Identifying Classes from Requirements

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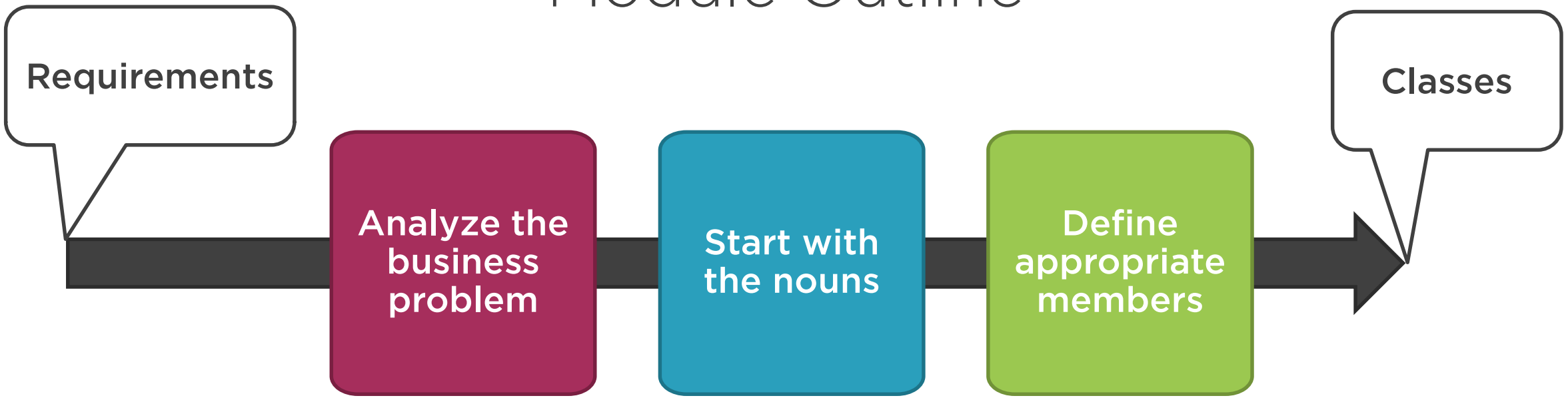
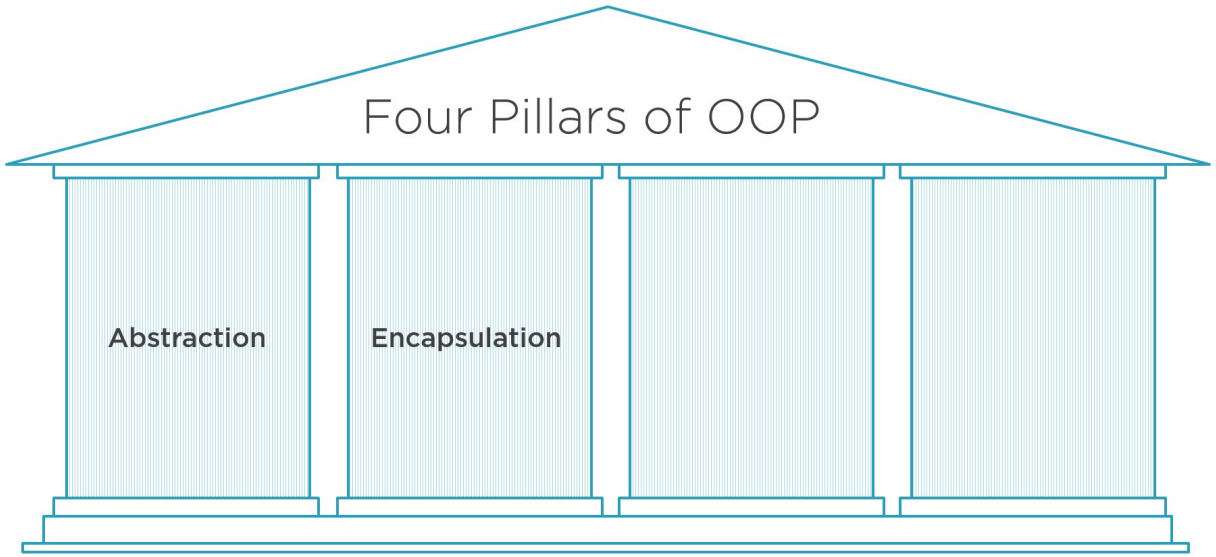
Module Outline





Business Requirements

Object-Oriented Programming (OOP)

Identifying classes

- Represents business entities
- Defines properties (data)
- Defines methods (actions/behavior)

Separating responsibilities

Establishing relationships

Leveraging reuse

Acme Customer Management System

Manage business, residential, government, and educator types of customers

Manage our products

Accept orders from customers online or through our call center

Start with the nouns.

Acme Customer Management System

Manage business, residential, government, and educator types of customers

Customer

Manage our products

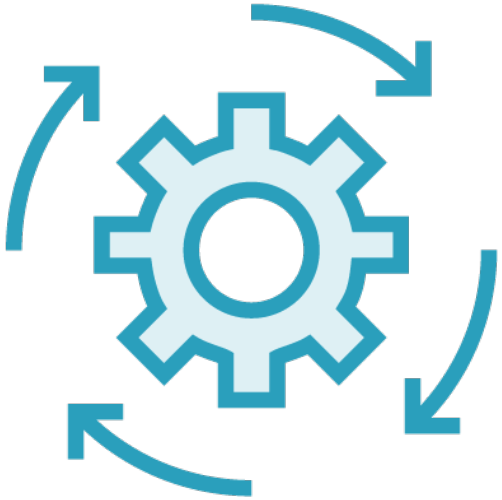
Product

Accept orders from customers online or through our call center

Order

Defining Appropriate Members

Properties: data



Methods: operations

Acme Customer Management System

- Customer's name (Last name, first name)
- Email address
- Home and work addresses

- Product name
- Description
- Current price

- Customer
- Order date
- Shipping address
- Products and quantities ordered

Define Appropriate Members

Customer	Product	Order
•Name •Email address •Home address •Work address	•Product name •Description •Current price	•Customer •Order date •Shipping address •Product •Quantity

Define Appropriate Members

Customer	Product	Order	Order Item
•Name •Email address •Home address •Work address	•Product name •Description •Current price	•Customer •Order date •Shipping address •Order items	•Product •Quantity

Define Appropriate Members

Customer	Product	Order	Order Item
•Name •Email address •Home address •Work address •Validate() •Retrieve() •Save()	•Product name •Description •Current price •Validate() •Retrieve() •Save()	•Customer •Order date •Shipping address •Order items •Validate() •Retrieve() •Save()	•Product •Quantity •Validate() •Retrieve() •Save()

Consider the effect of data changes over time

Define Appropriate Members

Customer	Product	Order	Order Item
•Name •Email address •Home address •Work address •Validate() •Retrieve() •Save()	•Product name •Description •Current price •Validate() •Retrieve() •Save()	•Customer •Order date •Shipping address •Order items •Validate() •Retrieve() •Save()	•Product •Quantity •Validate() •Retrieve() •Save()

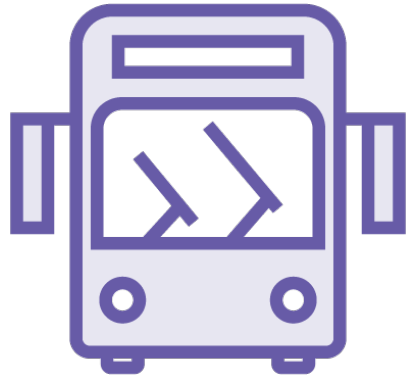
Define Appropriate Members

Customer	Product	Order	Order Item
•Name •Email address •Home address •Work address •Validate() •Retrieve() •Save()	•Product name •Description •Current price •Validate() •Retrieve() •Save()	•Customer •Order date •Shipping address •Order items •Validate() •Retrieve() •Save()	•Product •Quantity •Purchase price •Validate() •Retrieve() •Save()

Abstraction

Manage business, residential, government, and educator types of customers

Customer

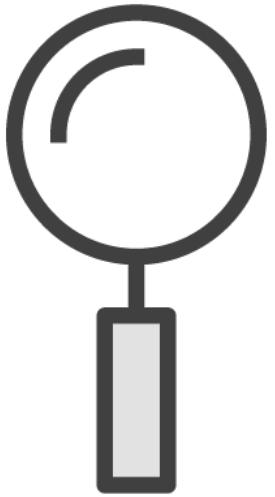


Joe Smith
Joe@aol.com
123 Main St.

Abstraction

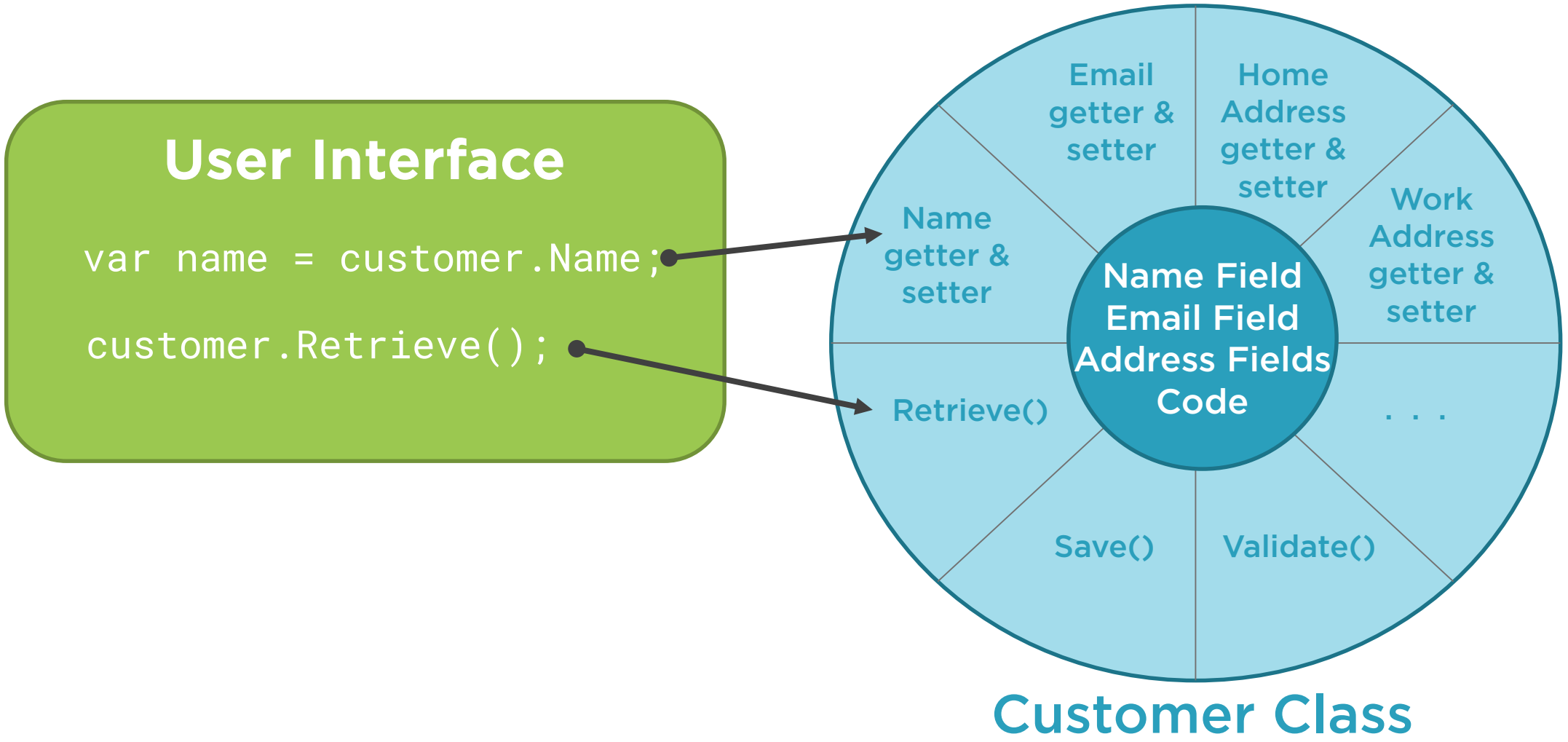
Simplifying reality

Ignoring extraneous details

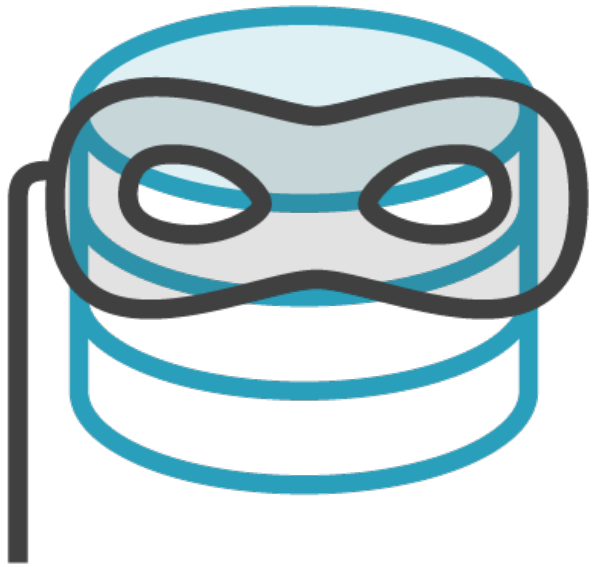


Focusing on what is important for a purpose

Encapsulation



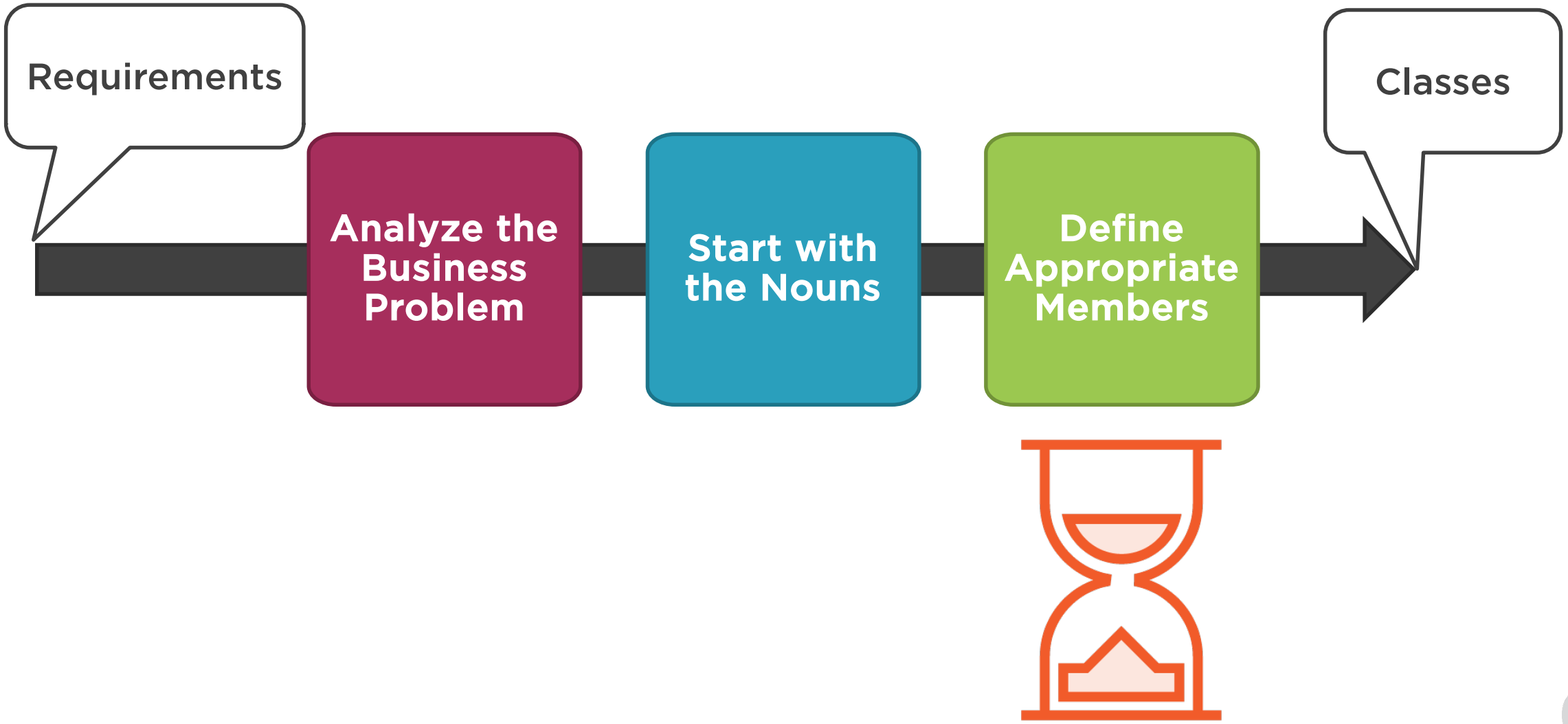
Encapsulation

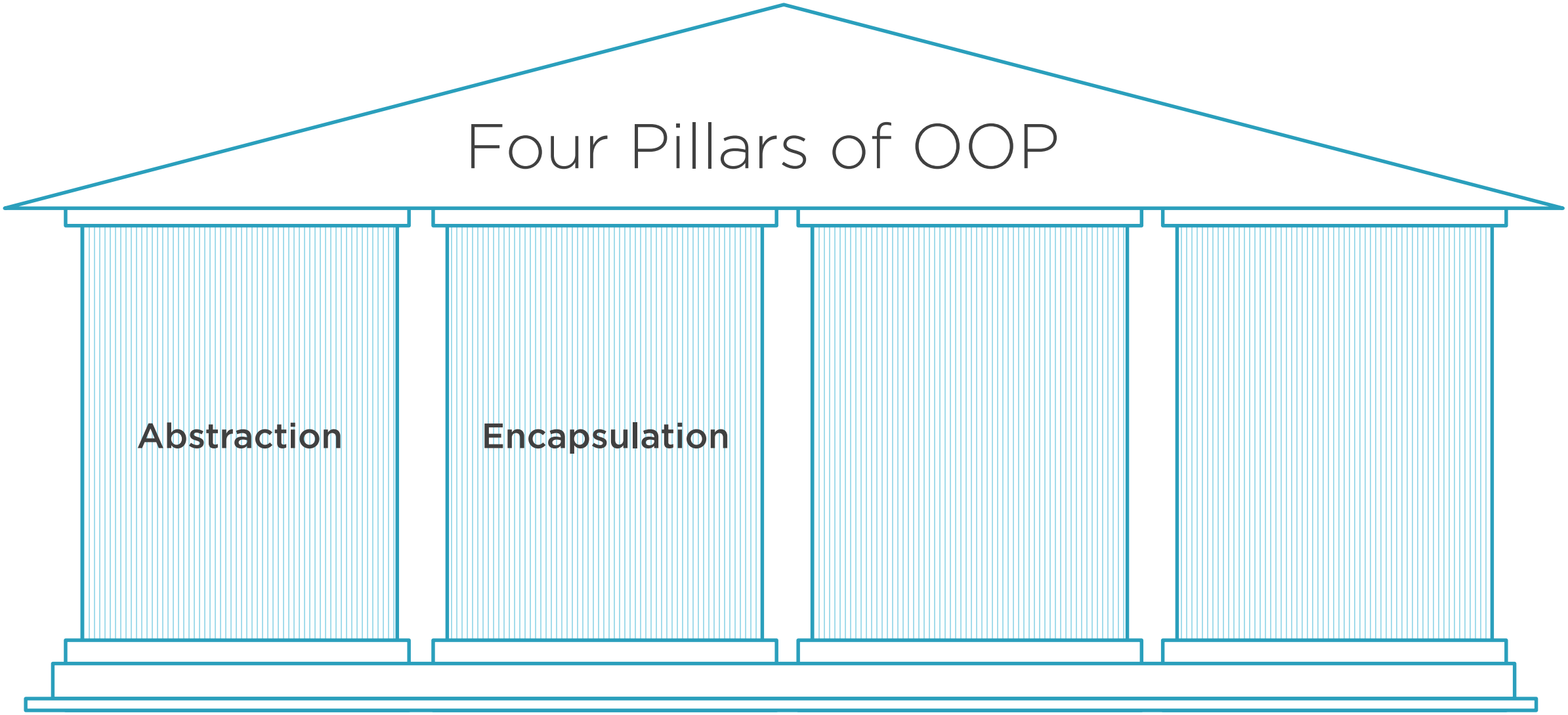


- Protects the data
- Allows for authorization before getting the data
- Allows for validation before setting the data

- Helps manage complexity
- Only the class needs to understand the implementation
- Implementation can be changed without impacting the application

Identifying Classes




Four Pillars of OOP
Abstraction
Encapsulation

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