

Bioinformatics session

3rd Annual workshop on
bioinformatics and variant
interpretation in InPreD

https://inpred.github.io/25-06_bioinfo_ws/bioinfo_ws



1. Unit testing

What is unit testing?

- test smallest piece of code that can be logically isolated in software application (function, subroutine, method)
- the smaller the better - more granular view of what is going on; also faster
- should not cross systems (database, filesystem, network) -> integration and functional tests

Example

```
# calculator.py
def add(x, y):
    """add numbers"""
    return x + y
```

```
# test_calculator.py
import calculator

def test_add():
    assert calculator.add(1, 2) == 3
```

Why do we need unit testing?

- early defect detection
- code quality improvement
- facilitates refactoring
- faster development cycles
- better documentation
- enables more frequent releases

How to design a unit test?

- identify the unit (function, method)
- what is its functionality?
- what is the input (correct and incorrect)?
- how to handle incorrect input? (edge cases, invalid data)
- what does it return?
- positive and negative results should be tested

Set up unit testing for your functions

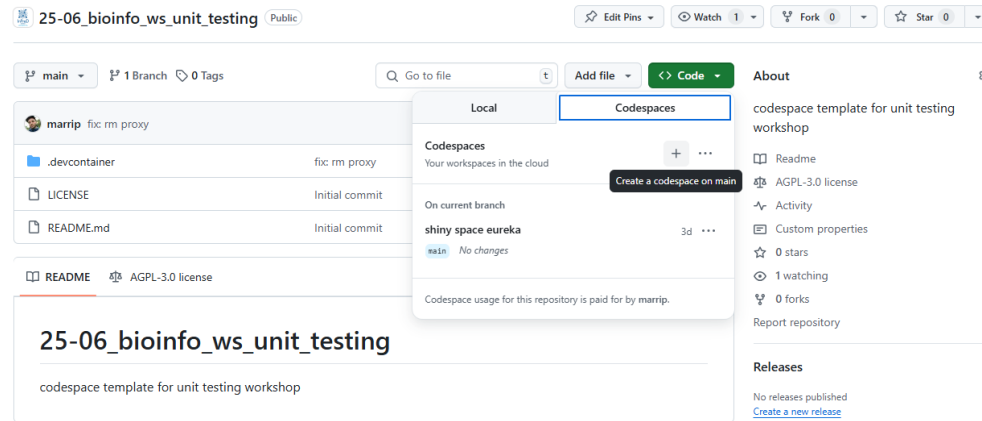
- install pytest

```
$ pip install pytest
```

- add your function to a module at `my_module/my_module.py`
- add your unit test at `my_module/tests/my_module_test.py`
- in the test file import your module `from my_module.my_module import my_function`

First exercise

- go to https://github.com/InPreD/25-06_bioinfo_ws_unit_testing



The screenshot shows the GitHub repository page for '25-06_bioinfo_ws_unit_testing' by user 'marrip'. The repository is public and has 1 branch and 0 tags. A dropdown menu is open from the 'Code' button, showing options for 'Local' and 'Codespaces'. The 'Codespaces' section lists 'On current branch' and 'shiny space eureka' (3d ago, no changes). A button 'Create a codespace on main' is visible. The repository description is 'codespace template for unit testing workshop'. The README section shows the repository name and description. The right sidebar contains links for 'About', 'Releases', 'Packages', 'Languages' (showing Dockerfile at 100.0%), and 'Suggested workflows'.

25-06_bioinfo_ws_unit_testing (Public)

Edit Pins Watch 1 Fork 0 Star 0

main 1 Branch 0 Tags

Go to file

Add file Code

About

codespace template for unit testing workshop

Readme

AGPL-3.0 license

Activity

Custom properties

0 stars

1 watching

0 forks

Report repository

Releases

No releases published

Create a new release

Packages

No packages published

Publish your first package

Languages

Dockerfile 100.0%

Suggested workflows

Based on your tech stack

First exercise

← →

25-06_bioinfo_ws_unit_testing [Codespaces: shiny space eureka]

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EXPLORER

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25-06_BIOINFO_WS_UNIT_TESTING [CODESPA...

> .devcontainer

🔑 LICENSE

📘 README.md

[Vorschau] README.md

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25-06_bioinfo_ws_unit_testing

codespace template for unit testing workshop

PROBLEME

AUSGABE

DEBUGGING-KONSOLE

TERMINAL

PORTS

🐚 bash

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```
root@codespaces-defab7:/workspaces/25-06_bioinfo_ws_unit_testing#
```

> GLIEDERUNG

> ZEITACHSE

<> Codespaces: shiny space eureka

🔗 main ↺

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👤 Layout: German

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First exercise

- pytest was already installed in the codespace
- the suggested layout was already applied
- create a branch for your work:

```
$ git checkout -b unit-tests-<your name>
```

- start with the first exercise in `first/tests/first_test.py`
- whenever you are done, commit your changes (use [commit message conventions](#)):

```
$ git add first/tests/first_test.py  
$ git commit -m "test: <your commit message>"
```

- and we push them to GitHub:

```
$ git push --set-upstream origin unit-tests-<your name>
```

2. Nextflow