MP8 Overview Session

CS 240 - The University of Illinois

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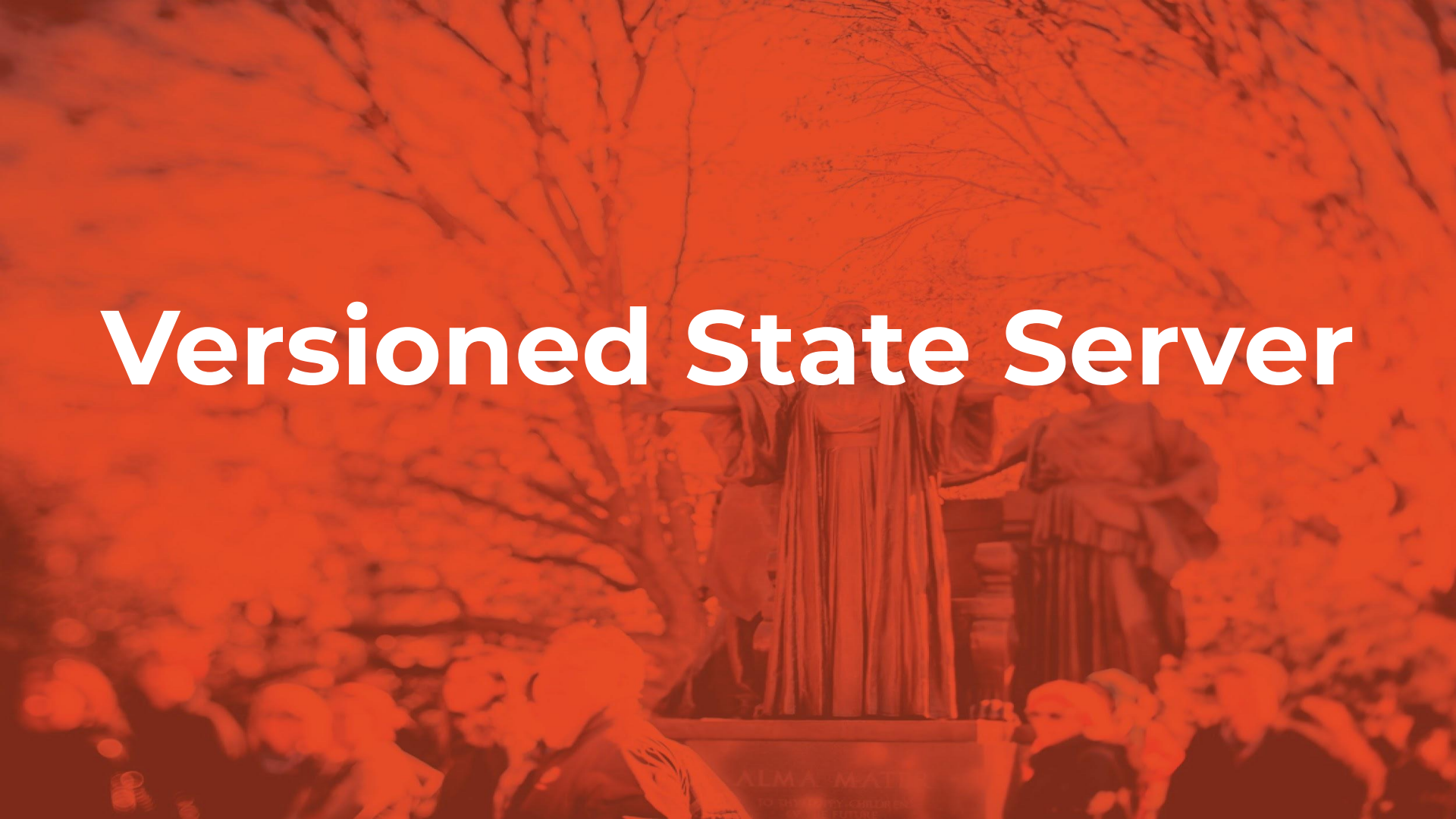
March 28, 2022

Goals

- Create a versioned state server using *flask*
  - store key-value pairs of data with a version number
- Implement the API(s) that will allow users to interact with your web server
  - PUT, GET, DELETE request
- Explore two solutions to the same problem
  - store data locally in memory
  - store data remotely in a MongoDB database



Versioned State Server

API Requirements

PUT /<key>

- Add a versioned object to storage
- Version number starts at 1
- Return HTTP/200 if successful
- You can get the contents of the request as a UTF-8 string with request.data.decode(“utf-8”)
- Example: PUT /date with data content “2022-03-26”

API Requirements

GET /<key>

- Retrieve the latest version of a key
- Return a JSON containing the latest value stored for <key> and the corresponding version number
- JSON format: { "value": "<string>", "version": <number> }
- Return HTTP/200 if successful, HTTP/404 if key not found
- Example JSON: { "value": "2022-03-28", "version": 3 }

API Requirements

GET /<key>/<version>

- Retrieve a specific version of a key
- Similar to GET /<key> but for a specific version instead of the latest version
- Return HTTP/200 if successful, HTTP/404 if key not found
- Example: GET /date/2
- Example JSON: { "value": "2022-03-27", "version": 2 }

API Requirements

DELETE /<key>

- Completely delete all data associated with a key
- Delete the key and all version of the key
- Future versions of the key begin again with 1
- Return HTTP/200 if successful

Example

PUT /date

Content: “2022-03-26”

date

Version	Value
1	2022-03-26

Example

PUT /date

Content: “2022-03-27”

date

Version	Value
1	2022-03-26
2	2022-03-27

Example

GET /date

Result:

{ “value”: “2022-03-27”, “version”: 2 }

date

Version	Value
1	2022-03-26
2	2022-03-27

Example

GET /date/1

Result:

{ “value”: “2022-03-26”, “version”: 1 }

date

Version	Value
1	2022-03-26
2	2022-03-27

Example

GET /date/3

Result:

HTTP/404 Not Found

date

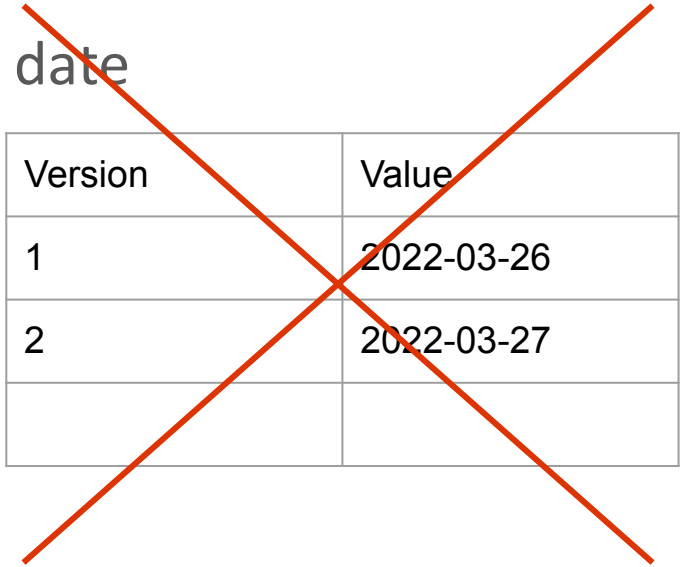
Version	Value
1	2022-03-26
2	2022-03-27

Example

DELETE /date

Result:

HTTP/200 Success



Part 1: Local Store

Local Storage

Complete app.py in local-store/

- Store the data locally using any Python data structure
- Launch the app with `python -m flask run`
- The server should be hosted on localhost (127.0.0.1) on port 5000

Testing Part 1

Run your server and send HTTP requests using

- curl commands in the terminal
- applications such as Postman

To run the test suite

- python -m pytest test_local.py

Part 2: MongoDB

MongoDB Data Store

Complete app.py in mongodb-nosql/

- Store the data in a MongoDB database
- You can run a MongoDB server using docker
  - docker run --rm -it -p 27017:27017 mongo
- Install PyMongo to connect to MongoDB in flask
  - Doc: https://pymongo.readthedocs.io/en/stable/
- The server should be hosted on 127.0.0.1:5001

Testing Part 2

Run your server and send HTTP requests using

- curl commands in the terminal
- applications such as Postman

(Optional) MongoDB Compass

To run the test suite

- python -m pytest test_mongo.py


Question