

CC Lab 2

Name : Chaitanya Makkar

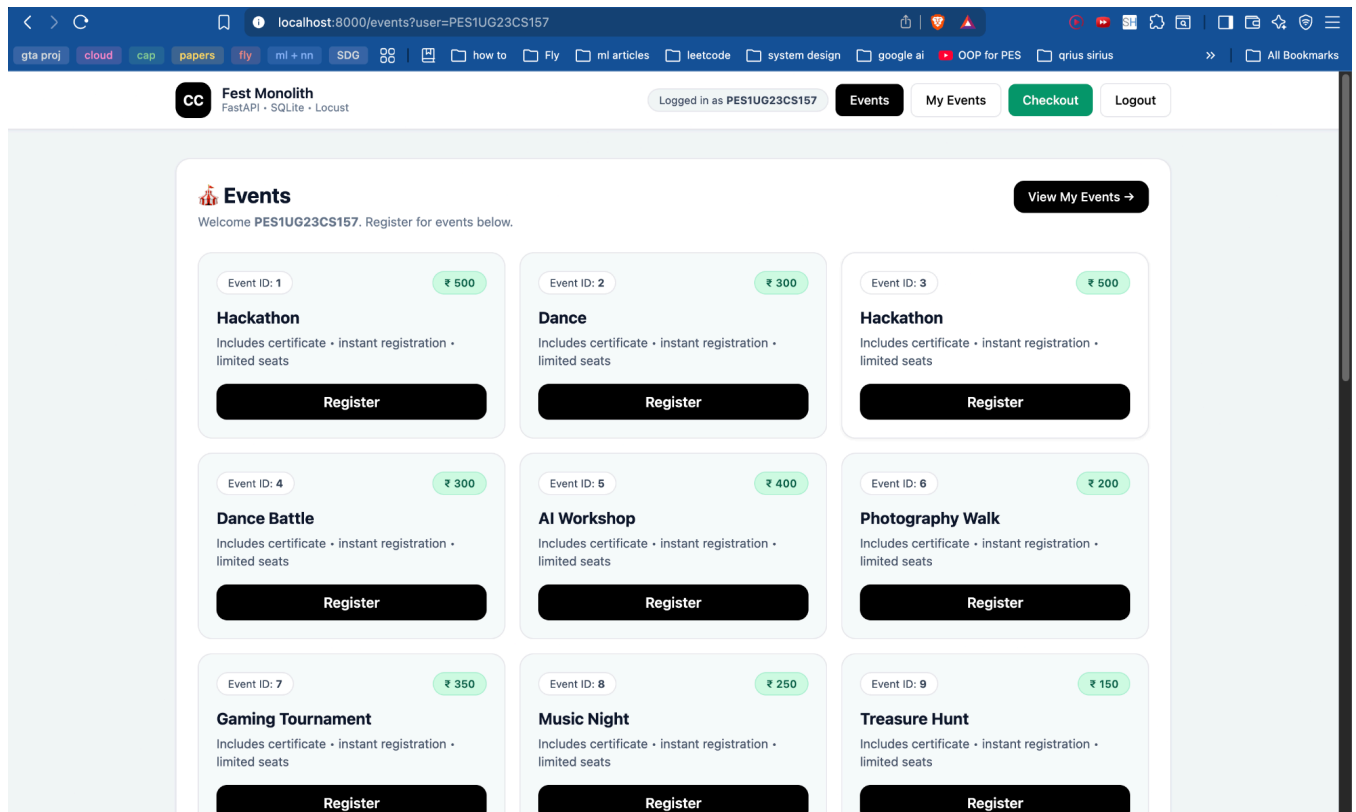
SRN : PES1UG23CS157

Section : C

Github link : https://github.com/Chaitu-03/CC_Lab2_PES1UG23CS157

Screenshots:

SS1:



SS2:

localhost:8000/checkout

gta projcloudcappapersflyml + nnsdghow toFlyml articlesleetcode systemdesigngoogle aiOOP for PESqrius siriusAll Bookmarks

CCFest MonolithFastAPI • SQLite • Locust

LoginCreate 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

SS3:

localhost:8000/checkout

gta projcloudcappapersflyml + nnsdghow toFlyml articlesleetcode systemdesigngoogle aiOOP for PESqrius siriusAll Bookmarks

CCFest MonolithFastAPI • SQLite • Locust

LoginCreate Account

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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:

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OUTPUTDEBUG CONSOLETERMINALPORTSGIT LENS

zsh + v

> locust -f locust/checkout_locustfile.py

[2026-01-29 20:23:50,205] Chaitis-MacBook-Pro/INFO/locust.main: Starting Locust 2.43.1

[2026-01-29 20:23:50,208] Chaitis-MacBook-Pro/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.

[2026-01-29 20:24:09,298] Chaitis-MacBook-Pro/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second

[2026-01-29 20:24:09,299] Chaitis-MacBook-Pro/INFO/locust.runners: All users spawned: {"CheckoutUser": 1} (1 total users)

KeyboardInterrupt

2026-01-29T14:54:58Z

[2026-01-29 20:24:58,921] Chaitis-MacBook-Pro/INFO/locust.main: Shutting down (exit code 0)

Type Name # reqs # fails Avg Min Max Med req/s failures/s

GET /checkout 20 0(0.00%) 4 1 21 3 0.68 0.00

Aggregated 20 0(0.00%) 4 1 21 3 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 /checkout 4 4 7 7 9 22 22 22 22 22 22 20

Aggregated 4 4 7 7 9 22 22 22 22 22 22 20

LOCUST

Host
http://localhost:8000

Status
CLEANUP

RPS
0.8

Failures
0%

EDIT

STOP

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	22	22	4.48	2	22	2797	0.8	0
	Aggregated	20	0	3	22	22	4.48	2	22	2797	0.8	0

SS5:

PES1UG23CS157

OUTPUTDEBUG CONSOLETERMINALPORTSGIT LENS

zsh + v

> locust -f locust/checkout_locustfile.py

[2026-01-29 20:21:05,057] Chaitis-MacBook-Pro/INFO/locust.main: Starting Locust 2.43.1

[2026-01-29 20:21:05,076] Chaitis-MacBook-Pro/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.

[2026-01-29 20:21:28,025] Chaitis-MacBook-Pro/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second

[2026-01-29 20:21:28,026] Chaitis-MacBook-Pro/INFO/locust.runners: All users spawned: {"CheckoutUser": 1} (1 total users)

KeyboardInterrupt

2026-01-29T14:52:15Z

[2026-01-29 20:22:15,254] Chaitis-MacBook-Pro/INFO/locust.main: Shutting down (exit code 0)

Type Name # reqs # fails Avg Min Max Med req/s failures/s

GET /checkout 20 0(0.00%) 4 1 14 4 0.69 0.00

Aggregated 20 0(0.00%) 4 1 14 4 0.69 0.00

Response time percentiles (approximated)

Type Name 50% 66% 75% 80% 90% 95% 98% 99% 99.9% 99.99% 100% # reqs

GET /checkout 4 6 6 6 8 15 15 15 15 15 15 20

Aggregated 4 6 6 6 8 15 15 15 15 15 15 20

LOCUST

Host
http://localhost:8000

Status
CLEANUP

RPS
0.7

Failures
0%

EDIT

STOP

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	4	15	15	4.38	1	15	2797	0.7	0
	Aggregated	20	0	4	15	15	4.38	1	15	2797	0.7	0

SS6:

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OUTPUTDEBUG CONSOLETERMINALPORTSGIT LENS

zsh + -

```
> locust -f locust/events_locustfile.py
[2026-01-29 20:27:43,116] Chaitis-MacBook-Pro/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 20:27:43,118] Chaitis-MacBook-Pro/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.
[2026-01-29 20:27:53,820] Chaitis-MacBook-Pro/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 20:27:53,820] Chaitis-MacBook-Pro/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
KeyboardInterrupt
2026-01-29T14:58:39Z
[2026-01-29 20:28:39,328] Chaitis-MacBook-Pro/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	20	0(0.00%)	109	94	128	110	0.69	0.00
	Aggregated	20	0(0.00%)	109	94	128	110	0.69	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	110	110	120	120	130	130	130	130	130	130	130	20
	Aggregated	110	110	120	120	130	130	130	130	130	130	130	20

LOCUST

Hosthttp://localhost:8000

StatusCLEANUP

RPS0.6

Failures0%

EDIT

STOP

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	20	0	110	130	130	109.36	94	128	21138	0.6	0
	Aggregated	20	0	110	130	130	109.36	94	128	21138	0.6	0

SS7:

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OUTPUTDEBUG CONSOLETERMINALPORTSGIT LENS

zsh + -

```
> locust -f locust/events_locustfile.py
[2026-01-29 20:38:04,451] Chaitis-MacBook-Pro/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 20:38:04,453] Chaitis-MacBook-Pro/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.
[2026-01-29 20:39:54,774] Chaitis-MacBook-Pro/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 20:39:54,774] Chaitis-MacBook-Pro/INFO/locust.runners: All users spawned: {"EventsUser": 1} (1 total users)
KeyboardInterrupt
2026-01-29T15:10:35Z
[2026-01-29 20:40:35,535] Chaitis-MacBook-Pro/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%)	104	94	122	98	0.70	0.00
	Aggregated	21	0(0.00%)	104	94	122	98	0.70	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	98	110	110	110	120	120	120	120	120	120	120	21
	Aggregated	98	110	110	110	120	120	120	120	120	120	120	21

LOCUST

Hosthttp://localhost:8000

StatusCLEANUP

RPS0.7

Failures0%

EDIT

STOP

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	98	120	120	104.29	95	123	21138	0.7	0
	Aggregated	21	0	98	120	120	104.29	95	123	21138	0.7	0

SS8:

Chaitu-03, 4 hours ago [1 author (Chaitu-03)]

PES1UG23CS157Chaitu-03, 4 hours ago • PES1UG23CS157


4

OUTPUTDEBUG CONSOLETERMINALPORTSGITLENS

zsh + v

```
> locust -f locust/myevents_locustfile.py
[2026-01-29 20:47:38,437] Chaitis-MacBook-Pro/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 20:47:38,440] Chaitis-MacBook-Pro/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.
[2026-01-29 20:47:47,242] Chaitis-MacBook-Pro/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 20:47:47,242] Chaitis-MacBook-Pro/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
KeyboardInterrupt
2026-01-29T15:18:57Z
[2026-01-29 20:48:57,557] Chaitis-MacBook-Pro/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%)    48       36       77       48       0.70       0.00
Aggregated                                     20           0(0.00%)    48       36       77       48       0.70       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              50       53       55       55       65       78       78       78       78       78       20
Aggregated                                     50       53       55       55       65       78       78       78       78       78       20
```

 **LOCUST**

Hosthttp://localhost:8000

StatusSTOPPED

RPS0.7

Failures0%

NEW

RESET

STATISTICSCHARTSFAILURESEXCEPTIONSCURRENT RATIODOWNLOAD DATALOGS

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	48	78	78	48.99	36	78	3144	0.7	0
	Aggregated	20	0	48	78	78	48.99	36	78	3144	0.7	0

SS9:


PES1UG23CS157Chaitu-03, 4 hours ago • PES1UG23CS157

OUTPUTDEBUG CONSOLETERMINALPORTSGITLENS

zsh + v

```
> locust -f locust/myevents_locustfile.py
[2026-01-29 20:46:08,946] Chaitis-MacBook-Pro/INFO/locust.main: Starting Locust 2.43.1
[2026-01-29 20:46:08,947] Chaitis-MacBook-Pro/INFO/locust.main: Starting web interface at http://0.0.0.0:8089, press enter to open your default browser.
[2026-01-29 20:46:17,489] Chaitis-MacBook-Pro/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-29 20:46:17,410] Chaitis-MacBook-Pro/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
KeyboardInterrupt
2026-01-29T15:17:11Z
[2026-01-29 20:47:11,939] Chaitis-MacBook-Pro/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              22           0(0.00%)    48       35       65       48       0.74       0.00
Aggregated                                     22           0(0.00%)    48       35       65       48       0.74       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              48       57       59       59       62       65       66       66       66       66       22
Aggregated                                     48       57       59       59       62       65       66       66       66       66       22
```

 **LOCUST**

Hosthttp://localhost:8000

StatusCLEANUP

RPS0.7

Failures0%

EDIT

STOP

RESET

STATISTICSCHARTSFAILURESEXCEPTIONSCURRENT RATIODOWNLOAD DATALOGS

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	22	0	48	65	66	48.6	35	66	3144	0.7	0
	Aggregated	22	0	48	65	66	48.6	35	66	3144	0.7	0

Answers

- 1) The bottle neck point was the nested loop and a double variable updation under `__init__.py` which was unnecessary and made the time complexity as $O(n^2)$.
- 2) This bottleneck issue of nested loop and double variable updation was resolved by only updating a single variable under a single looping condition, hence making the time complexity as $O(n)$.
- 3) Reduced time complexity: Changed from $O(n^2)$ to $O(n)$ - linear time instead of quadratic time.