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Django training - Introduction to the Python framework

4 days (28 hours)

Introducing our Django training course

[Django](#) is a web framework written in Python. Born in 2003, Django is both robust and proven, while maintaining an update cycle that keeps pace with the latest market developments. Time has confirmed Django's quality, and after 15 years of existence, this framework remains as dynamic as ever, with a very active community.

Django proclaims its pragmatic and efficient approach with its slogan: the web framework for perfectionists with deadlines. It's designed for rapid development without ever sacrificing quality.

Since Django 3, you've had immediate access to an HTTP routing module, a complete ORM for managing multiple databases, a native templating engine, a turnkey DB administration interface, and much more.

In this introductory course, we'll be looking at all the major aspects of Django (views, database, templates, forms, etc.), not forgetting building REST APIs with Django Rest Framework. We'll also take the opportunity to study the complete cycle of a professional website: writing unit tests, multi-environment management (dev, prod), automated deployment in production.

Like all our training courses, this one will introduce you to the latest stable version and its new features ([Django 5](#) at the time of writing).

Objectives

- Getting to grips with the Django framework
- Building a website
- Provide a usable REST API for mobile / front-end clients
- Customizing Django for your needs
- Test and deploy your site in production

Target audience

Web developers, Project managers

Prerequisites

Knowledge of Python or a recent programming language. HTML / CSS / JavaScript notions are a plus.

Materials required

- Python interpreter
- Internet access
- Access to a development environment (examples will be based on PyCharm)
- Rights to install and run a web server
- Access to standard web development ports

Django training program

Day 1: Getting to grips with Django

Introduction to Python & Django

- Programming in Python
- Django history
- Processing an HTTP request
- Django project structure (Files, settings.py, MVT pattern)
- Browsing Django documentation
- Managing a Django project in CLI
- What's new in versions 4

Urls & Views

- Routing requests with urls.py
- Pattern Matching in URLs
- Route isolation with Django app
- View and HTTP response
- Request / Response

Templates

- Loading a template into a view
- Tags & filters
- Template inheritance
- Static resource in a template

- Define a custom tag / filter

Day 2: Interacting with the database

Database and Models

- Discover Django ORM
- Defining a model
- Define relationships between models (OneToOne, ForeignKey, ManyToMany)
- Manage Database migrations
- CRUD on SQL Query

and QuerySet models

- How QuerySet works
- QuerySet queries using REPL
- Complex queries and inverted relations

Linking models with Views

- Loading a model into a view
- Setting up a query from a view
- Model validation
- Signals and model functions

Advanced model operations

- Customized manager queries
- Writing SQL queries by hand
- Advanced queries
- Manage multiple databases
- Queries and transactions

Day 3: Managing & displaying data

Forms management

- Displaying and editing a Django Form
- Connecting a Form to a Model
- Checking and validating form content
- Resources in a Form
- Managing multiple forms with a Django

Formset Admin

- Installing the admin site
- Customize lists and forms
- Filter, Sort, Search with admin
- Add custom actions
- Add JavaScript code
- Managing users and rights

Structuring views into classes

- Class View principle
- HTTP requests, templates, context variables
- Displaying a Model in a Class View
- Managing a Form in a Class View
- Mixin and Class View

API Rest with Django Rest Framework

- REST API principles
- Defining a REST endpoint with DRF
- How a router works
- Nested object in a REST API
- Model serialization and rendering in JSON / XML / MessagePack format
- Routing additional actions

Day 4: Packing a site for production

Advanced REST concepts

- Validate content
- Managing API versions
- Caching and ETag
- Client authentication and permissions

Tests with Django & DRF

- Setting up Python tests with TestCase
- Testing with a BDD dataset
- HTTP test client
- Testing a REST API with DRF
- Unit testing, transaction testing, webserver testing

Having a multi-lingual site

- Preparing code for internationalization
- Generate translations

- Enabling different languages in Django
- JavaScript translations

Configuring a production application

- Multi-configuration database, flags
- Provisioning a dev machine with Vagrant
- Workflow with Nginx and Gunicorn
- Automated deployment with fab and Ansible
- Isolating your application with Docker

Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.