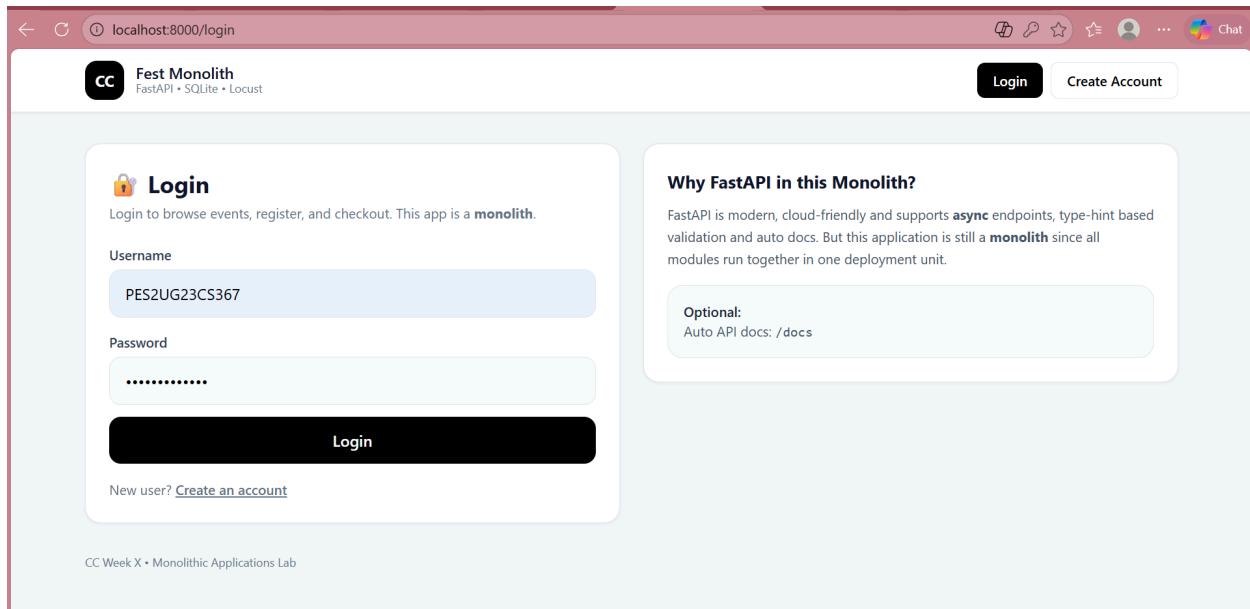


# CC LAB-2

NAME:N.VAISHNAVI  
SECTION:6F  
SRN:PES2UG23CS367  
DATE:20-01-20226

GITHUB REPO LINK:  
[PES2UG23CS367/CC\\_LAB-2](https://github.com/PES2UG23CS367/CC_LAB-2)



localhost:8000/events?user=PES2UG23CS367

Fest Monolith  
FastAPI • SQLite • Locust

Logged in as PES2UG23CS367

Events My Events Checkout Logout

## Events

Welcome PES2UG23CS367. Register for events below.

View My Events →

Event ID:	Name	Price
1	Hackathon	₹ 500
2	Dance	₹ 300
3	Hackathon	₹ 500
4	Dance Battle	₹ 300
5	AI Workshop	₹ 400
6	Photography Walk	₹ 200

**Hackathon**  
Includes certificate • instant registration • limited seats  
**Register**

**Dance**  
Includes certificate • instant registration • limited seats  
**Register**

**Hackathon**  
Includes certificate • instant registration • limited seats  
**Register**

**Dance Battle**  
Includes certificate • instant registration • limited seats  
**Register**

**AI Workshop**  
Includes certificate • instant registration • limited seats  
**Register**

**Photography Walk**  
Includes certificate • instant registration • limited seats  
**Register**

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

```
PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> python -m venv .venv
● >>
PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> .\.\venv\Scripts\activate
● >>
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> pip install -r requirements.txt
● >>
Collecting fastapi
Explore and understand your code Auto ▾ → ▷
COLLECTING uvicorn
  Downloading uvicorn-0.40.0-py3-none-any.whl (68 kB)
    |██████████| 68 kB 3.3 MB/s
Collecting jinja2
  Downloading jinja2-3.1.6-py3-none-any.whl (134 kB)
    |██████████| 134 kB 6.4 MB/s
Collecting python-multipart
  Downloading python_multipart-0.0.21-py3-none-any.whl (24 kB)
Collecting locust
  Downloading locust-2.43.1-py3-none-any.whl (1.5 MB)
    |██████████| 1.5 MB 6.4 MB/s
Collecting starlette<0.51.0,>=0.40.0
  Downloading starlette-0.50.0-py3-none-any.whl (74 kB)
    |██████████| 74 kB 5.5 MB/s
Collecting pydantic>=2.7.0
```

```
Lab-2\PES2UG23CS367\.\venv\Scripts\python.exe -m pip install --upgrade pip command.
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> python
● insert_events.py
>>
  ✓ Events inserted successfully!
○ (.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> python
  -m uvicorn main:app --reload
>>
INFO:     Will watch for changes in these directories: ['C:\\\\Users\\\\HP\\\\Downloads\\\\Monolith_CC_Lab-2\\\\CC Lab-2\\\\PES2UG23CS367']
INFO:     Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO:     Started reloader process [19808] using StatReload
INFO:     Started server process [7788]
INFO:     Waiting for application startup.
```

localhost:8000/checkout

Fest Monolith  
FastAPI • SQLite • Locust

Summarize Chat Login Create Account

## Monolith Failure

One bug in one module impacted the entire application.

HTTP 500

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

localhost:8000/checkout

Fest Monolith  
FastAPI • SQLite • Locust

Summarize Chat 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

The screenshot shows a web application for event registration. At the top, there's a header bar with the URL 'localhost:8000/events?user=PES2UG23CS367'. On the right side of the header are several icons: a magnifying glass, a star, a person icon, and a 'Chat' button. Below the header, the page title 'Fest Monolith' is displayed, along with the subtext 'FastAPI • SQLite • Locust'. To the right of the title are navigation links: 'Events' (which is active), 'My Events', 'Checkout', and 'Logout'. The main content area is titled 'Events' with a small icon of a castle. It says 'Welcome PES2UG23CS367. Register for events below.' Below this, there are six event cards arranged in two rows of three. Each card has a green circular badge with the price. The events listed are:

- Hackathon** (Event ID: 1, ₹ 500) - Includes certificate • instant registration • limited seats. **Register**
- Dance** (Event ID: 2, ₹ 300) - Includes certificate • instant registration • limited seats. **Register**
- Hackathon** (Event ID: 3, ₹ 500) - Includes certificate • instant registration • limited seats. **Register**
- Dance Battle** (Event ID: 4, ₹ 300) - Includes certificate • instant registration • limited seats. **Register**
- AI Workshop** (Event ID: 5, ₹ 400) - Includes certificate • instant registration • limited seats. **Register**
- Photography Walk** (Event ID: 6, ₹ 200) - Includes certificate • instant registration • limited seats. **Register**

On the right side of the page, there's a button labeled 'View My Events →'.

```
PROBLEMS OUTPUT TERMINAL ...
python + ⌂ ⌂ ⌂ ...

(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> python
-m uvicorn main:app --reload
>>
INFO:      Finished server process [26084]
INFO:      Stopping reloader process [25240]
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> python
-m uvicorn main:app --reload
>>
INFO:      Will watch for changes in these directories: ['C:\\\\Users\\\\HP\\\\Downloads\\\\Monolith_CC_Lab-2\\\\CC Lab-2\\\\PES2UG23CS367']
INFO:      Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO:      Started reloader process [30944] using StatReload

Explore and understand your code Auto ↻ ➔

INFO:      Application startup complete.
INFO:      127.0.0.1:58098 - "GET /checkout HTTP/1.1" 200 OK
INFO:      127.0.0.1:56625 - "GET /login HTTP/1.1" 200 OK
INFO:      127.0.0.1:55133 - "POST /login HTTP/1.1" 302 Found
INFO:      127.0.0.1:55133 - "GET /events?user=PES2UG23CS367 HTTP/1.1" 200 OK
```

localhost:8089

Start new load test

Number of users (peak concurrency) \*

Ramp up (users started/second) \*

Host

Advanced options ^

Run time (e.g. 20, 20s, 3m, 2h, 1h20m, 3h30m10s, etc.)

Profile

START

localhost:8089

## LOCUST

Host: http://localhost:8000 | Status: STOPPED | RPS: 0.6 | Failures: 0% | NEW | RESET | Chat

**STATISTICS**

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	18	0	10	2100	2100	124.02	7	2059	2797	0.6	0
	Aggregated	18	0	10	2100	2100	124.02	7	2059	2797	0.6	0

ABOUT

```
PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> .\venv\Scripts\activate
● >>
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367> locust -f locust/events_locustfile.py
● >>
[2026-01-20 14:55:16,086] DESKTOP-I5CDJ6L/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 14:55:16,086] DESKTOP-I5CDJ6L/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
Traceback (most recent call last):
  File "src/gevent/greenlet.py", line 900, in gevent._gevent_cgreenlet.Greenlet.run
    File "C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367\.venv\lib\site-packages\locust\web.py", line 632, in start_server
      self.server.serve_forever()
    File "C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367\.venv\lib\site-packages\gevent\baseserver.py", line 401, in
      
```

python  
locust  
powershell

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS + ⌂ ⌂ X

(.venv) PS C:\Users\HP\Downloads\Monolith\_CC\_Lab-2\CC Lab-2\PES2U  
G23CS367> locust -f locust/events\_locustfile.py

>>

```
in bind
    return self._sock.bind(address)
OSErr... [WinError 10048] Only one usage of each socket address (protocol/network address/port) is normally permitted: ('', 8089)
[2026-01-20 14:55:16,180] DESKTOP-I5CDJ6L/INFO/locust.main: Shutting down (exit code 2)
```

Type	Name	# reqs	# fails	Avg	Min	Max	Me
d		req/s	failures/s	-	-	-	-
-----	-----	-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----
Aggregated		0	0(0.00%)	0	0	0	0
0		0.00	0.00				

Response time percentiles (approximated)

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

○ (.venv) PS C:\Users\HP\Downloads\Monolith\_CC\_Lab-2\CC Lab-2\PES2U  
G23CS367> █

python  
locust  
powershell

```
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2U
G23CS367> locust -f locust/checkout_locustfile.py
>>
2026-01-20T09:30:28Z
[2026-01-20 15:00:28,159] DESKTOP-I5CDJ6L/INFO/locust.main: Shutting down (exit code 0)
Type      Name # reqs     # fails |     Avg       Min       Max     Me
d |    req/s  failures/s
---- | |-----|-----|-----|-----|-----|-----|-----| -
---- | |
GET      /checkout      18     0(0.00%) |     124        7     2058
      10 |   0.64      0.00
---- | |-----|-----|-----|-----|-----|-----| -
---- | |
          Aggregated      18     0(0.00%) |     124        7     2058
      10 |   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      10      10      11      13      14     2100
2100  2100 2100 2100 2100 18
---- | |-----|-----|-----|-----|-----|-----|-----| -
-- |-----|-----|-----|-----|
          Aggregated      10      10      11      13      14     2100
```

The screenshot shows the Locust web interface at [localhost:8089](http://localhost:8089). The title bar says "localhost:8089". The main header includes the Locust logo, navigation links (STATISTICS, CHARTS, FAILURES, EXCEPTIONS, CURRENT RATIO, DOWNLOAD DATA, LOGS), and status information (Host http://localhost:8000, Status STOPPED, RPS 0, Failures 0%). There are also buttons for NEW, RESET, and a gear icon.

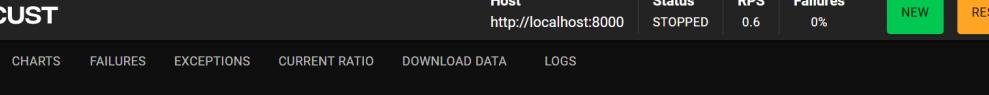
The STATISTICS tab is selected. Below it is a table with the following data:

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	2	0	470	2500	2500	1482.08	466	2498	21138	0	0
	Aggregated	2	0	470	2500	2500	1482.08	466	2498	21138	0	0

```
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2U
    Aggregated      10      10      11      13      14     2100     2100     21
00    2100    2100    2100      18

(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2U

(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
367> locust -f locust/events_locustfile.py
>>
[2026-01-20 15:01:24,065] DESKTOP-I5CDJ6L/INFO/locust.main: Starting L
ocust 2.43.1
[2026-01-20 15:01:24,065] DESKTOP-I5CDJ6L/INFO/locust.main: Starting w
eb interface at http://localhost:8089, press enter to open your defaul
t browser.
[2026-01-20 15:01:46,990] DESKTOP-I5CDJ6L/INFO/locust.runners: Ramping
to 1 users at a rate of 1.00 per second
[2026-01-20 15:01:46,990] DESKTOP-I5CDJ6L/INFO/locust.runners: All use
rs spawned: {"EventsUser": 1} (1 total users)
```



The screenshot shows the Locust performance testing interface. At the top, there's a header bar with the Locust logo, the URL 'localhost:8089', and various browser control icons. Below the header is the Locust title bar with the text 'LOCUST' and a gear icon. The main area has tabs for 'STATISTICS' (which is active), 'CHARTS', 'FAILURES', 'EXCEPTIONS', 'CURRENT RATIO', 'DOWNLOAD DATA', and 'LOGS'. On the right side of the main area, there are buttons for 'NEW' (green) and 'RESET' (orange). Below these buttons is a small chart icon. The bottom half of the screen displays a table of test results. The table has columns for Type, Name, # Requests, # Fails, Median (ms), 95%ile (ms), 99%ile (ms), Average (ms), Min (ms), Max (ms), Average size (bytes), Current RPS, and Current Failures/s. Two rows of data are shown: one for a specific GET request and one for an aggregated summary.

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	18	0	9	2100	2100	125.11	8	2095	21138	0.6	0
Aggregated		18	0	9	2100	2100	125.11	8	2095	21138	0.6	0

```
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
● 367> python -m uvicorn main:app --reload
INFO:     Will watch for changes in these directories: ['C:\\\\Users\\\\HP\\\\Downloads\\\\Monolith_CC_Lab-2\\\\CC Lab-2\\\\PES2UG23CS367']
INFO:     Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO:     Started reloader process [10008] using StatReload
INFO:     Started server process [21524]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Shutting down
INFO:     Waiting for application shutdown.
INFO:     Application shutdown complete.
INFO:     Finished server process [21524]
INFO:     Stopping reloader process [10008]
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
● 367> locust -f locust/events_locustfile.py
>>
[2026-01-20 15:21:35,974] DESKTOP-I5CDJ6L/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:21:35,974] DESKTOP-I5CDJ6L/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser
```

```
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
367> locust -f locust/events_locustfile.py
>>
[2026-01-20 15:26:24,282] DESKTOP-I5CDJ6L/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
8      2095      9 |      0.62      0.00
-----|-----|-----|-----|-----|-----|-----|-----|-----|
-- |-----|
          Aggregated      18      0(0.00%) |      125      8      2095
9 |      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      /events?user=locust_user      9      9      10      10      10      12
2100    2100    2100    2100    2100    2100    18
-----|-----|-----|-----|-----|-----|-----|-----|-----|
-- |-----|
          Aggregated      9      9      10      10      12      2100      2100
2100    2100    2100    2100    18
```

The screenshot shows the Locust web interface at [localhost:8089](http://localhost:8089). The top navigation bar includes back, forward, search, and user icons. The main header says "LOCUST". The host is listed as "http://localhost:8000". The status is "STOPPED" with 0.7 RPS and 0% Failures. Buttons for "NEW" and "RESET" are visible.

The navigation tabs include "STATISTICS" (which is active), "CHARTS", "FAILURES", "EXCEPTIONS", "CURRENT RATIO", "DOWNLOAD DATA", and "LOGS".

The "STATISTICS" table provides detailed performance data:

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	18	0	170	2200	2200	283.95	166	2232	3144	0.7	0
Aggregated		18	0	170	2200	2200	283.95	166	2232	3144	0.7	0

```
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
● 367> locust -f locust/myevents_locustfile.py
>>
[2026-01-20 15:26:36,604] DESKTOP-I5CDJ6L/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:26:36,604] DESKTOP-I5CDJ6L/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-20 15:26:55,941] DESKTOP-I5CDJ6L/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:26:55,942] DESKTOP-I5CDJ6L/INFO/locust.runners: All users spawned: {"MyEventsUser": 1} (1 total users)
Traceback (most recent call last):
  File "C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS367
\.\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
2026-01-20T10:01:54Z
[2026-01-20 15:31:54,077] DESKTOP-I5CDJ6L/INFO/locust.main: Shutting down (exit code 0)
```

```

367> locust -f locust/myevents_locustfile.py
>>
[2026-01-20 15:31:54,077] DESKTOP-I5CDJ6L/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%) |     283
  165    2231    170 |   0.61      0.00
-----| |-----|-----|-----|-----|-----|-----|-----|
-- | -----
          Aggregated      18      0(0.00%) |     283      165    2231    1
  70 |   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      170      170      170      170      170
  180    2200    2200    2200    2200    2200    2200    18
-----| |-----|-----|-----|-----|-----|-----|-----|
-- | -----|-----|-----|-----|-----|-----|-----|-----|
          Aggregated      170      170      170      170      180      2200      2200
  2200    2200    2200    2200    18

```

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	19	0	8	2100	2100	118.4	8	2099	3144	0.6	0
	Aggregated	19	0	8	2100	2100	118.4	8	2099	3144	0.6	0

The screenshot shows a terminal window with several tabs at the top: 'Welcome', '\_init\_.py', 'events.html', 'main.py 3', and another partially visible tab. The main area displays command-line output for testing a Python application.

Terminal Output:

```
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
367> locust -f locust/myevents_locustfile.py
>>
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
● 367> python -m uvicorn main:app --reload
INFO:     Will watch for changes in these directories: ['C:\\\\Users\\\\HP\\\\Downloads\\\\Monolith_CC_Lab-2\\\\CC Lab-2\\\\PES2UG23CS367']
INFO:     Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO:     Started reloader process [34268] using StatReload
INFO:     Started server process [23084]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Shutting down
INFO:     Waiting for application shutdown.
INFO:     Application shutdown complete.
INFO:     Finished server process [23084]
INFO:     Stopping reloader process [34268]
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS
● G23CS367> locust -f locust/myevents_locustfile.py
[2026-01-20 15:32:14,037] DESKTOP-I5CDJ6L/INFO/locust.main: Starting Locust 2.43.1
[2026-01-20 15:32:14,037] DESKTOP-I5CDJ6L/INFO/locust.main: Starting web interface at http://localhost:8089, press enter to open your default browser.
[2026-01-20 15:32:34,610] DESKTOP-I5CDJ6L/INFO/locust.runners: Ramping to 1 users at a rate of 1.00 per second
[2026-01-20 15:32:34,615] DESKTOP-I5CDJ6L/INFO/locust.runners: All use
```

```
PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL PORTS + v .  
(.venv) PS C:\Users\HP\Downloads\Monolith_CC_Lab-2\CC Lab-2\PES2UG23CS  
G23CS367> locust -f locust/myevents_locustfile.py  
2026-01-20T10:34:02Z  
[2026-01-20 16:04:02,428] DESKTOP-I5CDJ6L/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  
7      2099      8 |      0.64      0.00  
----|----|-----|-----|-----|-----|-----|-----|-----|  
--|-----  
          Aggregated      19      0(0.00%) |      118      7      2099  
8 |      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      /my-events?user=locust_user      8      9      9      9  
10      2100      2100      2100      2100      2100      2100      19  
----|----|-----|-----|-----|-----|-----|-----|-----|  
--|-----|-----|-----  
          Aggregated      8      9      9      9      10      2100      2100  
2100      2100      2100      2100      19
```

## Aim

To study the limitations of a monolithic application and analyze its performance under load using Locust.

## Description

A FastAPI-based monolithic application was developed with SQLite as backend. Artificial bottlenecks were introduced to demonstrate how a failure or inefficiency in one module impacts the entire system.

## **Observations**

Checkout, events, and my-events modules initially had inefficient logic  
Monolithic crash affected the whole application  
Load testing showed high response times before optimization

## **Optimizations Performed**

Removed unnecessary computational loops  
Reduced redundant processing  
Improved response times under load

## **System Architecture (Monolithic)**

In a **monolithic architecture**, all application modules such as:

- Authentication
- Events
- Checkout
- My-Events

are part of a **single codebase** and run in **one process**.

### **Key Characteristics:**

- Single deployment unit
- Shared database
- Shared runtime environment
- Tight coupling between modules

## **Application Description**

The application allows users to:

- Register and login

- View all events
- View personal registered events
- Perform checkout operations

All functionalities are implemented inside a **single FastAPI application**, making it monolithic.

The database is accessed using SQL queries inside FastAPI routes.

## What is Locust?

Locust is an **open-source load testing tool** that simulates multiple users accessing a system to measure:

- Response time
- Throughput (RPS)
- Failure rate

## Checkout Module Performance

### Before Optimization

- Inefficient looping logic
- High response time

(Screenshot: **SS4**)

### Optimization Performed

- Replaced loop-based computation with direct summation

### After Optimization

- Reduced response time

- Improved throughput

(Screenshot: **SS5**)

## Optimization Performed

- Removed unnecessary computation loop
  - Retained only database fetch and response rendering
- 

## After Optimization

- Significant reduction in average response time
- Improved performance under load

(Screenshot: **SS7**)

## Result

Performance improved significantly after optimization, proving that inefficiencies in monolithic systems directly impact scalability and reliability.