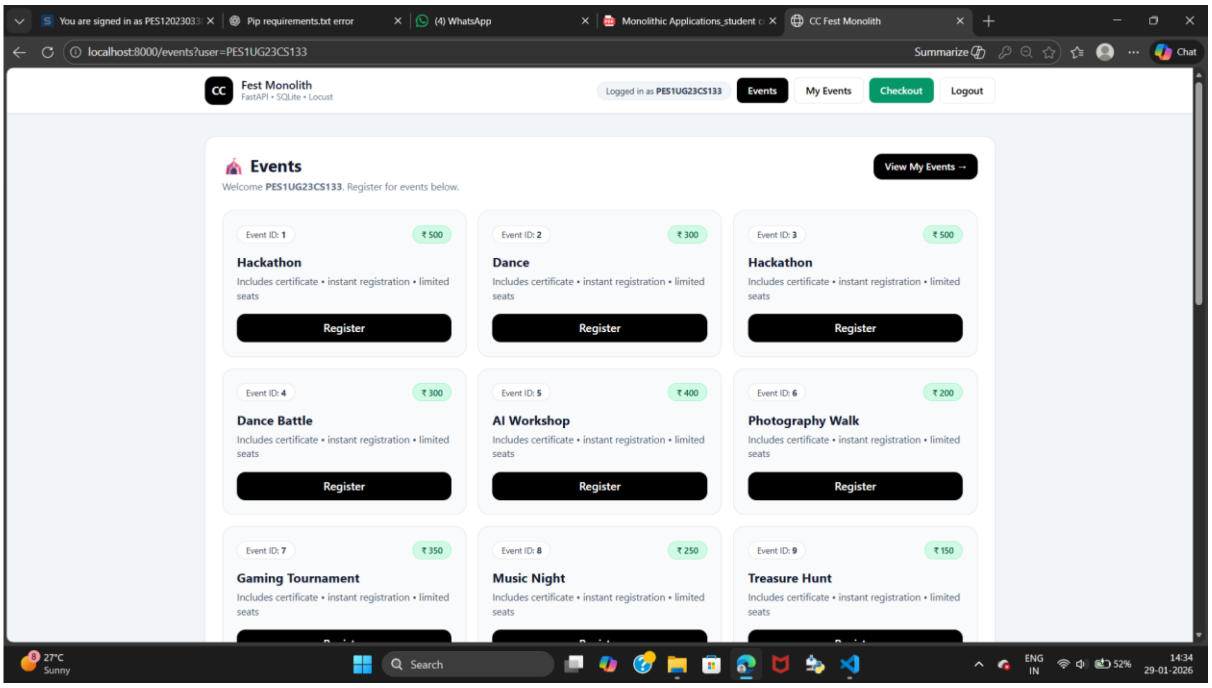
CC LAB 2

NAME: B M Krupa **SRN:** PES1UG23CS133 **SEC:** C

REPO LINK: https://github.com/BMKrupa/PES1UG23CS133_CCLAB2.git

SS1


localhost:8000/events?user=PES1UG23CS133

Fest Monolith
FastAPI • SQLite • Locust

Logged in as PES1UG23CS133 | Events | My Events | Checkout | Logout

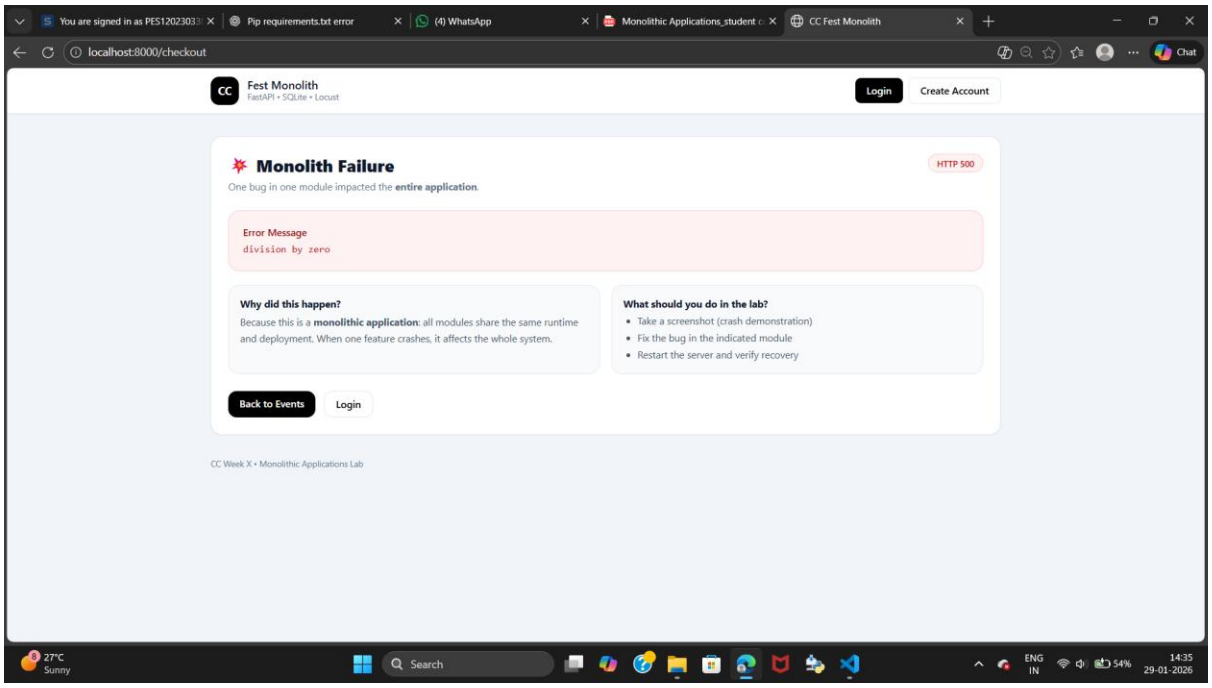
Events
Welcome PES1UG23CS133. Register for events below.

View My Events →

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

14:34 29-01-2026

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
```

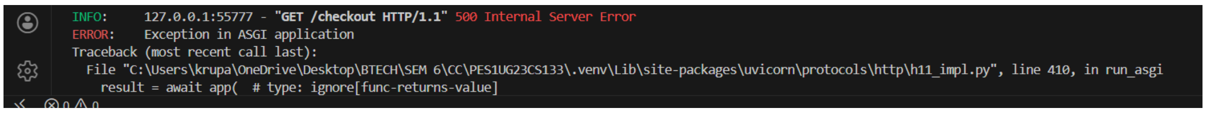
Why did this happen?
Because this is a **monolithic application**: all modules share the same runtime and deployment. When one feature crashes, it affects the whole system.

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

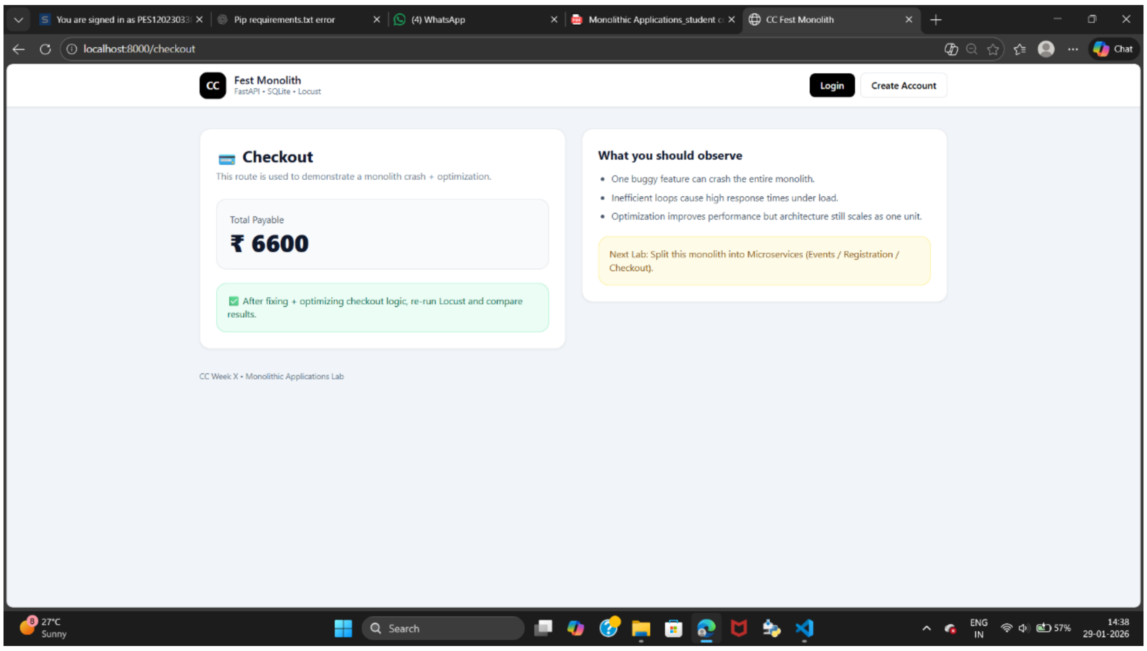
CC Week X • Monolithic Applications Lab

14:35 29-01-2026



```
INFO:     127.0.0.1:55777 - "GET /checkout HTTP/1.1" 500 Internal Server Error
ERROR:    Exception in ASGI application
Traceback (most recent call last):
  File "C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\.venv\Lib\site-packages\uvicorn\protocols\http\h11_impl.py", line 410, in run_asgi
    result = await app(  # type: ignore[func-returns-value]
```

SS3



localhost:8000/checkout

Fest Monolith
FastAPI • SQLite • Locust

Login | Create Account

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

Total Payable
₹ 6600

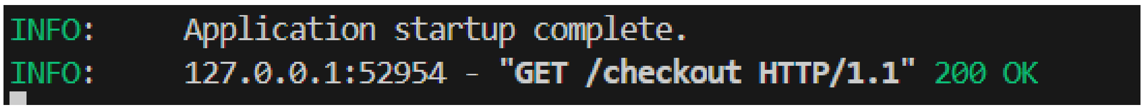
After fixing + optimizing checkout logic, re-run Locust and compare results.

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.

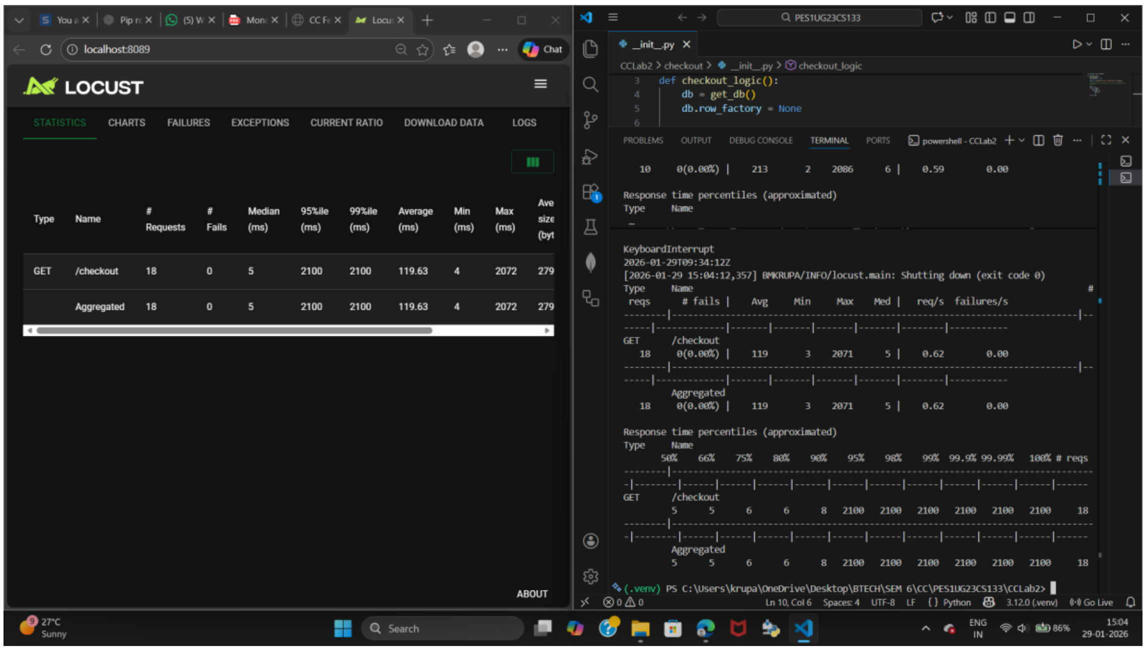
Next Lab: Split this monolith into Microservices (Events / Registration / Checkout).

CC Week X • Monolithic Applications Lab



```
INFO:     Application startup complete.
INFO:     127.0.0.1:52954 - "GET /checkout HTTP/1.1" 200 OK
```

SS4



localhost:8089

LOCUST

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)	Ave size (byt
GET	/checkout	18	0	5	2100	2100	119.63	4	2072	279
	Aggregated	18	0	5	2100	2100	119.63	4	2072	279

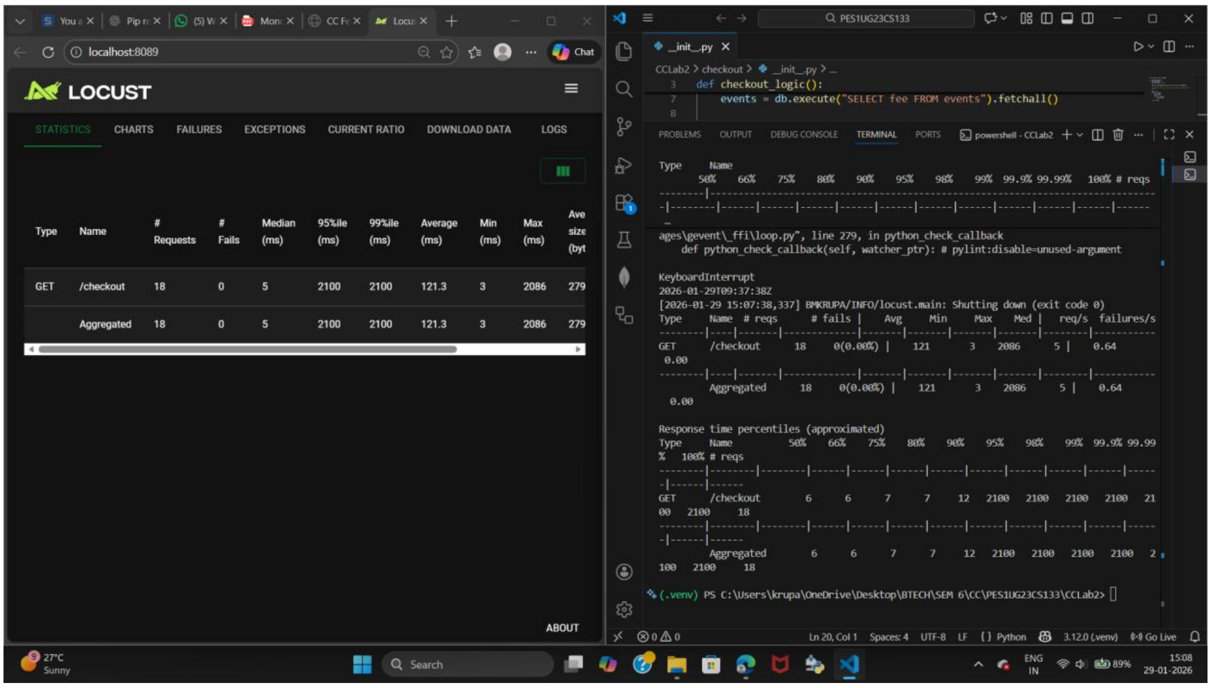
CCLab2 > checkout > __init__.py > checkout_logic

```python
def checkout_logic():
    db = get_db()
    db.row_factory = None
```

```
   10     0(0.00%) |    213       2    2086       6 |    0.59        0.00

Response time percentiles (approximated)
Type     Name

KeyboardInterrupt
2026-01-29T09:34:12Z
[2026-01-29 15:04:12,357] BMKRUPA/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%) |    119       3    2071       5 |    0.62        0.00
--------|----------------------------------------------------------------------|--
-----|------------|-------|-------|-------|-------|--------|----------
         Aggregated
   18     0(0.00%) |    119       3    2071       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      /checkout
           5      5      6      6      8   2100   2100   2100   2100   2100   2100     18
--------|------------------------------------------------------------------------------
-|--------|------|------|------|------|------|------|------|------|------|------|------
         Aggregated
           5      5      6      6      8   2100   2100   2100   2100   2100   2100     18
(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2>
```

SS5

AFTER



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)	Ave size (byt
GET	/checkout	18	0	5	2100	2100	121.3	3	2086	279
	Aggregated	18	0	5	2100	2100	121.3	3	2086	279

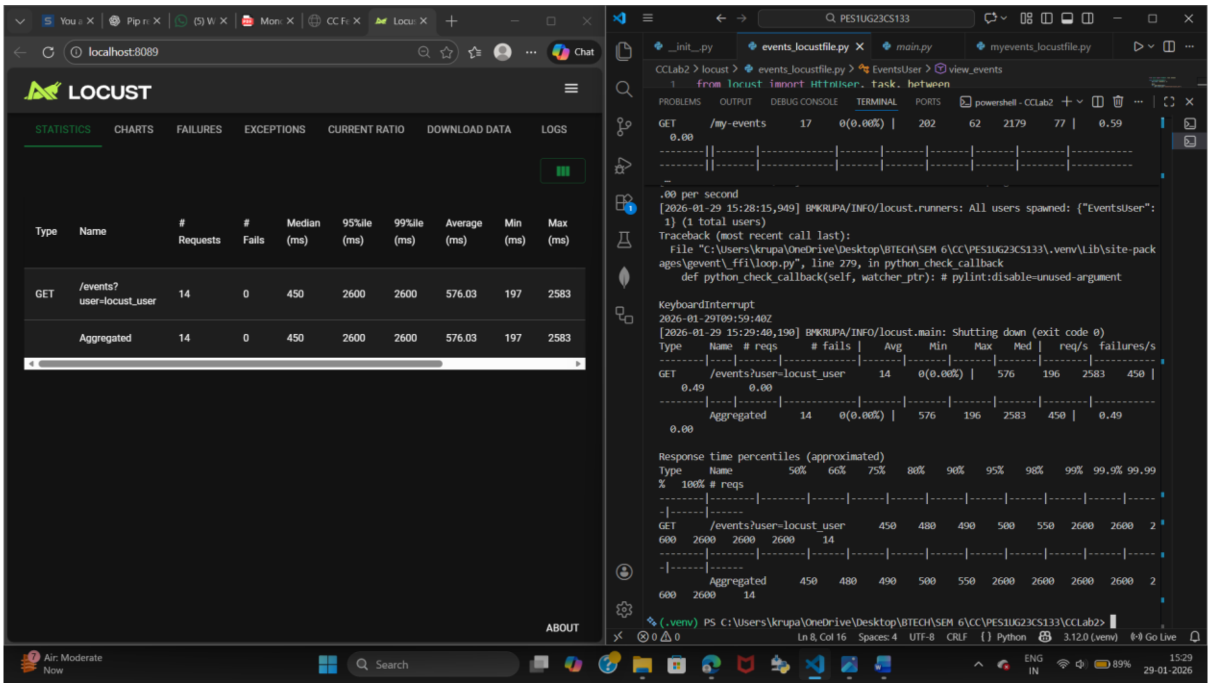
```python
def checkout_logic():
    events = db.execute("SELECT fee FROM events").fetchall()
```

```
Type     Name
      50%    66%    75%    80%    90%    95%    98%    99%  99.9% 99.99%   100% # reqs
--------|-------------------------------------------------------------------------------
-|--------|------|------|------|------|------|------|------|------|------|------|------
ages\gevent\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T09:37:38Z
[2026-01-29 15:07:38,337] BMKRUPA/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%) |    121       3    2086      5 |    0.64
 0.00
--------|----|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      18     0(0.00%) |    121       3    2086      5 |    0.64
  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      6      7      7     12   2100   2100   2100   2100   21
00   2100     18
--------|--------|--------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated        6      6      7      7     12   2100   2100   2100   2100    2
100   2100     18

(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2>
```

/events

SS6

BEFORE



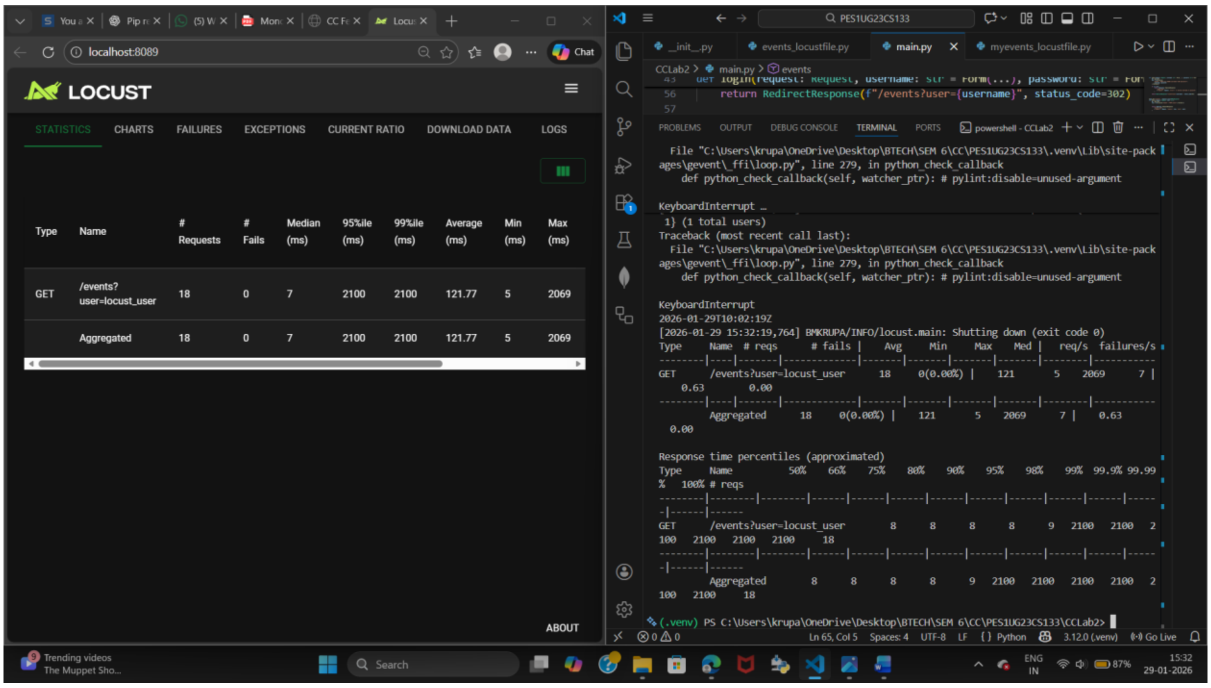
Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)
GET	/events?user=locust_user	14	0	450	2600	2600	576.03	197	2583
	Aggregated	14	0	450	2600	2600	576.03	197	2583

```python
from locust import HttpUser, task, between
```

```
GET      /my-events      17     0(0.00%) |    202      62    2179     77 |    0.59
  0.00
--------||-------|------------|-------|-------|-------|-------|--------|----------
--------||-------|------------|-------|-------|-------|-------|--------|----------
.00 per second
[2026-01-29 15:28:15,949] BMKRUPA/INFO/locust.runners: All users spawned: {"EventsUser":
 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\.venv\Lib\site-pack
ages\gevent\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T09:59:40Z
[2026-01-29 15:29:40,190] BMKRUPA/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%) |    576     196    2583    450 |
    0.49       0.00
--------|----|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      14     0(0.00%) |    576     196    2583    450 |    0.49
  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      450    480    490    500    550   2600   2600    2
600   2600   2600   2600     14
--------|--------|--------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated      450    480    490    500    550   2600   2600   2600   2600    2
600   2600     14

(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2>
```

SS7

AFTER



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)
GET	/events?user=locust_user	18	0	7	2100	2100	121.77	5	2069
	Aggregated	18	0	7	2100	2100	121.77	5	2069

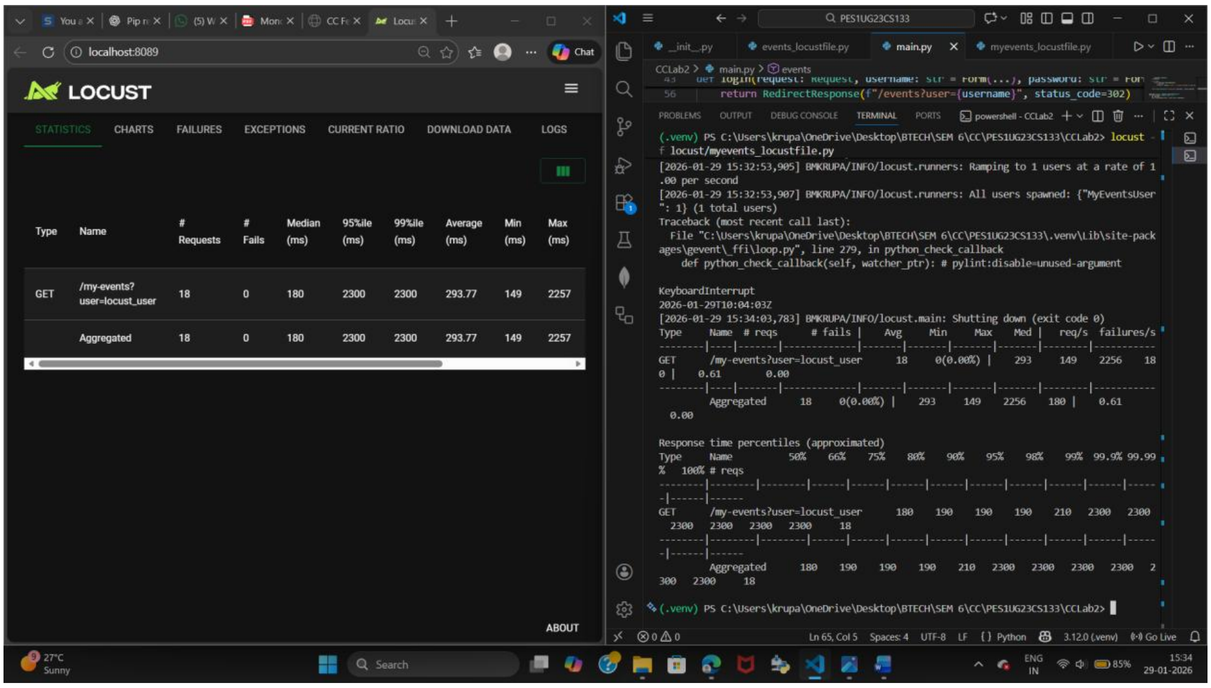
```
def login(request: Request, username: str = Form(...), password: str = For
    return RedirectResponse(f"/events?user={username}", status_code=302)
```

```
  File "C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\.venv\Lib\site-pack
ages\gevent\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt …
 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\.venv\Lib\site-pack
ages\gevent\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T10:02:19Z
[2026-01-29 15:32:19,764] BMKRUPA/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%) |    121       5    2069      7 |
    0.63        0.00
--------|----|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      18     0(0.00%) |    121       5    2069      7 |    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      /events?user=locust_user       8      8      8      8      9   2100   2100   2
100   2100   2100   2100     18
--------|--------|--------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated       8      8      8      8      9   2100   2100   2100   2100   2
100   2100     18

(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2>
```

/my-events

SS8

BEFORE



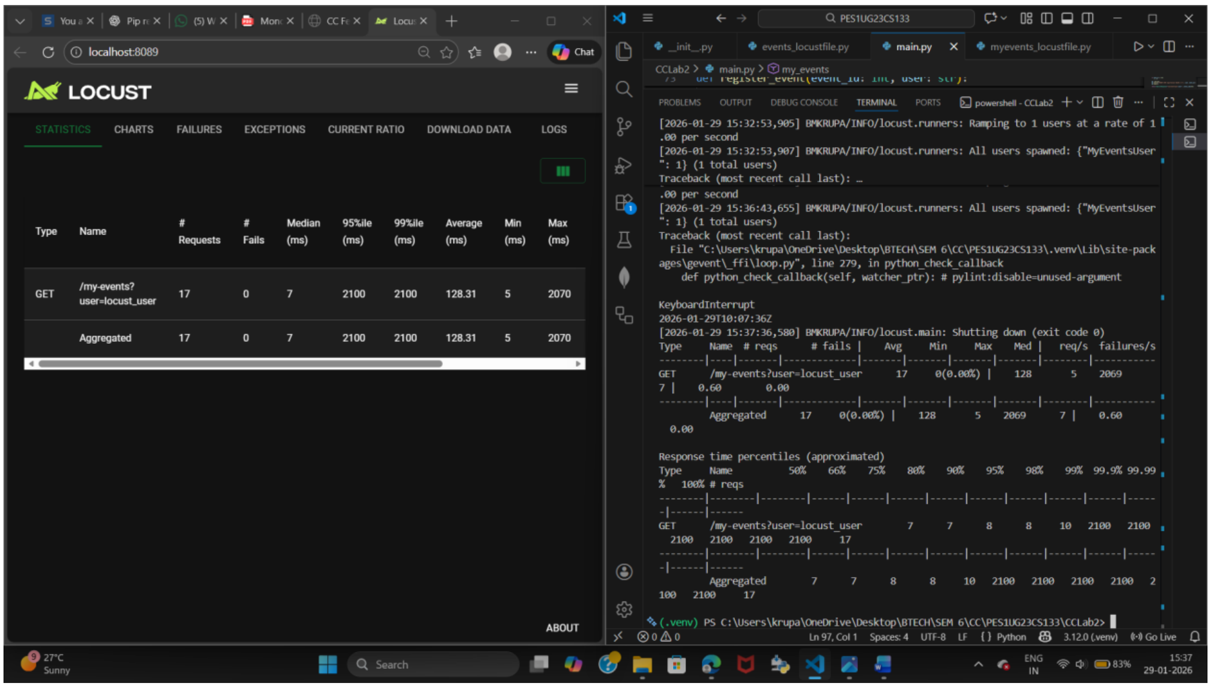
Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)
GET	/my-events?user=locust_user	18	0	180	2300	2300	293.77	149	2257
	Aggregated	18	0	180	2300	2300	293.77	149	2257

```
def login(request: Request, username: str = Form(...), password: str = For
    return RedirectResponse(f"/events?user={username}", status_code=302)
```

```
(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2> locust -
f locust/myevents_locustfile.py
[2026-01-29 15:32:53,905] BMKRUPA/INFO/locust.runners: Ramping to 1 users at a rate of 1
.00 per second
[2026-01-29 15:32:53,907] BMKRUPA/INFO/locust.runners: All users spawned: {"MyEventsUser
": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\.venv\Lib\site-pack
ages\gevent\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T10:04:03Z
[2026-01-29 15:34:03,783] BMKRUPA/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%) |    293     149    2256     18
0 |    0.61        0.00
--------|----|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      18     0(0.00%) |    293     149    2256    180 |    0.61
  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      180    190    190    190    210   2300   2300
  2300   2300   2300   2300     18
--------|--------|--------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated      180    190    190    190    210   2300   2300   2300   2300   2
300   2300     18

(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2>
```

SS9

AFTER



Type	Name	# Requests	# Fails	Median (ms)	95%ile (ms)	99%ile (ms)	Average (ms)	Min (ms)	Max (ms)
GET	/my-events?user=locust_user	17	0	7	2100	2100	128.31	5	2070
	Aggregated	17	0	7	2100	2100	128.31	5	2070

```
[2026-01-29 15:32:53,905] BMKRUPA/INFO/locust.runners: Ramping to 1 users at a rate of 1
.00 per second
[2026-01-29 15:32:53,907] BMKRUPA/INFO/locust.runners: All users spawned: {"MyEventsUser
": 1} (1 total users)
Traceback (most recent call last): …
.00 per second
[2026-01-29 15:36:43,655] BMKRUPA/INFO/locust.runners: All users spawned: {"MyEventsUser
": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\.venv\Lib\site-pack
ages\gevent\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T10:07:36Z
[2026-01-29 15:37:36,580] BMKRUPA/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%) |    128       5    2069
7 |    0.60        0.00
--------|----|-------|-------------|-------|-------|-------|-------|--------|-----------
         Aggregated      17     0(0.00%) |    128       5    2069       7 |    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       7      7      8      8     10   2100   2100
  2100   2100   2100   2100     17
--------|--------|--------|------|------|------|------|------|------|------|------|-----
-|------|------
         Aggregated       7      7      8      8     10   2100   2100   2100   2100    2
100   2100     17

(.venv) PS C:\Users\krupa\OneDrive\Desktop\BTECH\SEM 6\CC\PES1UG23CS133\CCLab2>
```

Route 1: /events

Bottleneck:
The route contained an unnecessary CPU-intensive loop that executed millions of iterations without contributing to the response.

Change Made:
The redundant loop was removed, keeping only the database query and template rendering logic.

Why Performance Improved:
Eliminating wasted CPU computation reduced response time and allowed the server to handle requests faster under load.

Route 2: /my-events

Bottleneck:
The route included a dummy loop performing a large number of iterations that did not affect the output but consumed CPU resources.

Change Made:
The unnecessary loop was removed while retaining the database query and response logic.

Why Performance Improved:
Removing redundant processing lowered CPU usage per request, resulting in faster responses and better performance during load testing.