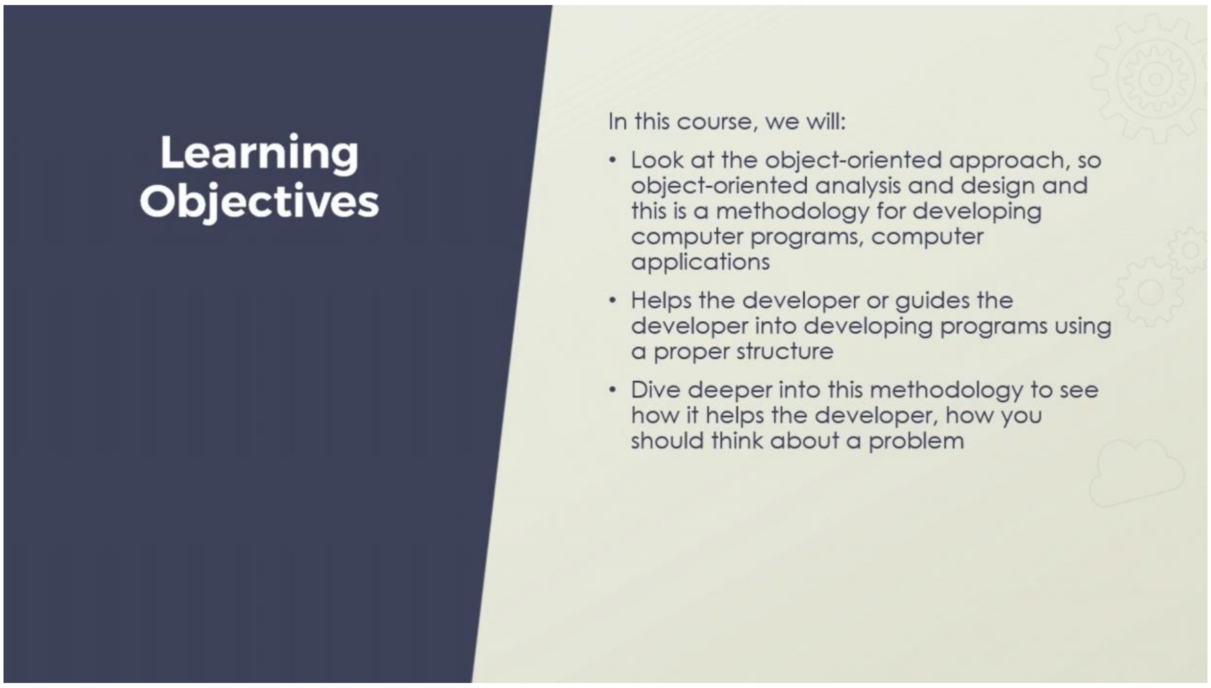
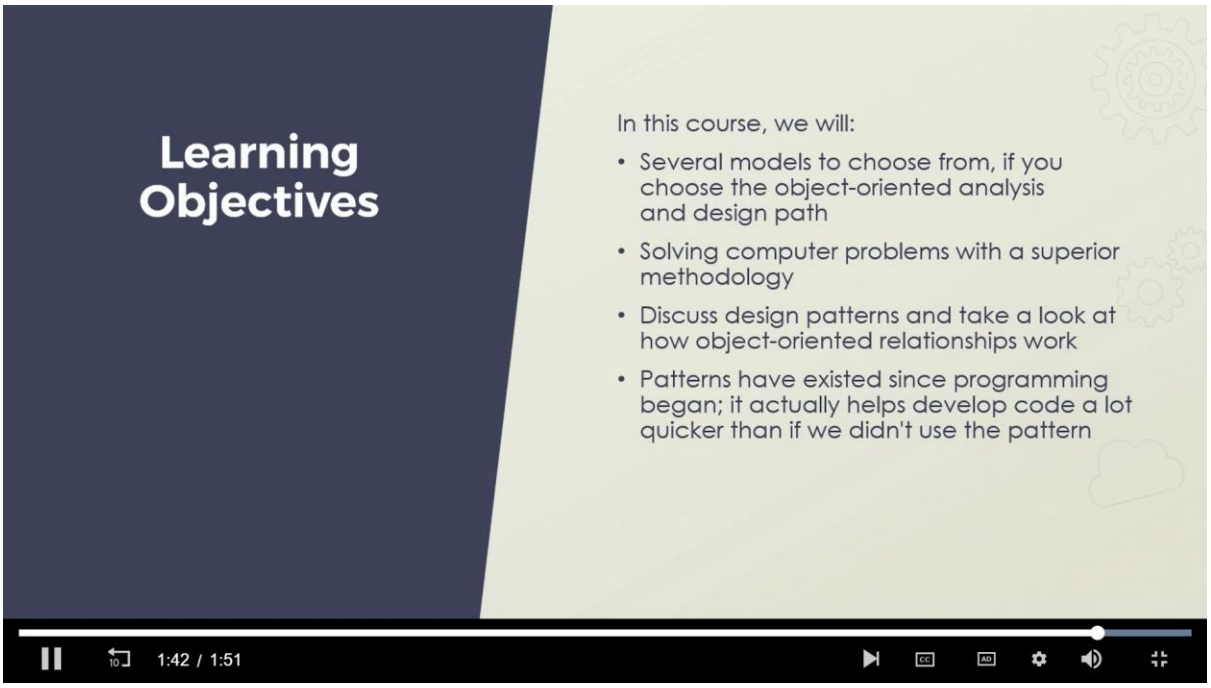


Learning Objectives

In this course, we will:

- Look at the object-oriented approach, so object-oriented analysis and design and this is a methodology for developing computer programs, computer applications
- Helps the developer or guides the developer into developing programs using a proper structure
- Dive deeper into this methodology to see how it helps the developer, how you should think about a problem

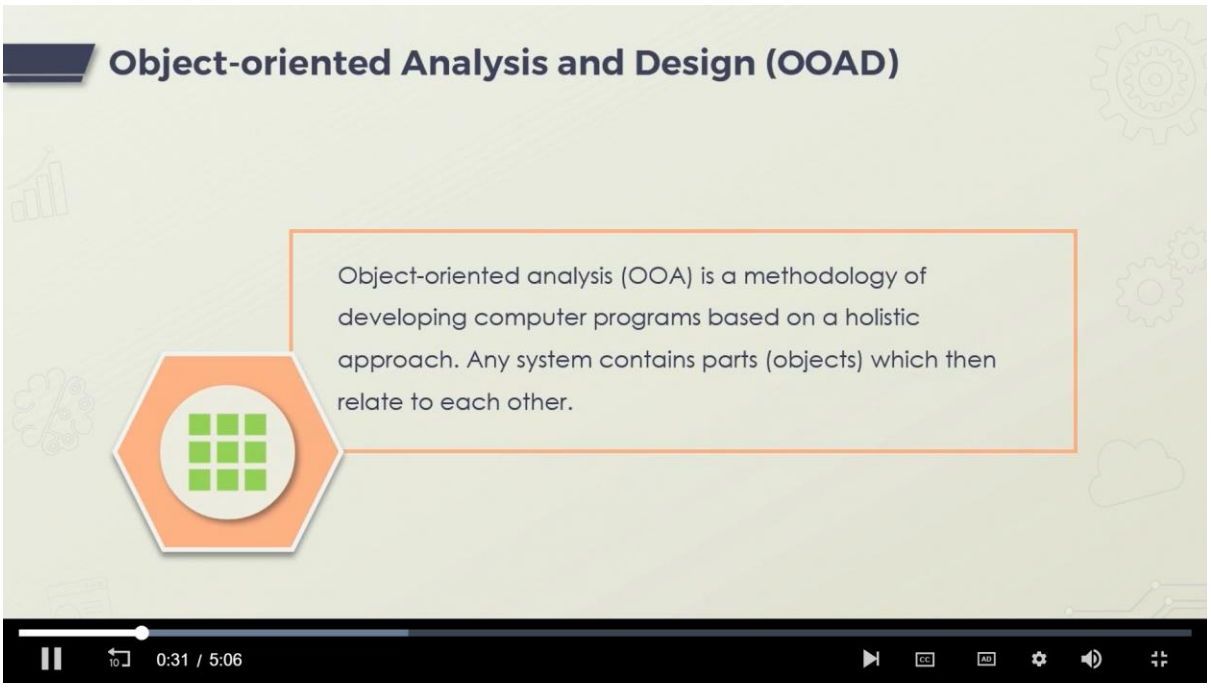


Learning Objectives

In this course, we will:

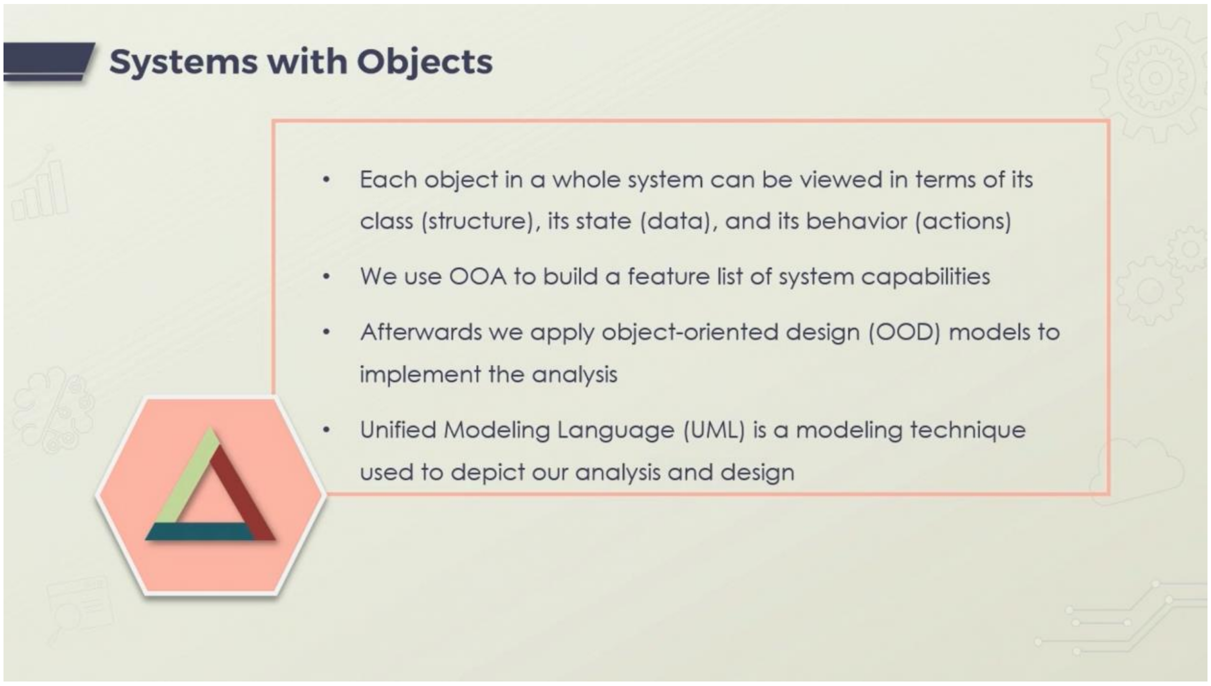
- Several models to choose from, if you choose the object-oriented analysis and design path
- Solving computer problems with a superior methodology
- Discuss design patterns and take a look at how object-oriented relationships work
- Patterns have existed since programming began; it actually helps develop code a lot quicker than if we didn't use the pattern

Introduction to Object oriented analysis and design



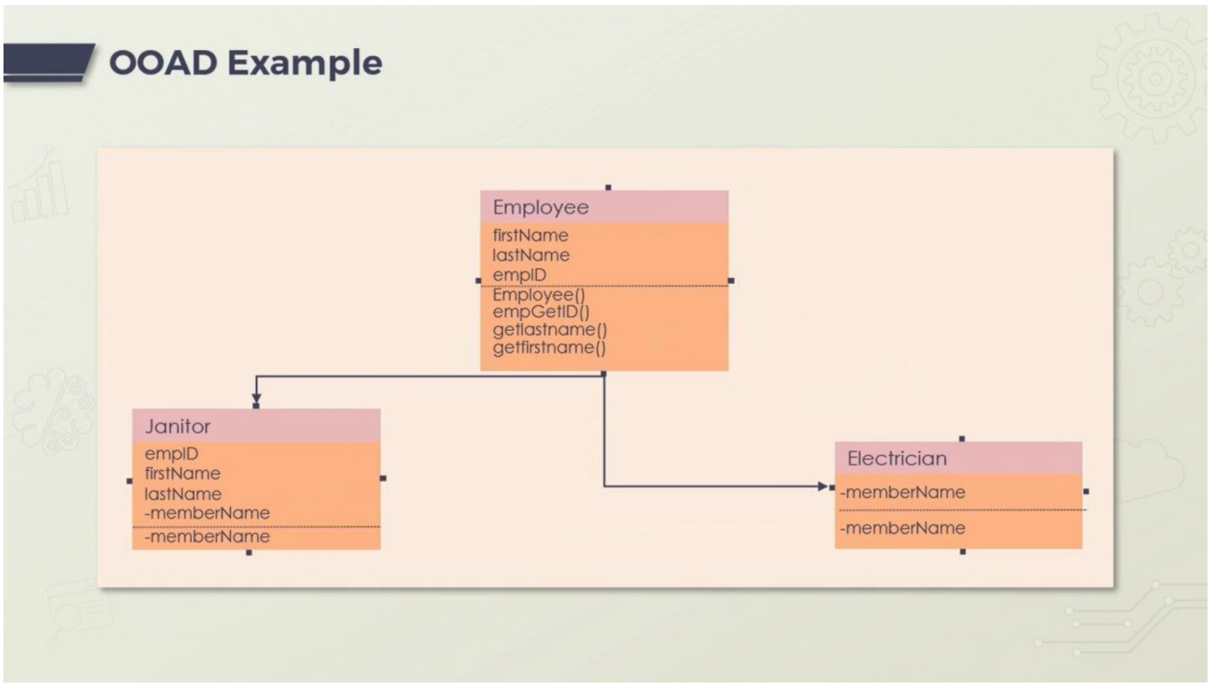
Object-oriented Analysis and Design (OOAD)

Object-oriented analysis (OOA) is a methodology of developing computer programs based on a holistic approach. Any system contains parts (objects) which then relate to each other.

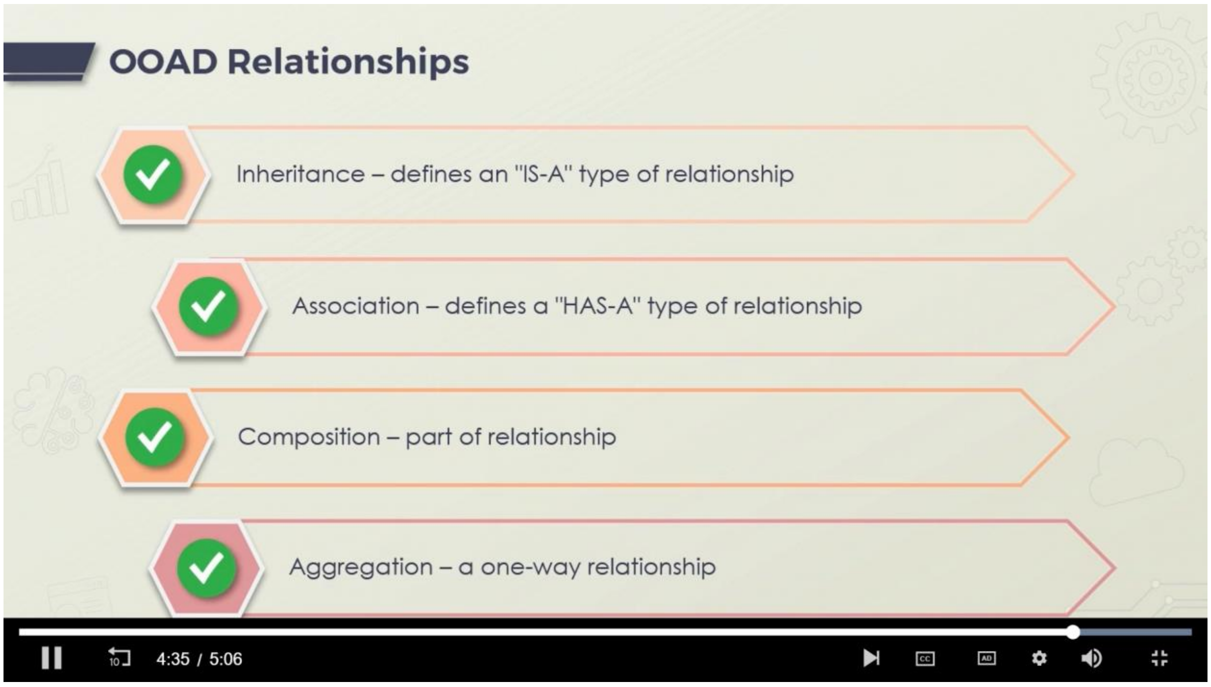


Systems with Objects

- Each object in a whole system can be viewed in terms of its class (structure), its state (data), and its behavior (actions)
- We use OOA to build a feature list of system capabilities
- Afterwards we apply object-oriented design (OOD) models to implement the analysis
- Unified Modeling Language (UML) is a modeling technique used to depict our analysis and design



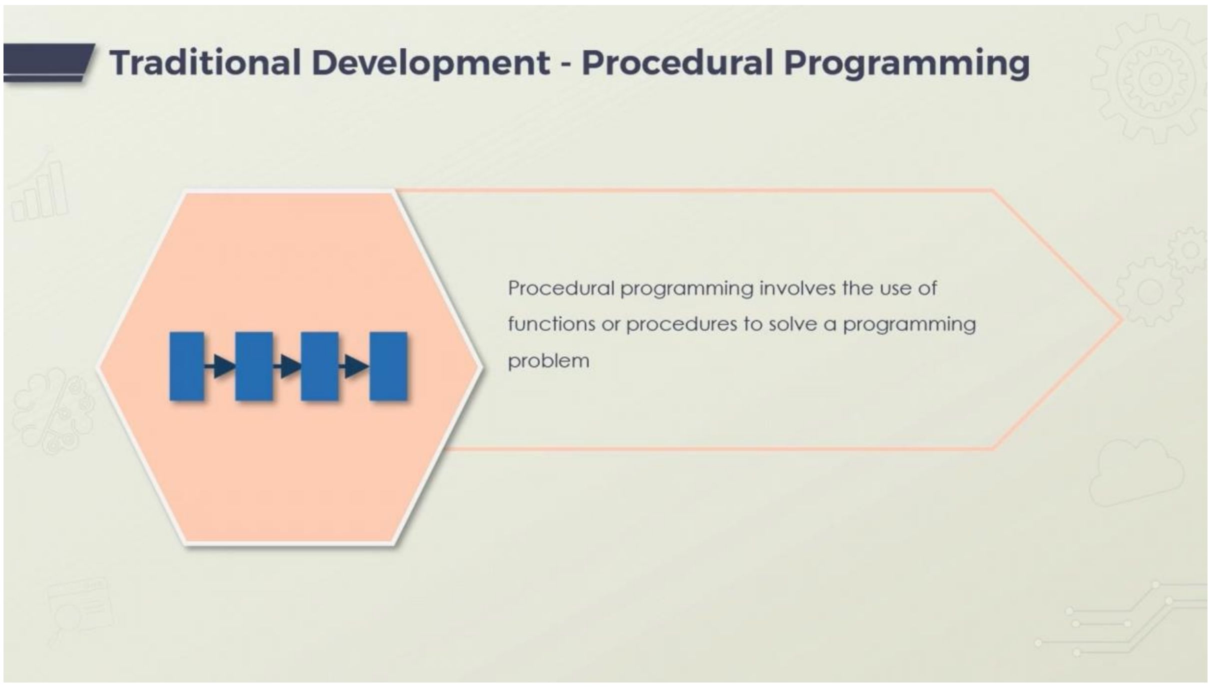
OOAD Example



OOAD Relationships

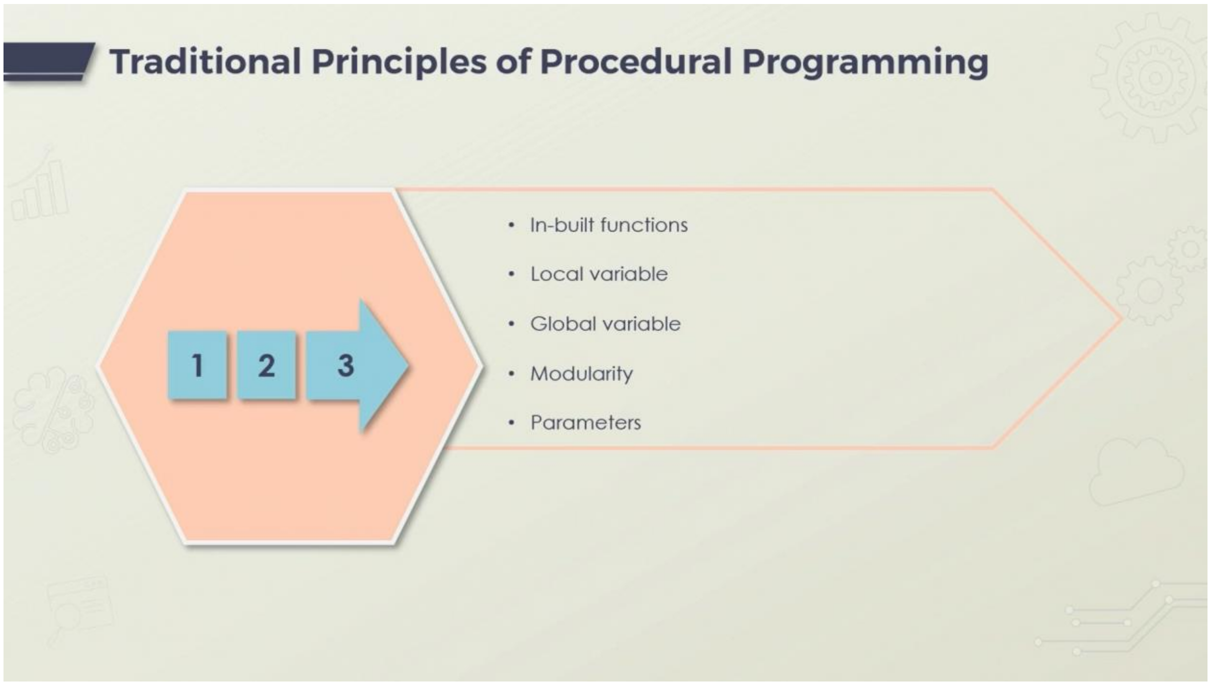
- Inheritance – defines an "IS-A" type of relationship
- Association – defines a "HAS-A" type of relationship
- Composition – part of relationship
- Aggregation – a one-way relationship

OOAD Versus Traditional approaches



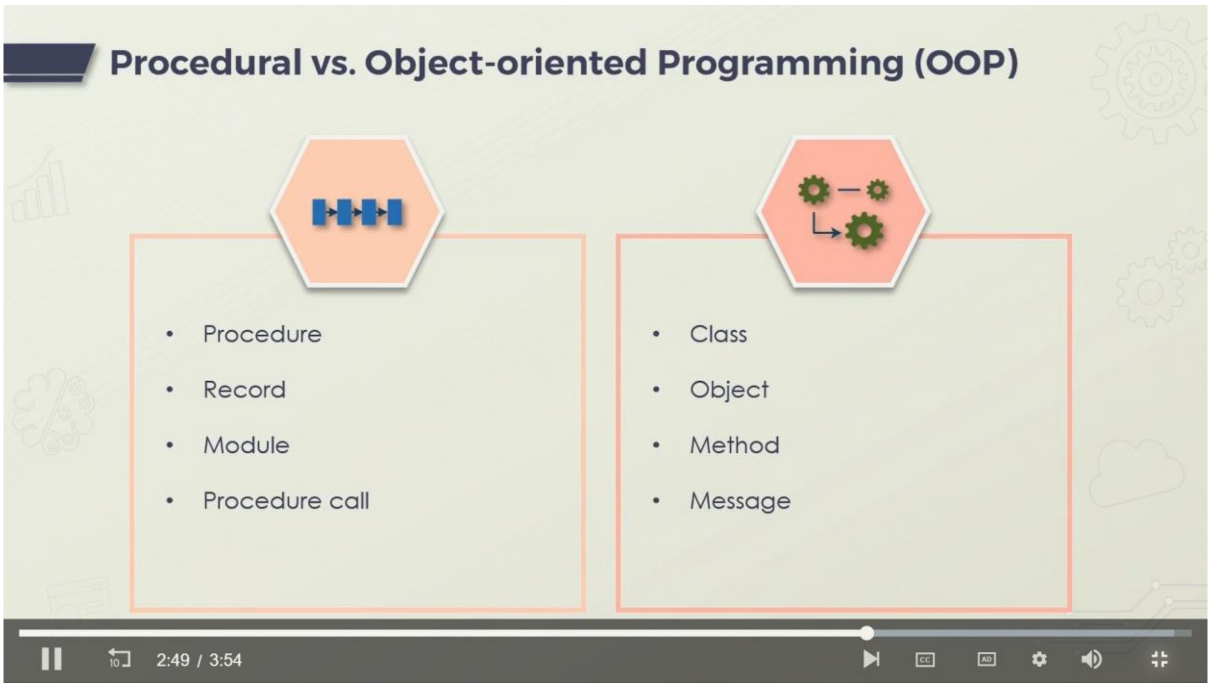
Traditional Development - Procedural Programming

Procedural programming involves the use of functions or procedures to solve a programming problem



Traditional Principles of Procedural Programming

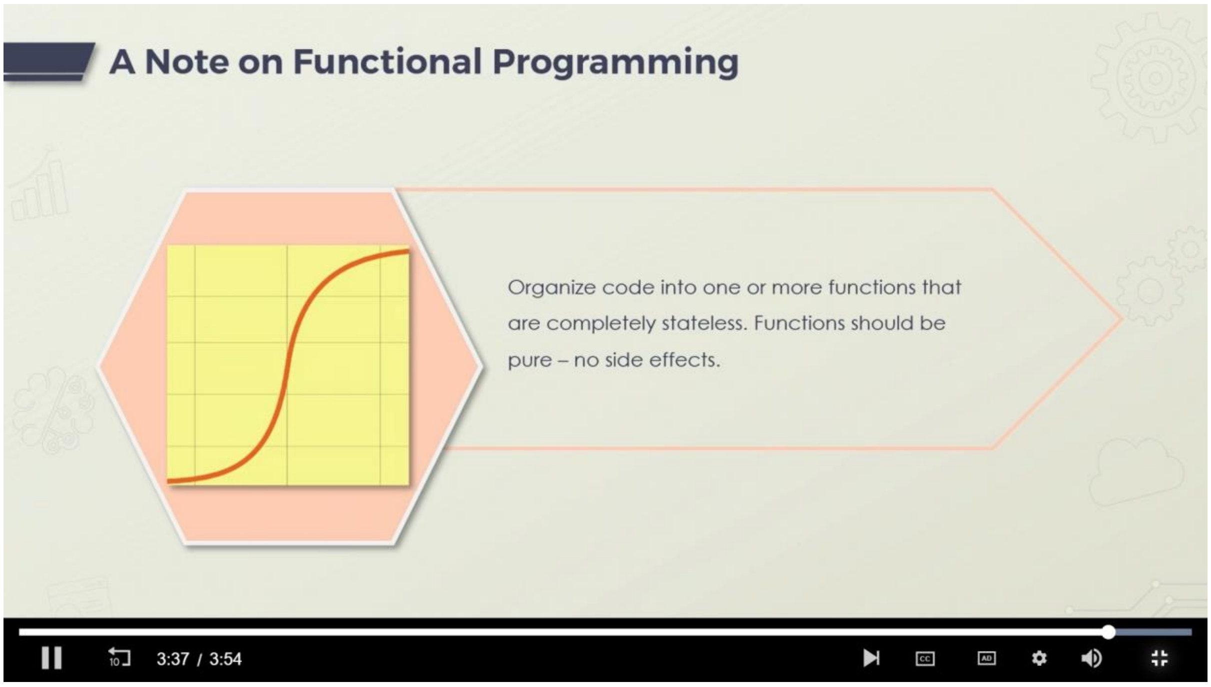
- In-built functions
- Local variable
- Global variable
- Modularity
- Parameters



Procedural vs. Object-oriented Programming (OOP)

- Procedure
- Record
- Module
- Procedure call

- Class
- Object
- Method
- Message



A Note on Functional Programming

Organize code into one or more functions that are completely stateless. Functions should be pure – no side effects.