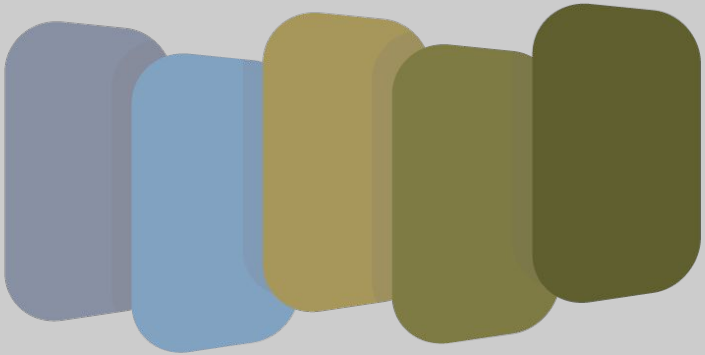
Level Up!
Your Scientific Coding

Level 2: Unit Testing



CSDMS

community surface
dynamics modeling system

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Purpose

What's our goal here?

It's worth it for you, a busy scientist, to take the time to learn, and use, unit testing.

You'll save time and energy in the long run.

Agenda

Here's what we're showing you in the next 30 minutes.

- What?
- Why?
  - grad student
  - postdoc
  - researcher
  - professor
- Where?
  - our favorite online resources
- How?
  - a short demo of unit testing with pytest

What?

What it unit testing?

- When you write code, write tests that check that the code produces expected results
- Keys: isolate, cover, automate, reproduce

Why?

Why should I use unit testing if I'm a grad student?

- Test data analysis code for your thesis
- Job skill

Why?

Why should I use unit testing if I'm a postdoc?

- Test code for journal articles
- Model development
- Productivity tool

Why?

Why should I use unit testing if I'm a research scientist?

- Confidence that changes don't break existing code
- Stop bugs before they happen!
- Safety in a collaborative project

Why?

Why should I use unite testing if I'm a professor?

- Metrics for funding agencies
- Teamwork

Where?

Here are some of our favorite resources for learning how to use git and GitHub effectively.

- *Code Complete*
  wikipedia.org/wiki/Code_Complete
- Ministry of Testing
  ministryoftesting.com
- pytest documentation
  docs.pytest.org
- Clune and Rood (2011)
  (included in level-up repo)

How?

A live demonstration of using git and GitHub.

github.com/csdms/level-up

Thank you!

Thanks for watching this webinar. We hope you enjoyed it!

- You'll get a reminder when webinar recording is posted
- Example repository
  github.com/csdms/level-up
- Next webinar: object-oriented programming!
  csdms.colorado.edu/wiki/Webinars