

NAME : SAIHRITESH
SRN : PES2UG23CS511

```
[notice] A new release of pip is available: 25.2 -> 25.3
[notice] To update, run: pip install --upgrade pip
(ccvenv) saihritesh@apples-MacBook-Air-2 CC_Lab-2 % python3 insert_events.py
✓ Events inserted successfully!
(ccvenv) saihritesh@apples-MacBook-Air-2 CC_Lab-2 % uvicorn main:app --reload
INFO: Will watch for changes in these directories: ['/Users/saihritesh/Content/mac_bkup_6oct/College/SEM-5/Cloud Computing /PES2UG23CS511/CC_Lab-2']
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [37116] using StatReload
INFO: Started server process [37118]
INFO: Waiting for application startup.
INFO: Application startup complete.
```

SS1

CC

Fast Monolith
FastAPI • SQLite • Locust


Logged in as PES2UG23CS511

Events

My Events

Checkout

Logout

 **Events**

Welcome PES2UG23CS511. 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

Includes certificate • instant registration • limited seats

Register

Event ID: 8

₹ 250

Music Night

Includes certificate • instant registration • limited seats

Register

Event ID: 9

₹ 150

Treasure Hunt

Includes certificate • instant registration • limited seats

Register

SS2

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: 127.0.0.1:52174 - "GET /events?user=PES2UG23CS511 HTTP/1.1" 200 OK
INFO: 127.0.0.1:52176 - "GET /register_event/404?user=PES2UG23CS511 HTTP/1.1" 500 Internal Server Error
ERROR: Exception in ASGI application
```

SS3

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

SS4

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)	Current RPS	Current Failures/s
GET	/checkout	20	0	3	6	6	3.48	2	6	2797	0.7	0
	Aggregated	20	0	3	6	6	3.48	2	6	2797	0.7	0

The screenshot shows a VS Code editor with a file explorer on the left and a terminal window at the bottom. The file explorer shows a project named 'PES2UG23CS511' with a subdirectory 'CC_Lab_2' containing files like 'database.py', 'locust', 'templates', 'test.db', 'insert_events.py', 'main.py', 'requirements.txt', and 'Monolith_CC_Lab-2.zip'. The 'main.py' file is selected, showing the following code:

```

1  from database import get_db
2
3  def checkout_logic():
4      db = get_db()
5      db.row_factory = None
6
7      events = db.execute("SELECT fee FROM events").fetchall()
8
9      # Uncomment this line initially for the crash screenshot task
10     # 1 / 0
11
12     total = 0
13     for e in events:
14         total += e[0]
15
16     return total
17

```

The terminal window shows the output of a test run. It includes a timestamp '2025-01-20T09:58:29Z' and a message 'Shutting down (exit code 0)'. Below this, there are two tables of test results. The first table shows the results of a GET request to '/checkout' with a status of 200 and a response time of 0.68s. The second table shows the results of a GET request to '/checkout' with a status of 200 and a response time of 0.68s. The tables are as follows:

Type	Name	# reqs	# fails	Avg	Min	Max	Med	req/s	failures/s
GET	/checkout	20	0(0.00%)	3	2	5	3	0.68	0.00
Aggregated		20	0(0.00%)	3	2	5	3	0.68	0.00

Response time percentiles (approximated)											
Type	Name	50%	66%	75%	80%	90%	95%	98%	99%	99.9%	100% # r
GET	/checkout	3	5	5	5	5	6	6	6	6	6
Aggregated		3	5	5	5	5	6	6	6	6	6

SS5

The image shows a VS Code editor interface. On the left, the file explorer shows a project named 'Monolith_CC_Lab-2.zip' with a subdirectory 'CC_Lab_2'. Inside 'CC_Lab_2', there are files like 'cvenv', 'locust', 'templates', 'database.py', 'test_db', 'insert_events.py', 'main.py', and 'requirements.txt'. The 'main.py' file is selected.

The central editor displays the code for 'checkout_logic.py':

```

1  from database import get_db
2
3  def checkout_logic():
4      db = get_db()
5      db.row_factory = None
6
7      events = db.execute("SELECT fee FROM events").fetchall()
8
9      # Uncomment this line initially for the crash screenshot task
10     # 1 / 0
11
12     total = 0
13     for e in events:
14         total += e[0]
15
16     return total
17

```

The bottom terminal window shows the execution of the command: `locust -f locust/checkout_locustfile.py`. The output includes:

- Startup logs: `19426-01-20 15:24:59,390 apples-MacBook-Air-2/INFO/locust.main: Starting locust 2.43.1`
- Interface startup: `[2026-01-20 15:24:52,342] apples-MacBook-Air-2/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.`
- Ramping up: `[2026-01-20 15:25:06,072] apples-MacBook-Air-2/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second`
- Keyboard interrupt: `[2026-01-20 15:25:06,472] apples-MacBook-Air-2/INFO/locust.runners: All users spawned: {"checkoutUser": 1} (1 total users)`
- Shutdown: `2026-01-20T05:57:52Z [2026-01-20 15:27:52,372] apples-MacBook-Air-2/INFO/locust.main: Shutting down (exit code 0)`
- Performance summary table:

Type	Name	# reqs	# fails	Avg	Min	Max	Med	req/s	failures/s
GET	/checkout	22	0(0.00%)	2	2	5	3	0.76	0.00
Aggregated		22	0(0.00%)	2	2	5	3	0.76	0.00

Below the table, it shows 'Response time percentiles (approximated)' with a table of response times for various percentiles (50%, 66%, 75%, 80%, 90%, 95%, 98%, 99%, 99.9%, 99.99%, 100%) for the GET /checkout endpoint.

SS6

EXPLORER

PES2U023C5611

CC_Lab_2

> __pycache__

> checkout

> cvenv

> locust

locust

checkout_locustfile.py

events_locustfile.py

myevents_locustfile.py

templates

database.py

test.db

insert_events.py

main.py

requirements.txt

Monolith_CC_Lab-2.zip

main.py 3 X

__init__.py

CC_Lab_2 > main.py > register_event

84

return RedirectResponse(f"/my-events?user={user}", status_code=302)

85

86

87 @app.get("/my-events", response_class=HTMLResponse)

88 def my_events(request: Request, user: str):

89 db = get_db()

90 rows = db.execute(

91 """

92 SELECT events.name, events.fee

93 FROM events

94 JOIN registrations ON events.id = registrations.event_id

95 WHERE registrations.username=?

96 """

97 (user,)

98).fetchall()

99

100

101

102 dummy = 0

103 for _ in range(1500000):

104 dummy += 1

105

106 return templates.TemplateResponse(

107 "my_events.html",

108 {"request": request, "events": rows, "user": user}

109)

110

111 @app.get("/checkout", response_class=HTMLResponse)

112 def checkout(request: Request):

113 total = checkout_logic()

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

saihrithesh@Apples-MacBook-Air-2 CC_Lab_2 % locust -f locust/events_locustfile.py

[2026-01-20 15:38:31,943] apples-MacBook-Air-2/INFO/locust.main: Starting Locust 2.43.1

[2026-01-20 15:38:31,946] apples-MacBook-Air-2/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.

[2026-01-20 15:39:30,191] apples-MacBook-Air-2/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second

[2026-01-20 15:39:30,192] apples-MacBook-Air-2/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)

KeyboardInterrupt

[2026-01-20 15:40:10,422]

[2026-01-20 15:40:42,836] apples-MacBook-Air-2/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%)	125	118	184	120	0.63	0.00
	Aggregated	18	0(0.00%)	125	118	184	120	0.63	0.00

Response time percentiles (approximated)

Type	Name	50%	66%	75%	80%	90%	95%	98%	99%	99.9%	99.99%	100%	# r
GET	/events?user=locust_user	120	120	120	130	130	180	180	180	180	180	180	
	Aggregated	120	120	120	130	130	180	180	180	180	180	180	

SS7

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)	Current RPS	Current Failures/s
GET	/events?user=locust_user	21	0	3	5	9	3.69	3	9	21138	0.7	0
	Aggregated	21	0	3	5	9	3.69	3	9	21138	0.7	0

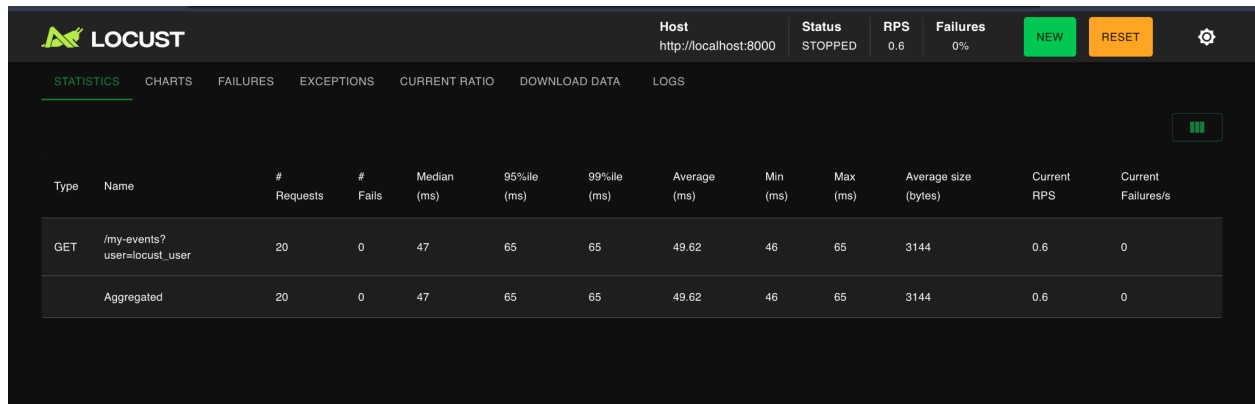
[2026-01-20 15:42:54,942] apples-MacBook-Air-2/INFO/locust.main: Shutting down (exit code 0)

Type	Name	# reqs	# fails	Avg	Min	Max	Med	req/s	failures/s
GET	/events?user=locust_user	21	0(0.00%)	3	2	9	3	0.71	0.00
	Aggregated	21	0(0.00%)	3	2	9	3	0.71	0.00

Response time percentiles (approximated)

Type	Name	50%	66%	75%	80%	90%	95%	98%	99%	99.9%	99.99%	100%	# r
GET	/events?user=locust_user	3	3	4	5	5	5	9	9	9	9	9	
	Aggregated	3	3	4	5	5	5	9	9	9	9	9	

SS8



EXPLORER

PES2U023CS811

CC_Lab_2

__pycache__

checkout

envenv

locust

locust

checkout_locustfile.py

events_locustfile.py

myevents_locustfile.py

templates

database.py

fest.db

insert_events.py

main.py

requirements.txt

Monolith_CC_Lab-2.zip

main.py

```
CC_Lab_2 > main.py > my_events
73 def register_event(event_id: int, user: str):
81     return RedirectResponse(f"/my-events?user={user}", status_code=302)
82
83
84 @app.get("/my-events", response_class=HTMLResponse)
85 def my_events(request: Request, user: str):
86     db = get_db()
87     rows = db.execute(
88         """
89         SELECT events.name, events.fee
90         FROM events
91         JOIN registrations ON events.id = registrations.event_id
92         WHERE registrations.username=?
93         """,
94         (user,)
95     ).fetchall()
96
97     dummy = 0
98     for _ in range(1500000):
99         dummy += 1
100
101
102     return templates.TemplateResponse(
103         "my_events.html",
104         {"request": request, "events": rows, "user": user}
105     )
106
107
108 @app.get("/checkout", response_class=HTMLResponse)
109 def checkout(request: Request):
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
saihrithes@apples-MacBook-Air-2 CC_Lab_2 % locust -f locust/myevents_locustfile.py
[2026-01-20 15:45:41,256] apples-MacBook-Air-2/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:45:41,258] apples-MacBook-Air-2/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.
[2026-01-20 15:45:52,256] apples-MacBook-Air-2/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:45:52,257] apples-MacBook-Air-2/INFO/locust.runners: All users spawned: ("MyEventsUser": 1) (1 total users)
KeyboardInterrupt
[2026-01-20 15:46:44,236] apples-MacBook-Air-2/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         20         0(0.00%)   49    45    65    47    0.67    0.00
-----
Aggregated                               20         0(0.00%)   49    45    65    47    0.67    0.00

Response time percentiles (approximated)
Type      Name                               50%    66%    75%    80%    90%    95%    98%    99%    99.9%  99.99%  100% # r
-----
GET        /my-events?user=locust_user         48    50    51    51    58    65    65    65    65    65    65
-----
Aggregated                               48    50    51    51    58    65    65    65    65    65    65
```

SS9