Welcome to the CoGrammar

Django 1

The session will start shortly...

Questions? Drop them in the chat. We'll have dedicated moderators answering questions.

Software Engineering Session Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(Fundamental British Values: Mutual Respect and Tolerance)**
- 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. Moderators are going to be answering questions as the session progresses as well.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: **Questions**

Software Engineering Session Housekeeping cont.

- For all **non-academic questions**, please submit a query: **www.hyperiondev.com/support**
- Report a **safeguarding** incident: **www.hyperiondev.com/safeguardreporting**
- We would love your **feedback** on lectures: **Feedback on Lectures**

Skills Bootcamp
8-Week Progression Overview

Fulfil 4 Criteria to Graduation

✅ Criterion 1: Initial Requirements

- ***Guided Learning Hours (GLH):*** Minimum of 15 hours
- ***Task Completion:*** First 4 tasks

Due Date: 24 March 2024

✅ Criterion 2: Mid-Course Progress

- ***Guided Learning Hours (GLH):*** Minimum of 60 hours
- ***Task Completion:*** *First* 13 tasks

Due Date: 28 April 2024

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Skills Bootcamp Progression Overview

✅ Criterion 3: Course Progress

- ***Completion:*** All mandatory tasks, including Build Your Brand and resubmissions by study period end
- ***Interview Invitation:*** Within 4 weeks post-course
- ***Guided Learning Hours:*** Minimum of 112 hours by support end date (10.5 hours average, each week)

✅ Criterion 4: Demonstrating Employability

- ***Final Job or Apprenticeship Outcome:*** Document within 12 weeks post-graduation
- ***Relevance:*** Progression to employment or related opportunity

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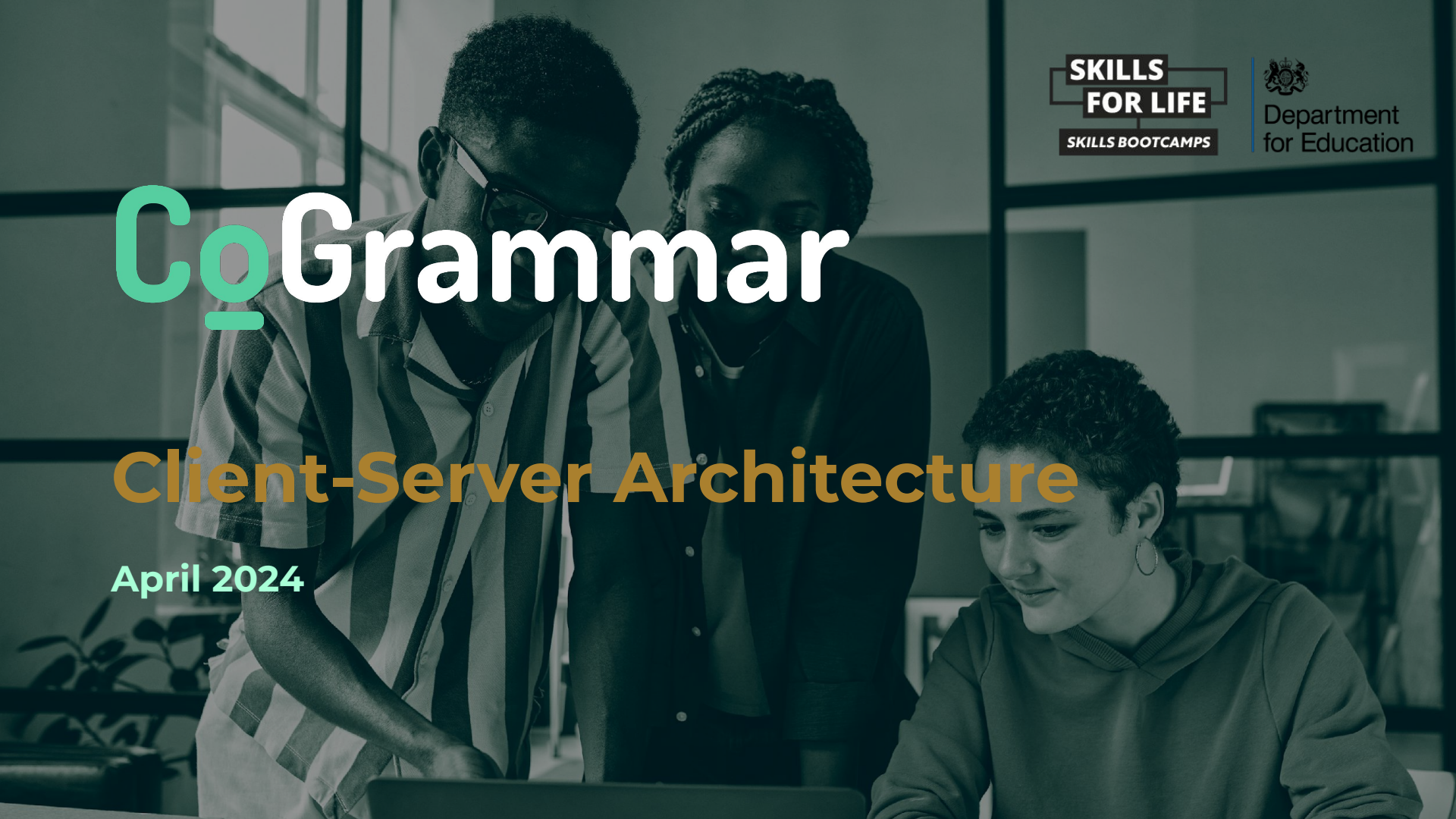
Learning Outcomes

- Define the client-server architecture
- Explain the request response cycle used in the client server architecture.
- Define HTTP
- Define what a web framework is.
- Describe Django
- Explain the benefits of Django
- Describe the MVT structure of Django

Learning Outcomes

- Explain what a template is in Django.
- Create templates for your Django projects.
- Explain what a view is in Django.
- Route views to specific urls.
- Create views that will render your templates to the user.
- Render templates with context data received from view.



Client-Server Architecture

April 2024

Client-Server Architecture

- Network architecture that breaks down task and workloads between clients and server
- Can reside on same system or linked by a computer network
- Typically consists of multiple workstations, PCs or other devices belonging to users connected to a central server
- Connect through internet connection or other network connection

Client-Server Architecture

- Basic steps
  - Client sends request for data
  - Server accepts request
  - Server processes request
  - Send requested data back to user

Servers and Clients

- Servers
  - Not just a computer clients make requests to
  - Requires appropriate server software running to be a server E.g. Apache, Tomcat, Nginx
- Client
  - Not just any device making requests
  - Requires correct software to make requests
  - Most common client - Web browser
  - Your social media application is also a client

HTTP

- HyperText Transfer Protocol
- Underlying protocol of WWW
- Defines how messages are formed and transmitted between clients and server
- Defines actions clients and server must take in response to various commands

HTTP

- Basic example of HTTP implementation
  - Urls gets entered in a browser
  - Browser send HTTP command to server
  - Command directs server to search for and transmit requested page
  - Response can be HTML in this instance

HTTP

- HTTP is a stateless protocol
- Each request is independent from the previous request

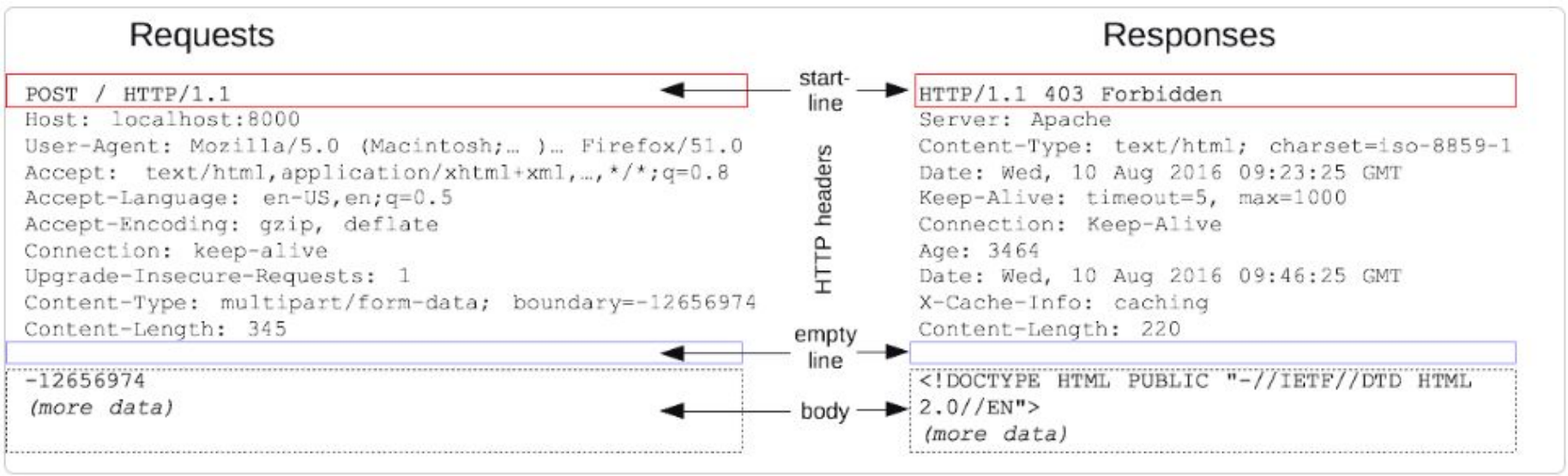
HTTP

- E.g. a request is made for the first ten records in a database and then another request is made for the next ten records
- Stateful protocol
  - Give me the first 10 records
  - Give me the next 10 records
- Stateless protocol
  - Give me records 1-10
  - Give me records 11-20

HTTP Messages

- Used for requests and responses
- Composed of textual information encoded in ASCII and spans multiple lines
- Consists of
  - Start line
  - Headers
    - General
    - Request
    - Representational
  - Body

HTTP Messages



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Status Codes

- Short notes tacked onto a webpage
- Not part of the site's content but messages telling us how things went
- Returned every time your browser interacts with a server
- Helps diagnose and fix website configuration

Status Codes

5 Classes of status codes

- 100s
  - Informational code
  - Indicates request initiated in continuing
- 200s
  - Success code
  - Indicates request was received, understood and processed

Status Codes

- 300s
  - Redirection codes
  - When a new resource in substituted for the requested resource
- 400s
  - Client Error
  - Problem with request
- 500s
  - Server error
  - Request was accepted but a server error has occurred
  -
  -

Django

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What is a Web Framework?

- Software framework designed to assist in the development of web applications.
- Provides libraries for database access, templating frameworks, and session management.
- Promotes code reuse.

What is Django?

- Open-source web framework
- Used for developing secure and scalable websites and web applications
- Platforms using Django: Instagram, Spotify, Youtube and many more

Why Django?

- Has a large list of libraries and tools
- Allows for the creation of robust data driven applications.
- Code is fast to implement and is very clean and pragmatic

Model-View-Template (MVT) Architecture

- Variation of Model-View-controller architecture
- Three main components
  - **Model**: Represents the business logic and data structure of the application.
  - **View**: Handles the interaction between the user and the application, managing the presentation logic.
  - **Template**: Deals with the presentation layer, defining the structure and appearance of the HTML content.

Templates

- Templates define the structure of the HTML pages.
- They incorporate dynamic data using template tags.
- They receive data from views through context dictionaries.
- Templates are stored in the templates directory.
- HTML pages are constructed using template tags for data integration.

Django Template Language

- We build our our templates using the Django Template Language.
- It allows us to create base templates and extend them.
- We can use variables inside our templates.
- It also contains ‘tags’ we can use to create loop structures and boolean checks.

Views

- Views are Python functions we create in the views.py file.
- Views define the behaviour of our URL patterns.
- Views handle user requests and define the logic for processing them.
- They interact with models to retrieve or update data.
- Views return appropriate HTTP responses, such as rendering templates or redirecting.

Summary

- **Client-Server Architecture:** Use a request response cycle, where clients make request to a server that will respond.
- **HTTP:** Underlying protocol of the WWW. Defines how messages are formed and transmitted between clients and server.
- **Web Framework:** Software framework design to assist in the development of web applications, services and more.
- **Django:** Free and open source web framework. Makes use of the MVT structure.
- **Templates:** Define the structure of our HTML pages.
- **Views:** Allow is to perform backend processes and actions, and render our templates to the user.

Questions and Answers

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Thank you for attending

SKILLS FOR LIFE
SKILLS BOOTCAMPS

Department for Education

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