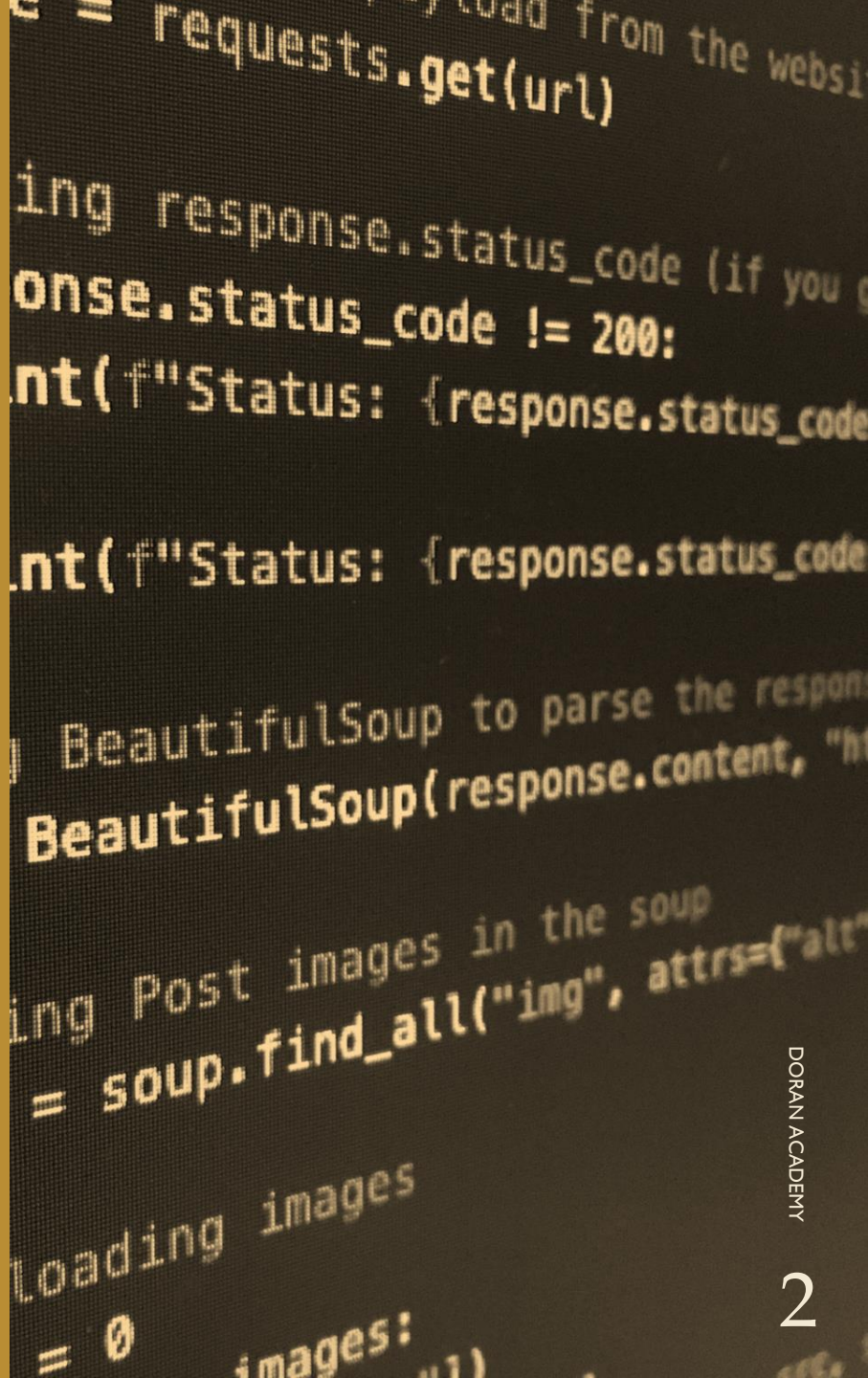
PYTHON ADVANCED MASTERCLASS

DEEP DIVE
INTO
LEARNING PYTHON

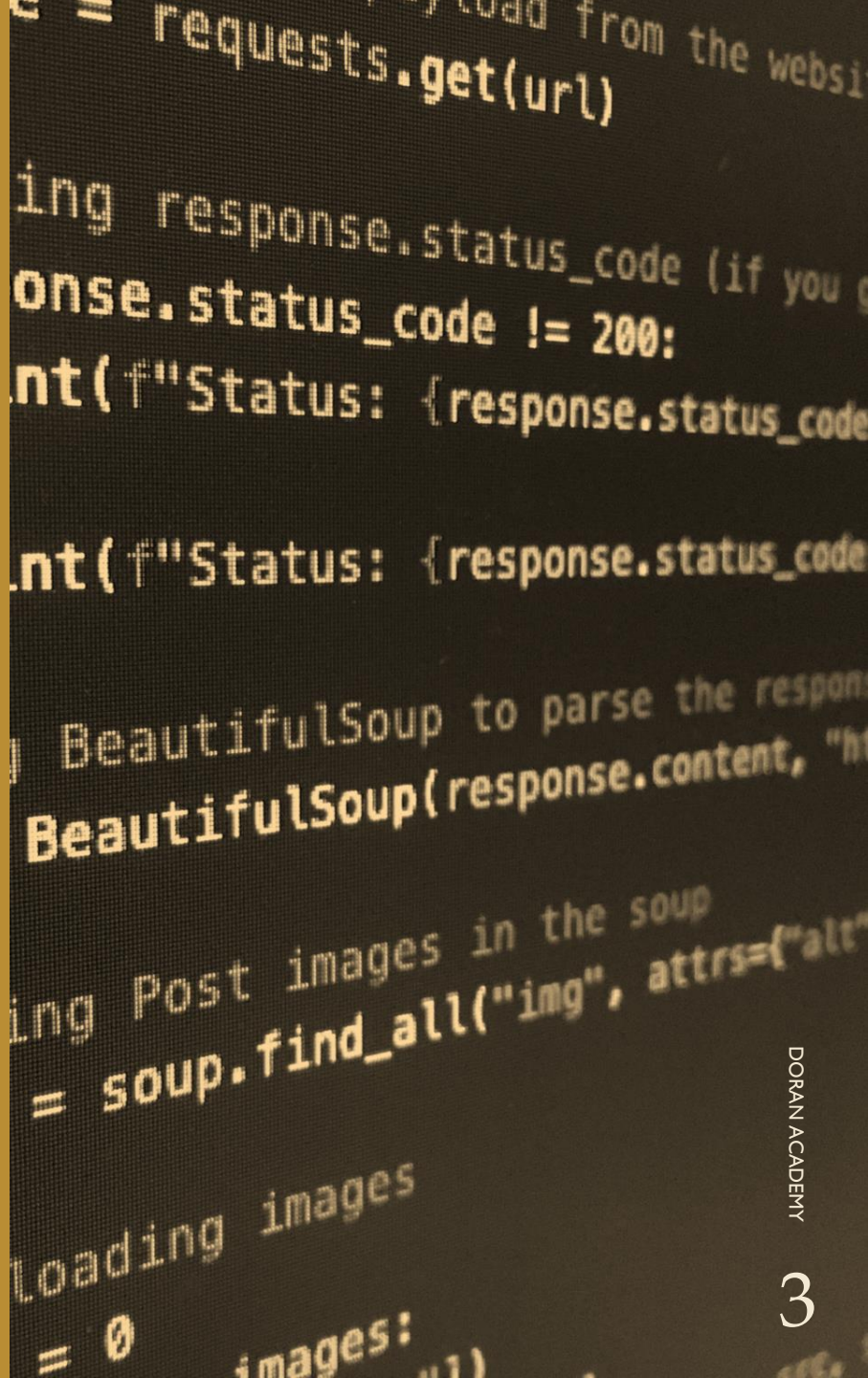
WORKING WITH DATABASES – P1

- Introduction to Databases
- Database Concepts
- Keys
- Introduction to SQlite
- CRUD on SQlite
- Introducing ‘Cursor’



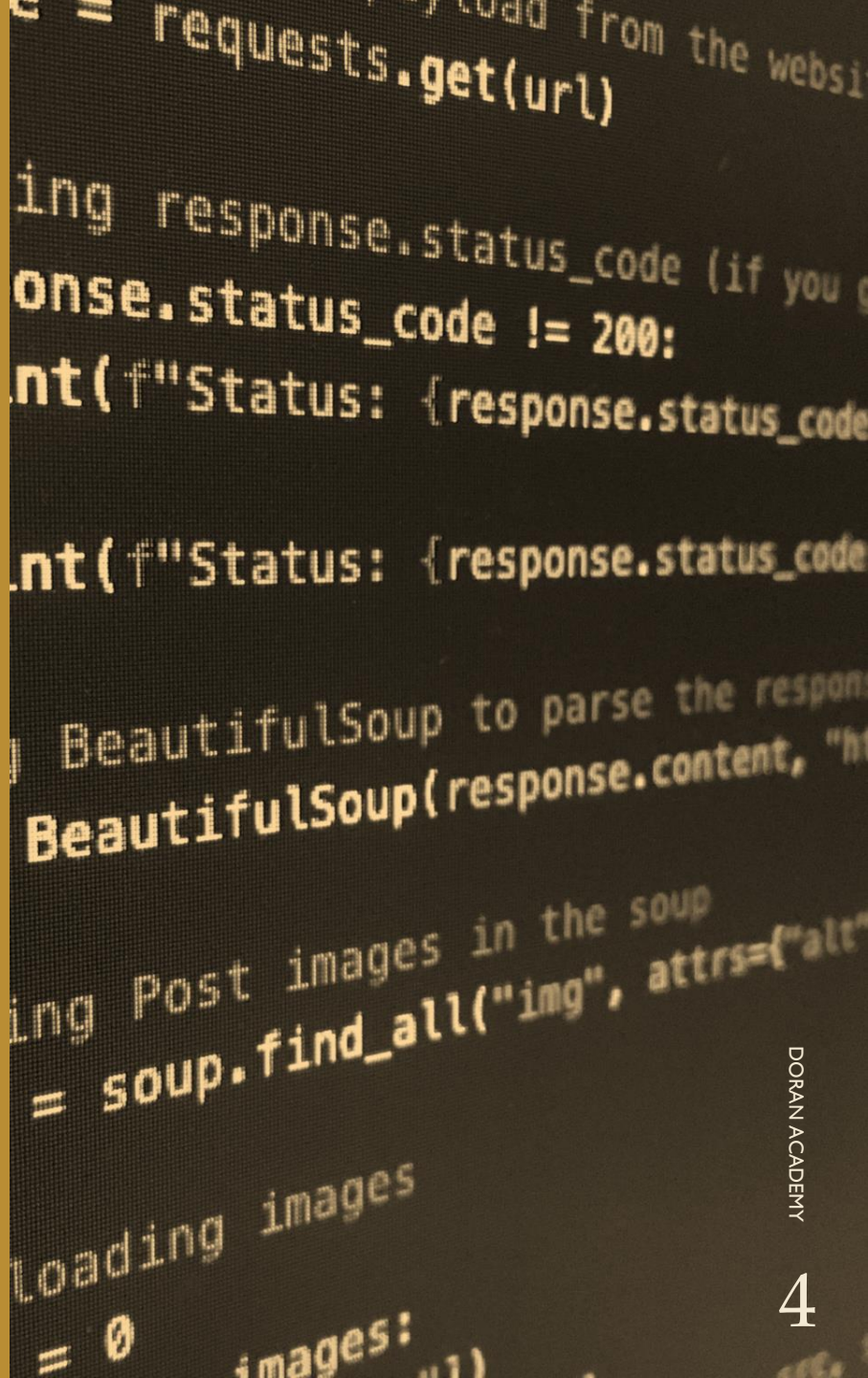
WORKING WITH DATABASES – P2

- Tools of the Trade in Big Databases
- Configuring MySQL
- Connection Error Handling
- CRUD in MySQL



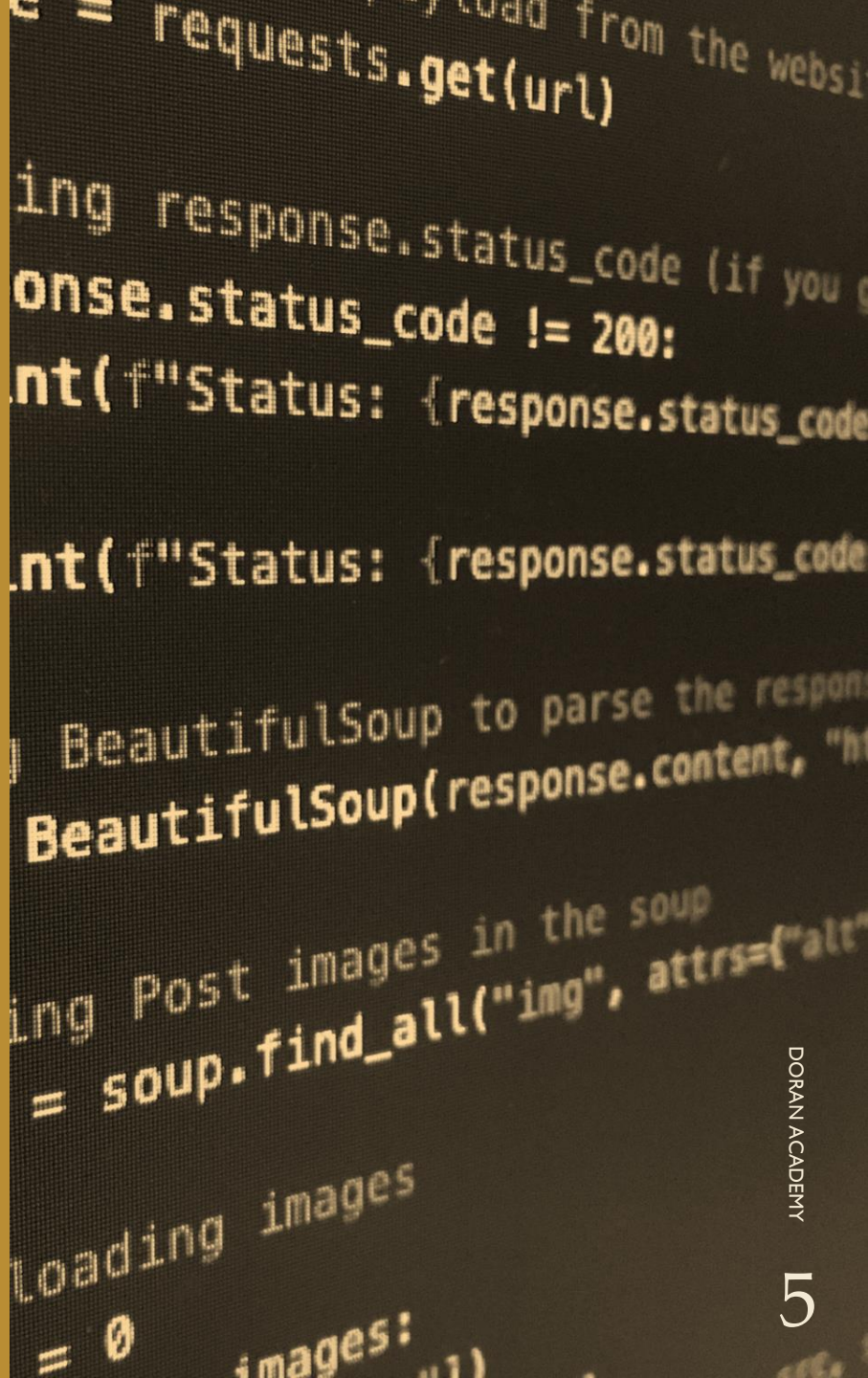
VIRTUAL ENVIRONMENTS

- What Are Virtual Environments?
- Why Do We Need a VE?
- Package Managers
- Conda vs Pip vs Poetry vs Pipenv
- Virtualenv and VirtualenvWrapper
- Creating and Configuring a VE



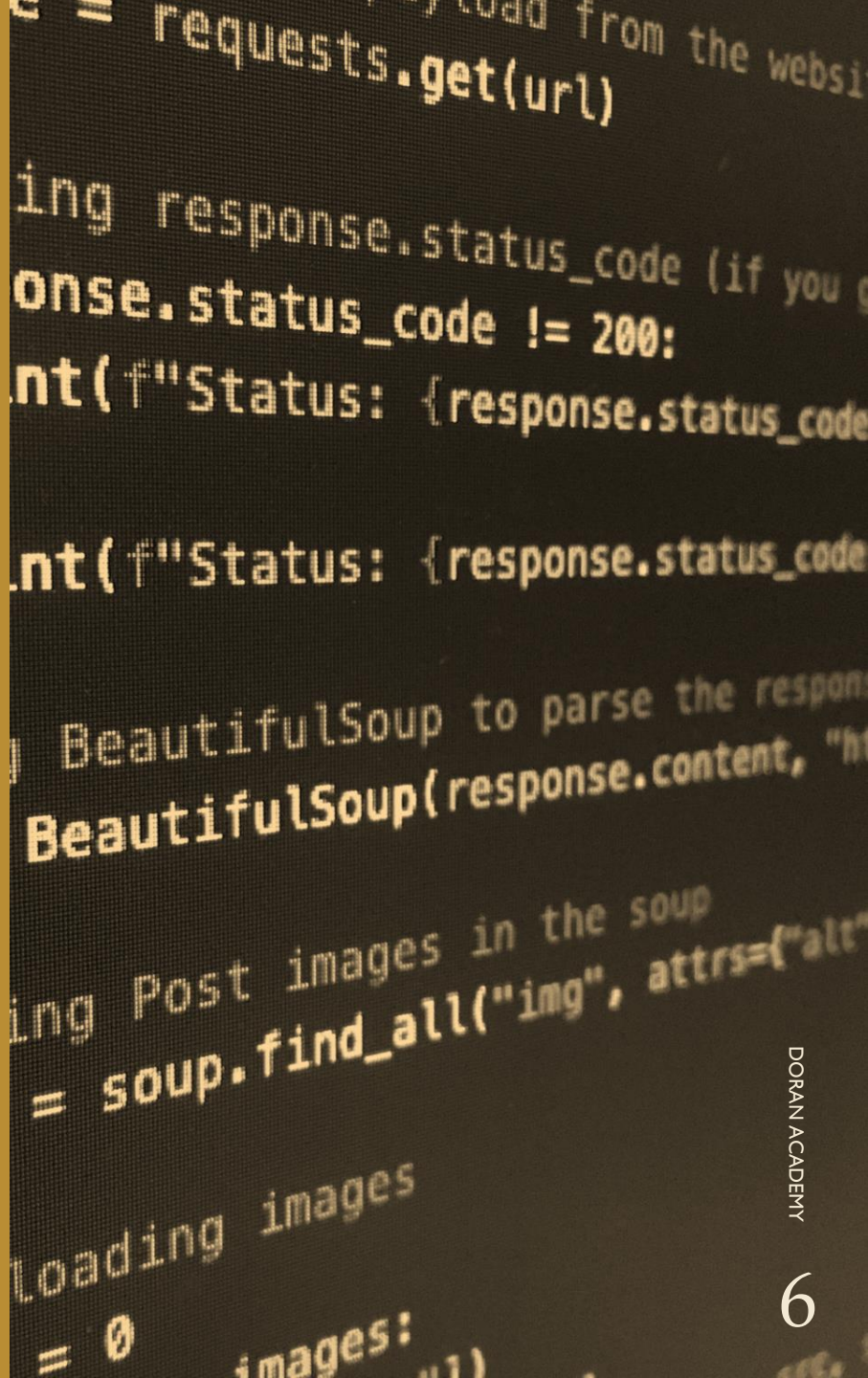
COMPREHENSIONS

- Introduction
- Conditional Expressions
- Filters
- List Comprehensions
- Set and Dictionary Comprehensions
- Generator Expressions
- Nested Comprehensions



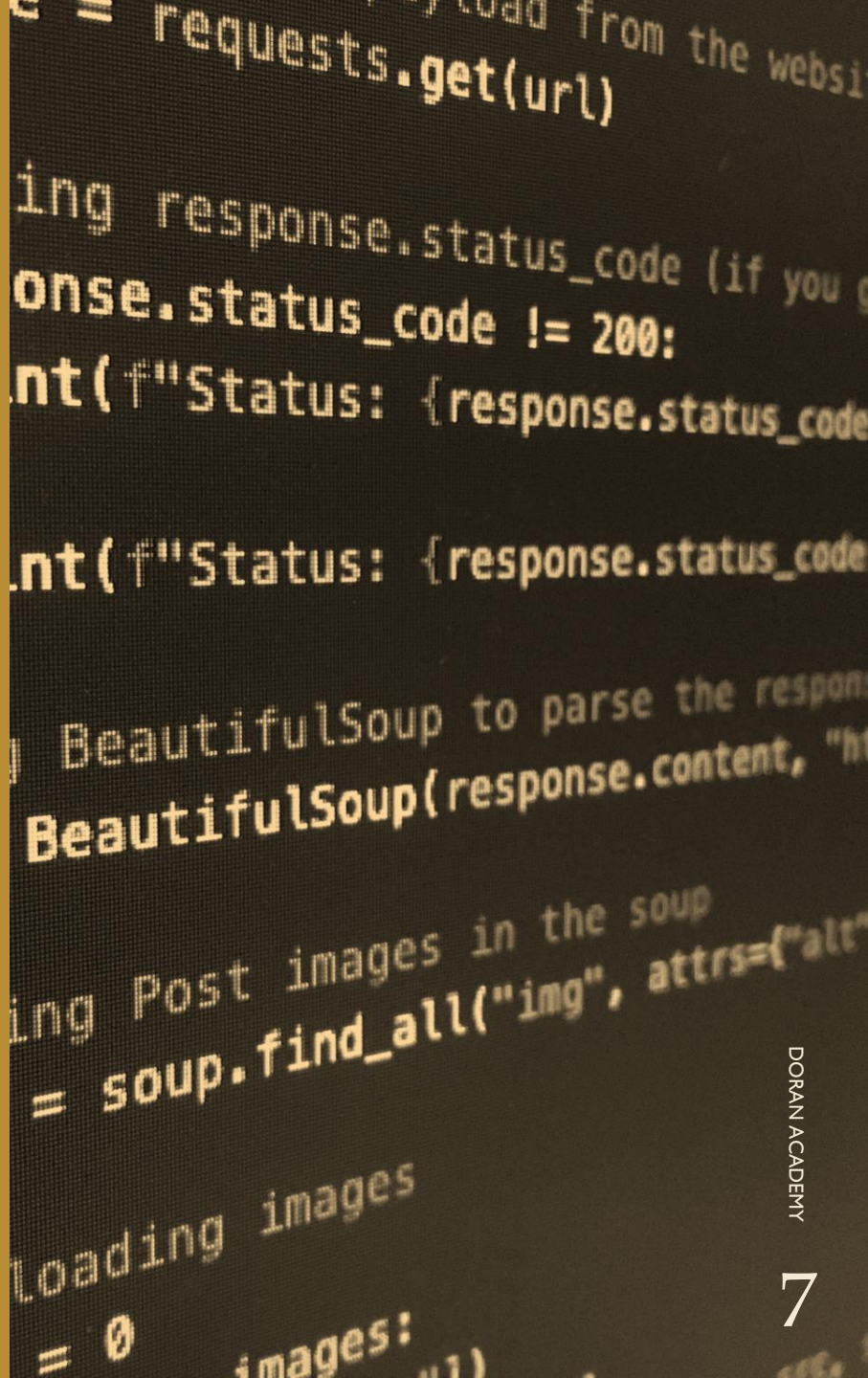
DECORATORS

- Functions as ‘First Class Objects’
- Inner Functions
- Functions Returning Functions
- Wrapper Function
- Reusable Decorators



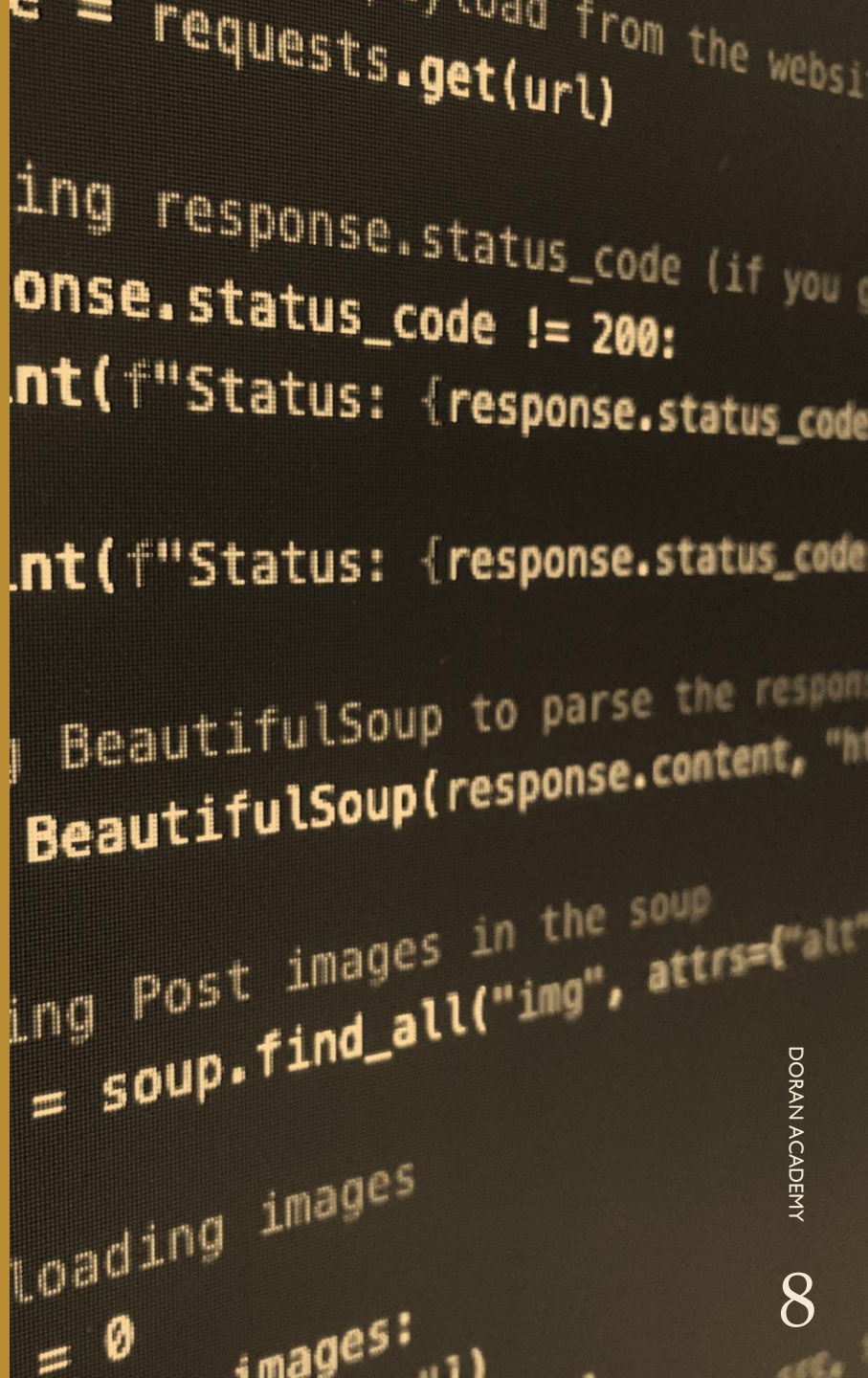
GENERATORS

- Stateless Data Types
- Yield vs Return
- Built-in Generator
- Custom Generator
- Memory Efficiency



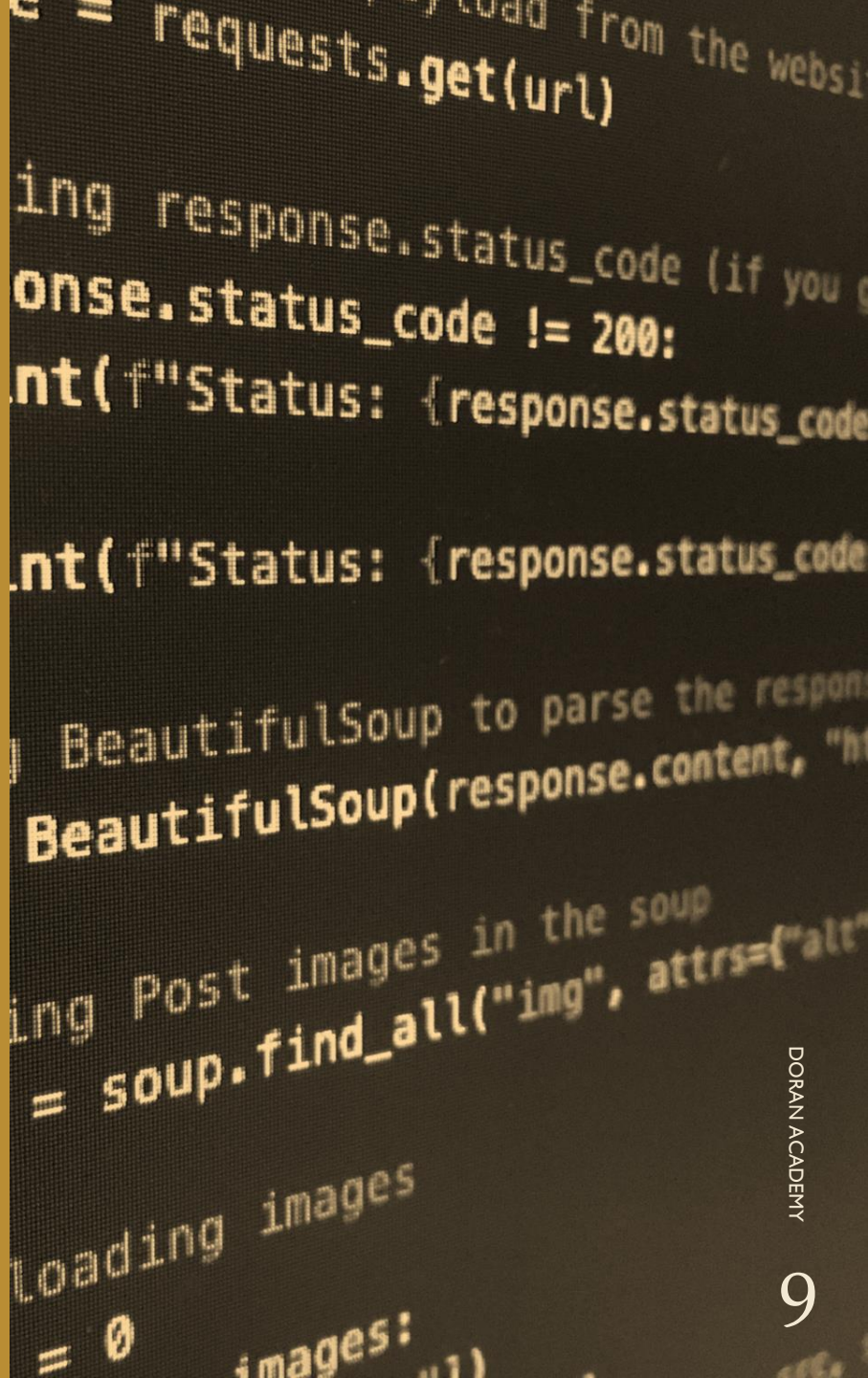
META CLASSES AND TYPE

- The ‘TYPE’ Function
- Altering Type of a Class
- Type vs __new__
- Meta Classes
- Custom Class Types



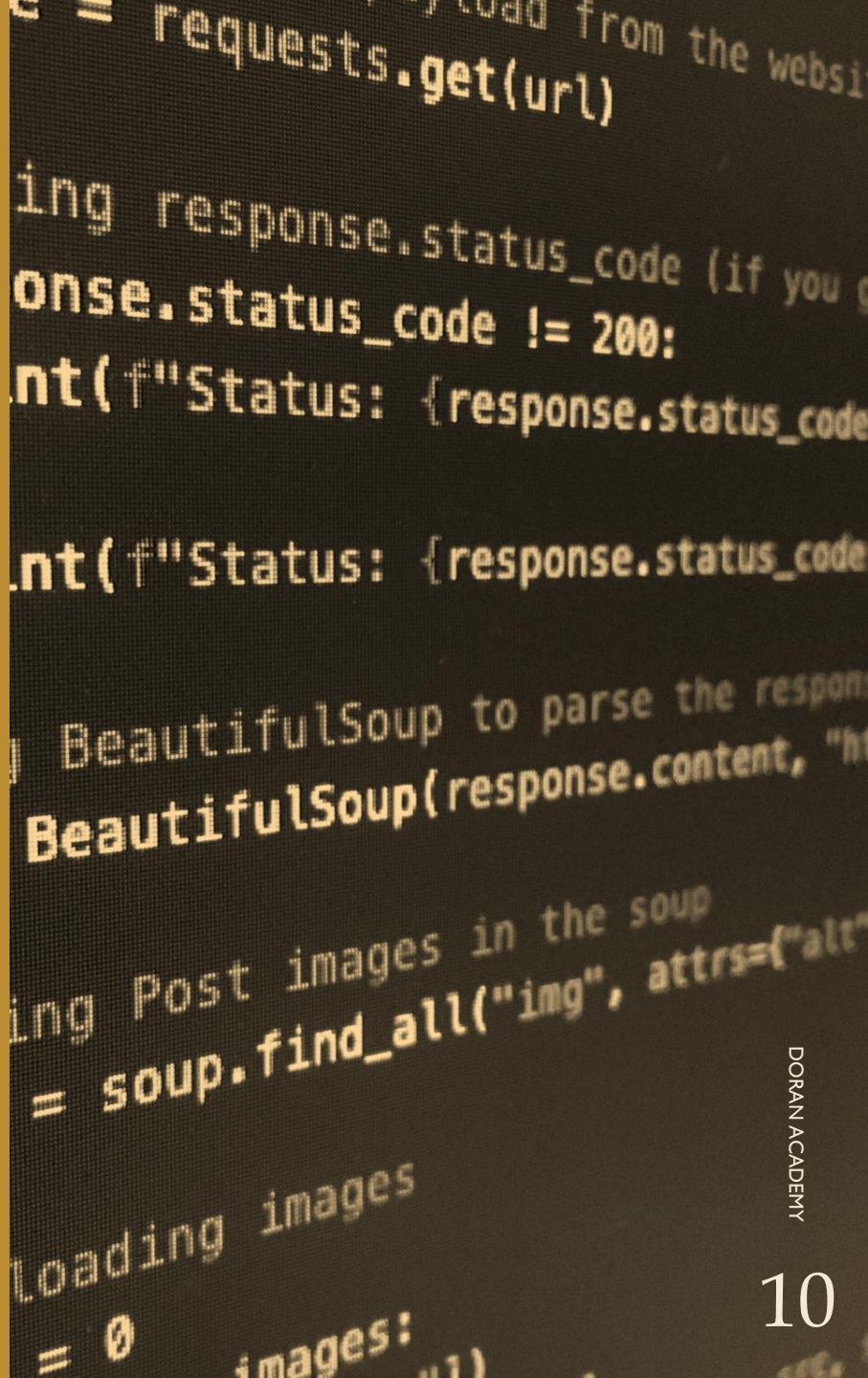
DUCK TEST

- Duck Typing
- The Philosophy of Duck Typed Languages
- Duck Typing and Inheritance
- Python Viewpoint of Duck Typing
- Dive Even Deeper
- Story of a Billionaire Penguin !



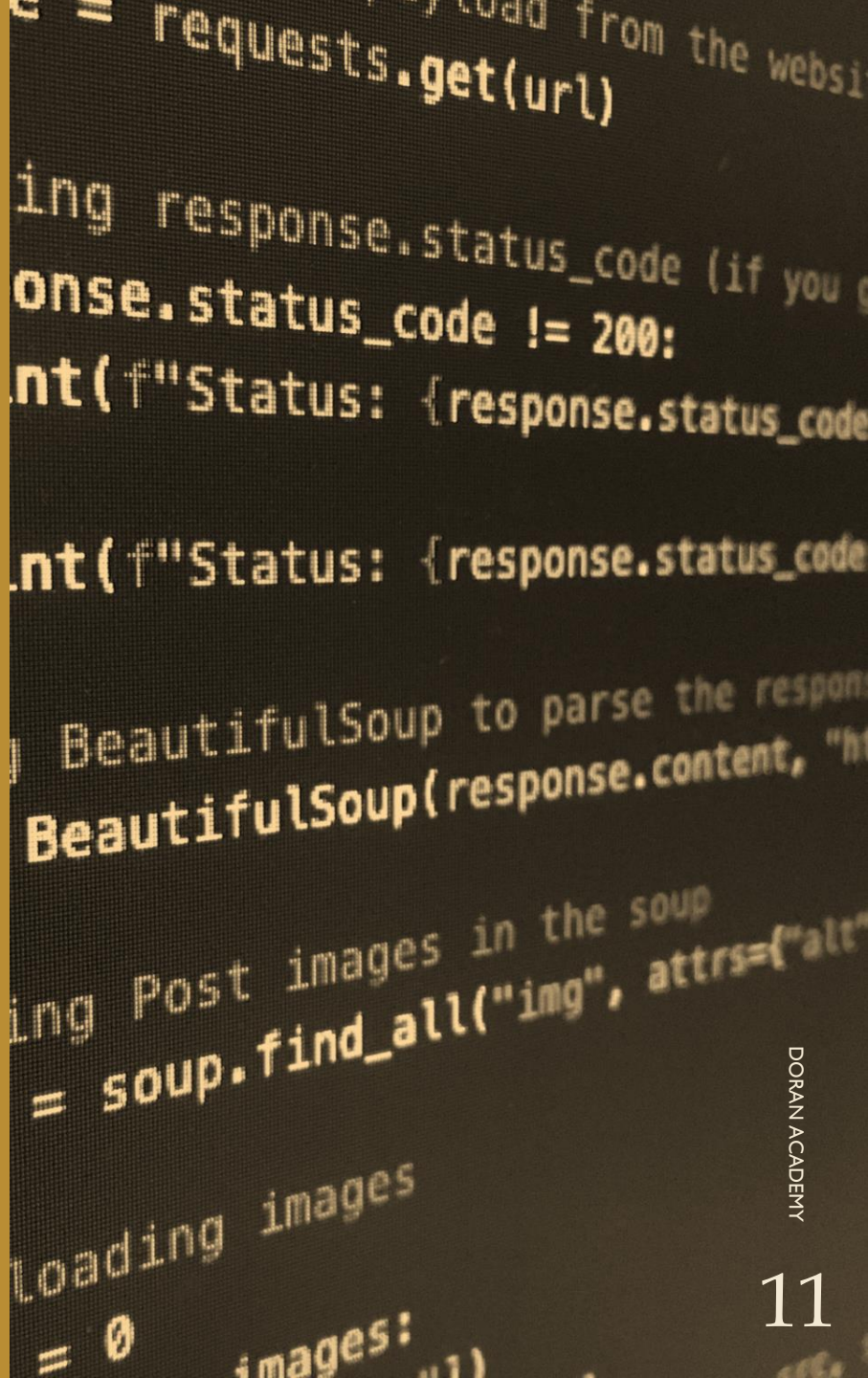
THREADING – P1

- What is a Thread?
- Starting a Thread
- Daemon Thread
- Joining Threads
- Multi-Threading
- Race Condition



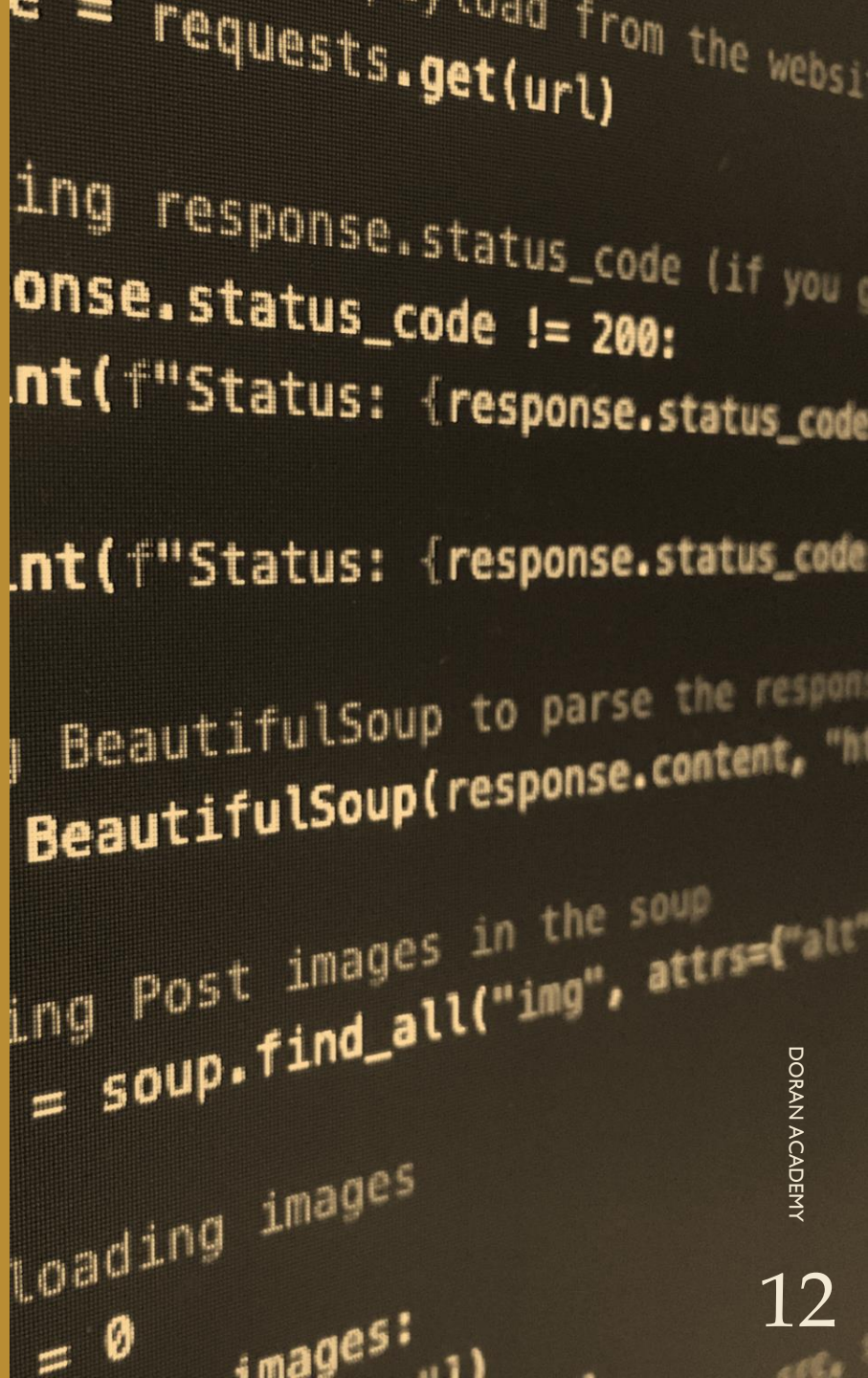
THREADING – P2

- Synchronisation
- Deadlocks
- Thread Pools
- Semaphore
- Barrier
- Timer



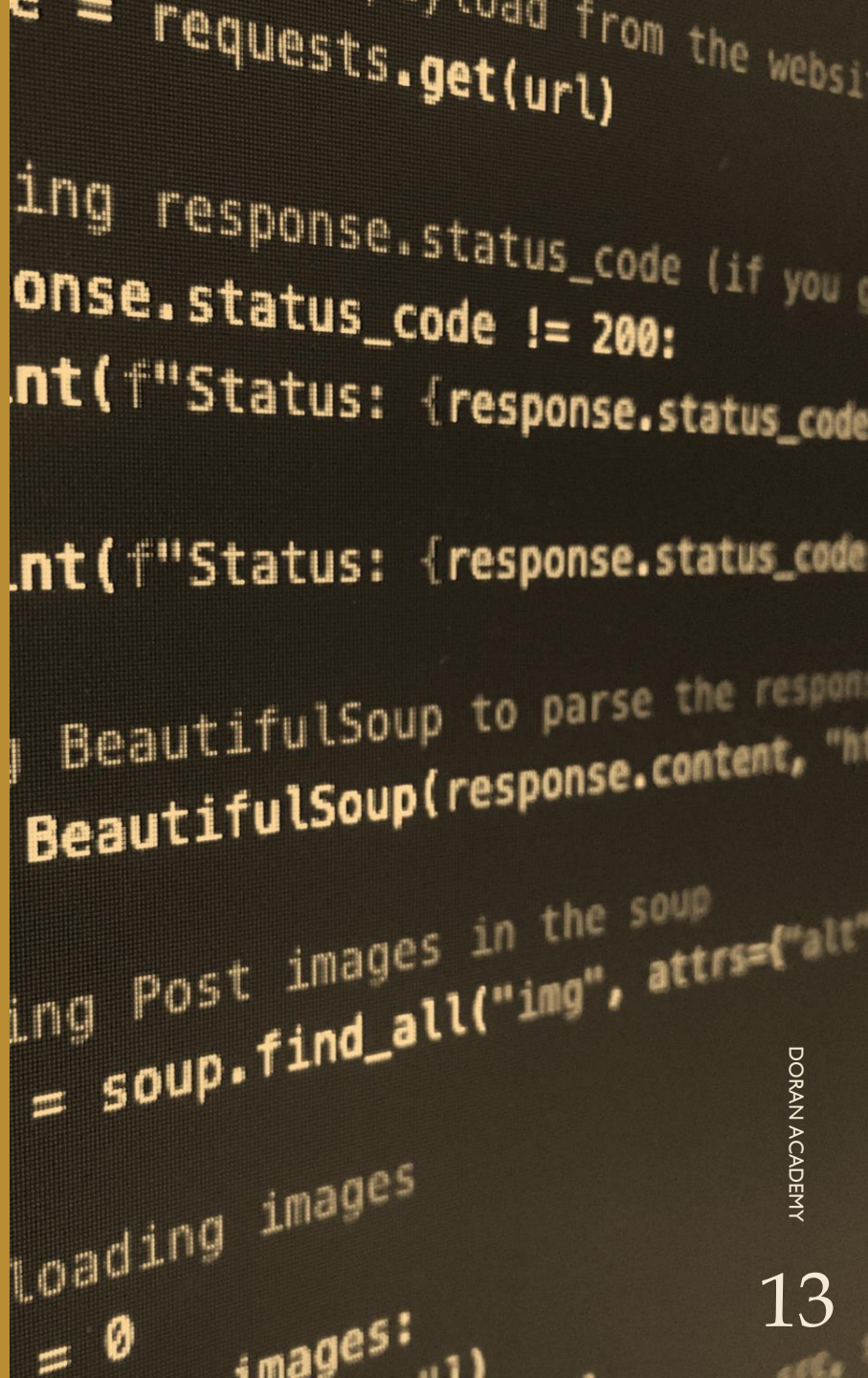
ASYNCIO – P1

- Asyncio Explained
- Where Does Asyncio Fit in?
- Why Asyncio is Ridiculously Hard?
- Awaitables
- Rules
- Coroutines
- Chained Coroutines



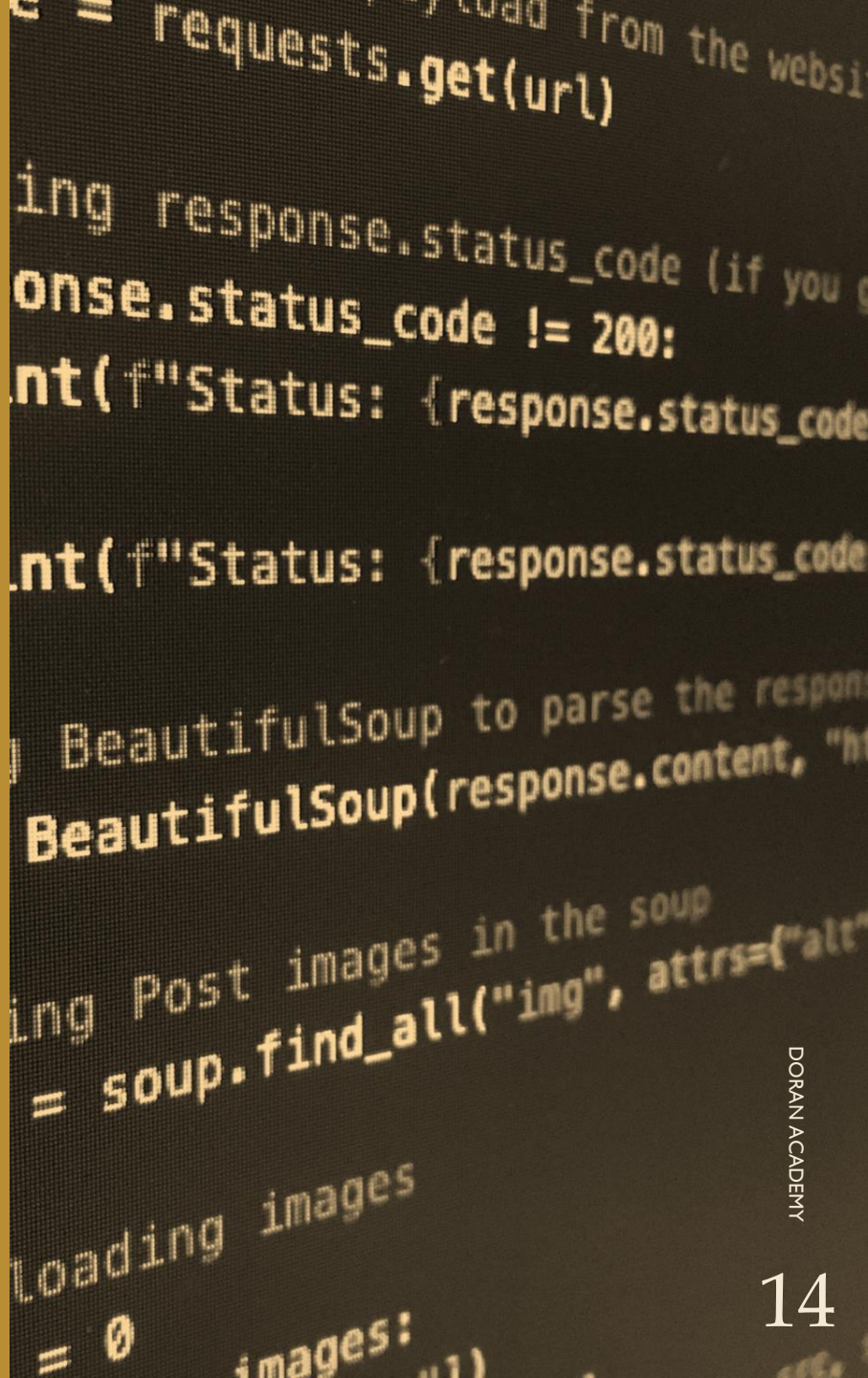
ASYNCIO – P2

- Asyncio and Queues
- Async Generators
- Async Comprehensions
- Event Loop
- Async Requests



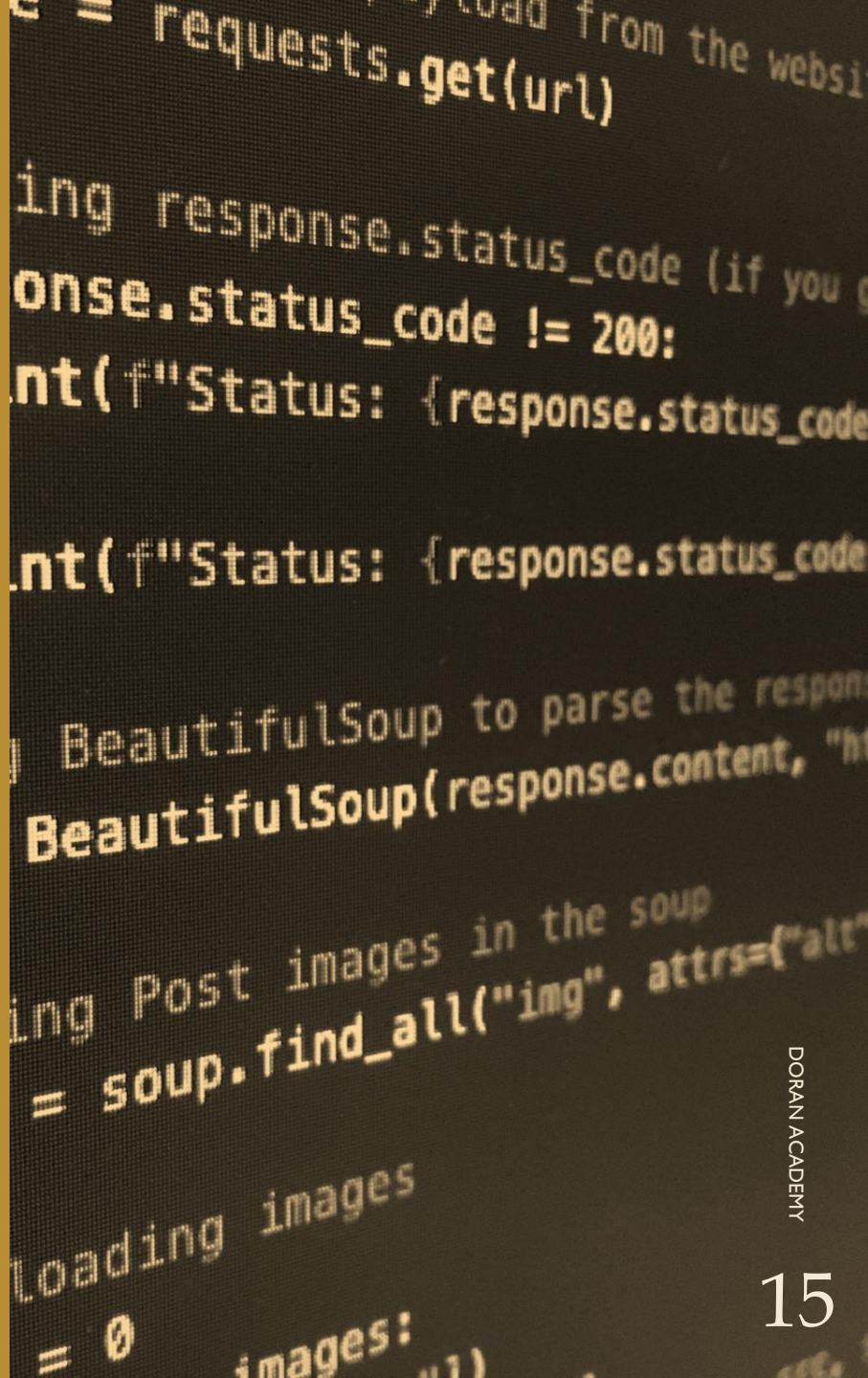
LINKED LISTS

- Introducing Linked Lists
- Singly Linked Lists
- Doubly Linked Lists
- Circular Linked Lists
- Queues
- Stacks
- Deques



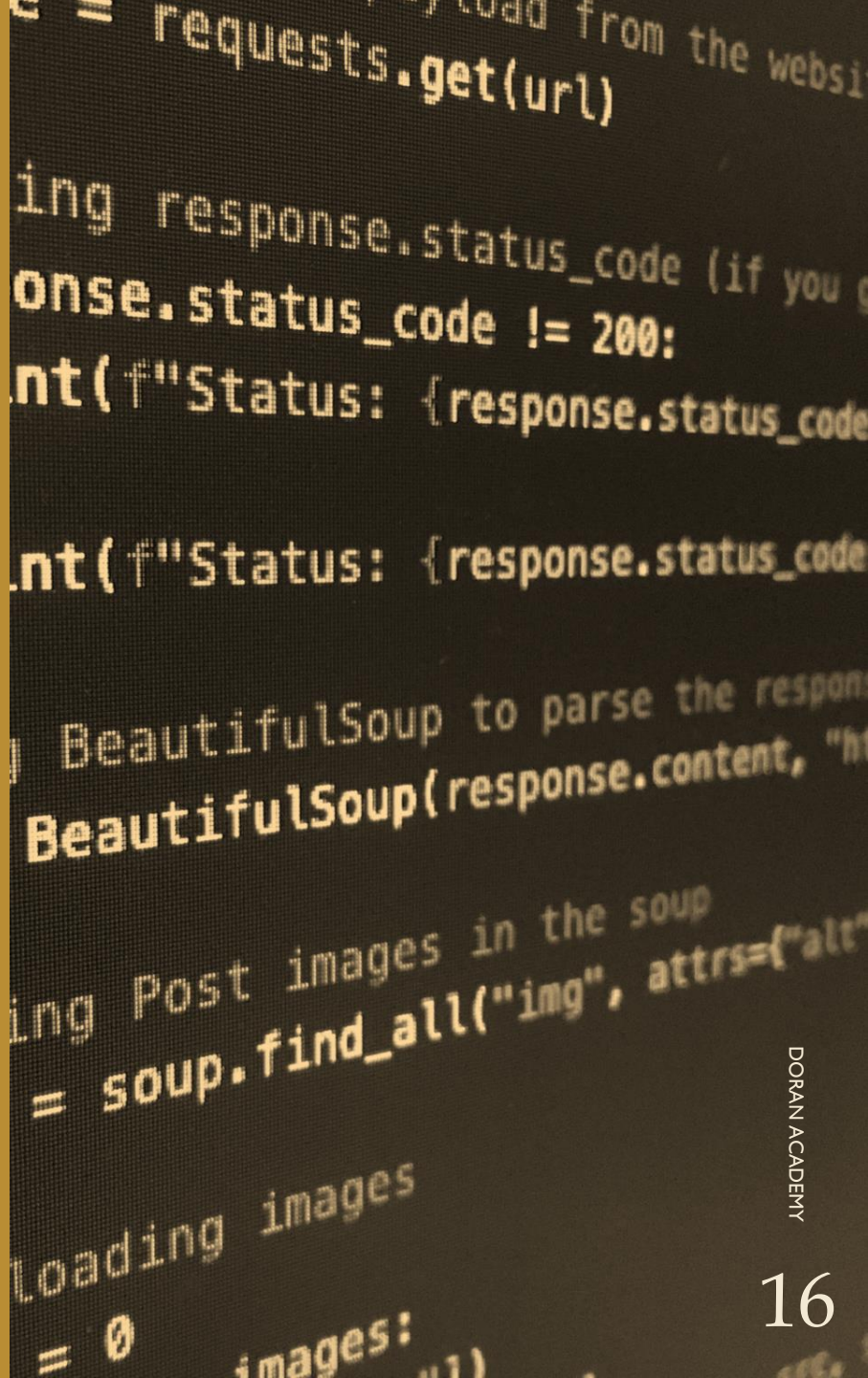
API – P1

- HTTP Protocol and HTTP Header
- HTTP Message Types
- Restful API
- Introducing fastAPI
- API Call
- Getting to Know JSON Format
- Working with Restful APIs
- Project: Getting Data From ‘NASA’ Mars Rover



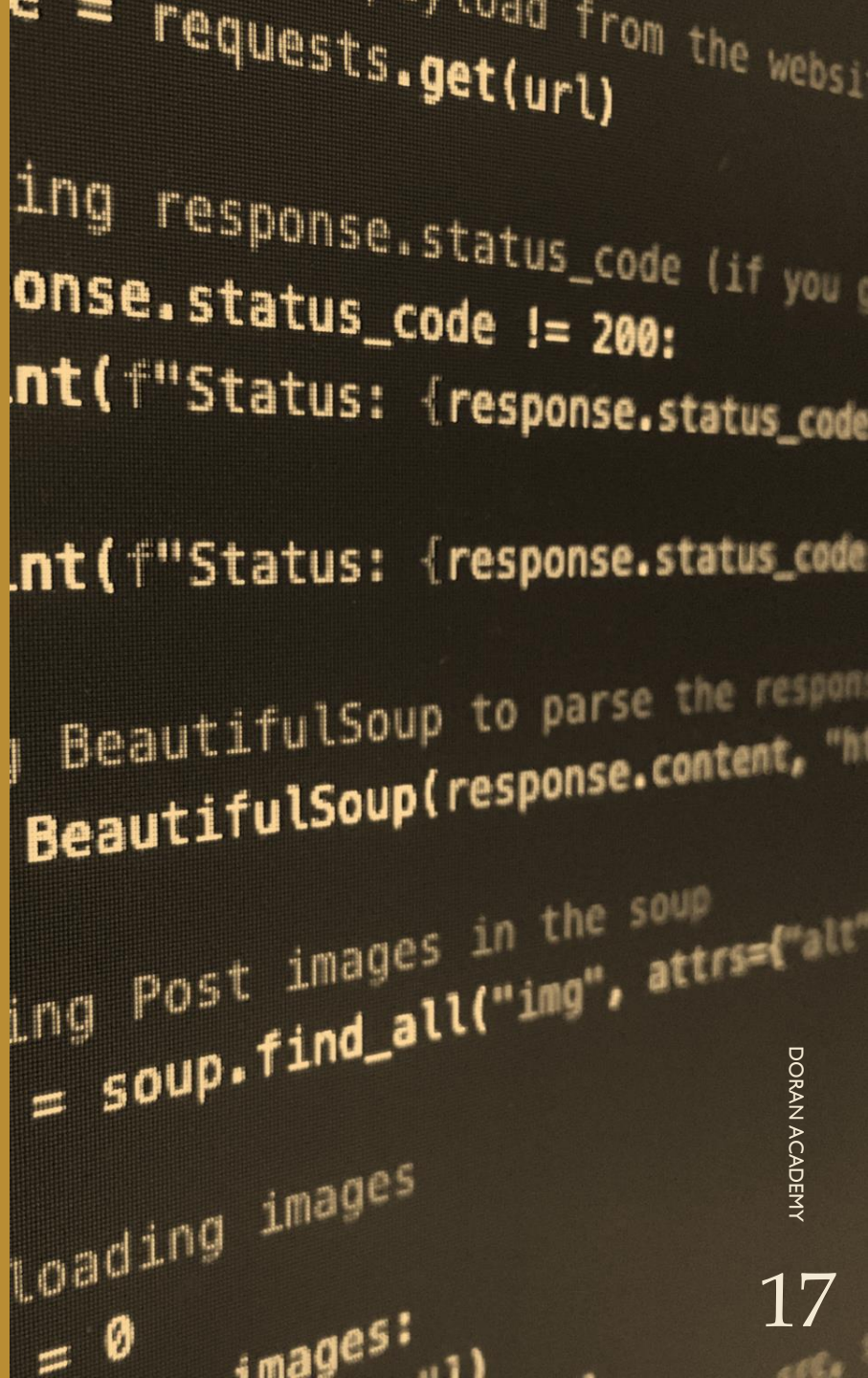
API – P2

- Writing Your First API
- Path Parameters
- Enumerations
- Query Parameters
- Swagger UI



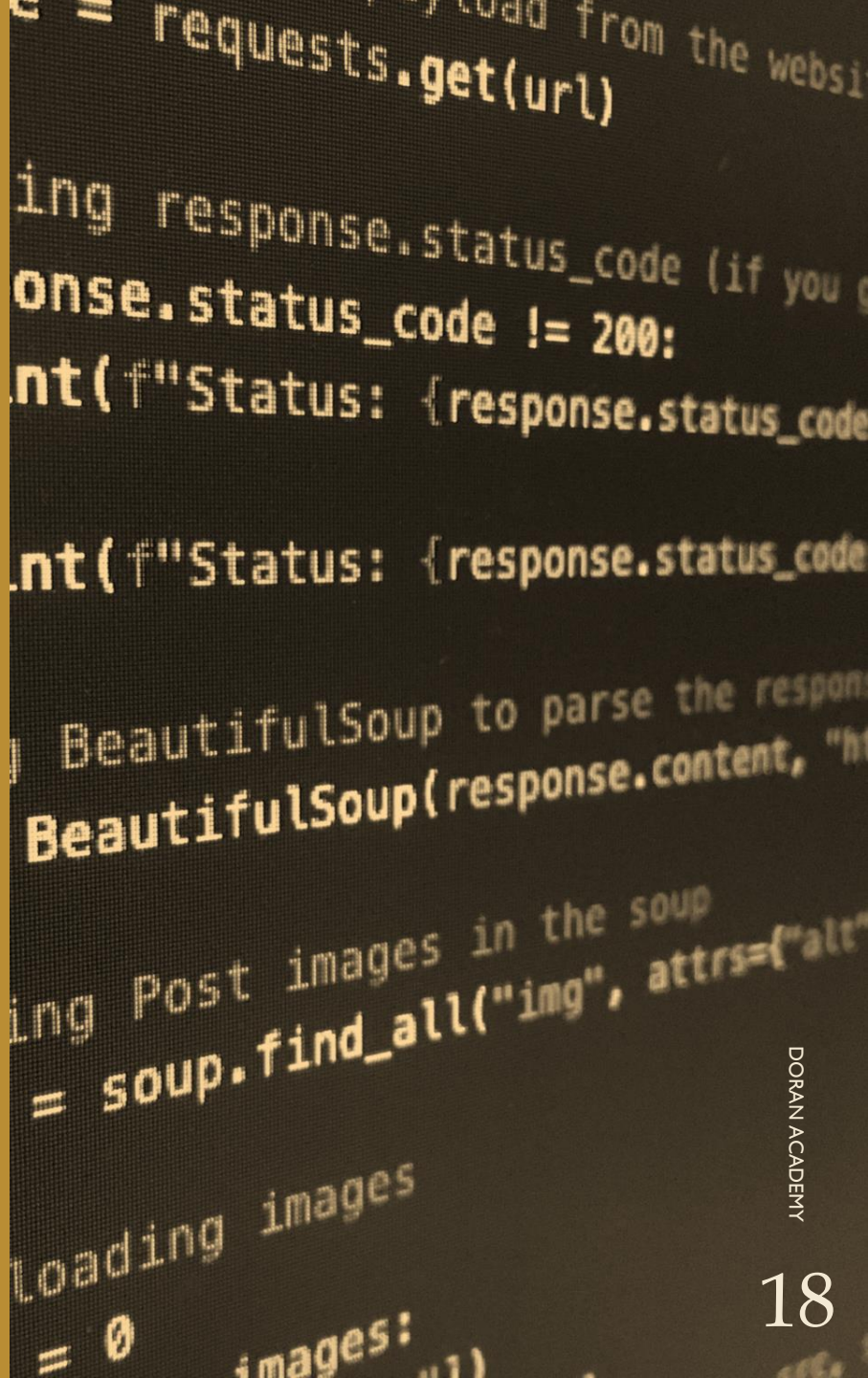
BONUS: DESIGN PATTERNS

- Singleton
- Observer
- Proxy
- …



BONUS: DESIGN STRATEGIES

- Monolithic
- Microservice
- Test Driven
- …



NOTES

WEBSITES

- www.python.org
- www.realpython.com

TEXTS

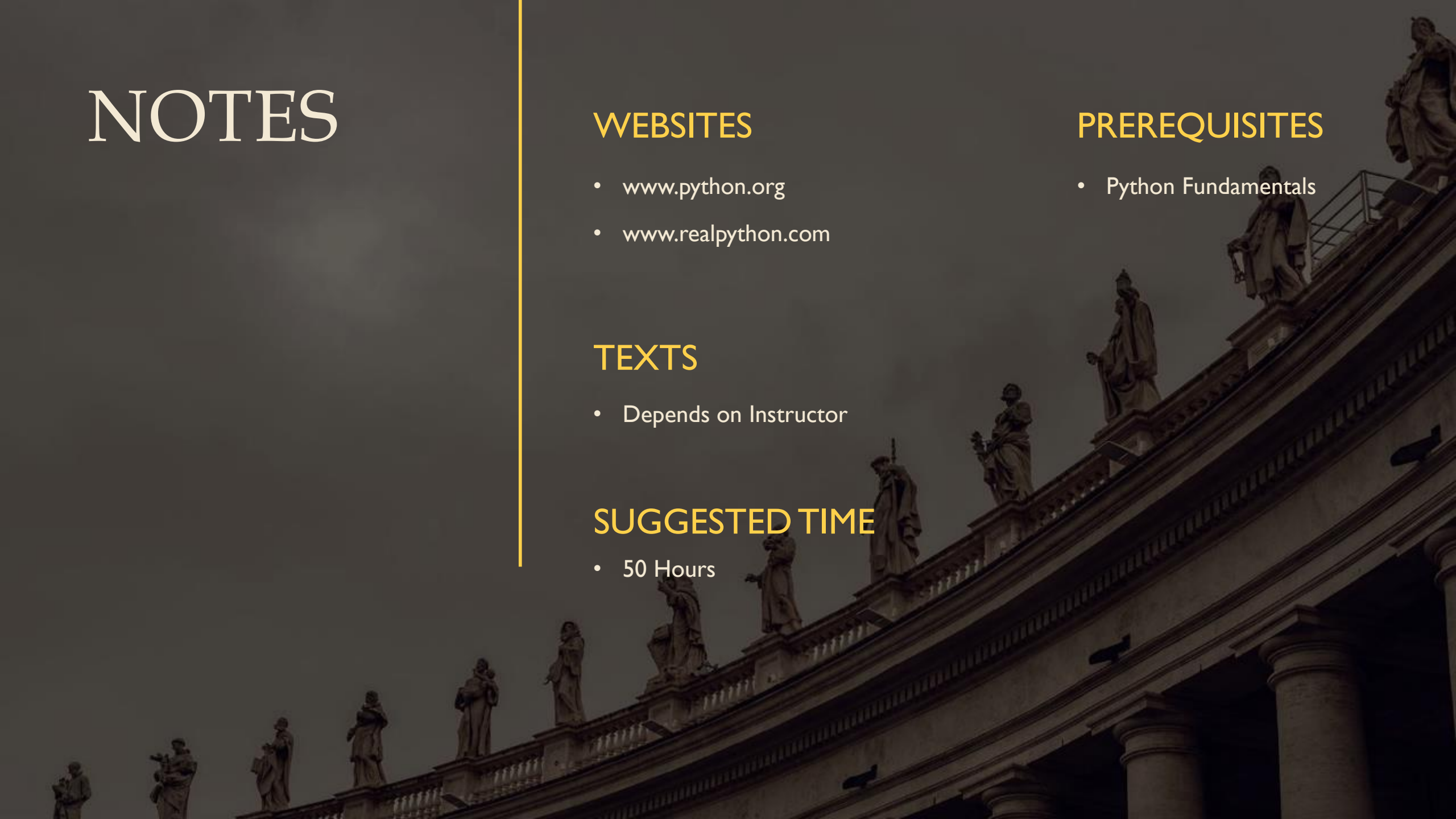
- Depends on Instructor

SUGGESTED TIME

- 50 Hours

PREREQUISITES

- Python Fundamentals



DOCUMENT HISTORY

Author	Version	Revision	Date / Time	Department	Validity
Mehdi Shokri	1.0.0		16-05-2023	Development	3 Months