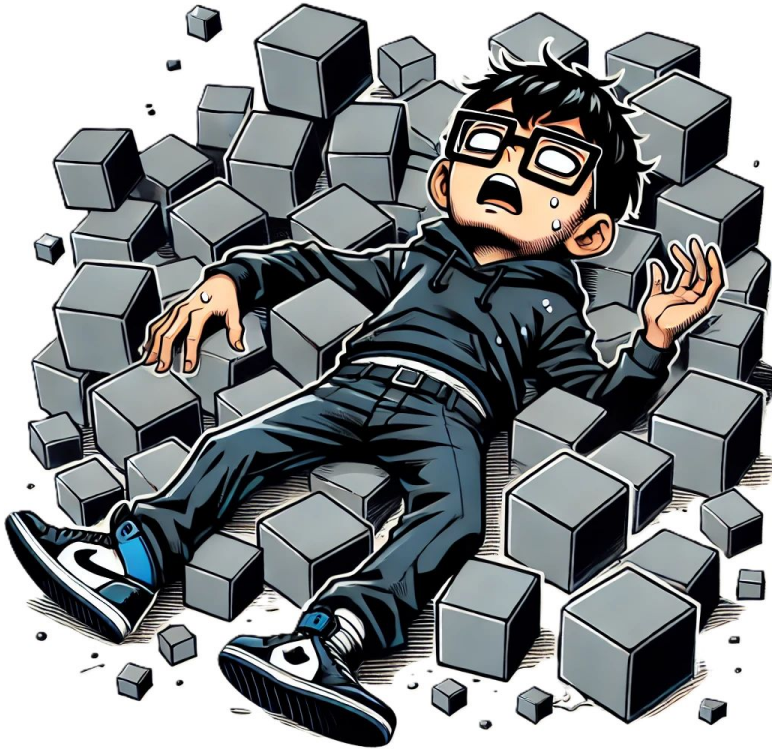
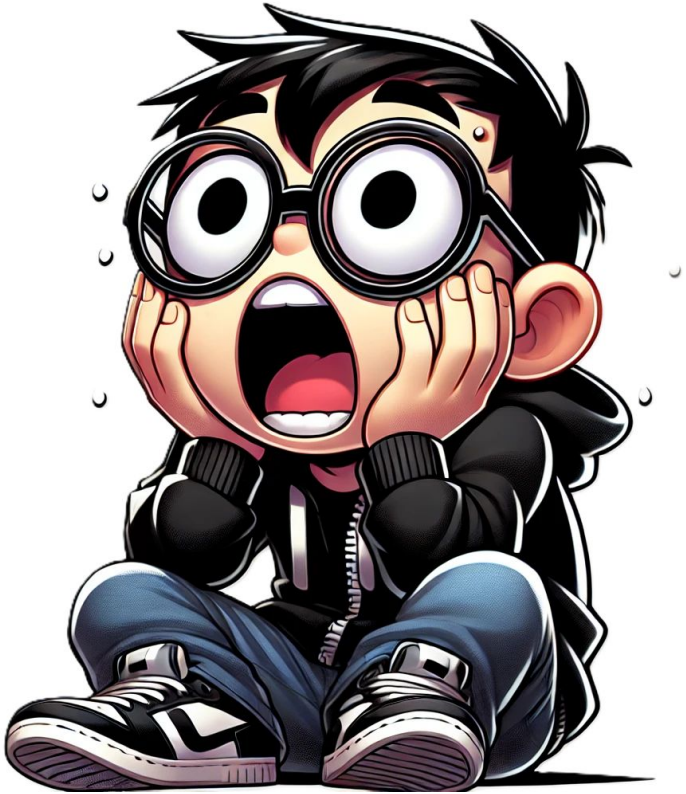
J'écris des tests sans pleurer maintenant

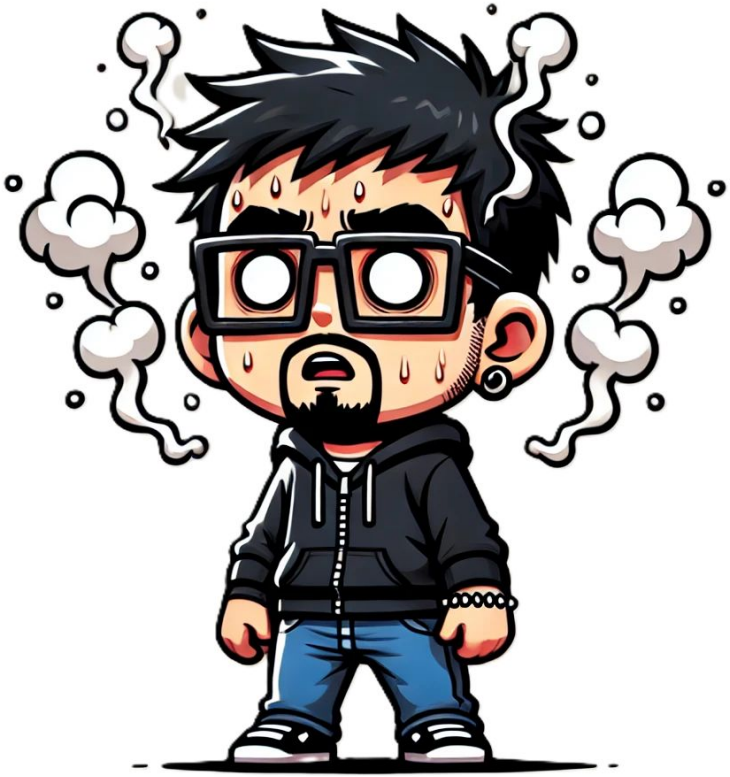
Jérémy Sorant

Illustrations générées avec ChatGPT






COVERAGE



Mes débuts avec les tests

Problèmes :

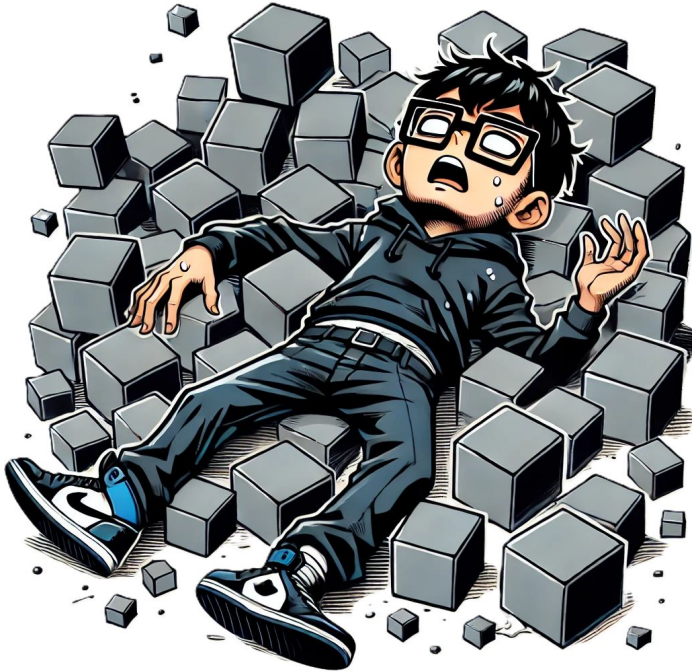
⇒ Code difficilement testable
⇒ Tests lents
⇒ Tests flacky
⇒ Tests fragiles
⇒ Tests difficiles à maintenir

Les games changers

Axes :
⇒ Fragilité
⇒ Lenteur
⇒ Maintenabilité / Lisibilité

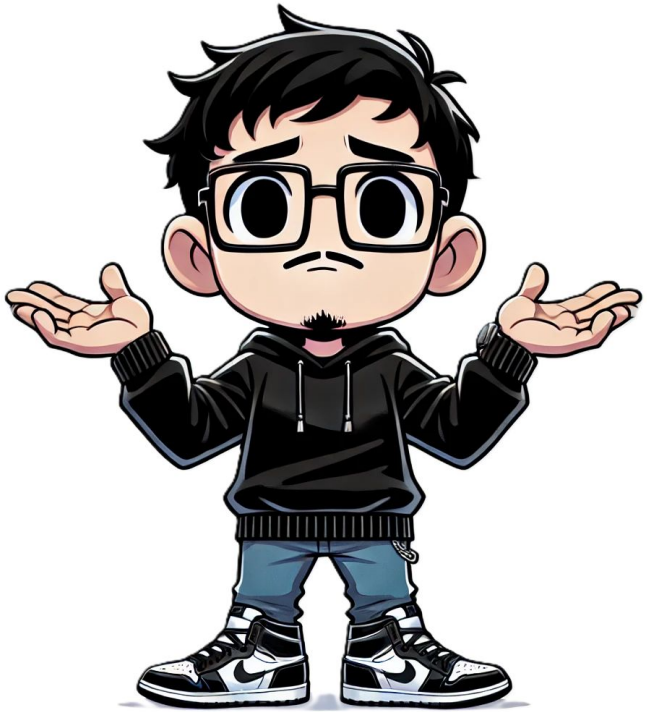
Fragilité

Problème



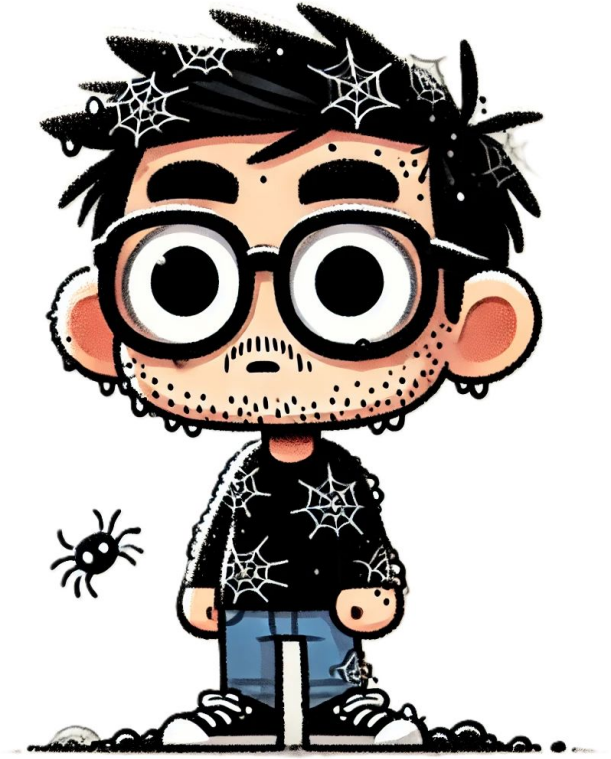
Perte de temps

Hésitation à refactorer



Contournements

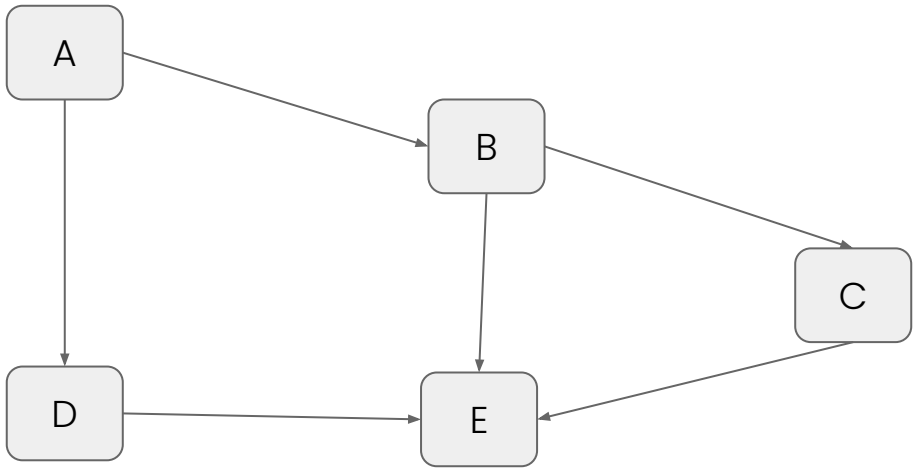
Dégradation continue

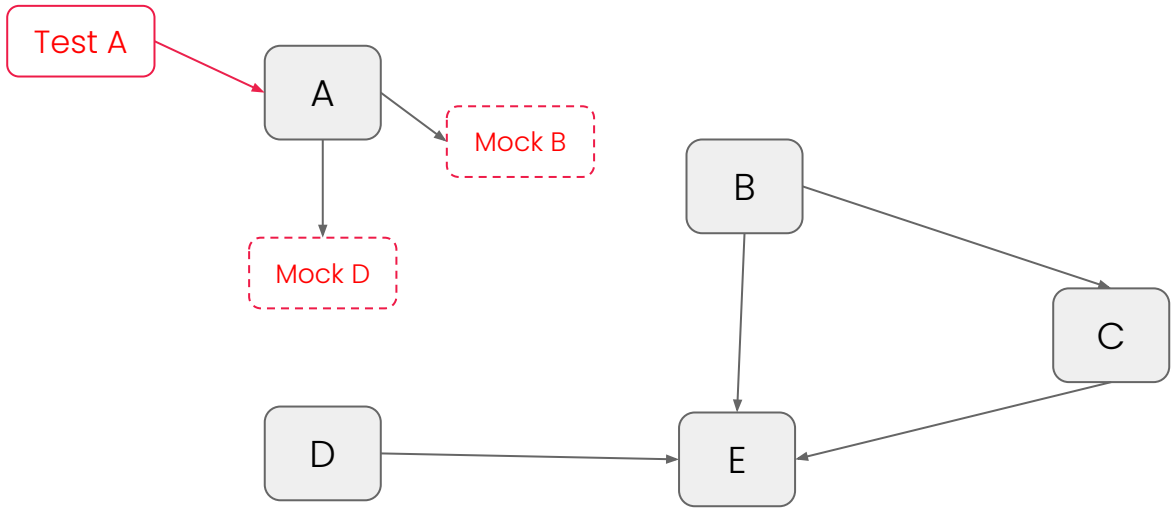


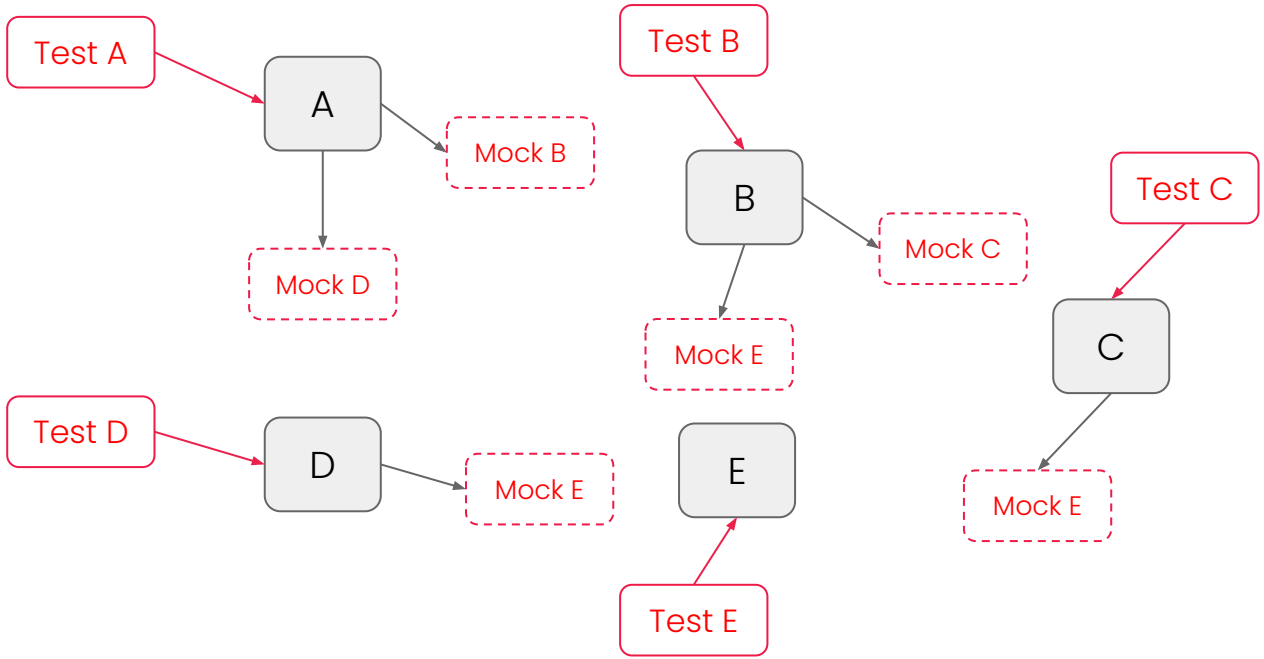
Tristitude

Cause

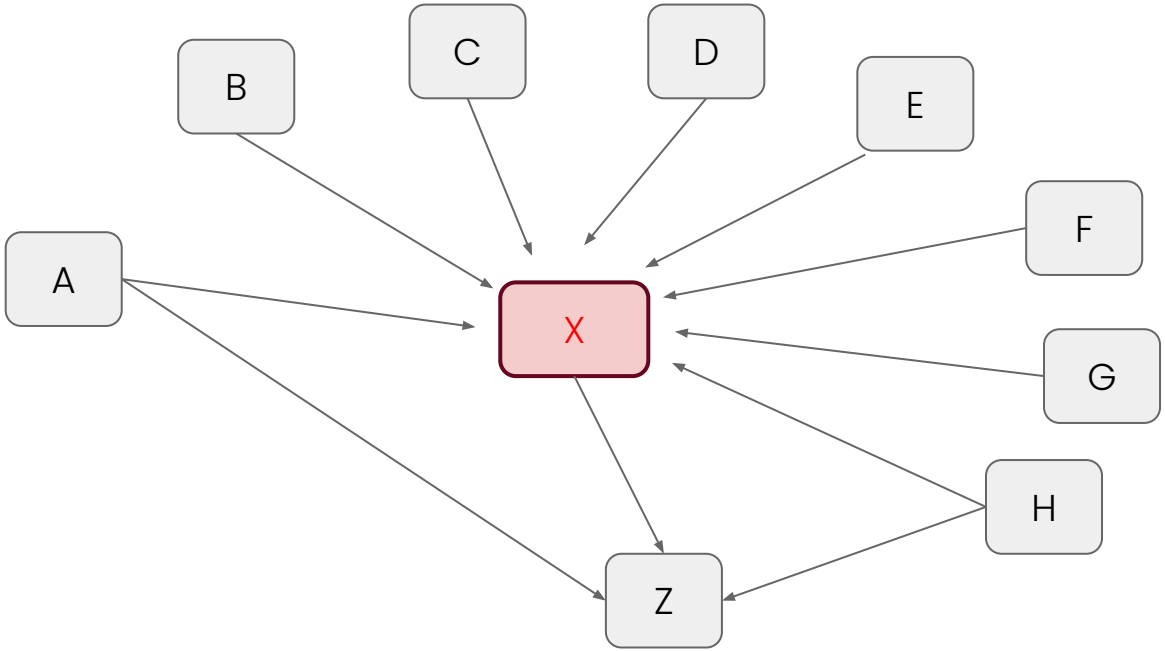
Unitaire = une classe, une fonction


A
B
C
D
E

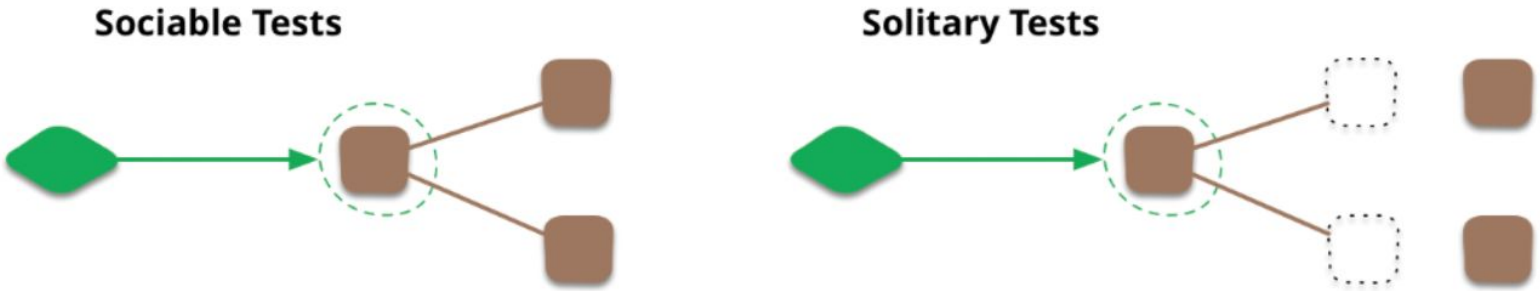

Test A
A
Mock B
Mock D
B
C
D
E


Test A
A
Mock B
Mock D
Test B
B
Mock C
Mock E
Test C
C
Mock E
Test D
D
Mock E
E
Test E

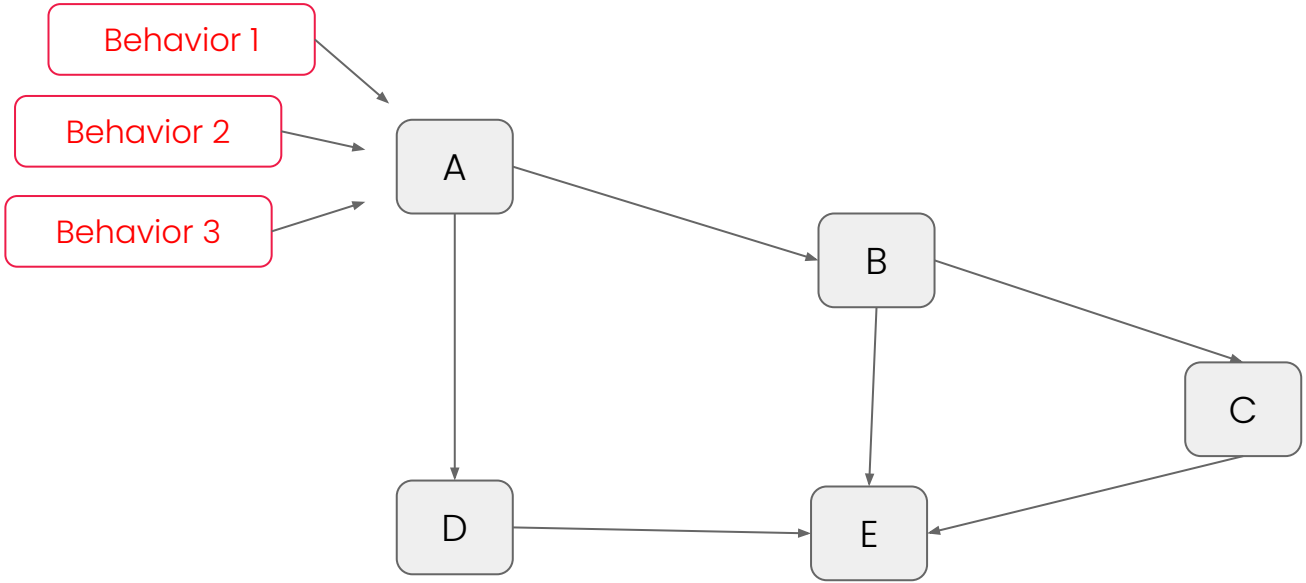
Couplage excessif

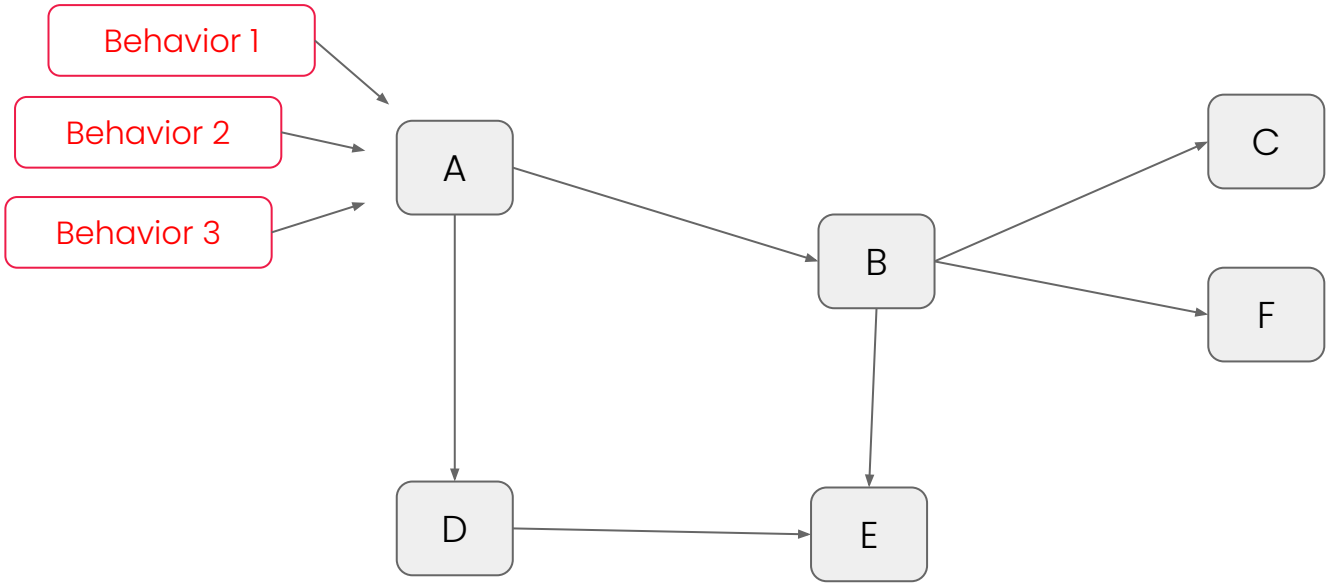


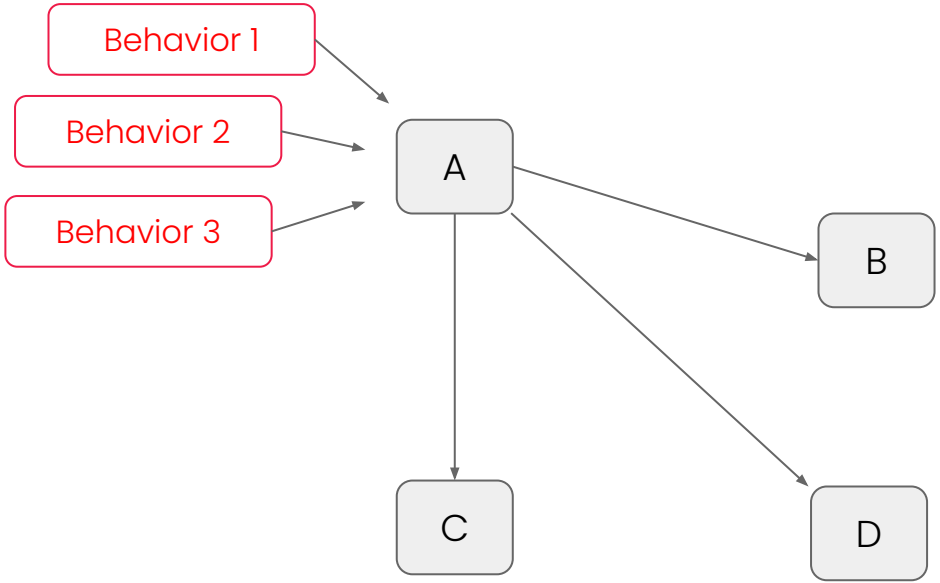
Test social / traversant



- Martin Fowler


Behavior 1
Behavior 2
Behavior 3
A
B
C
D
E


Behavior 1
Behavior 2
Behavior 3
A
B
C
D
E
F


Behavior 1
Behavior 2
Behavior 3
A
B
C
D

Comportement vs implémentation

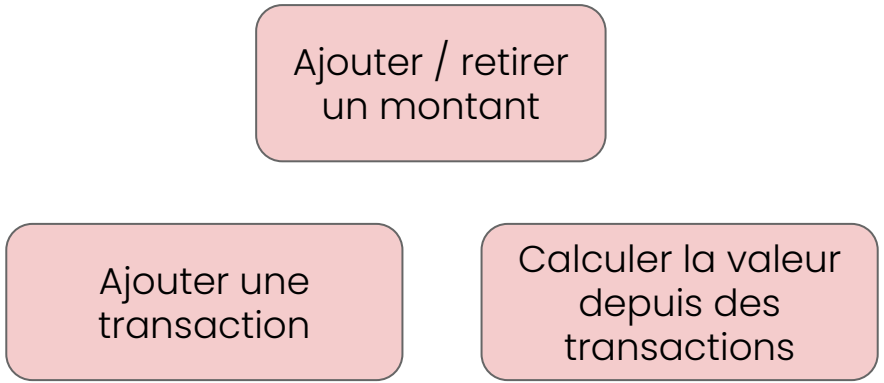
Le comportement est stable

L’implémentation est instable

Exemple

Etant donné	Compte A 1000 €	Compte B 1000 €
Quand	Virement A => B 100 €	
Alors	Compte A 900 €	Compte B 1100 €

Exemple


Ajouter / retirer un montant
Ajouter une transaction
Calculer la valeur depuis des transactions

Connecteur BDD

Vérifier le contenu d'une table

```
@Test
void shouldSaveAndGetBook() {
    AnyBookRepository repository = new AnyBookRepository();

    repository.save(harryPotter());

    Optional<Book> retrievedBook = repository.get(harryPotter().id());

    assertThat(retrievedBook).contains(harryPotter());
}
```

Bénéfices

⇒ Ne casse que si le comportement change
⇒ Facilite le refactoring
⇒ Peut servir de documentation

Lenteur

Problème

Mon application est difficile à tester
⇒ Obligé de tester avec la base de données
⇒ Tests e2e
⇒ Vérification manuelle

Teste moins souvent

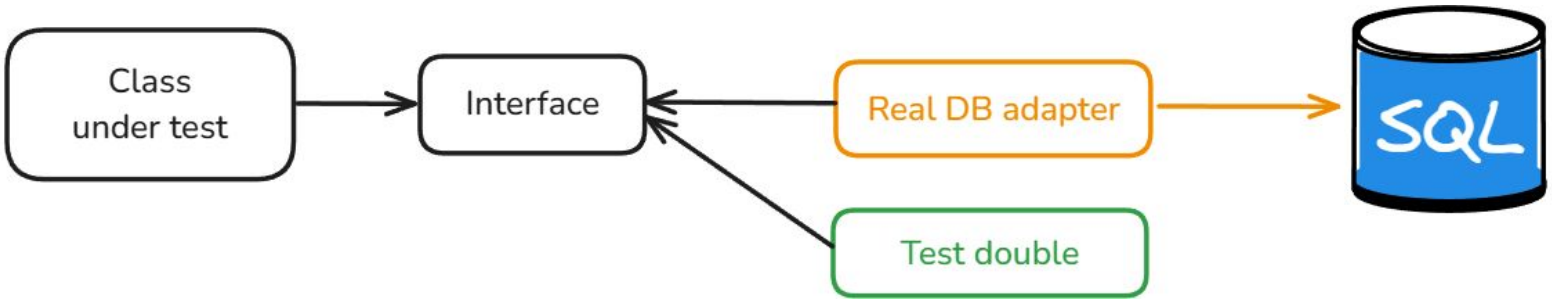
Perte de temps

Tristitude

Cause

Dependency Inversion Principle

Dependency Inversion Principle



Feedback <3

- ✓ Borrow a book — 82 ms
  - ✓ should return book borrowed event when book is borrowed — 76 ms
  - ✓ should throw when book is not owned by the library — 2 ms
  - ✓ should throw when book is already borrowed — 2 ms
  - ✓ should throw when borrower has already four books borrowed — 2 ms

Compromis

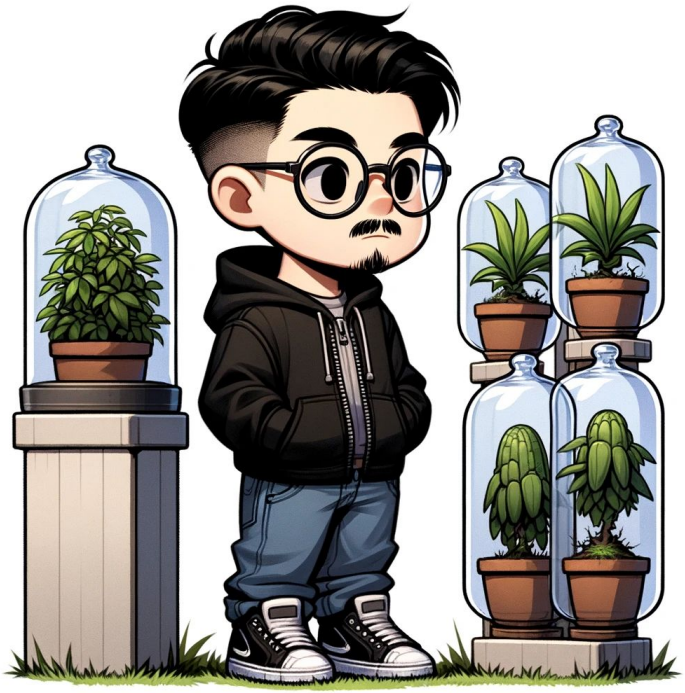
Surface couverte

Rapidité

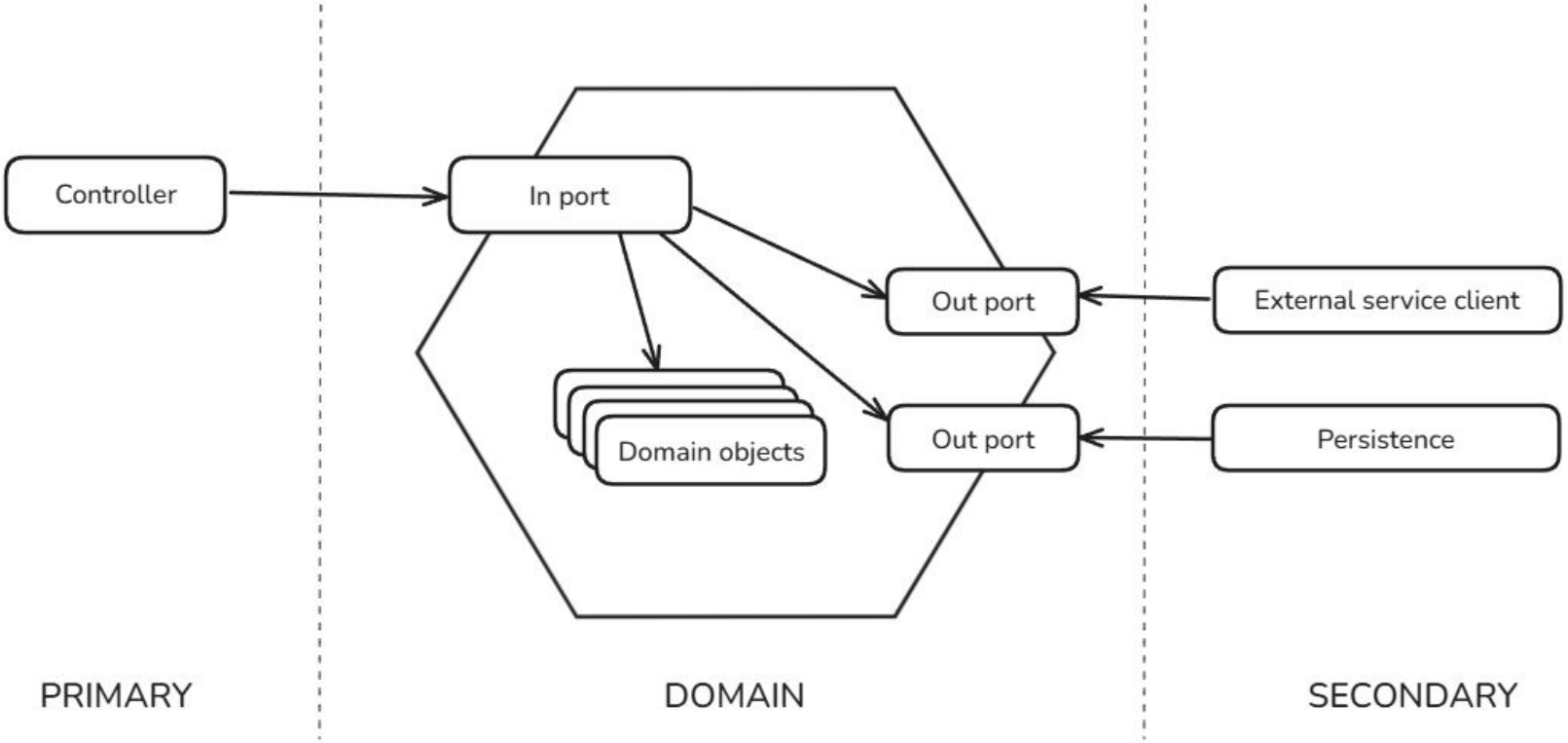
Testez aussi les vraies implémentations et la tuyauterie !

Architecture testable

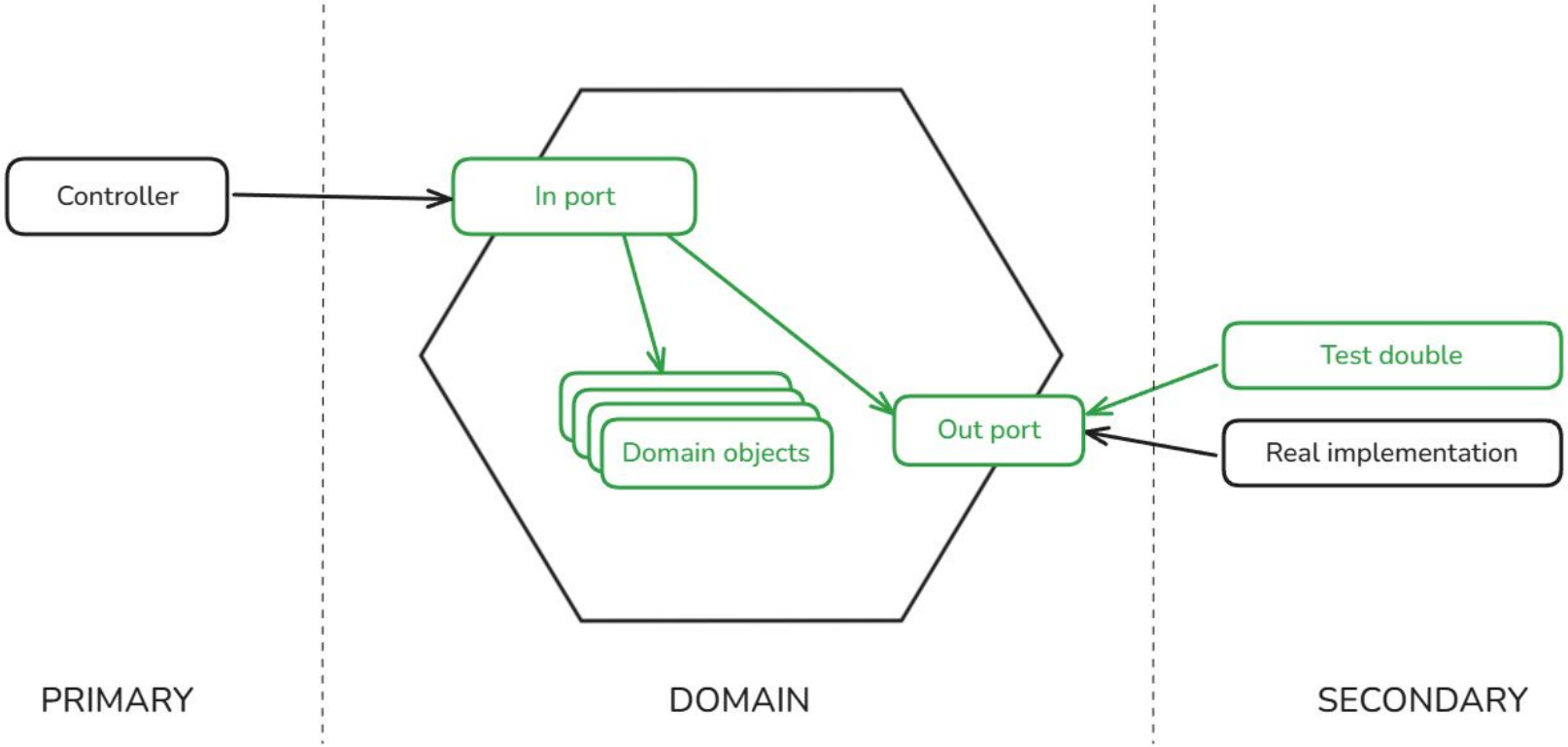
⇒ Clean architecture
⇒ Architecture hexagonale



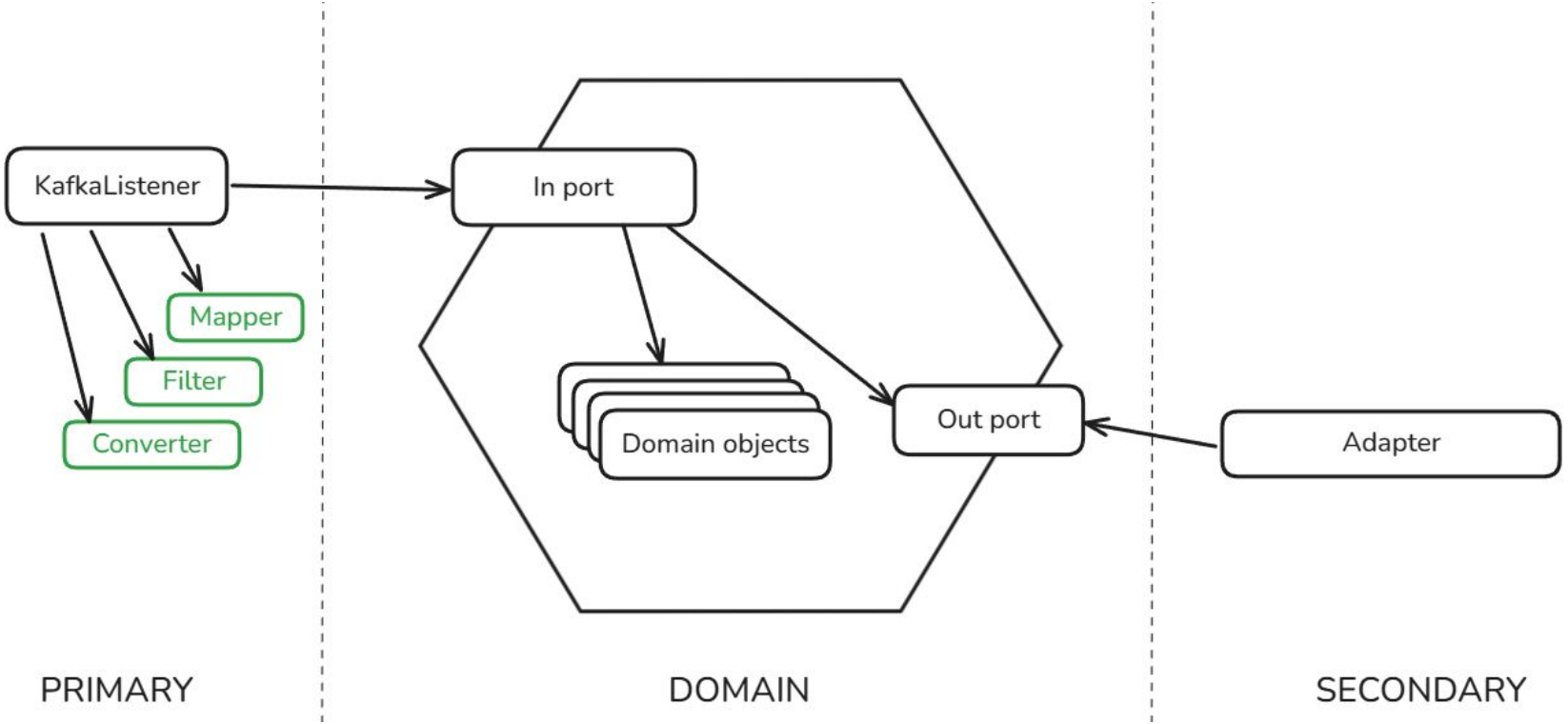
Architecture hexa



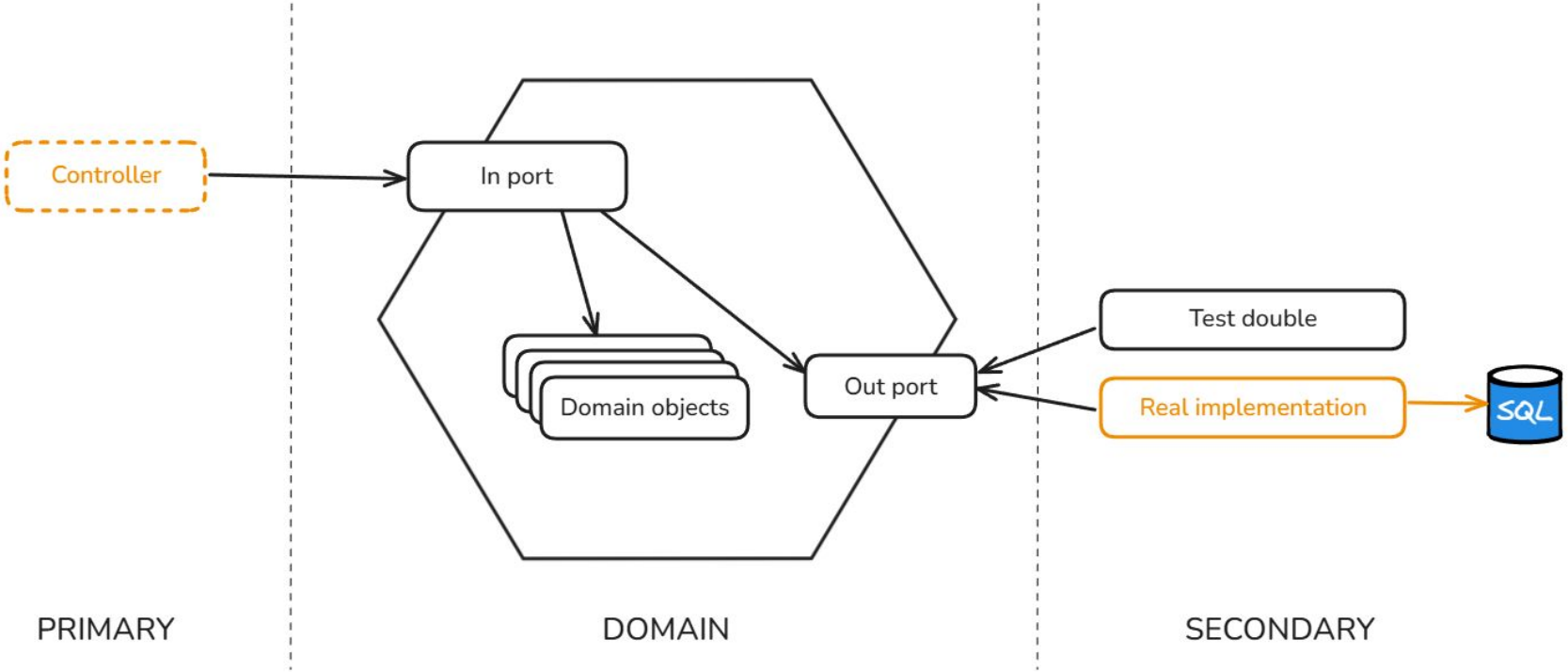
Acceptation



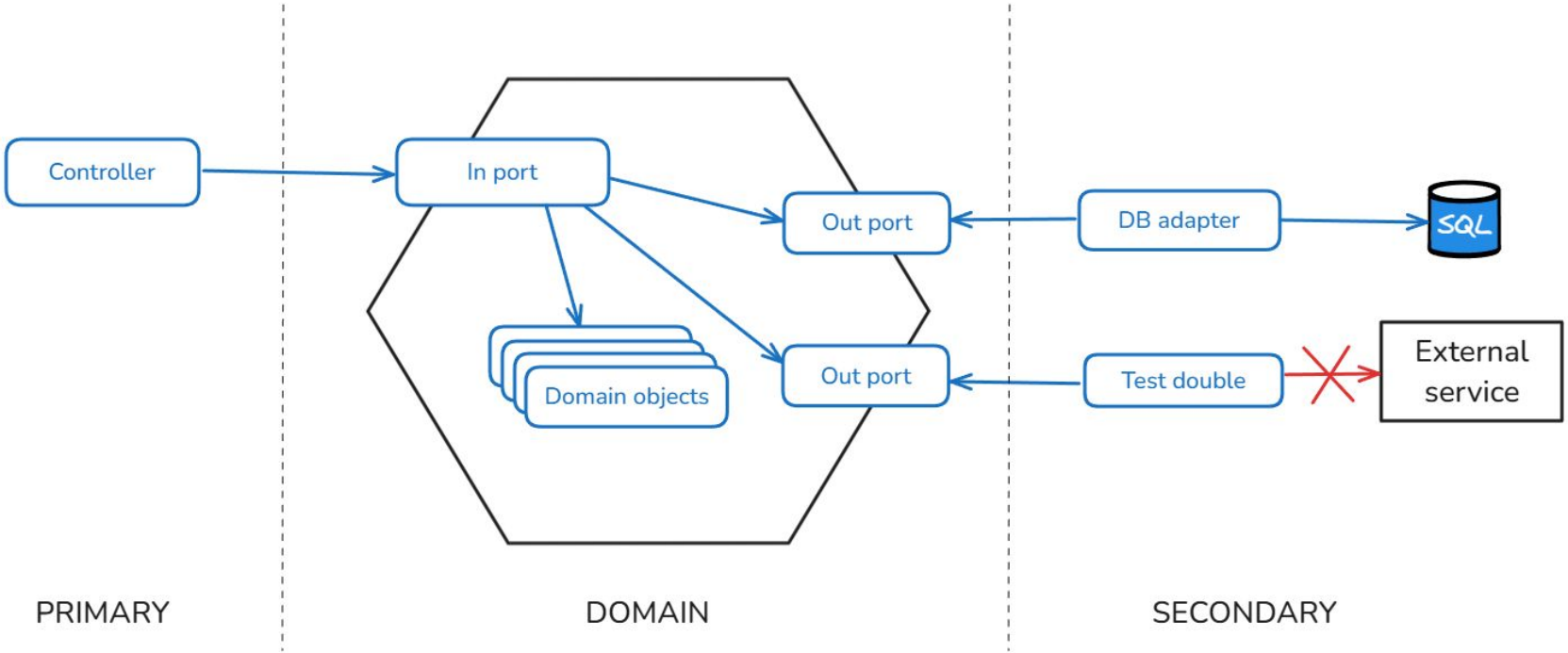
Unitaire


KafkaListener
Mapper
Filter
Converter
In port
Domain objects
Out port
Adapter
PRIMARY
DOMAIN
SECONDARY

Intégration

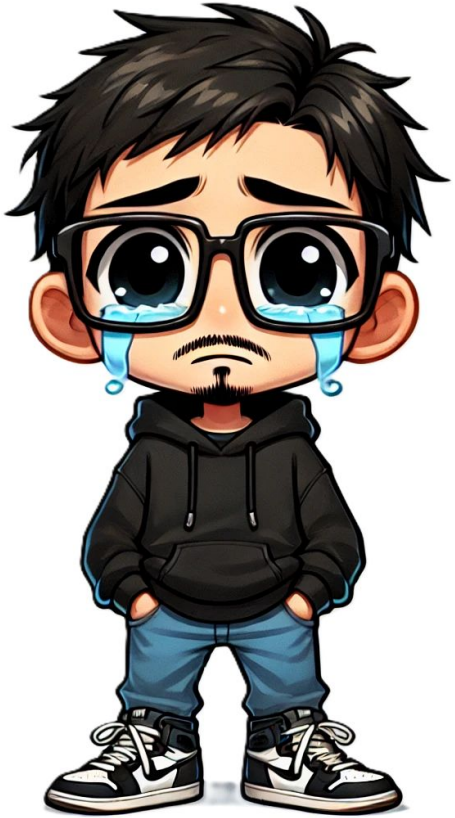


Composant


Controller
In port
Out port
DB adapter
SQL
Domain objects
Out port
Test double
External service
PRIMARY
DOMAIN
SECONDARY

Résumé

⇒ Architecture testable
⇒ Stratégie adaptée



Maintenabilité

Problèmes

⇒ J’ai du mal à comprendre l’intention du test

⇒ Je ne comprends pas l’erreur retournée par mon test

⇒ Je ne comprends pas le rapport entre mon test et le métier

Charge cognitive

Perte de temps

Tristitude

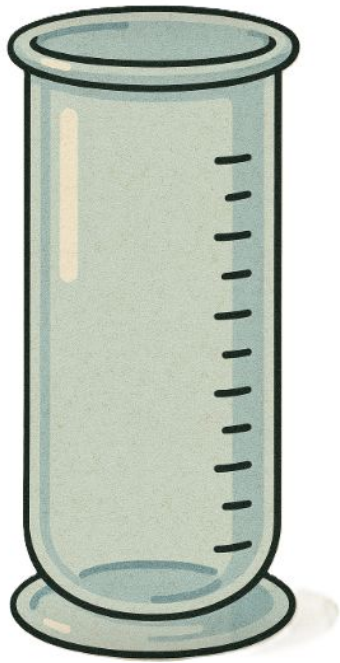
Exemple

Gérer les emprunts de livres dans une bibliothèque

Live coding - Maintenabilité

Résumé

Révéler l’intention
⇒ Nomenclature adaptée, langage métier
⇒ GWT / AAA + une seule règle par test
⇒ Cacher les détails d’implémentation
    ⇒ Extract / Fixture / Builder
⇒ Utiliser les outils du framework de test
⇒ Custom assertions
⇒ Messages d’erreur explicites



Takeaways

Takeaways

⇒ Testez des comportements plutôt que des implémentations

⇒ Optez pour une architecture qui facilite l'écriture des tests

⇒ La maintenabilité des tests est aussi importante que celle du code de prod

⇒ TDD peut vous permettre de voir le dev sous un angle totalement différent

CRAFTING SUSTAINABLE CODE WE DO

Jérémy Sorant

Développeur chez SHODO Lyon

Co-organisateur des Software Crafters Lyon

linkedin.com/in/jeremy-sorant

github.com/jsorant

CRAFTING SUSTAINABLE CODE WE DO

linkedin.com/in/jeremy-sorant
github.com/jsorant

Code & slides

Feedback

COACHING . CRAFT . JUSTICE SOCIALE

shodo.io

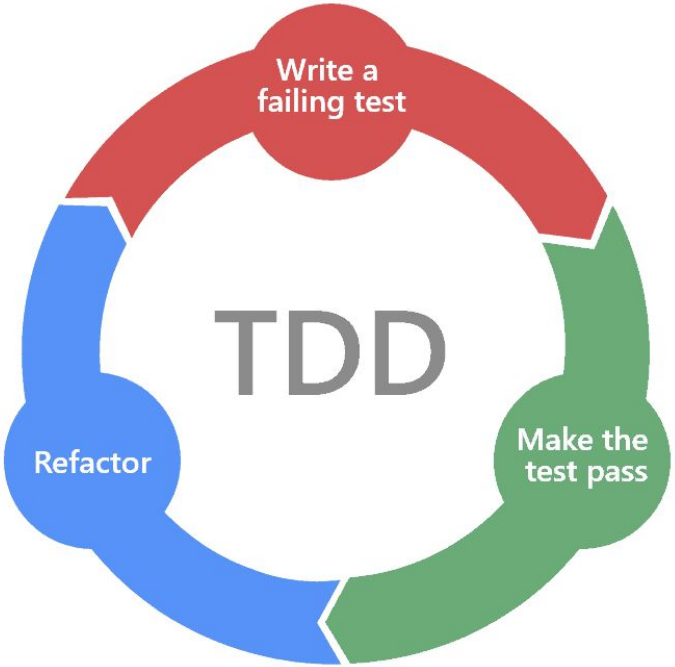
SHODOioFR

SHODO

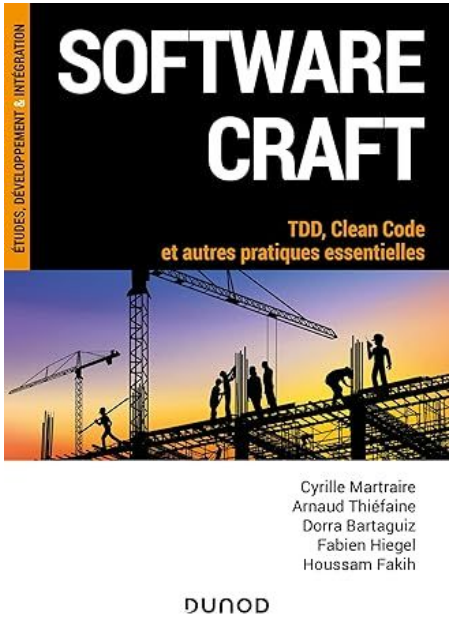
Annexes

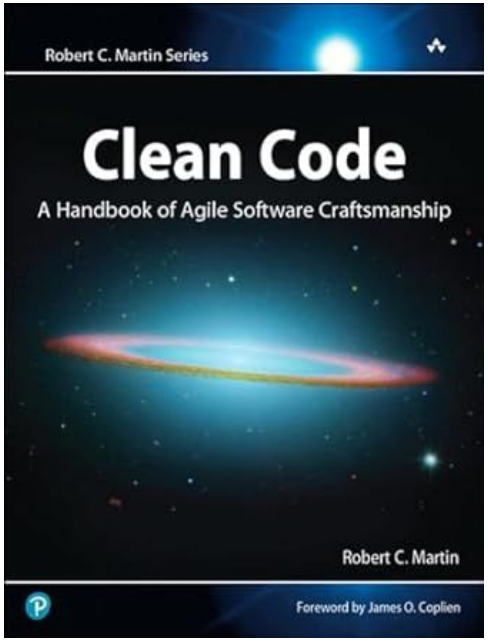
TDD

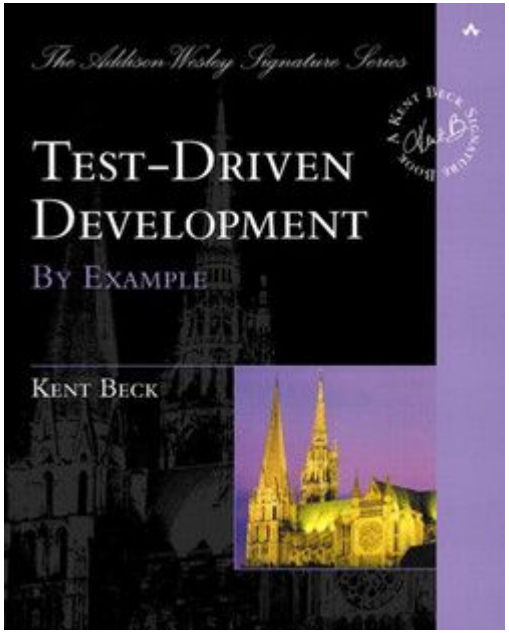
⇒ Aide à se concentrer sur le besoin
⇒ Produit du code testé et couvert à 100%
⇒ Limite l'over engineering
⇒ Aide à découper le problème
⇒ Apporte de la sérénité
⇒ Méthode de dev plus fun



Lectures


ÉTUDES, DÉVELOPPEMENT & INTÉGRATION
SOFTWARE CRAFT
TDD, Clean Code et autres pratiques essentielles
Cyrille Martraire
Arnaud Thiéfaine
Dorra Bartaguiz
Fabien Hiegel
Houssam Fakih
DUNOD


Robert C. Martin Series
Clean Code
A Handbook of Agile Software Craftsmanship
Robert C. Martin
Foreword by James O. Coplien


The Addison Wesley Signature Series
TEST-DRIVEN DEVELOPMENT
BY EXAMPLE
KENT BECK

Comportement vs implementation

Unit Test

Martin Fowler

https://martinfowler.com/bliki/UnitTest.html

TDD, Where Did It All Go Wrong

Ian Cooper

https://www.youtube.com/watch?v=EZ05e7EMOLM

Outside-in Diamond pour écrire des tests Antifragiles & orientés métier

Thomas Pierrain

https://www.youtube.com/watch?v=09R8ROv3aKU

Hexa & Tests

Architecture Hexagonale : Comment bien écrire ses tests ?

Julien Topçu

https://www.youtube.com/watch?v=4vBJAN3ttkc

Architecturoplastie hexagonale d’un backend Node.js

Jordan Nourry, Adrien Joly, Julien Topçu

https://www.youtube.com/watch?v=r2XMwAUqZBA

AssertJ - Fluent assertions

https://assertj.github.io/doc/

Custom assertions

https://assertj.github.io/doc/#assertj-core-custom-assertions

https://www.baeldung.com/assertj-custom-assertion

Tests front

Tester son interface efficacement (front)

Jérémy Chauvin

https://dev.to/singebob/tester-son-interface-efficacement-des-patterns-pour-des-tests-dui-robustes-2402

Données de test

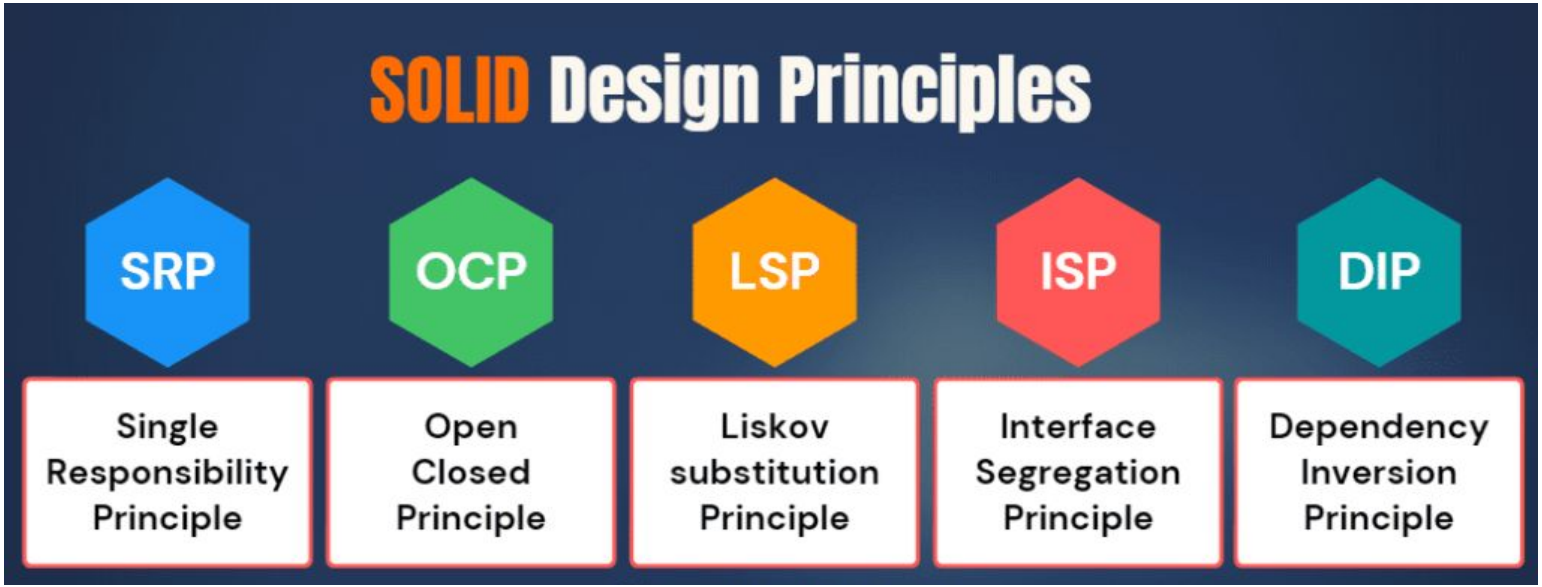
Mieux tester en optimisant la génération de données de test : Panorama des patterns

Jérémy Chauvin

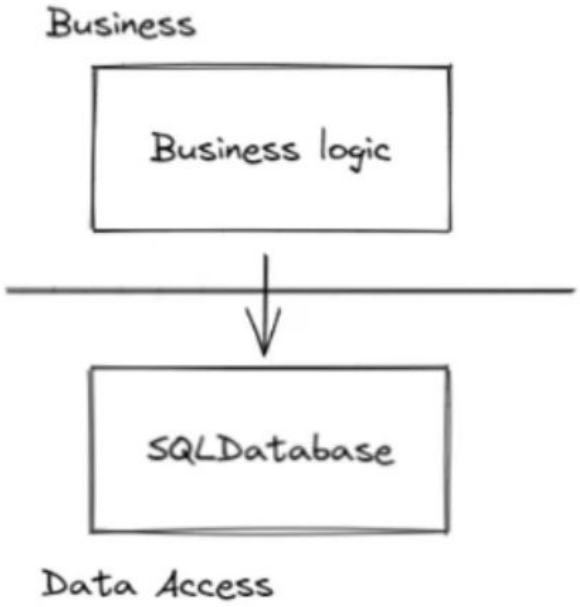
https://dev.to/singebob/mieux-tester-en-optimisant-la-generation-de-donnees-de-test-panorama-des-patterns-1cde

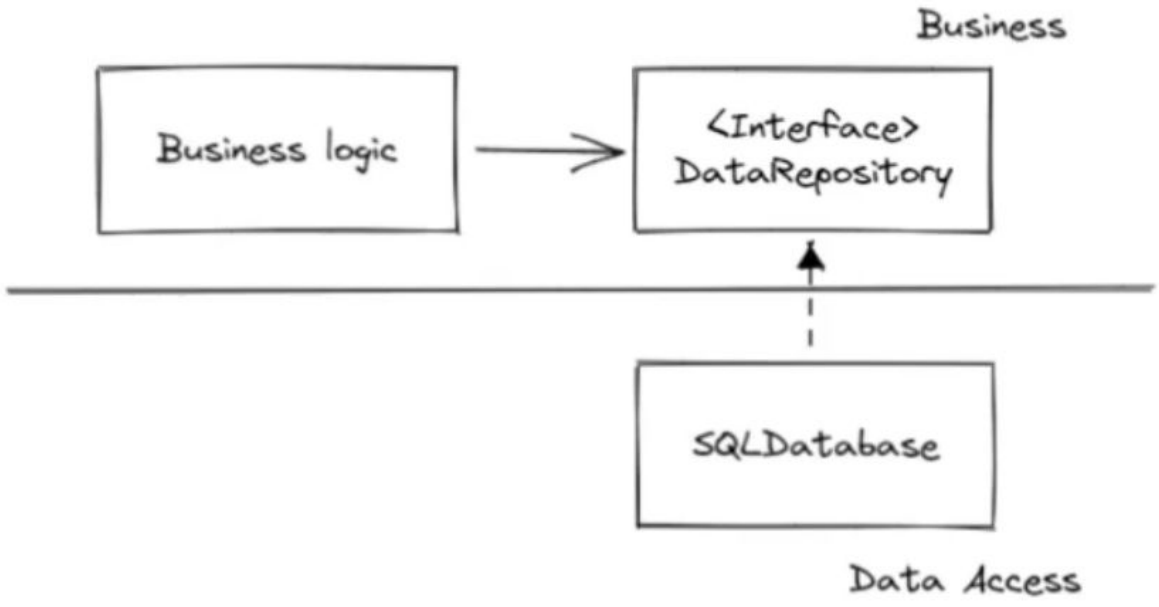
SOLID

https://blog.cleancoder.com/uncle-bob/2020/10/18/Solid-Relevance.html



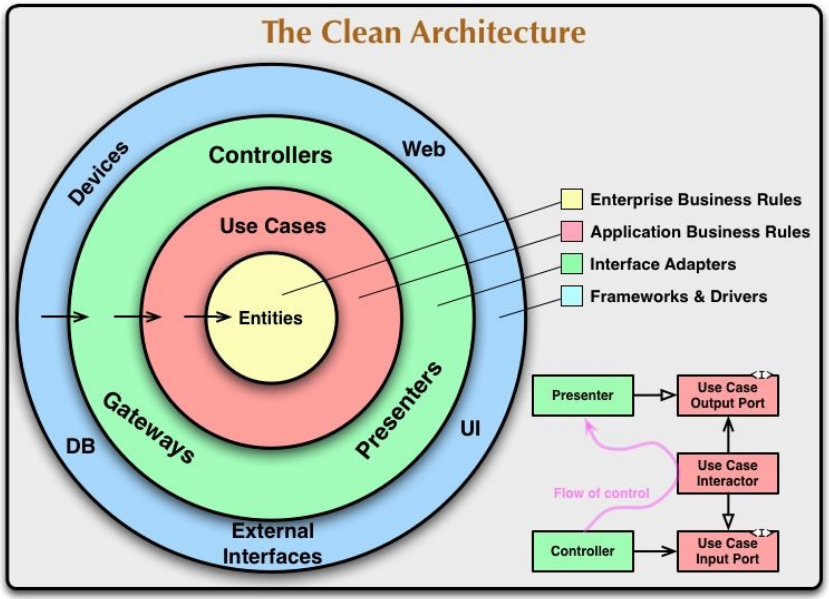
Dependency Inversion Principle





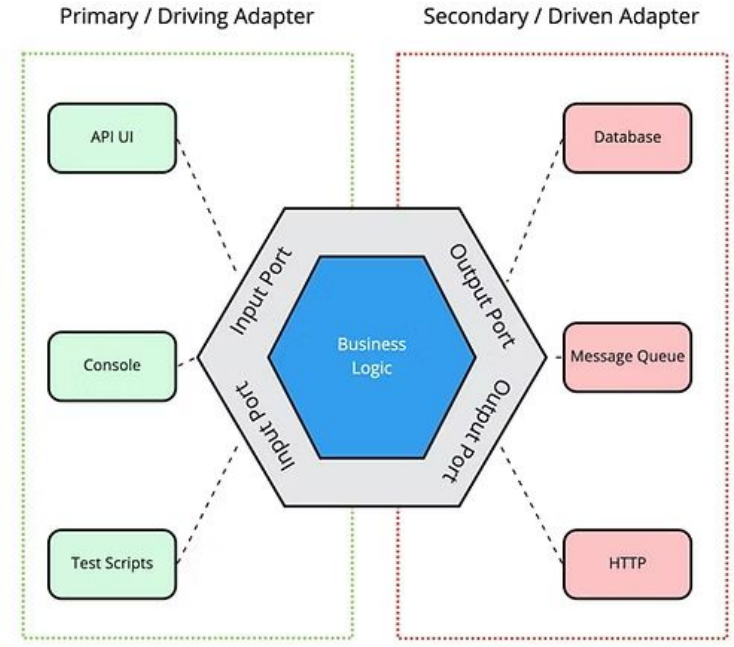
Clean architecture

https://blog.cleancoder.com/uncle-bob/2012/08/13/the-clean-architecture.html

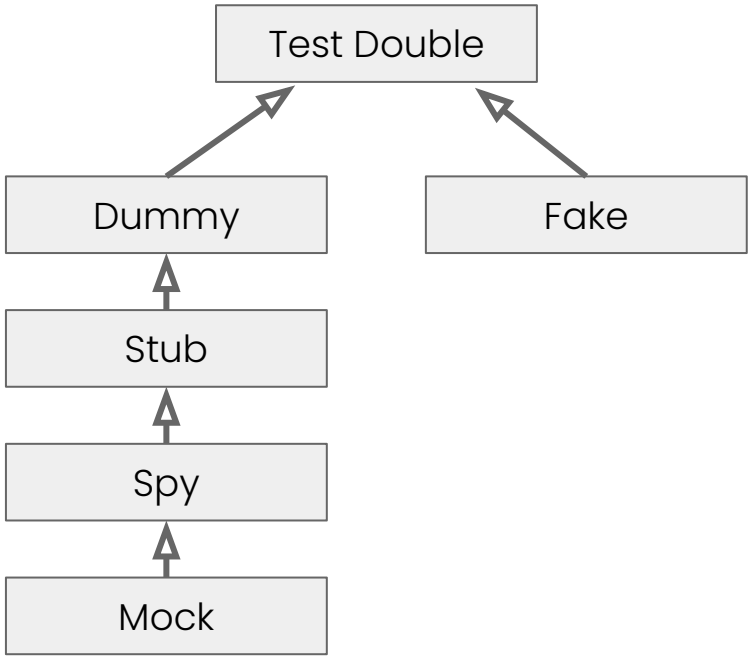


Architecture hexagonale

https://alistaircockburn.com/Hexagonal%20Budapest%2023-05-18.pdf



Doublures de test



Doublures de test

https://blog.cleancoder.com/uncle-bob/2014/05/14/TheLittleMocker.html

https://www.martinfowler.com/articles/mocksArentStubs.html

Contrat d'adapters