Software Engineering Bootcamp

Hyperiondev

Using Software Engineering Principles to build RESTful APIs

Lecture – Housekeeping

- ❑ The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly.
- ❑ No question is daft or silly - **ask them!**
- ❑ There are Q/A sessions midway and at the end of the session, should you wish to ask any follow-up questions.
- ❑ You can also submit questions here: http://hyperiondev.com/sbc4-se-questions
- ❑ For all non-academic questions, please submit a query: www.hyperiondev.com/support
- ❑ Report a safeguarding incident: http://hyperiondev.com/safeguardreporting
- ❑ We would love your feedback on lectures: https://hyperionde.wufoo.com/forms/zsgv4m40ui4i0g/

Objectives

1. What is an API
2. What is REST
3. What is a RESTful API
4. Benefits of RESTful APIs
5. Flask
6. Testing RESTful API

Github Repository - Lecture Examples/Slides

https://github.com/HyperionDevBootcamps/C4_SE_lecture_examples

Documentation

pytest: https://docs.pytest.org/en

Flask: https://flask.palletsprojects.com/en/2.3.x/

Flask testing: https://flask.palletsprojects.com/en/2.3.x/testing/

Postman: https://www.postman.com/

HTML: https://devdocs.io/html/

What is an API(Application Programming Interface)?

- Everything is an API

- An API is a way for computer programs to communicate.

- It is a type of software interface, offering a service to other pieces of software.

What is REST?

- Representational State Transfer
- It is a software architecture, a set of guidelines to follow, for building APIs.
- REST defines a set of functions like GET, PUT, DELETE, etc. that users can use to access server data(HTTP).
- The main feature of REST is statelessness.
    - This means that servers do not save client data between requests.
- Other features include:
    - Uniform interface
    - Layered system
    - Cacheability

Benefits of RESTful APIs?

- Scalability
  - REST APIs can scale efficiently because REST optimizes client-server interactions. The statelessness of the system does not require the server to store previous request information. This means we have less load on the server.

- Flexibility
  - REST APIs have client-server separation. By layering our application functions we can make changes to one part of the system without having to change others. By decoupling and simplifying our components we allow them to evolve independently.

Benefits of RESTful APIs?

- Independence
    - REST APIs are independent of the technology used. You can write both client and server applications in various programming languages without affecting the API design.

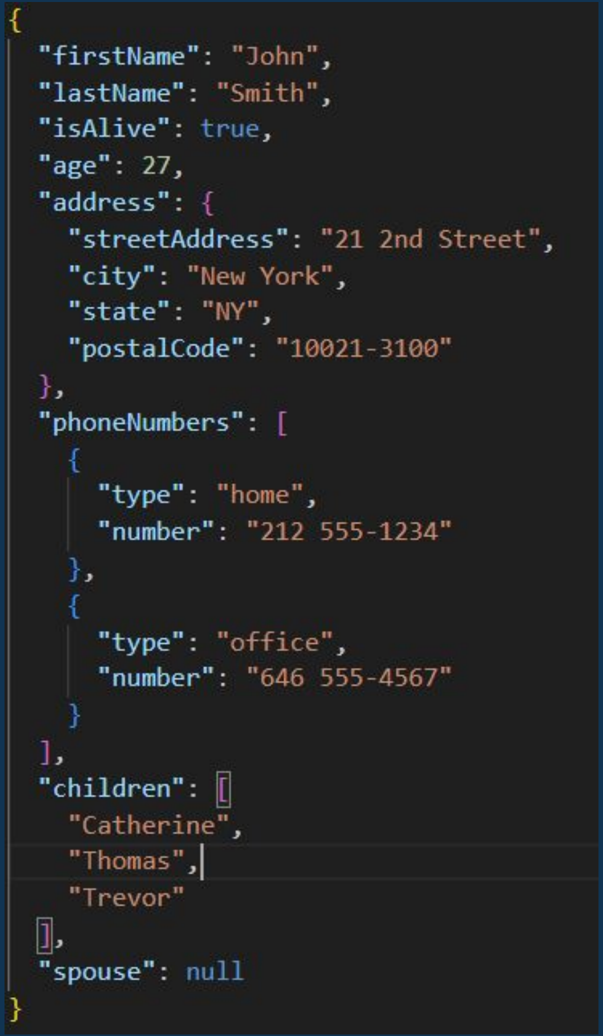
What is flask?

- Flask is a web framework
- Web Framework represents a collection of libraries and modules that enables web application developers to write applications without worrying about low-level details such as protocol
- It helps us do url routing and it has a template engine that builds templates from our html files.
- It also allows us to build a RESTful API

What is JSON?

- JavaScript Object Notation
- Lightweight data-interchange format
- Human-readable text to store and transmit data objects consisting of attribute–value pairs and arrays

JSON Example



```
{
  "firstName": "John",
  "lastName": "Smith",
  "isAlive": true,
  "age": 27,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021-3100"
  },
  "phoneNumbers": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
    {
      "type": "office",
      "number": "646 555-4567"
    }
  ],
  "children": [
    "Catherine",
    "Thomas",
    "Trevor"
  ],
  "spouse": null
}
```

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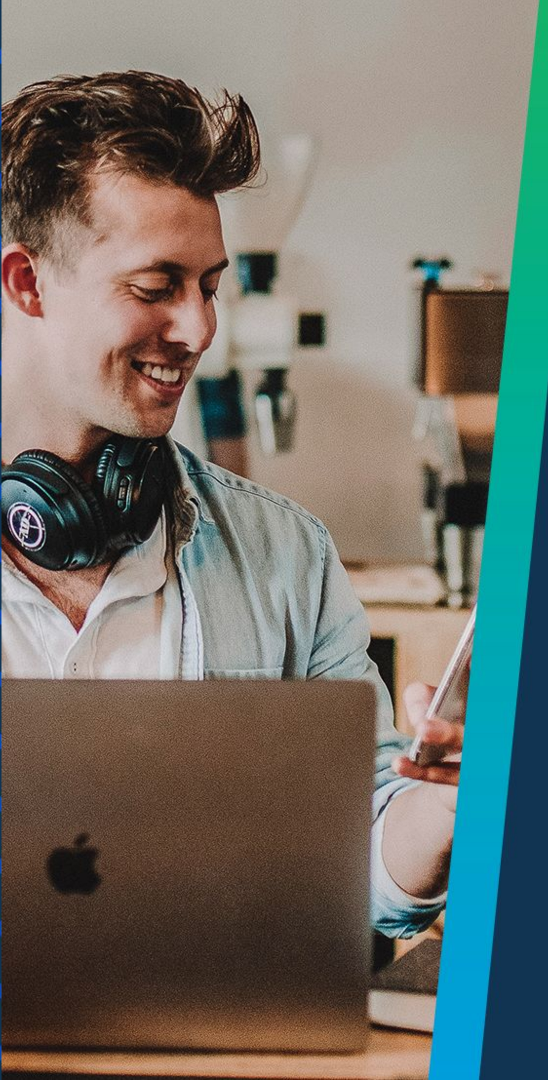
Q & A Section

Please use this time to ask any questions relating to the topic explained, should you have any



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Thank you for joining us

Stay hydrated
Avoid prolonged screen time
Take regular breaks
Have fun :)