Software Engineering Bootcamp

Hyperion*dev*

Recent Developments in Software Engineering

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. Recap : Rest and Flask

2. What are Software Engineers and what they do?

3. Trends to look out for.

4. PEP

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/

PEP-0 : https://peps.python.org/pep-0000/

PEP-484 : https://peps.python.org/pep-0000/

What are Software engineers?

- 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.

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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

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What is Software engineering?

- Software engineering is the branch of computer science that deals with the design, development, testing, and maintenance of software applications. Software engineers apply engineering principles and knowledge of programming languages to build software solutions for end users.

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What do Software Engineers do?

- Design and maintain software systems

- Evaluate and test new software programs

- Optimize software for speed and scalability

- Write and test code

- Consult with clients, engineers, security specialists, and other stakeholders

- Present new features to stakeholders and internal customers

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Trends to look out for

- Cloud computing
  - On-demand availability of computer system resources, especially data storage (cloud storage) and computing power.

- Container Development
  - A container is a unit of software that packages code and its dependencies so the application runs quickly and reliably across different environments.

Trends to look out for

- Microservices
  - Rather than building one great service, functionality is broken down into manageable sections.

- AR/VR
  - Augmented and virtual reality is a market worth 250 billion dollars. It is already being mass distributed in education, healthcare and retail.

PEP

- Python Enhancement Proposals

- Proposal for enhancing and improving python code.

- Each proposal gets assigned a number that will never change.

- Index for all PEPs: PEP-0

PEP-484

- Talks about type hints

- Type hints are added to Python code using annotations

- Type hints helps us to take python from a dynamically typed language to a statically typed language.

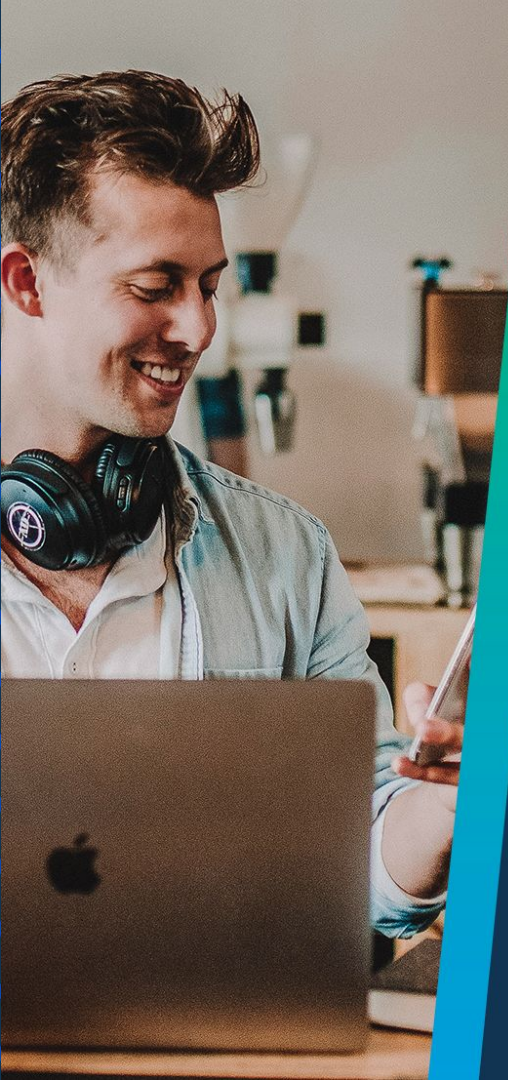- This means that we specify the types for our variables and return values.

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Advantages of Type Hints

- Type hints does not affect your code or change the way it runs.

- Type hints provide documentation by providing a signature to types of the arguments and result.

- Makes code easier to read and debug. With the data types in mind it's easier to see where the data types might be wrong and cause errors.

- Provides a better coding experience. Static code checkers can be integrated with your IDE.