

CLOUD COMPUTING

LAB-2

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SECTION: D

SS1:

The screenshot displays a web application interface for event registration. The browser address bar shows the URL `localhost:8000/events?user=PES2UG23CS260`. The application header includes a logo for 'Fest Monolith' (FastAPI • SQLite • Locust), a user login status 'Logged in as PES2UG23CS260', and navigation buttons for 'Events', 'My Events', 'Checkout', and 'Logout'. The main content area, titled 'Events', welcomes the user 'PES2UG23CS260' and lists nine events in a 3x3 grid. Each event card displays an Event ID, a title, a description, a price tag, and a 'Register' button. The events are: Hackathon (₹ 500), Dance (₹ 300), Hackathon (₹ 500), Dance Battle (₹ 300), AI Workshop (₹ 400), Photography Walk (₹ 200), Gaming Tournament (₹ 350), Music Night (₹ 250), and Treasure Hunt (₹ 150). All events include a certificate, instant registration, and limited seats. A 'View My Events' button is located in the top right corner of the event list.

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

SS2:

localhost:8000/register_event/404?user=PES2UG23CS260

CC Fest Monolith
FastAPI • SQLite • Locust


Logged in as PES2UG23CS260

Events

My Events

Checkout

Logout

 **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:      127.0.0.1:53355 - "GET /events?user=PES2UG23CS260 HTTP/1.1" 200 OK
INFO:      127.0.0.1:53355 - "GET /checkout HTTP/1.1" 500 Internal Server Error
ERROR:      Exception in ASGI application
Traceback (most recent call last):
```


SS3:

localhost:8000/checkout

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: 127.0.0.1:61771 - "GET /events?user=PES2UG23CS260 HTTP/1.1" 200 OK
INFO: 127.0.0.1:61771 - "GET /checkout HTTP/1.1" 200 OK

SS4:

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)	Current RPS	Current Failures/s
GET	/checkout	19	0	3	2100	2100	111.72	3	2058	2797	0.6	0
Aggregated		19	0	3	2100	2100	111.72	3	2058	2797	0.6	0

```
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
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

JUPITER

(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2> locust -f locust/checkout_locustfile.py

GET /checkout 3 4 5 5 7 2100 2100 2100 2100 2100 2100 19

Aggregated 3 4 5 5 7 2100 2100 2100 2100 2100 2100 19

(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2>

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)	Current RPS	Current Failures/s
GET	/checkout	19	0	3	2100	2100	111.72	3	2058	2797	0.6	0
Aggregated		19	0	3	2100	2100	111.72	3	2058	2797	0.6	0

```
(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2> locust -f locust/checkout_locustfile.py
GET /checkout 3 4 5 5 7 2100 2100 2100 2100 2100 2100 19
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----
Aggregated 3 4 5 5 7 2100 2100 2100 2100 2100 2100 19

(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2>
```

SS5:

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	4	2100	2100	111.77	2	2053	2797	0.7	0
Aggregated		19	0	4	2100	2100	111.77	2	2053	2797	0.7	0

```
KeyboardInterrupt
2026-01-29 15:06:40,833] KARTIK/INFO/locust.main: Shutting down (exit code 0)
[2026-01-29 15:06:40,833] KARTIK/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%) 111 2 2053 4 0.66 0.00
Aggregated 19 0(0.00%) 111 2 2053 4 0.66 0.00

Response time percentiles (approximated)
Type Name 50% 60% 75% 80% 90% 95% 98% 99% 99.9% 99.99% 100%
GET /checkout 4 4 5 5 6 2100 2100 2100 2100 2100 2100
Aggregated 4 4 5 5 6 2100 2100 2100 2100 2100 2100

(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2>
```



```
(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2>
```

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	190	2300	2300	326.74	179	2296	21138	0.5	0
	Aggregated	17	0	190	2300	2300	326.74	179	2296	21138	0.5	0

SS7:

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

JUPYTER

. . .
_check_callback
. . .

[view] PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UGKSC26@VCC Lab-2> locust -f locust/events_locustfile.py
[2026-01-29 15:25:30,148] KARTIK/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 15:25:30,148] KARTIK/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-29 15:25:33,554] KARTIK/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 15:25:33,555] KARTIK/INFO/locust.runners: All users spawned! ("EventsUser": 1) (1 total users)
Traceback (most recent call last):
File "E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UGKSC26@VCC Lab-2\.venv\Lib/site-packages/gevent_ffi_loop.py", line 179, in python_check_callback
def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument
KeyboardInterrupt
[2026-01-29 15:25:37,56:272]
[2026-01-29 15:26:27,118] KARTIK/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%) | 110 2 2045 3 | 0.64 0.00
Aggregated 19 0(0.00%) | 110 2 2045 3 | 0.64 0.00

Response time percentiles (approximated)
Type Name 50% 66% 75% 80% 90% 95% 98% 99% 99.9% 99.99% 100% #
req
GET /events/user-locust_user 3 4 4 4 5 2000 2000 2000 2000 2000 2000
19 Aggregated 3 4 4 4 5 2000 2000 2000 2000 2000 2000
19

[view]
PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UGKSC26@VCC Lab-2>

LOCUST

Hosthttp://localhost:8080StatusCLEANUPRPS0.7Failures0%

EDITSTOPRESET

STATISTICSCHARTSFAILURESEXCEPTIONSCURRENT RATIODOWNLOAD DATALOGS

III

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	3	2000	2000	110.78	2	2046	21138	0.7	0
Aggregated		19	0	3	2000	2000	110.78	2	2046	21138	0.7	0

```
[2026-01-29 15:25:20,148] KARTIK/INFO/locust.main: Starting Locust 2.45.1
[2026-01-29 15:25:20,148] KARTIK/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-29 15:25:33,554] KARTIK/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 15:25:33,555] KARTIK/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "E:\College Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2\.venv\Lib\site-packages\event\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T09:56:27Z
[2026-01-29 15:26:27,110] KARTIK/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%) | 110    2   2045    3 |  0.64      0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     19         0(0.00%) | 110    2   2045    3 |  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       /events?user=locust_user                   3      4      4      4      5   2000   2000   2000   2000   2000   2000   19
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                   3      4      4      4      5   2000   2000   2000   2000   2000   2000   19

(.venv) PS E:\College Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2>
```

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	19	0	3	2000	2000	110.78	2	2046	21138	0.7	0
	Aggregated	19	0	3	2000	2000	110.78	2	2046	21138	0.7	0

SS8:

```
GET /events?user=locust_user 19 0(0.00%) 110 2 2045 3 0.64 0.00
Aggregated 19 0(0.00%) 110 2 2045 3 0.64 0.00

user.
[2026-01-29 15:28:53,221] KARTIK/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 15:28:53,221] KARTIK/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "E:\College Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2\.venv\Lib\site-packages\event\_ffi\loop.py", line 279, in python_check_callback
    def python_check_callback(self, watcher_ptr): # pylint:disable=unused-argument

KeyboardInterrupt
2026-01-29T09:59:29Z
[2026-01-29 15:29:29,825] KARTIK/INFO/locust.main: Shutting down (exit code 0)
Type      Name                                     # reqs      # fails | Avg   Min   Max   M
ed | req/s  failures/s
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
GET       /my-events?user=locust_user                 20         0(0.00%) | 161    35  2146    3 |  0.68      0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     20         0(0.00%) | 161    35  2146    3 |  0.68      0.00

Response time percentiles (approximated)
Type      Name                                     50%    66%    75%    80%    90%    95%
-----|-----|-----|-----|-----|-----|-----|
GET       /my-events?user=locust_user                   63     73     74     75     89   2100
-----|-----|-----|-----|-----|-----|-----|
Aggregated                   63     73     74     75     89   2100

(.venv) PS E:\College Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2>
```

LOCUST

http://localhost:8000 CLEANUP 0.7 0% 0% 0% 0%

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	/my-events?user=locust_user	20	0	59	2100	2100	161.93	35	2147	3144	0.7	0
	Aggregated	20	0	59	2100	2100	161.93	35	2147	3144	0.7	0

```
...
File "E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2\.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

File "E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2\.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
2026-01-29T09:59:29Z
[2026-01-29 15:29:29,825] KARTIK/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%) | 161    35    2146   59 | 0.68    0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     20      0(0.00%) | 161    35    2146   59 | 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                 63     73     74     75     89    2100   2100   2100   2100   2100   2100   20
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     63     73     74     75     89    2100   2100   2100   2100   2100   2100   20

(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2> |
```

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	/my-events?user=locust_user	20	0	59	2100	2100	161.93	35	2147	3144	0.7	0
	Aggregated	20	0	59	2100	2100	161.93	35	2147	3144	0.7	0

SS9:

```
[2026-01-29 15:36:13,845] KARTIK/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%) | 187    2    2064
3 | 0.67    0.00
-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     20      0(0.00%) | 187    2    2064
3 | 0.67    0.00

Response time percentiles (approximated)
Type      Name                                     50%    66%    75%    80%    90%    95%
-----|-----|-----|-----|-----|-----|-----|
GET      /my-events?user=locust_user                 3     4     4     6    18    2100
2100   2100   2100   2100   2100   20
-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     3     4     4     6    18    2100
2100   2100   2100   2100   2100   20

(.venv) PS E:\College_Documents\Sem-6\CC Lab\LAB 2\PES2UG23CS260\CC Lab-2> |
```

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	/my-events?user=locust_user	20	0	3	2100	2100	107.29	2	2065	3144	0.7	0
	Aggregated	20	0	3	2100	2100	107.29	2	2065	3144	0.7	0

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	/my-events?user=locust_user	20	0	3	2100	2100	107.29	2	2065	3144	0.7	0
	Aggregated	20	0	3	2100	2100	107.29	2	2065	3144	0.7	0

```

KeyboardInterrupt
2026-01-29T10:06:13Z
[2026-01-29 15:36:13,845] KARTIK/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%) | 107    2   2064    3 | 0.67    0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     20       0(0.00%) | 107    2   2064    3 | 0.67    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                    3      4      4      6     18    2100  2100  2100  2100  2100  2100  20
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
Aggregated                                     3      4      4      6     18    2100  2100  2100  2100  2100  2100  20

```

PS E:\College_Documents\Sem-6\CC_Lab\LAB_2\PES2UG23CS260\CC_Lab-2>

1. What was the bottleneck?

For loop for summing up was and dum was not necessary as it doesn't have any use in the logic of the code

2. What change did you make?

I removed both of the loops to optimize them

3. Why did the performance improve?

Because on every call of the events and my_events for loop didn't run which actually had no significance