Scientific Software Development with Python

Part 1 — Recap

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Agenda

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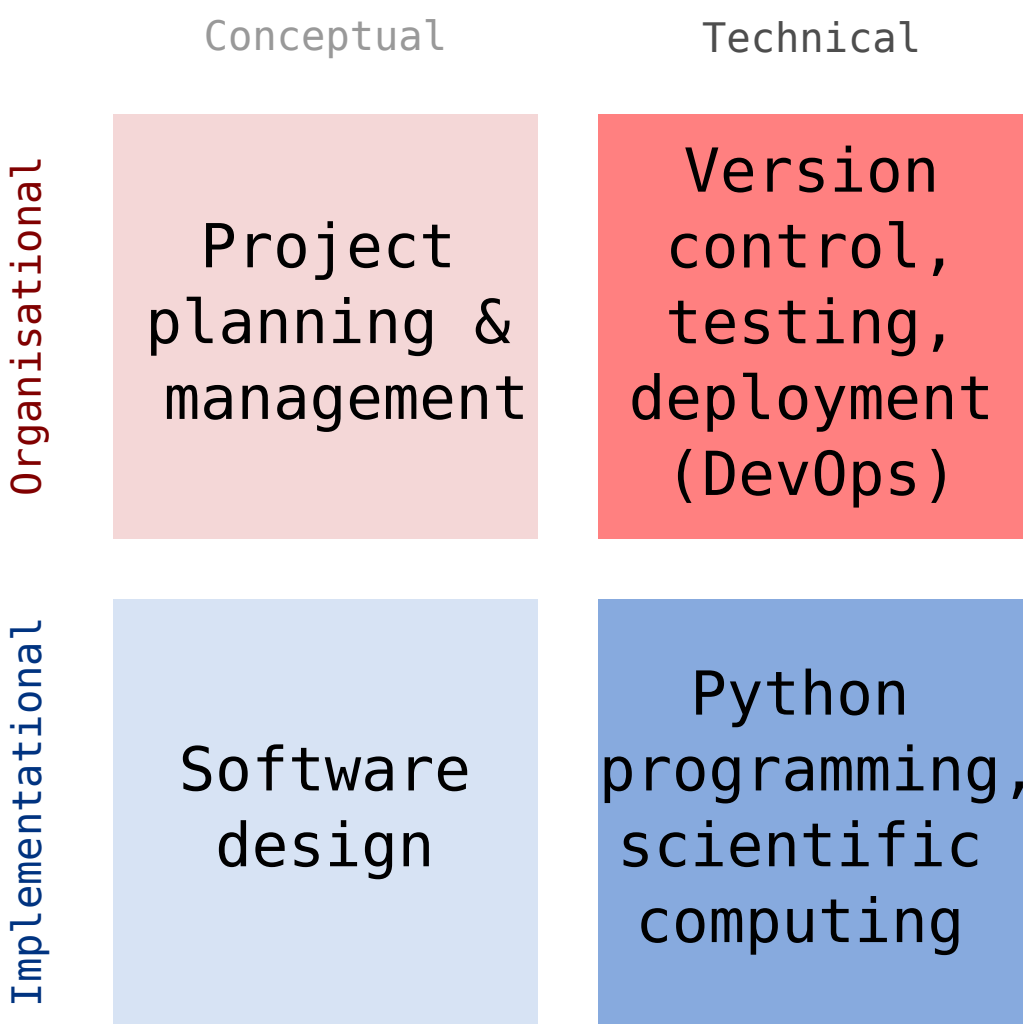
1. Recap

2. Preview

What we have learned so far



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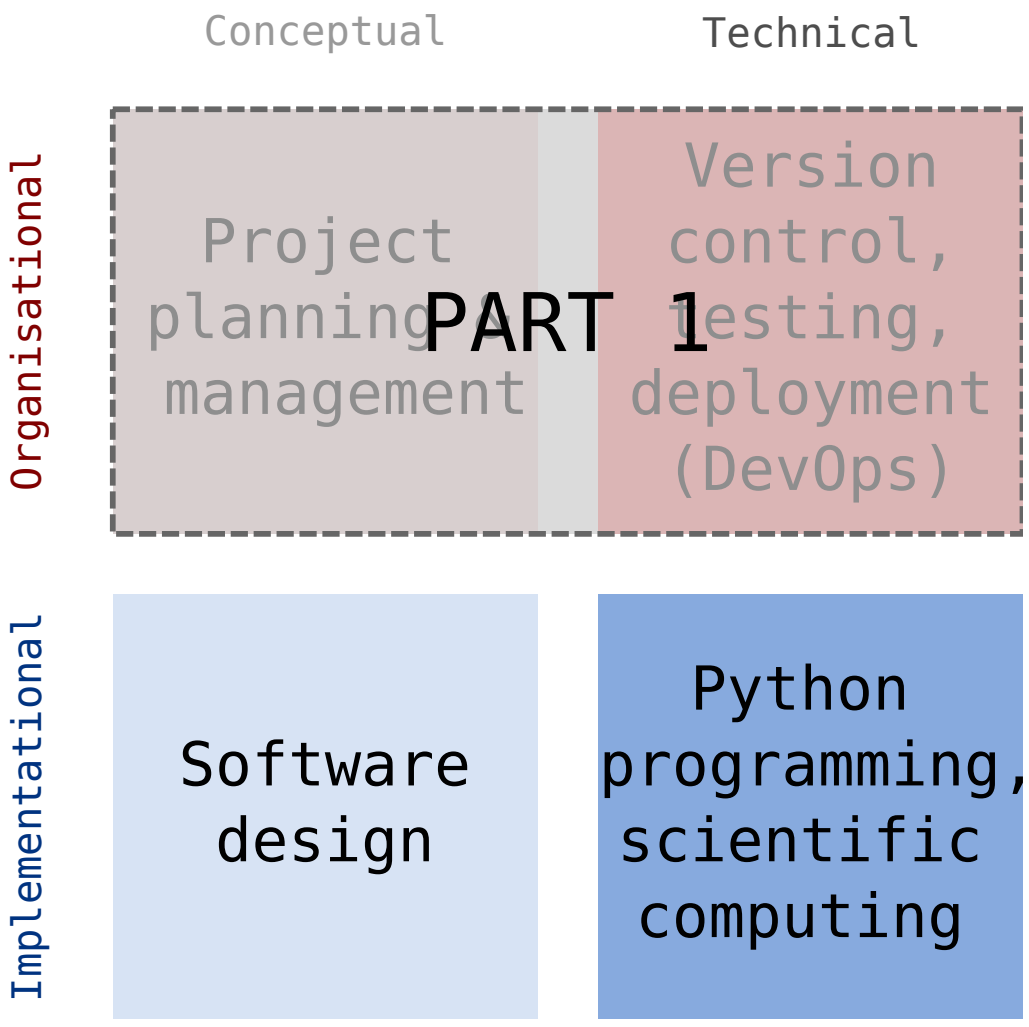

Agile project management

1. Embrace and acknowledge uncertainty:
   - We can't plan everything ahead, requirements will likely change
2. Iterative development
   - Release early, release often
   - Sprint-based process model

We should make use of Agile practices and tools (DevOps) to make Agile work.

Version control

- Using git and GitHub

Testing

- Unit testing with Pytest

Packaging

- Defining packages
- Publishing packages

Documentation

- Writing documentation with Sphinx

Continuous integration

- Automating DevOps with GitHub

Other useful tools

- Code formatter: black
- Linter: pylint
- Test coverage: Coverage.py

A typical development workflow

- Central repository contains **working** development version
- Developers implement features in personal forks
- When a feature is ready, it developer makes pull request to central repository
- Good practice: Request code review from other developer to ensure that code satisfies quality requirements

Definition of done

- What is required for a feature to be considered done?
- Should be agreed upon by the team
- Typical requirements:
  - Unit tests
  - Acceptance test (example) for user story
  - Documentation
  - No decrease in test coverage

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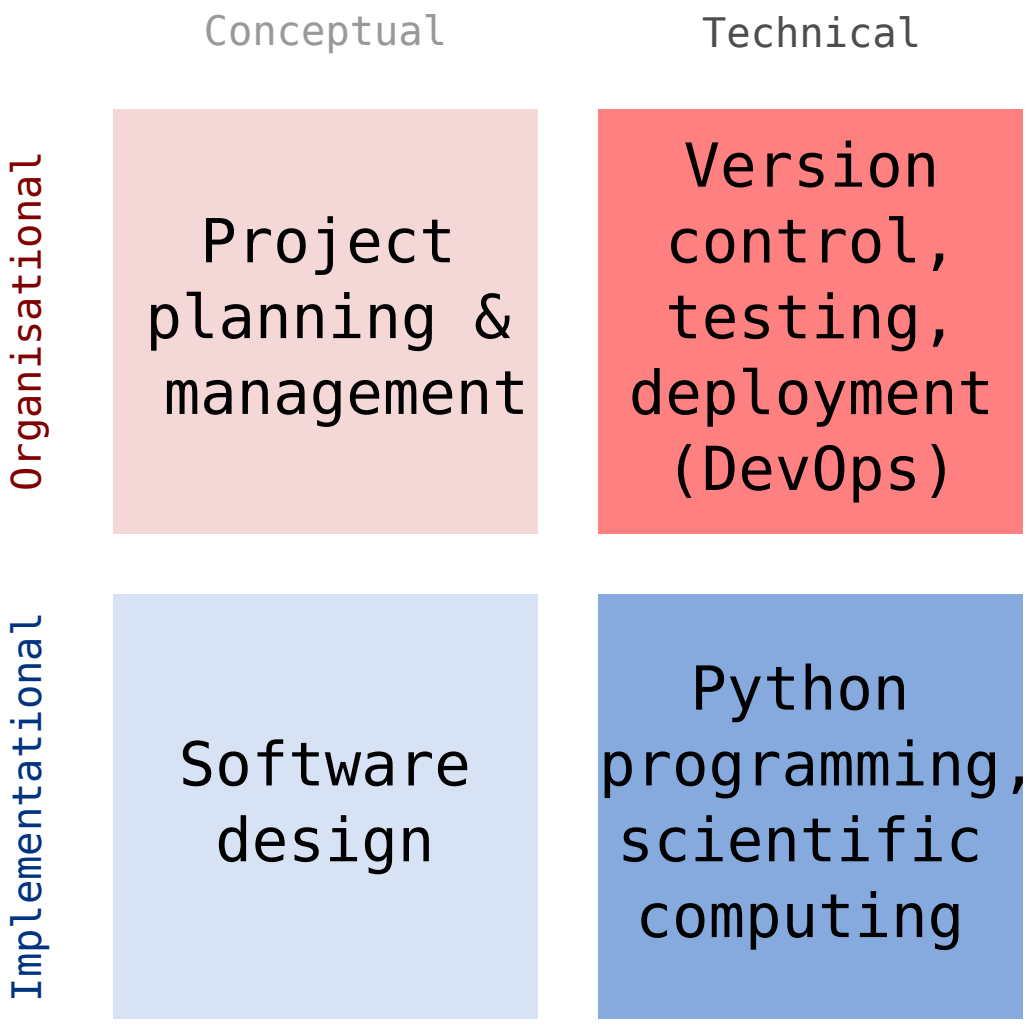
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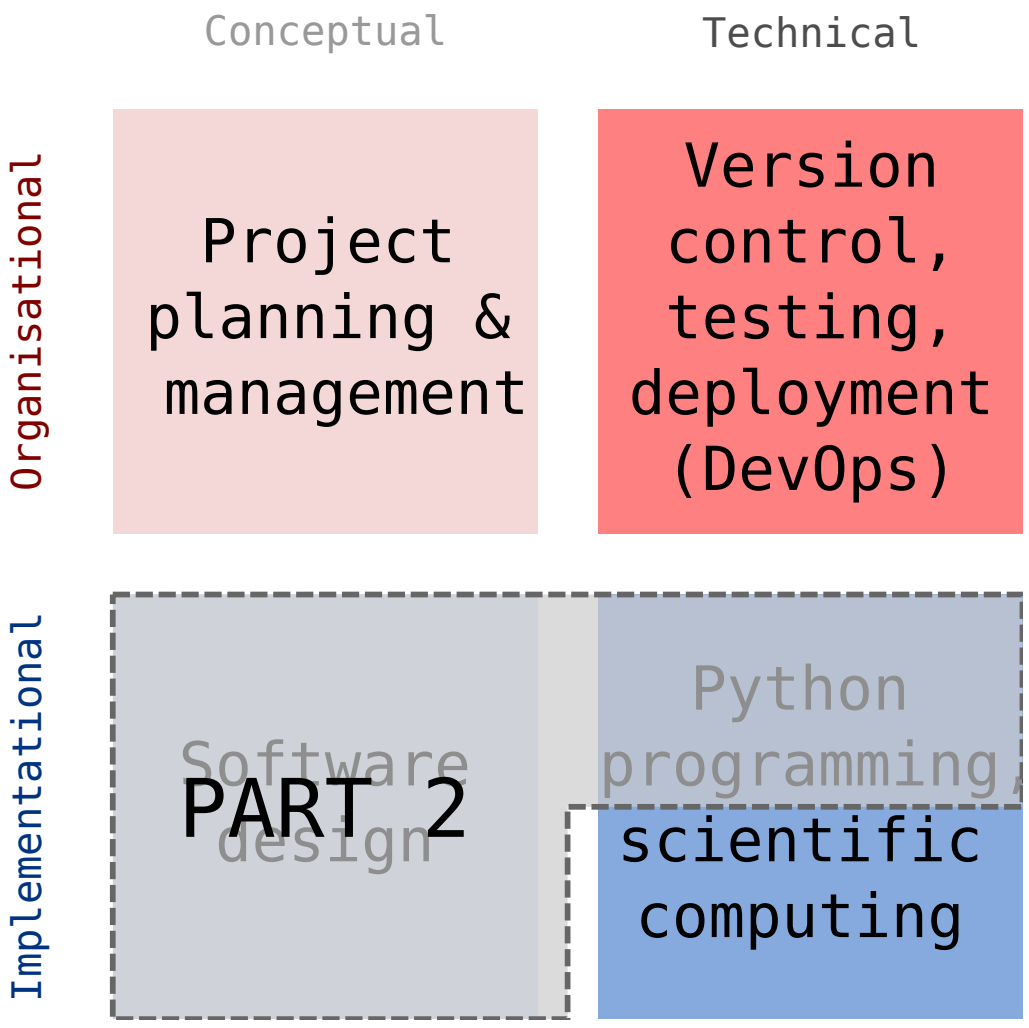
Technical
Organisational
Implementational
Project planning & management
Version control, testing, deployment (DevOps)
Software design
Python programming, scientific computing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PART 2

Topics

- Object orient programming with Python (Lecture 1 and 2)
- Python standard library (Lecture 3)
- Python recipes (Lecture 4)