

Global MOOC Roadmap

1. Week 1: Welcome on Board and Syntax Discovery
2. Week 2: Pharo Syntax, Blocks and Inspector
3. Week 3: Design, Class Methods and Collections
4. Week 4: Inheritance&Lookup and Web Development
5. Week 5: Exception, Debugging and Reflection
6. Week 6: Rethink lookup and Advanced OO Design
7. Week 7: More on OO Design and Testing

1.1 Different kind of Resources and Activities

This document summarizes the whole MOOC planning week by week. It is best to do the activities in the order they are presented but you can mix if you feel that this is better for you. There are several kinds of activities (that you can identify also based on the their names and/or tags):

- **[Lecture]** means that you should watch a video explaining some notions described in slides. You will find a handout version in PDF of all slides in this document. We invite you to always watch videos while taking notes on the slides. All the code snippets presented in the slides are normally fully executable in Pharo and we suggest you execute them.
- **[Live]** means that you should watch a video demonstrating a certain interactive aspect of the Pharo IDE. We suggest to reproduce what is shown in the video.

- **[Quiz]** means that you should answer a sequence of small questions. Watching the lectures will most of the time be enough to answer. Some questions will explicitly ask you to check in Pharo. This is based on the Quiz success that you will get your Pharo Mooc certificate.
- **[Redo]** means that you should
 - (1) watch a Live coding video session and
 - (2) redo what is demonstrated step by step using your Pharo installation.

During the first redo you should act as a monkey just reproducing what you see.

- **[Exercise]** means that you should do a guided project using your Pharo installation. The exercise is described by a document. Sometimes you have version with holes and full versions. It is best to start with a version without the solution, but this is up to you to decide. We will not grade you on such exercises but they are key to train yourself.
- **[Mini project]** means that you get a longer exercise named TinyBlog that will last the complete Mooc. Each week we will add new functionality. Each week you will get a complete code version of the previous week so that if you failed the week before you can still continue during the new week.
- **[Challenge]** means that you have to solve a little challenge by poking in Pharo. The idea is that you should look around, mess up and not be afraid to get lost. You should do the challenge for yourself, we will not grade it because there are several ways to solve it. Every week you will get the solution of the previous challenge and we strongly encourage you to read the messages and classes we use in the solution. Challenges are usually fun and challenging a bit, of course.

1.2 Week 1: Welcome on Board and Syntax Discovery

1. [Lecture] Objectives of this MOOC
2. [Lecture] Pharo: an Immersive Object-Oriented System
3. [Lecture] Pharo Vision
4. [Lecture] Pharo Object Model in a Nutshell
5. [Lecture] Pharo Syntax in a Nutshell
6. [Lecture] Class and Method Definitions
7. [Live] Selecting and executing expressions

1.3 Week 2: Pharo Syntax, Blocks and Inspector

8. [Live] Learn Pharo with Prof Stef
9. [Live] Syntax Highlighting gives Feedback
10. [Live] Learn Keyboard Shortcuts
11. [Redo] Coding a Counter
12. [Exercise] Expressions and Messages
13. [Challenge] Challenge 0

1.3 Week 2: Pharo Syntax, Blocks and Inspector

1. [Lecture] Understanding Messages
2. [Lecture] Messages for Java programmer
3. [Lecture] Messages: Composition and Precedence
4. [Lecture] Understanding Messages: Sequence and Cascade
5. [Live] Finding Methods with Finder
6. [Live] GTInspector 1: Inspect and Interact with Objects
7. [Lecture] Introduction to Blocks
8. [Lecture] Loops
9. [Lecture] Booleans and Conditions
10. [Lecture] Parenthesis vs Square Brackets
11. [Lecture] Yourself
12. [Lecture] The Essence of Dispatch through an Exercise
13. [Live] Nautilus 1: First Meet with the Code Browser
14. [Live] Nautilus 2: Packages, Tags and Groups
15. [Live] Nautilus 3: Inheritance view
16. [Redo] Coding a Counter in the Debugger
17. [Exercise] Solution: Expressions and Messages
18. [Exercise] Expression Results
19. [MiniProject] TinyBlog (Chapters 1 and 2)
20. [Challenge] Solution: Challenge 0
21. [Challenge] Challenge 1

1.4 **Week 3: Design, Class Methods and Collections**

1. [Lecture] Essence of Dispatch: Taking Pharo Booleans as Example
2. [Lecture] Essence of Dispatch
3. [Lecture] Variables
4. [Lecture] A Simple HTTP Application: a Pretext to Revisit Pharo Syntax
5. [Live] Nautilus 4: How to Become a Super Pharo Developer: Understanding Sender and Implementors
6. [Live] Nautilus 5: Navigating Fast Inside Classes
7. [Lecture] Class Methods
8. [Lecture] An Overview of Essential Collections
9. [Live] Spotter 1: Find and Browse a Class
10. [Live] Spotter 2: Filter Results by Category
11. [Lecture] Iterators
12. [Lecture] Stream Overview
13. [Lecture] Understanding Return
14. [Redo] Coding a Little Domain Specific Language
15. [Exercise] Solution: Expression Results
16. [Exercise] Rewriting Expressions
17. [MiniProject] TinyBlog (Chapter 3)
18. [Challenge] Solution: Challenge 1
19. [Challenge] Challenge 2

1.5 **Week 4: Inheritance, Lookup and Web Development**

1. [Lecture] Inheritance Basics
2. [Lecture] Inheritance & Lookup: Lookup
3. [Lecture] Inheritance & Lookup: Super
4. [Lecture] Inheritance & Lookup: DoesNotUnderstand:
5. [Lecture] Inheritance & Lookup: Lookup in Metaclasses
6. [Lecture] Class Methods at Work
7. [Lecture] Overview of Pharo Web Stack

8. [Lecture] Seaside: an Innovative Web Application Framework
9. [Lecture] Seaside: Rendering Components
10. [Lecture] Seaside: a Glance at MetaData and REST
11. [Lecture] Voyage: NoSql Object Database
12. [Live] How to load code from repository
13. [Live] How to load projects
14. [Live] Nautilus 6: An overview of Refactorings
15. [Live] Nautilus 7: Using the Quality Assistant and Code Critic
16. [Exercise] Solution: Rewriting Expressions
17. [MiniProject] TinyBlog (Chapters 4 to 7)
18. [Exercise] Building a Simple Contact Book Application
19. [Challenge] Solution: Challenge 2
20. [Challenge] Challenge 3

1.6 **Week 5: Exceptions, Debugging and Reflection**

1. [Lecture] Seaside: Composing Components
2. [Lecture] Really Understanding Class Methods
3. [Lecture] Common Errors
4. [Lecture] Powerful Exceptions: an Overview
5. [Lecture] Debugging in Pharo
6. [Lecture] SUnit: Unit Tests in Pharo
7. [Lecture] Files in Pharo
8. [Lecture] Reflection: Basic Introspection
9. [Lecture] Benchmarking in Pharo
10. [Live] Spotter 3: Scoping and Reducing Search
11. [Live] Spotter 6: Search, Navigate and Preview Files
12. [Live] Learning the Debugger
13. [Live] How to find a bug?
14. [Live] GTInspector 2: Inspect Files and Directories
15. [MiniProject] TinyBlog (Chapters 8 and 9)
16. [Exercise] TinyChat

17. [Challenge] Solution: Challenge 3
18. [Challenge] Challenge 4

1.7 **Week 6: Rethink Lookup and Advanced OO Design**

1. [Lecture] Did You Really Understand Super?
2. [Lecture] Understanding the Implementation of ifTrue:ifFalse:
3. [Lecture] Dice new vs. self class new
4. [Lecture] Message sends are plans for reuse
5. [Lecture] Hooks and Templates
6. [Lecture] Runtime Architecture
7. [Lecture] Characters, Strings and Symbols
8. [Lecture] Dynamic Vs. Literal Arrays
9. [Live] Understanding Images and Changes Files
10. [Live] Using the Pharo Launcher to manage your Pharo images
11. [Live] Diffing and Merging in Pharo
12. [Live] GTInspector 4: Build Custom Tab Views for your Objects
13. [Challenge] Solution: Challenge 4
14. [Challenge] Challenge 5

1.8 **Week 7: More on OO Design and Testing**

1. [Lecture] Advanced Points on Classes
2. [Lecture] Variable Size Objects
3. [Lecture] Understanding Metaclasses
4. [Lecture] Reflective Operations for Live Programming
5. [Lecture] DoesNotUnderstand: a Precious Hook
6. [Lecture] Reflection: Stack as an Object
7. [Lecture] Avoid Null Checks
8. [Lecture] A Journey in Pharo: A Bright Future
9. [Live] Spotter 4: The Preview pane
10. [Live] Spotter 5: Search in Playground History

1.8 Week 7: More on OO Design and Testing

11. [Live] GTInspector 3: Understand Pharo Internals by Inspection
12. [Challenge] Solution: Challenge 5