

# Real Programmers Don't Write Research Software

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**Sydney Informatics Hub**



# Sydney Informatics Hub

- **Statistics**
- **Data science**
- **Software engineering**
- **Bioinformatics**
- **HPC**

**<https://www.sydney.edu.au/research/facilities/sydney-informatics-hub.html>**

# Object-oriented programming

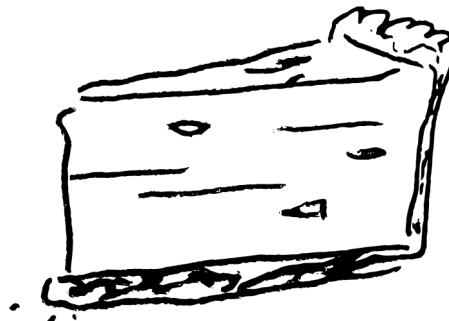


# **“I’m not a software engineer”**

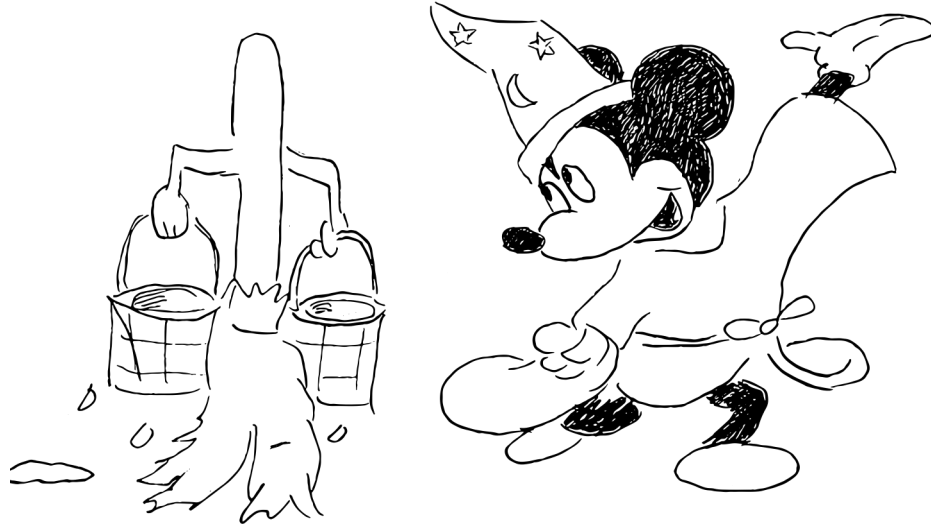
- I don’t have formal tech qualifications**
  - I’m a researcher**
  - I’m a data scientist**
  - I’m a bioinformatician**
- 
- I’ll fix things without you having to raise a ticket**
  - I don’t need to jump through enterprise IT hoops**

# Real programmers

- **Write in C**
- **Don't use high-level languages**
- **Do their own memory management**
- **Don't do web development**
- **Don't use GUIs**
- **Don't use IDEs**
- **Use vim**



# The Sorcerer's Apprentice



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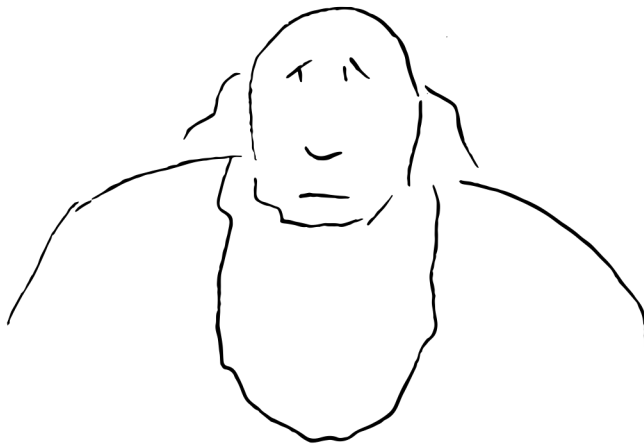
# The Sorcerer





# pipefail

```
#!/bin/bash  
set -e -u -o pipefail
```



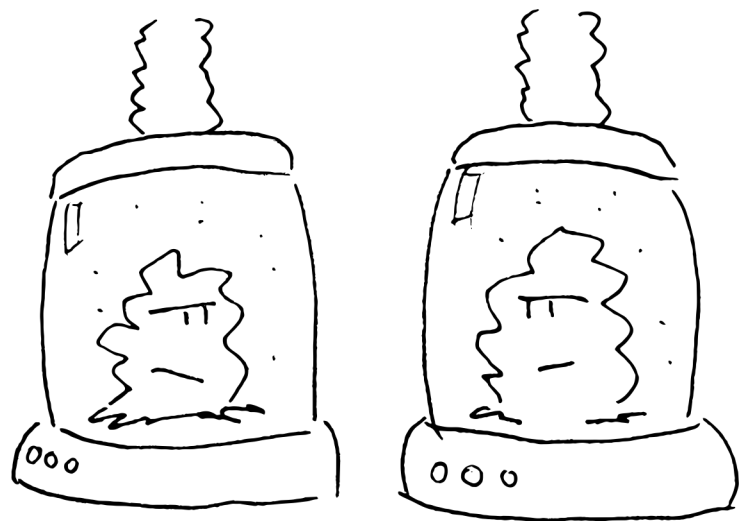
# Guardrails

- **Checking things automatically**
- **Doing the same thing twice**
- **Breaking things safely**
- **Collaborating safely**



# Environments

- **Separate dependencies for different projects**
- **Python: virtualenv, conda**
- **R: renv**



# Static analysis

- **Check your code without running it**
- **Enforce stylistic conventions**
- **Eliminate typos and silly errors**
- **Python: black, flake8**
- **R: lintr, styler**
- **pre-commit**



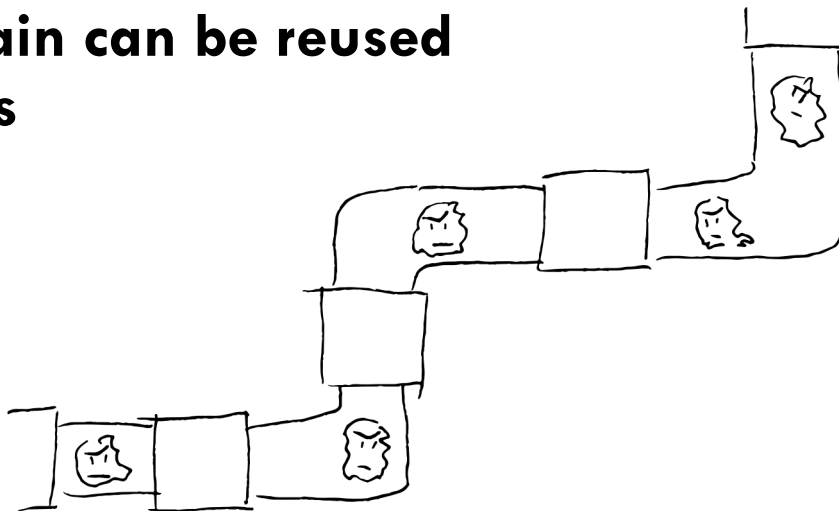
# Git

- **It's an essential part of modern IT**
- **It's impossible to use**
- **Let your IDE do it for you**



# DevOps tools

- **Tools are designed to scale from laptops to cloud**
- **Capture old tech stacks in containers**
- **Pipelines from one domain can be reused for computation in others**



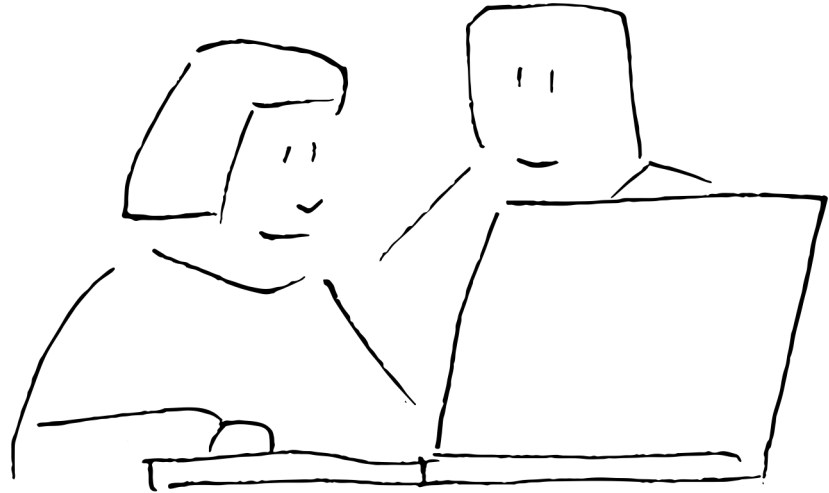
# Culture

- **Felienne Hermans: *The Programmer's Brain***
- **Confusion is uncomfortable**
- **We react to this with visceral language**
- **This can contribute to gatekeeping and exclusion**



# Code review

- **Vulnerable, and therefore intimidating**
- **Needs team support**
- **Has to be budgeted for**
- **Collaboration, not criticism**





# Building community

- **Research Software Engineering Unconference 2022**
  - Researchers who code and IT professionals
  - Overcoming isolation between teams and within institutions
- **NumPy: Newcomers Hour**
  - Make open source projects more inclusive

# Thank You!

- Links and references: <https://etc.mikelynych.org/eres22/>
- Questions?

