

Computational Sciences Projektseminar

Exercises • git • Github

Solution to the scalar_product, mean, and linear_regression exercises

```
def scalar_product(a, b):
    return np.sum(np.asarray(a) * np.asarray(b))
```

np.dot(*a*, *b*)

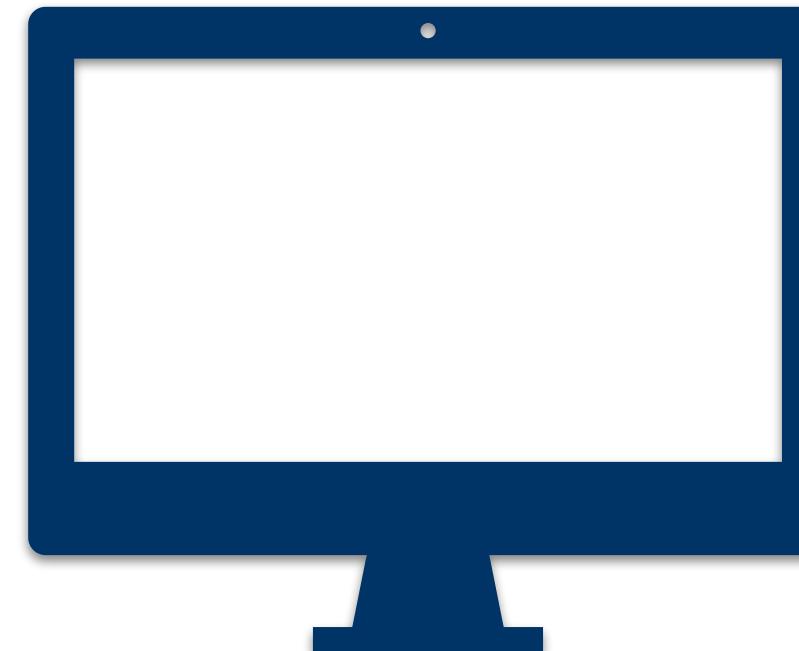
```
def mean(a):
    if len(a) == 0:
        return 0
    return np.sum(a) / len(a)
```

np.mean(*a*)

```
def linear_regression(x, y):
    x_ = np.asarray(x)
    y_ = np.asarray(y)
    mux = mean(x_)
    muy = mean(y_)
    x_ = x_ - mux
    y_ = y_ - muy
    slope = scalar_product(x_, y_) / scalar_product(x_, x_)
    const = muy - slope * mux
    return slope, const
```

np.polyfit(*x*, *y*, 1)

The git workflow • setup

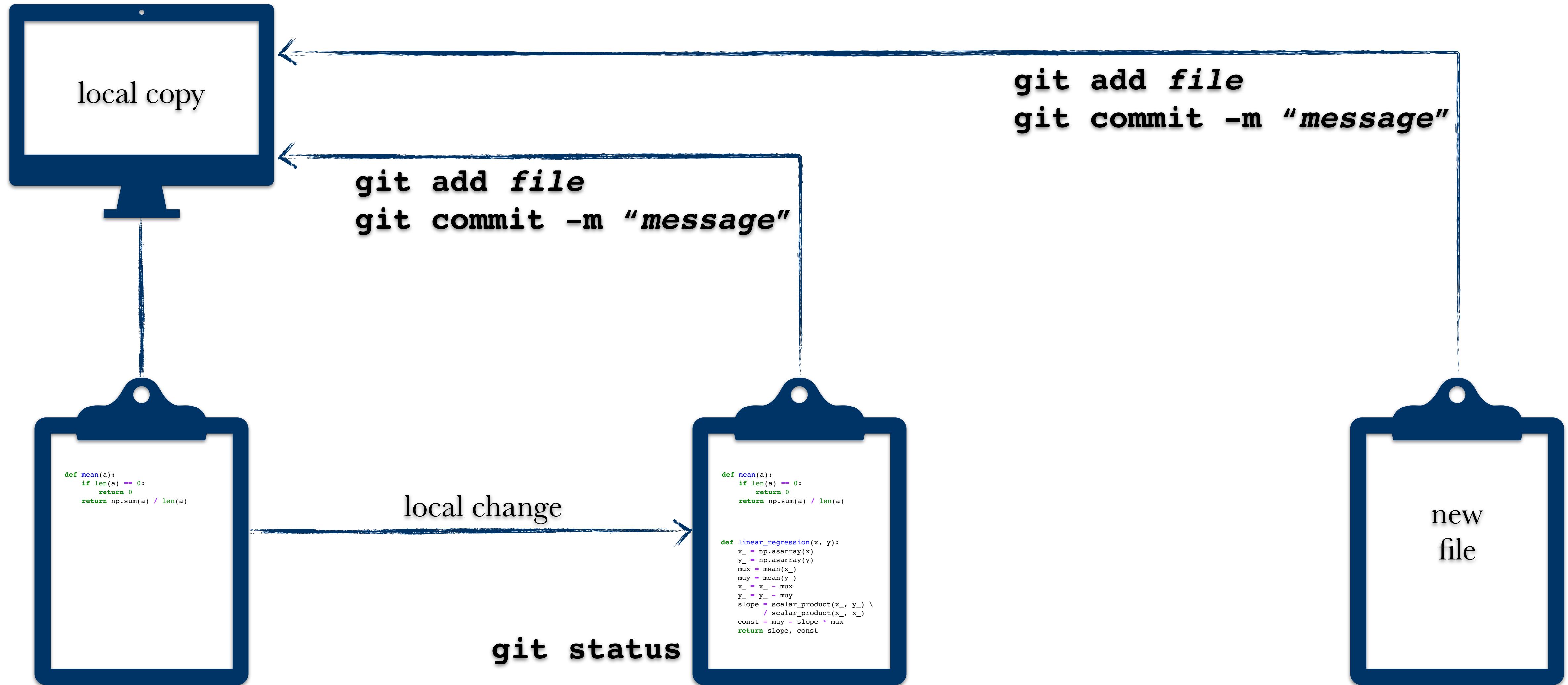


```
git config --global user.name "your name"  
git config --global user.name
```

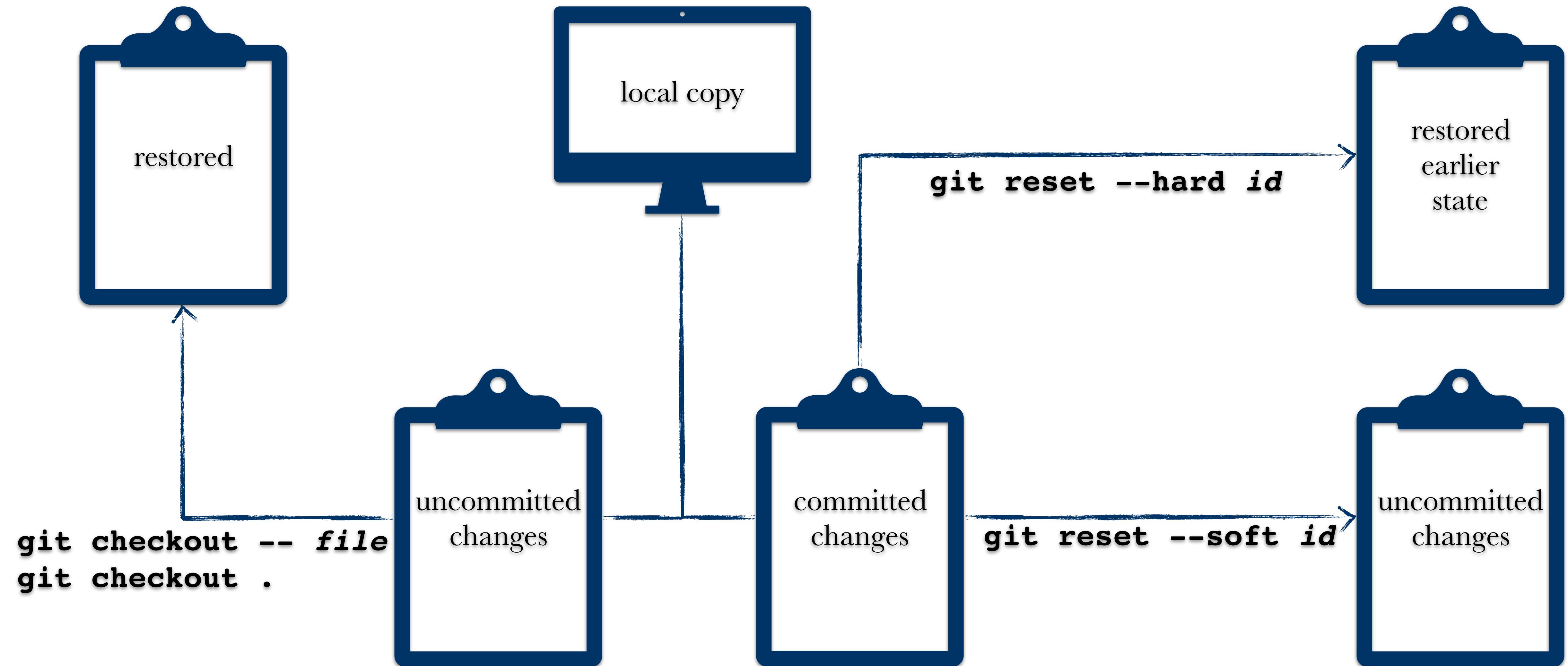
```
git config --global user.email "your@email"  
git config --global user.email
```

<https://help.github.com/articles/setting-your-commit-email-address-on-github/>

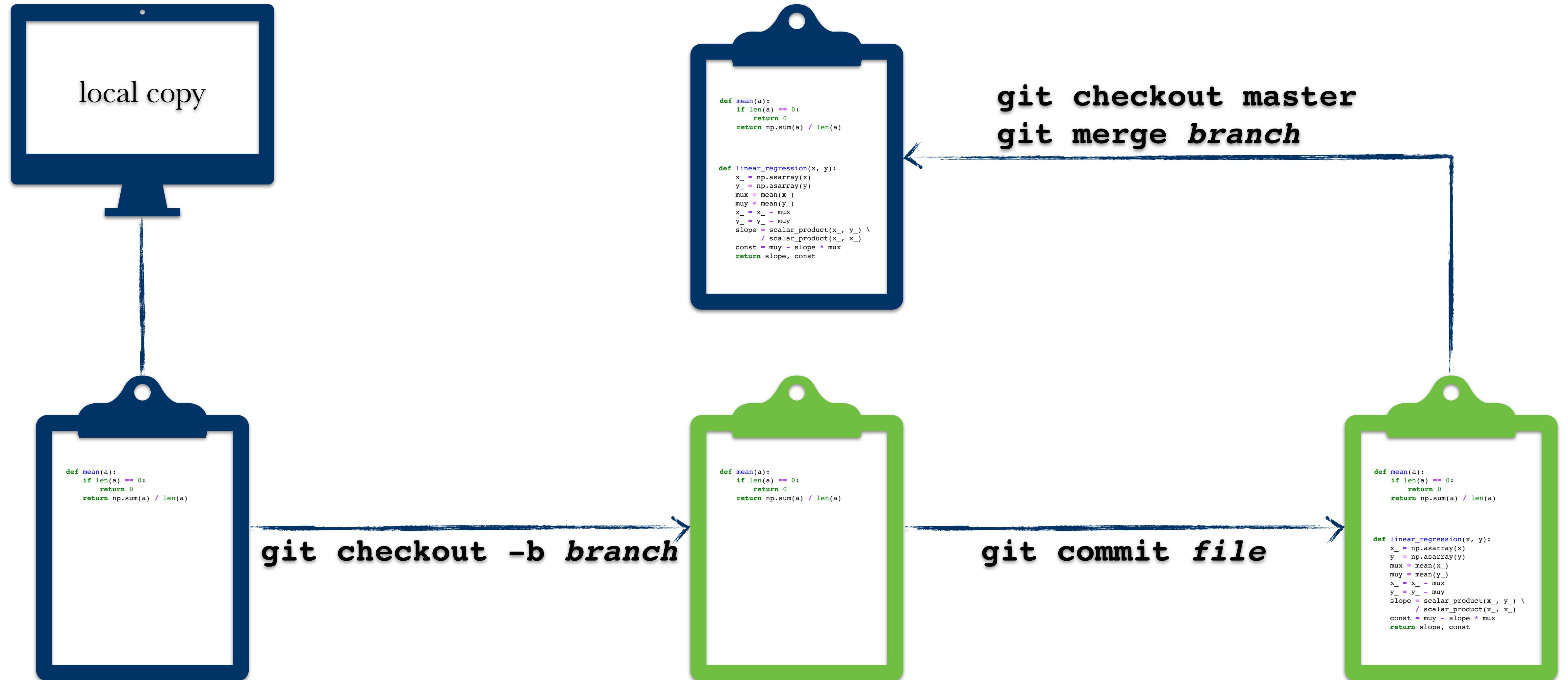
The git workflow • tracking changes and new files



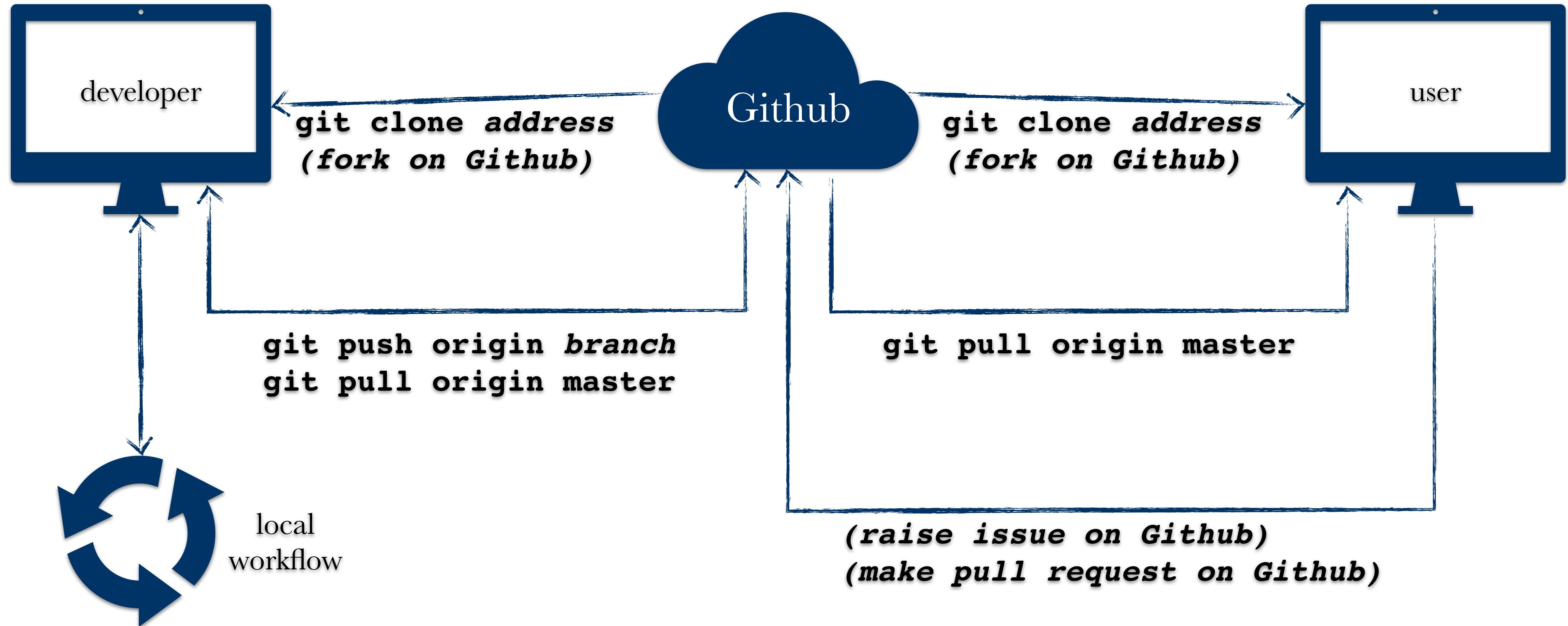
The git workflow • removing or reverting changes



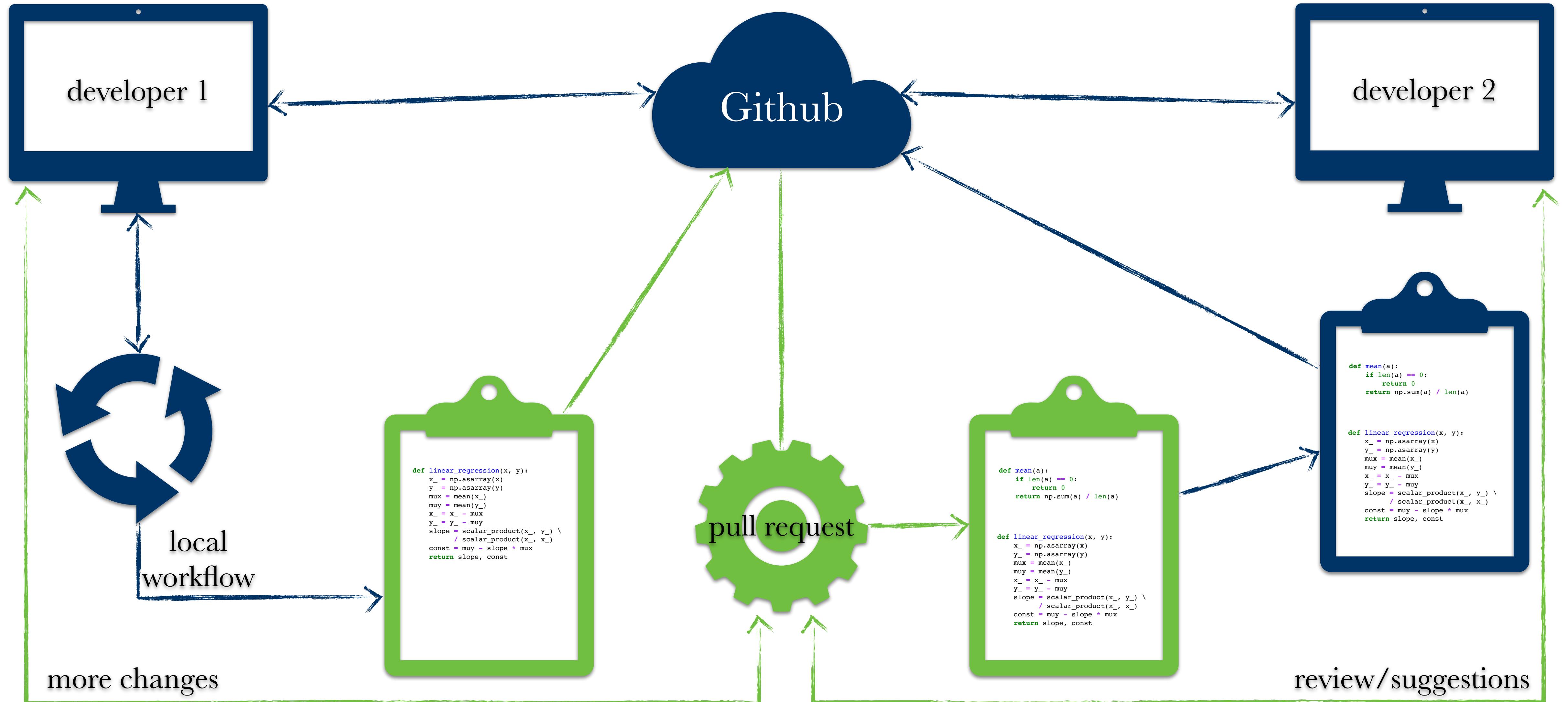
The git workflow • branching and merging



The Github workflow • overview



The Github workflow • recommended practice



The Github workflow • recommended practice

- **raise issue to address problem (bug, feature request, ...)**
- **make changes in a local feature branch**
- **push changes which fix the problem to feature branch on Github and make a pull request**
- **request code review from your peers and address their concerns/suggestions**
- **merge the pull request into the master branch and remove the feature branch**
- **do not forget to update your local copy (git checkout master, git pull origin master)**

The Github workflow • exercise

- **form teams of 2 students**
- **one student creates a repository with a simple text file (or Python script) with some mistake**
- **the other student raises an issue which addresses the problem**
- **the other student then fixes the problem and starts a pull request**
- **the first student reviews and handles the pull request**
- **switch roles and repeat**