



# Make your app modular, test only what's changed

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# Who I am

Hey, I'm Mike. I am originally from Ukraine 🇺🇦.

I started as an iOS engineer in 2009 at Readdle. Worked at Wire, Cara Care and Feeld.

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Mike Gerasymenko



# What is happening?

My hometown local charity fund:

<https://monstrov.org>



# Where I work

I am a Staff iOS engineer at Delivery Hero Logistics:

- Available in 70-something countries
- Serving over a million delivery drivers monthly

We are constantly hiring engineers. Reach out if you are interested. Or apply at

<https://careers.deliveryhero.com>

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**Glovo!**



# **Let's imagine you have a mobile application**

There are some core jobs it is doing:

- Login and registration
- Preferences
- Home Interface
- Details Interface
- ...



# Growth

As your company is growing 🌱, so is your app. Over time, there would be multiple teams working on one application. Letting them **separate responsibilities** and allowing them to **own** their part of the application is crucial.

Each team can own a set of modules and some parts of the main application's code.



# Modular architecture

Modular architecture is a software design approach that prioritizes breaking down a program's functionality into **self-contained modules**.

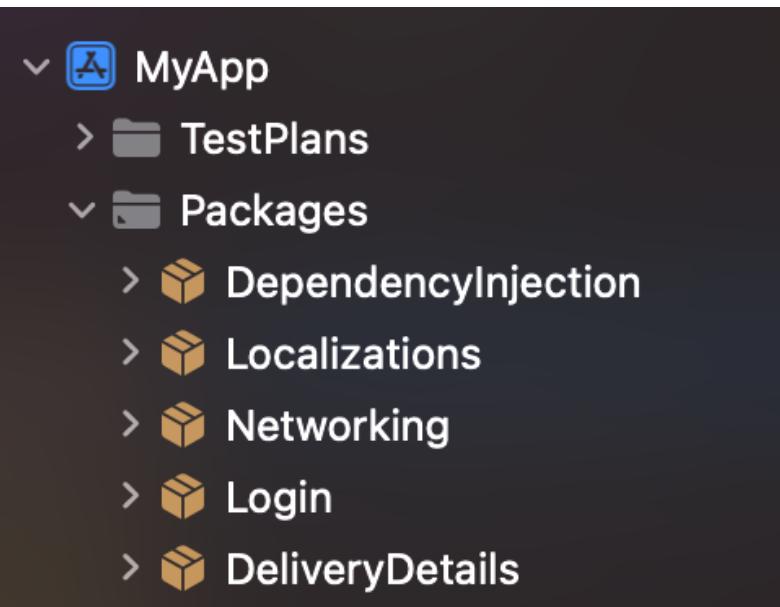
Each module encompasses all the required components to execute a specific aspect of the desired functionality.

# Swift Package Manager

SPM and Xcode support local packages, which allows for lightweight modularization:

```
Packages/  
└── Networking/  
    ├── Package.swift  
    ├── Sources  
    └── Tests  
└── Login/  
...  
...
```





## In Xcode

- First-class citizen treatment: Designed by Apple in California
- Xcode can handle many packages well
- Dependencies between packages are supported
- External dependencies are also supported



# Wait, there's more

- Adding individual files to SPM packages does not cause project file to change: you can forget about `project.pbxproj` conflicts
- You can open individual packages in Xcode to speed up the development
- ... and you can do selective testing 🚀





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**Congratulations, now you have a  
modular application**

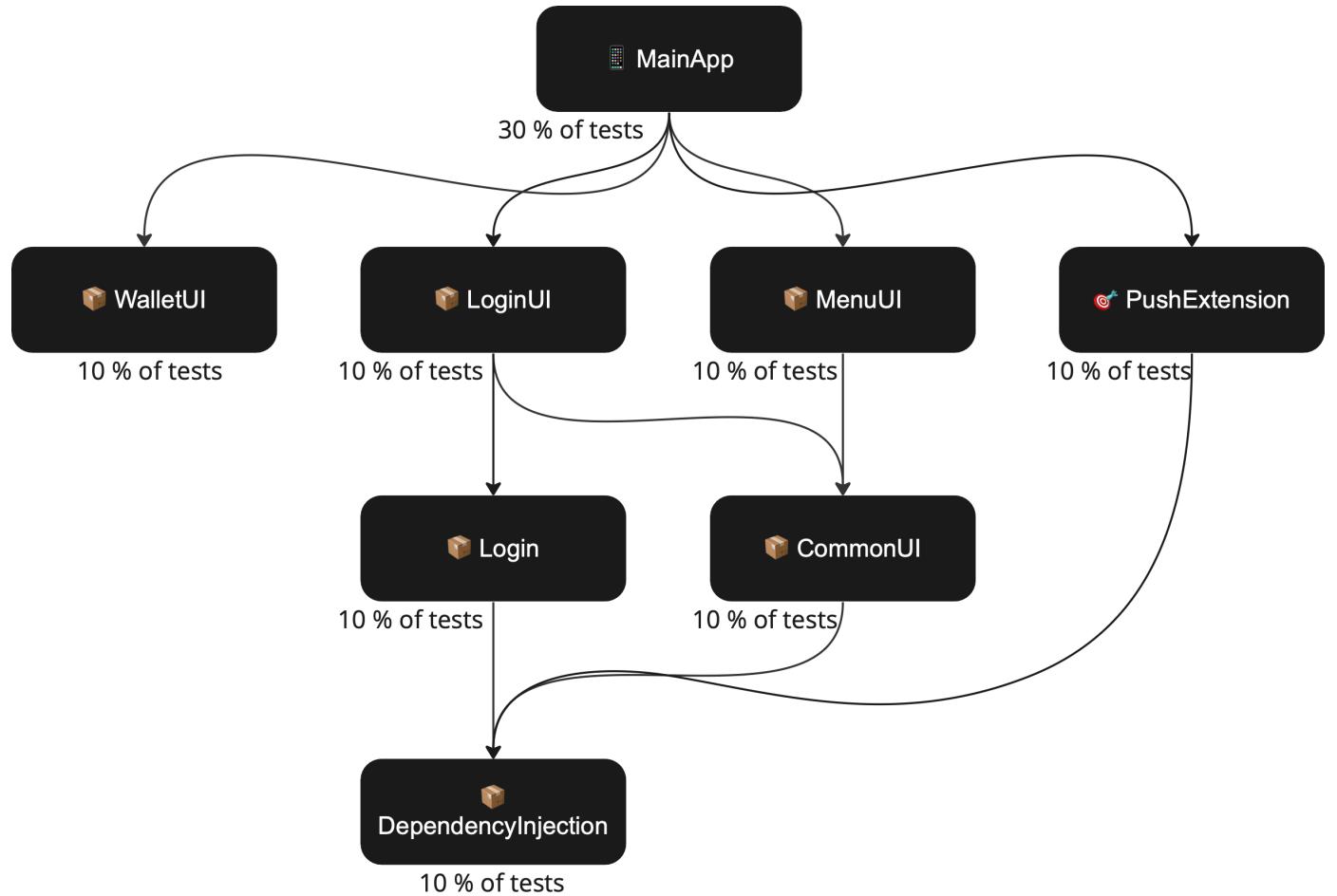


“Insanity is doing the same thing over and over and expecting different results.”

Albert Einstein, probably

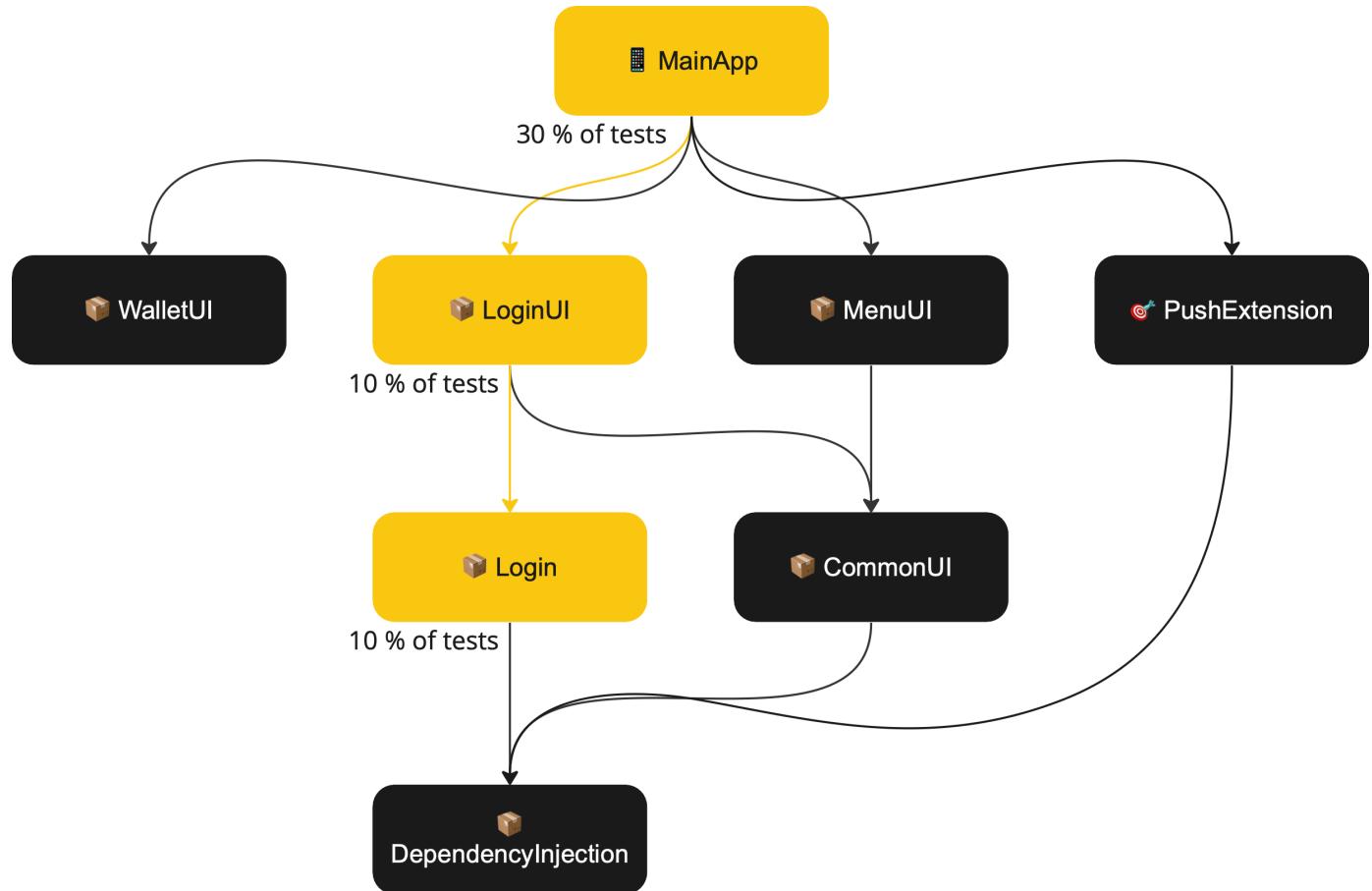
# Modules

Imagine we have the following dependencies structure



# Change

If the 📦 *Login* module is changed, it would only affect the 📦 *LoginUI* and the 📱 *MainApp*.

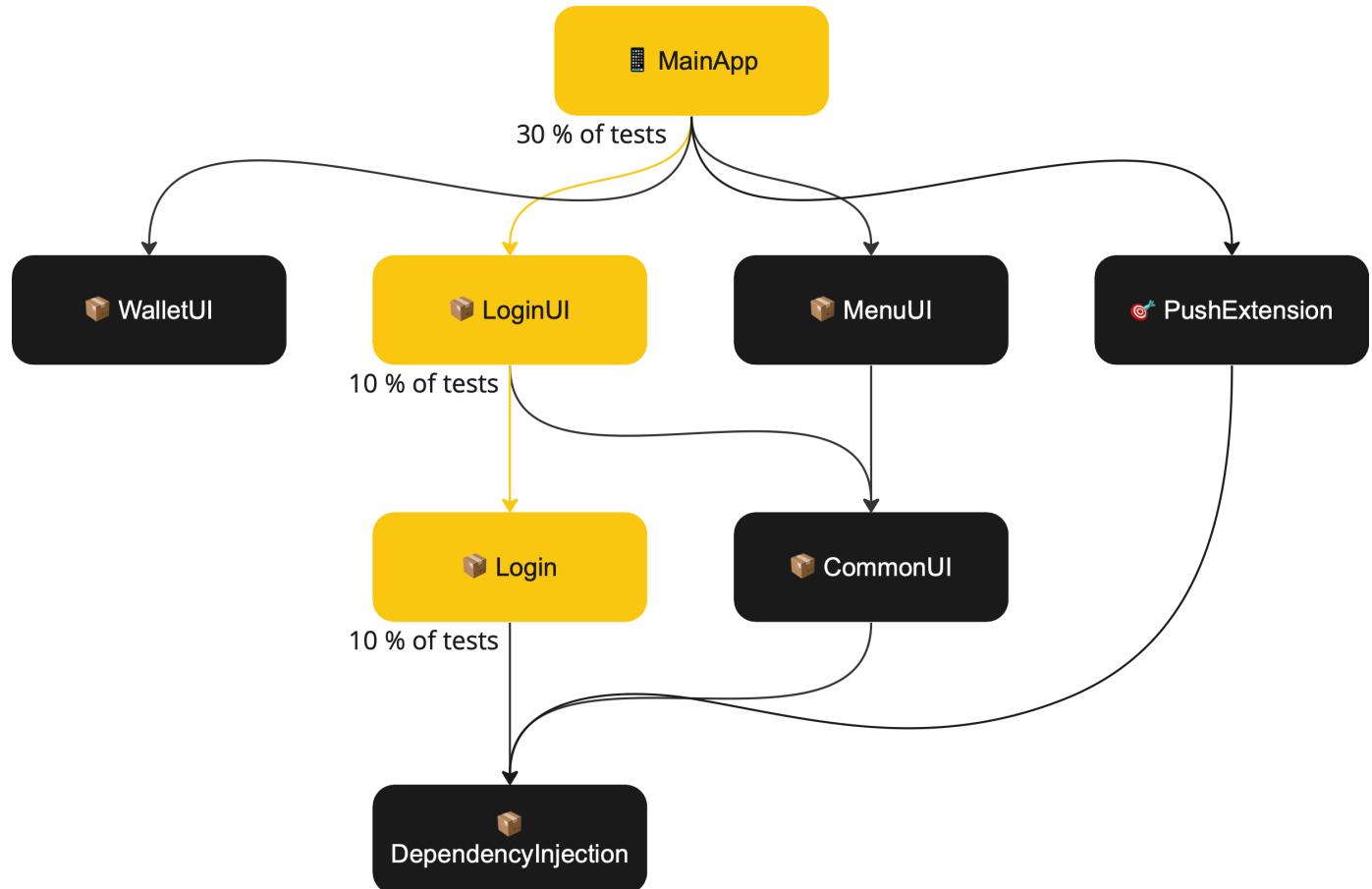


**Does it make sense to test all the modules, if we know only the  *Login module* is changed?**

# ONION



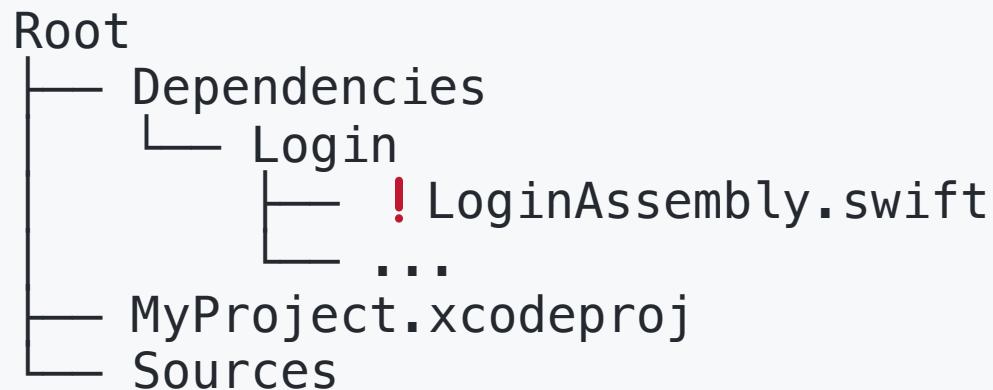
**We can only run  
50% of the tests  
and get the  
same results**



# But how can we know?

## 1. Detecting what is changed

Well, Git allows us to find what files were touched in the changeset.





## 2. Build the dependency graph

Going from the project to its dependencies, to its dependencies, to dependencies of the dependencies, ...

This can be achieved with *XcodeProj* package from Tuist.

Dependencies between packages can be parsed with `swift package dump-package`.

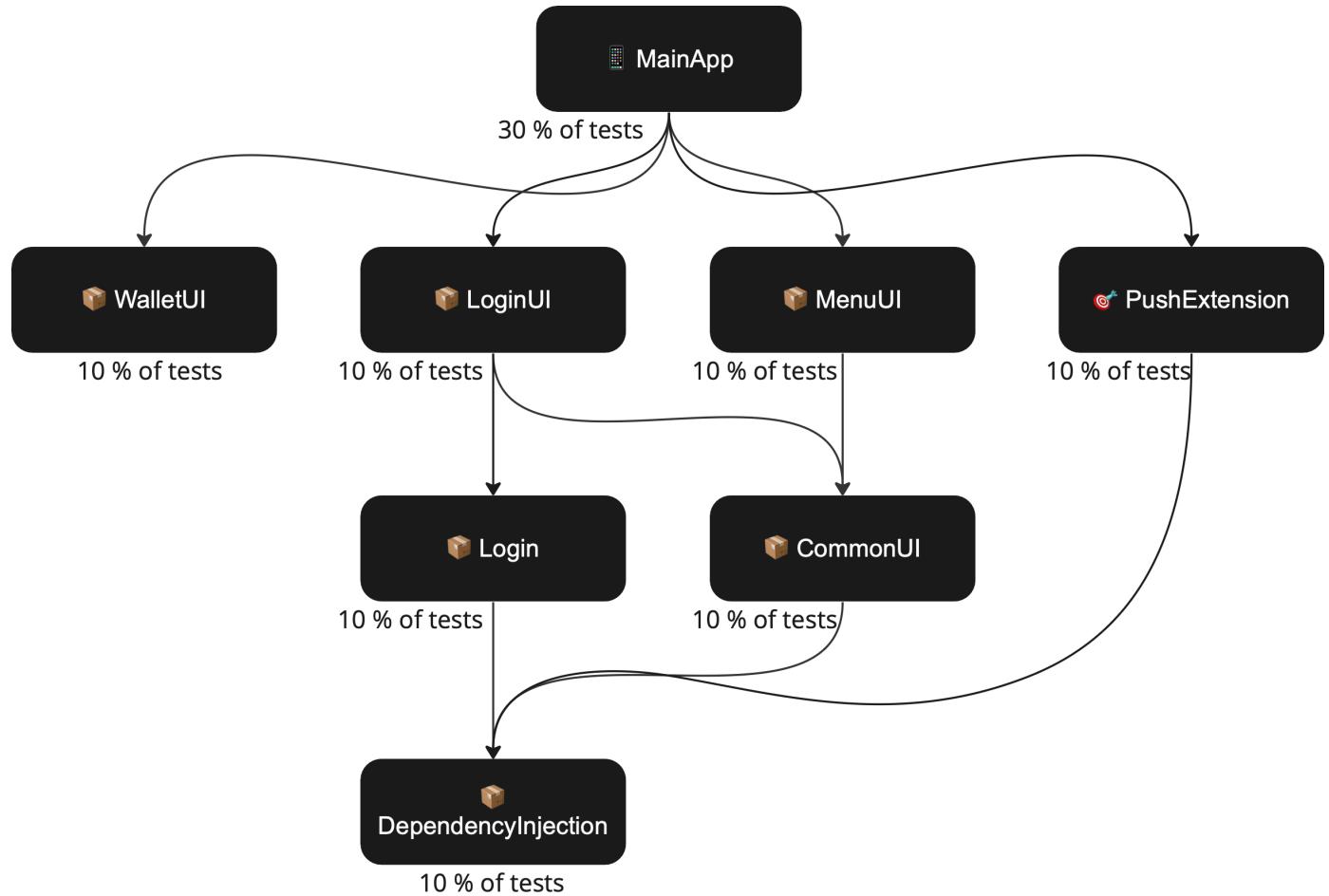


## **2.5. Save the list of files for each dependency**

This is important so we'll know which files affect which targets.

### 3. Traverse the graph

Go from every changed dependency all the way up, and save a set of dependencies you've touched.



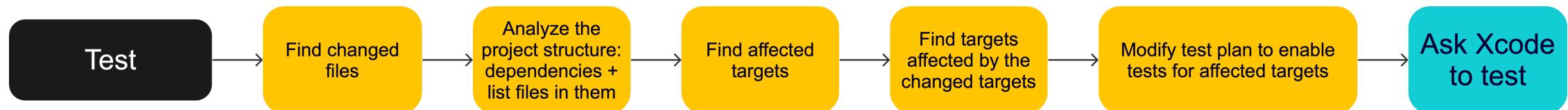


## **4. Disable tests that can be skipped in the scheme/test plan**

This is the most challenging part. We are dealing with obscure Xcode formats. But if we get that far, we will not be scared by that.



# Overview



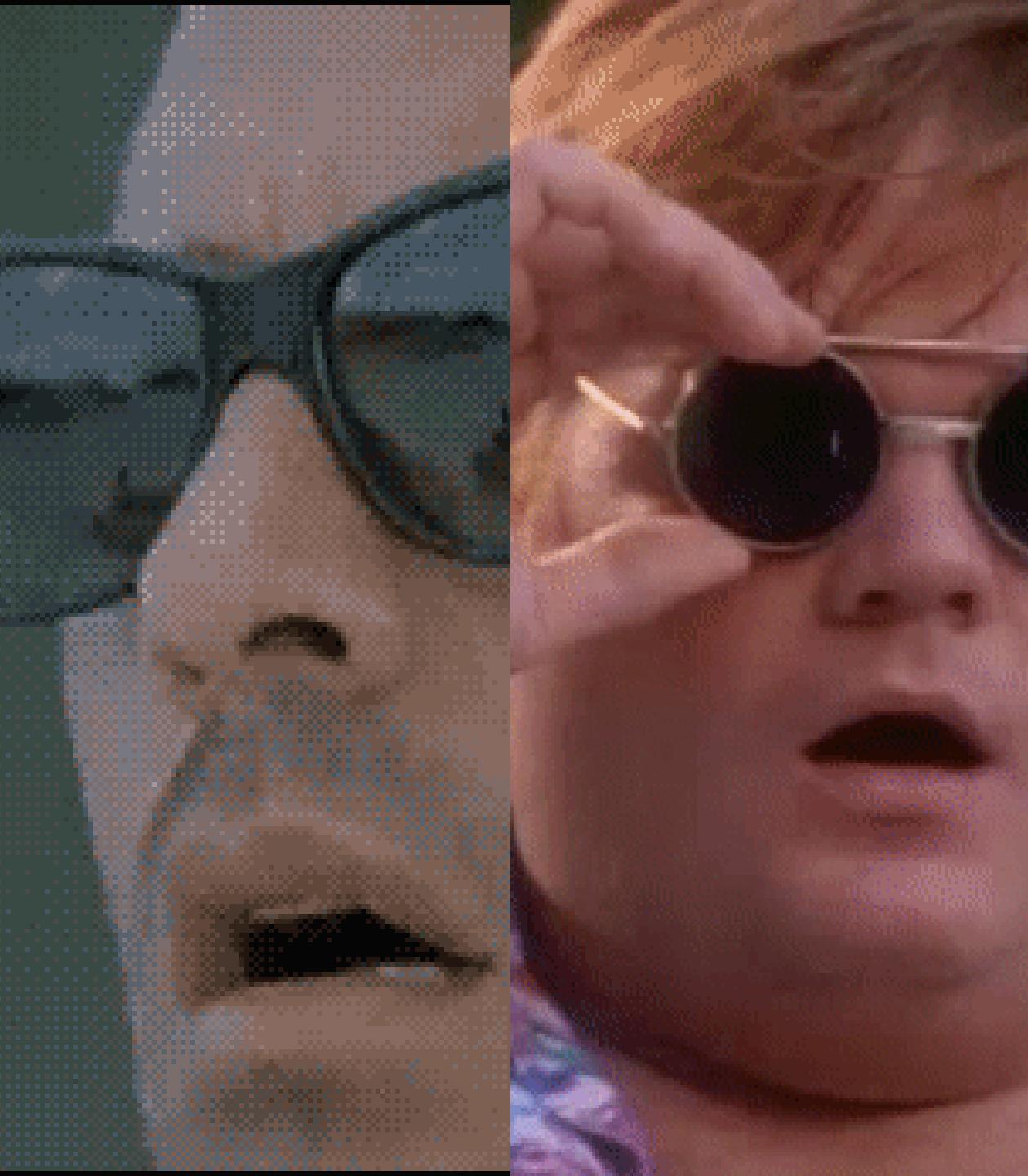


# Sounds like fun, Mike

But I am not going to implement it now.



**Luckily, we implemented it already.**





## mikeger/ **XcodeSelectiveTesting**

Xcode selective testing: Run only tests relevant to the changeset.



1  
Contributor

2  
Issues

80  
Stars

0  
Forks



## GitHub

**GitHub - mikeger/XcodeSelectiveTesting: Xcode selective testing: Run only tests relevant to the chan...**

Xcode selective testing: Run only tests relevant to the changeset. - GitHub - mikeger/XcodeSelectiveTesting: Xcode selective testing: Run only tests relevant to the changeset.

[github.com/mikeger/XcodeSelectiveTesting](https://github.com/mikeger/XcodeSelectiveTesting)



# Integration: Demo



# What's next?



# Questions

Slides: [gera.cx/test\\_what\\_changed.pdf](http://gera.cx/test_what_changed.pdf)