How To Learn OOP: A Practical Guide

Why Learn OOP?

- Fits a perspective of the world and problem well (for data centric processes)
- Abstraction helps understanding and maintenance of large code bases.
- Organises your code

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Critics of OOP

- Unnecessary Abstraction
- Design Patterns Gone Wild
- Poor IDE Performance

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S	Single Responsibility Principle
O	Open/closed Principle
L	Liskov Substitution Principle
I	Interface Segregation Principle
D	Dependency Inversion Principle

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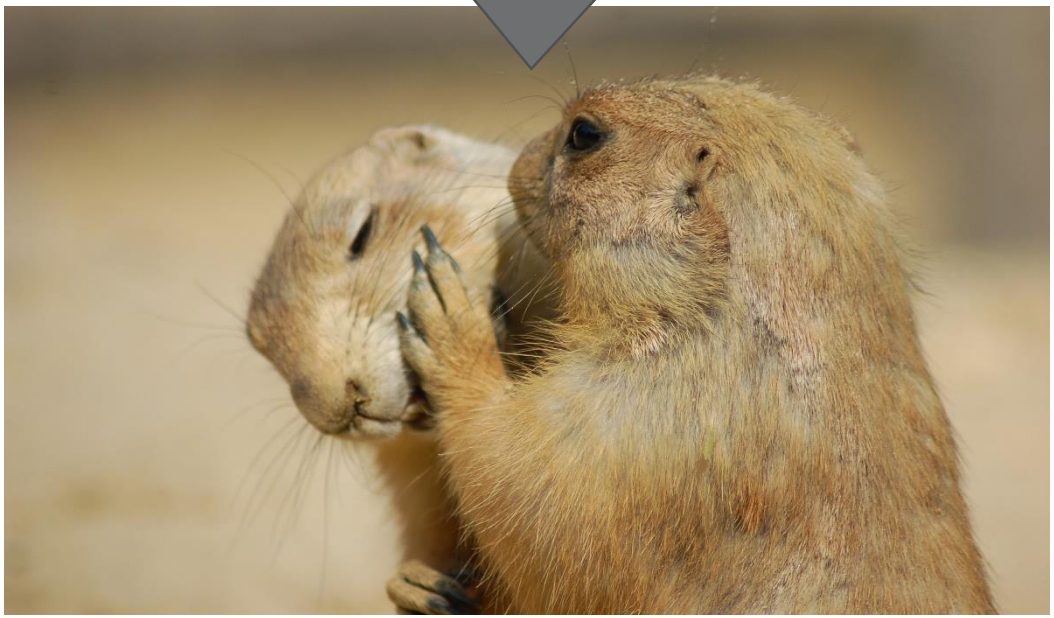
Psst…
It’s all about coupling and cohesion



Step 1: Make Classes

- Learn the basics of creating classes.
- Replace clusters/FGVs

Step 2: Practice!

S

Single Responsibility Principle

Don’t Worry – Not Yet!

I

Interface Segregation Principle

Don’t Worry – Not Yet!

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S/I Examples

Pressure Meter

- VISAReference
- Alarm Level

- Read Pressure
- Evaluate Alarm Level
- Read Alarm Message

S/I Examples

Pressure Meter

- VISAReference

- Read Pressure

Pressure Alarm

- Alarm Level

- Evaluate Alarm Level (Level)
- Read Alarm Message

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S/I Examples

Match

- Home Team
- Away Team
- Home Tries
- Away Tries
- Home Conversions
- Away Conversions
- Home Penalties
- Away Penalties

- Play Match
- Read Result

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S/I Examples

Match

- Home Team
- Away Team
- Result

- Play Match
- Read Result

Result

- Home Team?
- Away Team?
- Home Tries
- Away Tries
- Home Converted Tries
- Away Converted Tries
- Home Penalties
- Away Penalties

- Read Result

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S/I Examples

DAQ Card

- Input Task
- Output Task

- Read Input
- Write Output

S/I Examples

Analog Input

- Input Task

- Read Input

Analog Output

- Output Task

- Write Output

Step 3: Learn Inheritance

Step 4: Practice!

S

Single Responsibility Principle

Don't Worry – Not Yet!

L

Liskov Substitution Principle

I

Interface Segregation Principle

Don't Worry – Not Yet!

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Leaky Abstractions

Step 5: Complete SOLID

S	Single Responsibility Principle
O	Open/closed Principle
L	Liskov Substitution Principle
I	Interface Segregation Principle
D	Dependency Inversion Principle

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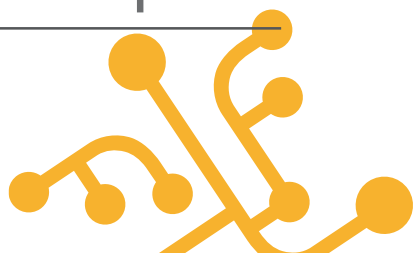

Step 6: Design Patterns