LAB 2 - MONOLITHIC ARCHITECTURE

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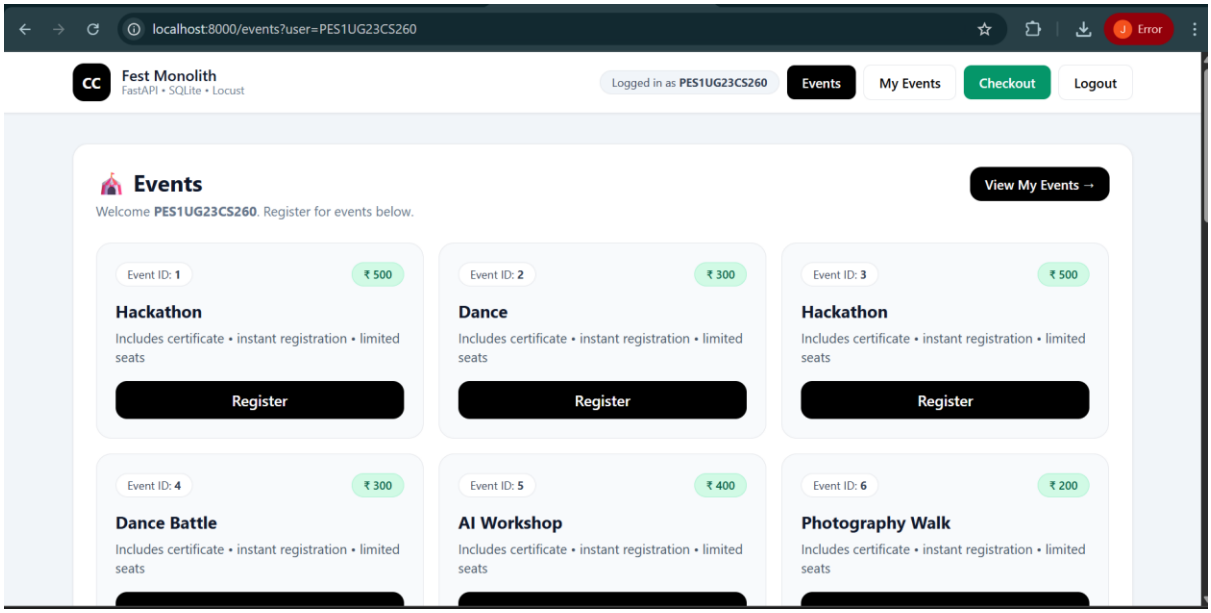
SRN:	**PES1UG23CS260**
Section:	**E**

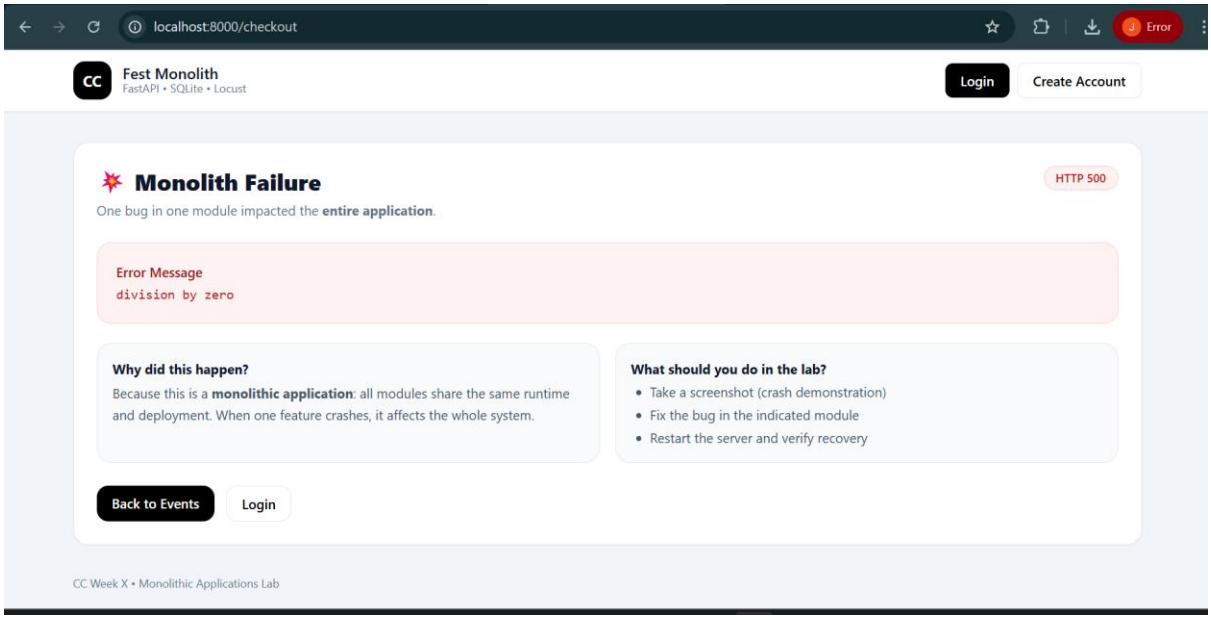
Github repo:

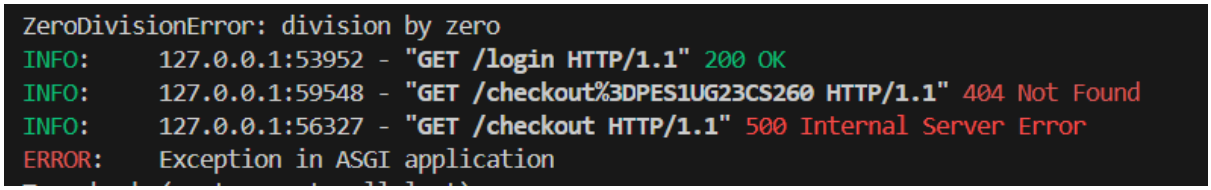
https://github.com/beatriz-1347/PES1UG23CS260_CC_Lab-2.git

SS1:

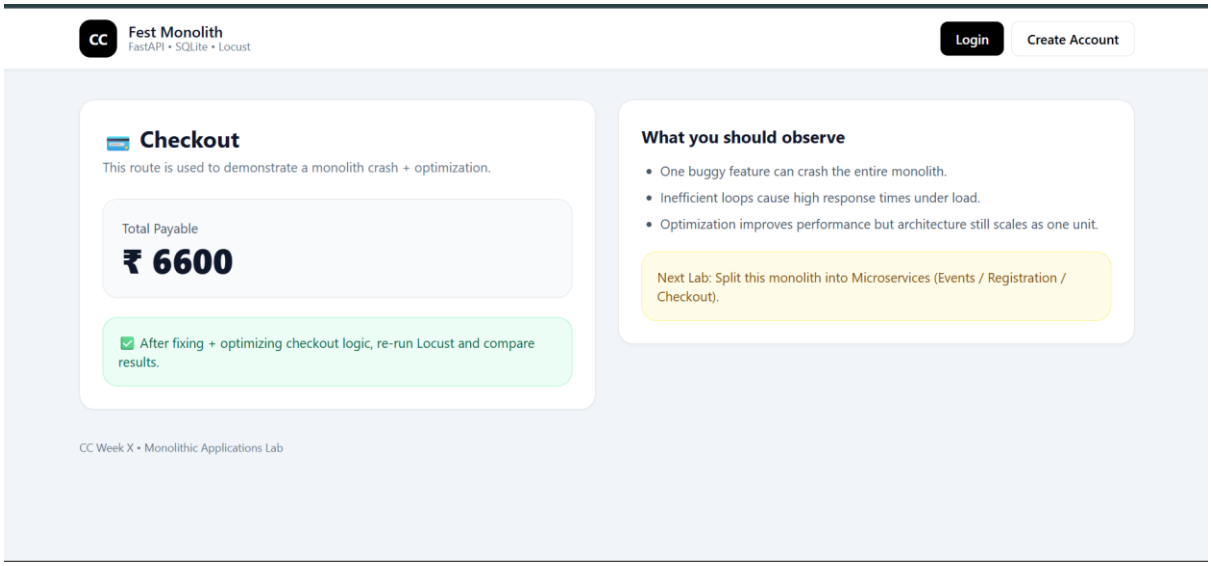


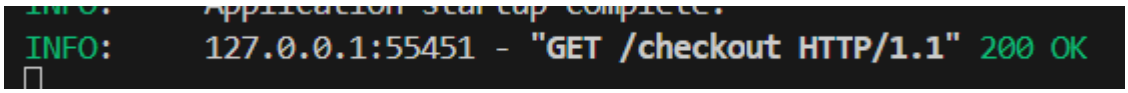
SS2:


localhost:8000/checkout
Error
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

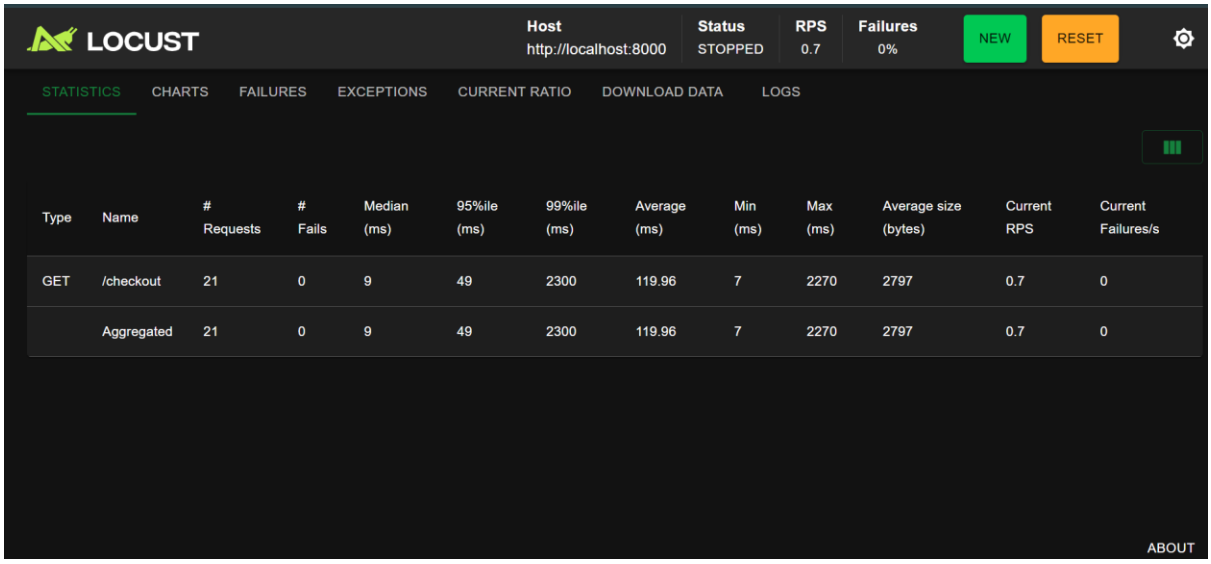

ZeroDivisionError: division by zero
INFO: 127.0.0.1:53952 - "GET /login HTTP/1.1" 200 OK
INFO: 127.0.0.1:59548 - "GET /checkout%3DPES1UG23CS260 HTTP/1.1" 404 Not Found
INFO: 127.0.0.1:56327 - "GET /checkout HTTP/1.1" 500 Internal Server Error
ERROR: Exception in ASGI application

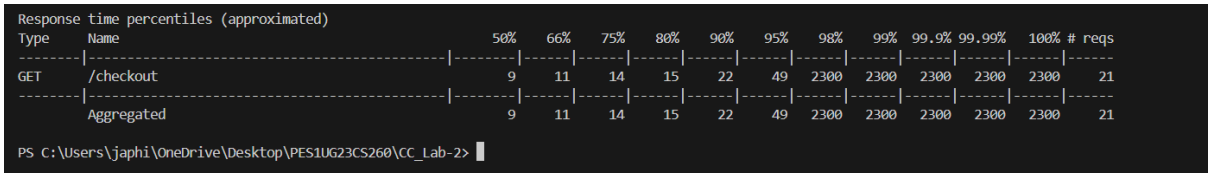
SS3:


CC
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: 127.0.0.1:55451 - "GET /checkout HTTP/1.1" 200 OK

SS4:

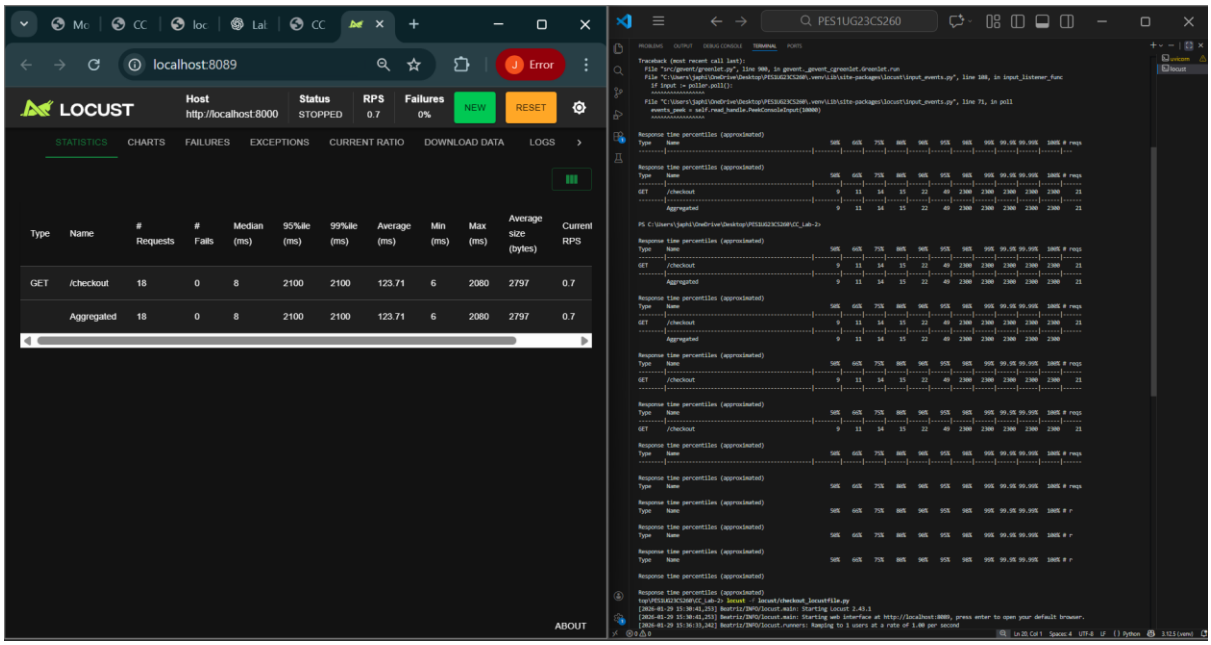




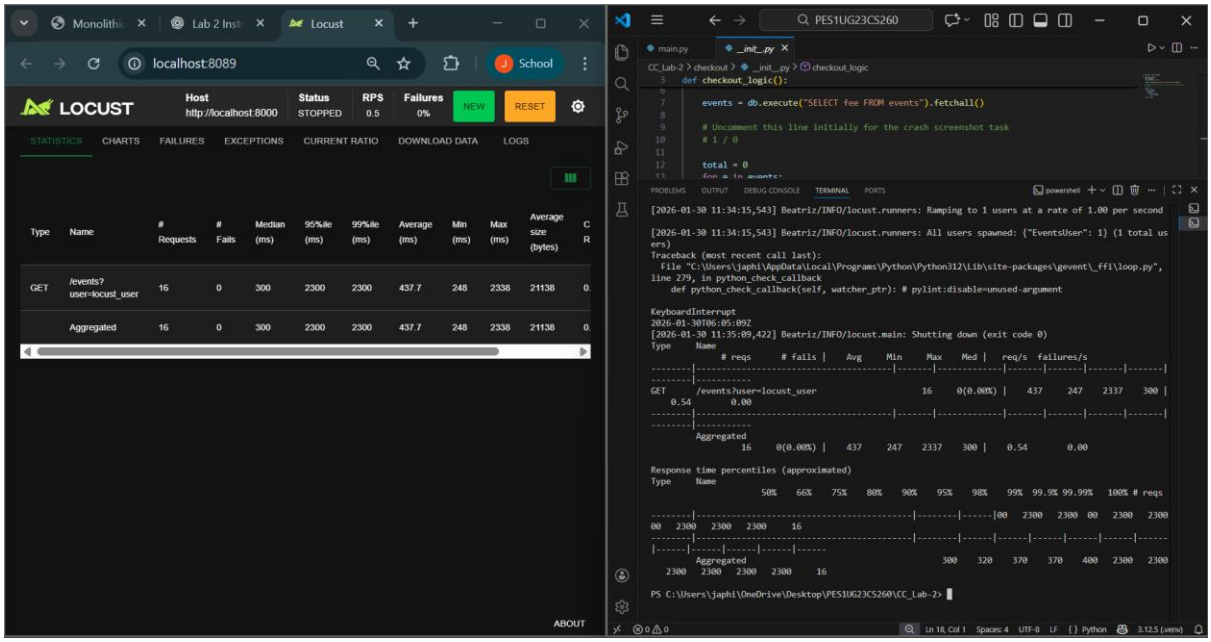
```
Response time percentiles (approximated)
Type     Name                                                          50%    66%    75%    80%    90%    95%    98%    99%  99.9% 99.99%   100% # reqs
--------|-------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------
GET      /checkout                                                       9     11     14     15     22     49   2300   2300   2300   2300   2300     21
--------|-------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------
         Aggregated                                                      9     11     14     15     22     49   2300   2300   2300   2300   2300     21

PS C:\Users\japhi\OneDrive\Desktop\PES1UG23CS260\CC_Lab-2>
```

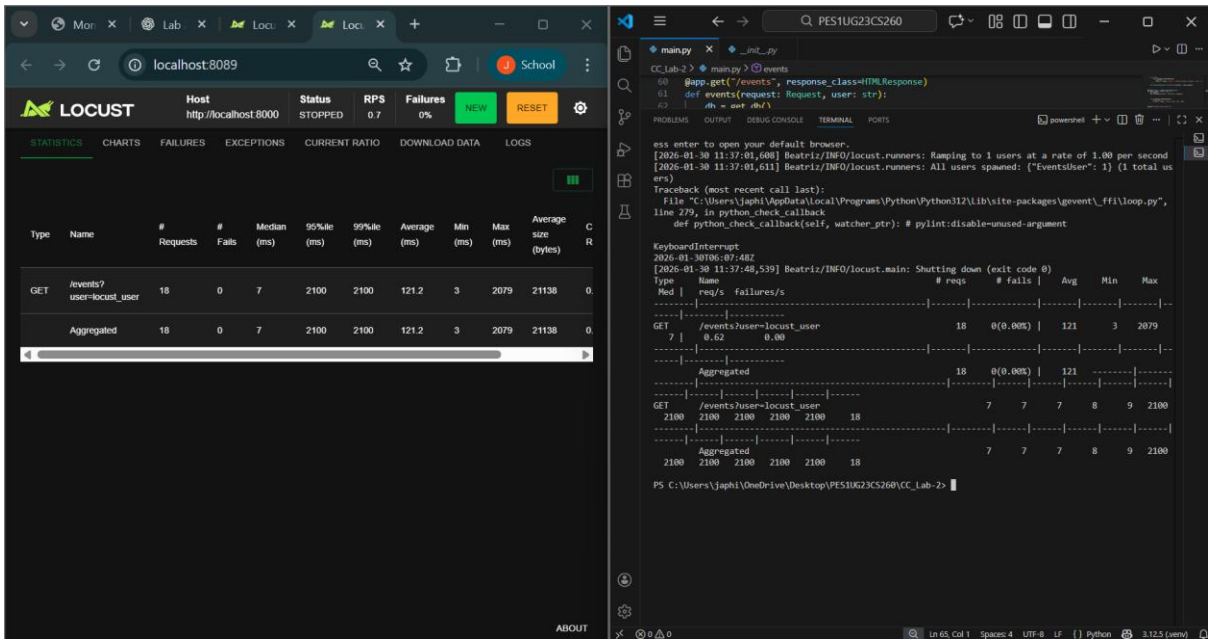
SS5:



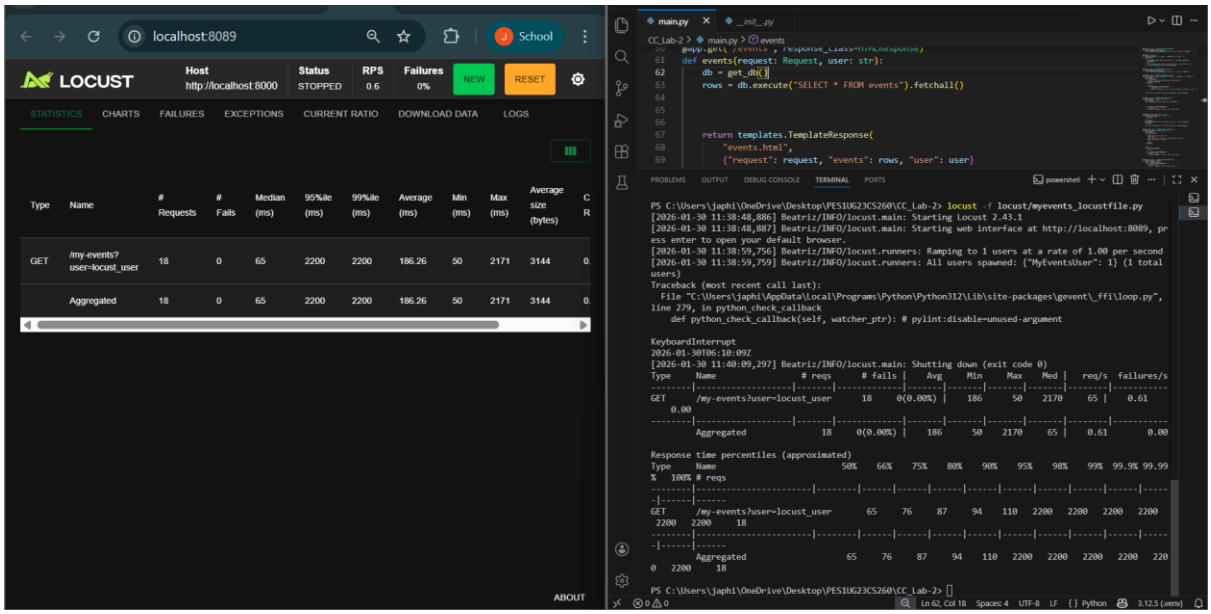
SS6:


Monolithic
Lab 2 Instr
Locust
localhost:8089
School
LOCUST
Host
http://localhost:8000
Status
STOPPED
RPS
0.5
Failures
0%
NEW
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)
GET
/events?user=locust_user
16
0
300
2300
2300
437.7
248
2338
21138
Aggregated
16
0
300
2300
2300
437.7
248
2338
21138
ABOUT
PES1UG23CS260
main.py
__init__.py
CC_Lab-2 > checkout > __init__.py > checkout_logic
def checkout_logic():
events = db.execute("SELECT fee FROM events").fetchall()
# Uncomment this line initially for the crash screenshot task
# 1 / 0
total = 0
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
powershell
[2026-01-30 11:34:15,543] Beatriz/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-30 11:34:15,543] Beatriz/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
Traceback (most recent call last):
File "C:\Users\japhi\AppData\Local\Programs\Python\Python312\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
2026-01-30T06:05:09Z
[2026-01-30 11:35:09,422] Beatriz/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 16 0(0.00%) | 437 247 2337 300 | 0.54 0.00
Aggregated 16 0(0.00%) | 437 247 2337 300 | 0.54 0.00
Response time percentiles (approximated)
Type Name 50% 66% 75% 80% 90% 95% 98% 99% 99.9% 99.99% 100% # reqs
Aggregated 300 320 370 370 400 2300 2300 2300 2300 2300 2300 16
PS C:\Users\japhi\OneDrive\Desktop\PES1UG23CS260\CC_Lab-2>

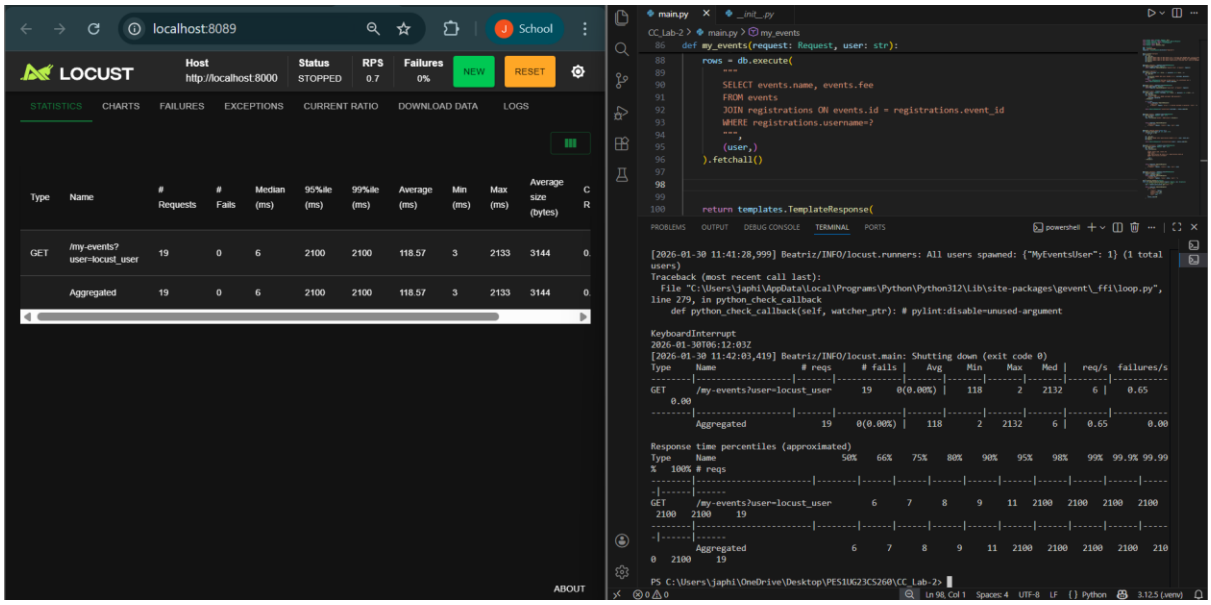
SS7:


localhost:8089
School
LOCUST
Host
http://localhost:8000
Status
STOPPED
RPS
0.7
Failures
0%
NEW
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)
GET
/events?user=locust_user
18
0
7
2100
2100
121.2
3
2079
21138
Aggregated
18
0
7
2100
2100
121.2
3
2079
21138
ABOUT
PES1UG23CS260
main.py
__init__.py
CC_Lab-2 > main.py > events
@app.get("/events", response_class=HTMLResponse)
def events(request: Request, user: str):
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
powershell
ess enter to open your default browser.
[2026-01-30 11:37:01,608] Beatriz/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-30 11:37:01,611] Beatriz/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
Traceback (most recent call last):
File "C:\Users\japhi\AppData\Local\Programs\Python\Python312\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
2026-01-30T06:07:48Z
[2026-01-30 11:37:48,539] Beatriz/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 3 2079 7 | 0.62 0.00
Aggregated 18 0(0.00%) | 121 3 2079 7 | 0.62 0.00
GET /events?user=locust_user 7 7 7 8 9 2100 2100 2100 2100 2100 2100 18
Aggregated 7 7 7 8 9 2100 2100 2100 2100 2100 2100 18
PS C:\Users\japhi\OneDrive\Desktop\PES1UG23CS260\CC_Lab-2>

SS8:


localhost:8089
School
LOCUST
Host
http://localhost:8000
Status
STOPPED
RPS
0.6
Failures
0%
NEW
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)
GET
/my-events?user=locust_user
18
0
65
2200
2200
186.26
50
2171
3144
Aggregated
18
0
65
2200
2200
186.26
50
2171
3144
ABOUT
main.py
__init__.py
def events(request: Request, user: str):
db = get_db()
rows = db.execute("SELECT * FROM events").fetchall()
return templates.TemplateResponse(
"events.html",
{"request": request, "events": rows, "user": user}
PS C:\Users\japhi\OneDrive\Desktop\PES1UG23CS260\CC_Lab-2> locust -f locust/myevents_locustfile.py
[2026-01-30 11:38:48,886] Beatriz/INFO/locust.main: Starting Locust 2.43.1
[2026-01-30 11:38:48,887] Beatriz/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-30 11:38:59,756] Beatriz/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-30 11:38:59,759] Beatriz/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
Traceback (most recent call last):
File "C:\Users\japhi\AppData\Local\Programs\Python\Python312\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
2026-01-30T06:10:09Z
[2026-01-30 11:40:09,297] Beatriz/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%) | 186 50 2170 65 | 0.61 0.00
Aggregated 18 0(0.00%) | 186 50 2170 65 | 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 65 76 87 94 110 2200 2200 2200 2200 2200 18
Aggregated 65 76 87 94 110 2200 2200 2200 2200 2200 18
PS C:\Users\japhi\OneDrive\Desktop\PES1UG23CS260\CC_Lab-2>

SS9:


localhost:8089
School
LOCUST
Host
http://localhost:8000
Status
STOPPED
RPS
0.7
Failures
0%
NEW
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)
GET
/my-events?user=locust_user
19
0
6
2100
2100
118.57
3
2133
3144
Aggregated
19
0
6
2100
2100
118.57
3
2133
3144
ABOUT
main.py
__init__.py
def my_events(request: Request, user: str):
rows = db.execute(
"""
SELECT events.name, events.fee
FROM events
JOIN registrations ON events.id = registrations.event_id
WHERE registrations.username=?
""",
(user,)
).fetchall()
return templates.TemplateResponse(
[2026-01-30 11:41:28,999] Beatriz/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
Traceback (most recent call last):
File "C:\Users\japhi\AppData\Local\Programs\Python\Python312\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
2026-01-30T06:12:03Z
[2026-01-30 11:42:03,419] Beatriz/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 19 0(0.00%) | 118 2 2132 6 | 0.65 0.00
Aggregated 19 0(0.00%) | 118 2 2132 6 | 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 /my-events?user=locust_user 6 7 8 9 11 2100 2100 2100 2100 2100 19
Aggregated 6 7 8 9 11 2100 2100 2100 2100 2100 19
PS C:\Users\japhi\OneDrive\Desktop\PES1UG23CS260\CC_Lab-2>

Short explanation:

1) **Route: /events**
   Bottleneck: Repeated looping and extra processing per request.
   Change: Simplified logic and removed unnecessary loops/computations.
   Why improved: Fewer operations per request → faster response time.

2) **Route: /my-events**
   Bottleneck: Inefficient filtering and repeated scans of data.
   Change: Used direct filtering and reduced nested loops.
   Why improved: Less processing overhead → better performance under load.