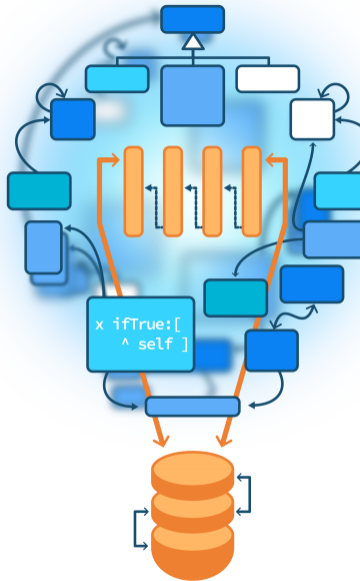


C3P: Advanced Object-Oriented Design

S. Ducasse and G. Polito



Lectures Web Site

- `https://github.com/UnivLille-Meta/Miage23`
- All slides are at
`https://rmod-files.lille.inria.fr/?dir=DesignCoffeeClub/`



From previous year students

"J'ai personnellement trouvé le cours très intéressant et rafraîchissant. C'est sûrement le cours où j'ai appris le plus de choses depuis le début de mes études supérieures. J'ai surtout trouvé que c'était le cours avec le plus de valeur unique (des "cours" tutos pour faire des requêtes SQL ou apprendre du JS c'est bien, mais je pourrais en trouver une vingtaine en 2 clics...)"



Testimonies on the web

- "J'ai trouvé ça très intéressant, beaucoup plus que prévu ! je regrette de ne pas m'y être mis plus tôt. J'ai enfin l'impression de vraiment faire de la POO ! Ou à l'inverse je me rend que je n'en faisais pas vraiment... - Anonymous, 2019"
- "En fait on peut apprendre facilement plein de trucs car on peut voir tout le code." Abir 2022
- "I finally understood objects after five years of Java and working in a C++ company."
- "I have already learned so much! I have spent the last 20 years or so in software development and, following this Mooc, I realized I hadnt really grasped the essence of object-oriented design. - Anonymous"



Yes it can feel strange but

- First exercise: Watch Karate Kid I (the original movie)



<https://www.youtube.com/watch?v=SMCsX19SGgY>

- and do what you are told to do

Our main goal as OO experts

- Make sure that you will **never program the same** after this lecture!
- In **any** OOP languages!
- Please try to see that this is not only about Pharo because it is not!



Multiple Goals

- Learn to learn fast
- Advanced Object-Oriented Design
- Tests and TDD
- Reverse engineering
- Think about learning
- Learn how to write activity report
- Improve your communication skills
- Work on real unknown code



Advanced Object-Oriented Design

- **Revisit** and realign OOP concepts
- **Advanced** topics
 - double dispatch
 - design patterns
 - advanced patterns



Tests...

- You know tests are important
- Why don't you use them?
- Because you did not feel the **pain**
 - Is my change breaking something?
 - If I merge this change does it work?



Reverse engineering

There is 80% of chance that you will work on programs that you did not write

- How to understand fast the architecture?
- Navigate/browse large code bases
- Understand design
- Identify key points



Some 'fun' stories about real business

- Half of the software of a large Belgium major insurance company was written in a language that does not appear on google!!!
- They got 700,000 Euros fine. Only that :)
- A bank in Paris is running all its business on an orphan language mixing COBOL and working on an obsolete OS that is simulated.
- Others are a mixture between databases and Pascal where we had to wait for a recent version to be able to save the program in a file!
- Key energy-related business in France is still using Fortran 77 with **proprietary** extensions.



A pakistaneese Javascript dev ...

- is paid 8 Euros per hour!
- Are you sure that you want to compete?
- Or do you want to sell your capacity to learn and focus on the added value?



About attitude

- You may complain like a lemming that "there is no documentation"...
- You may better
 - Learn how to learn fast
 - Learn how to jump over obstacles
 - Develop skills that are not mainstream



About learning

- How do you learn?
 - visual, oral?
 - repetition?
 - mental map?
 - iteration?
- What are your strategies to learn fast?
- What are your strategies to improve the quality of your learning?
- We will ask for a presentation on that!



The case of Pharo

- `http://mooc.pharo.org`
- Discord channel `https://discord.gg/QewZMZA`
- `http://books.pharo.org`
- Mailing-lists



Reporting

- Pull vs. Push feedback
- Good reporting lowers manager stress
- Weekly report will be part of the grade!



About soft skills

Soft skills (communication, autonomy, networking, teamwork)

- Soft skills are not well taught at university.
- Let us practice them.
 - How to help other people?
 - How to ask for help so that someone that you do not know and who does not earn anything will still help you?

Practice, learn, practice

- Reflect on your process
- practice again



Grading

- Organize in groups of 2/3
- Register and create your own folder at <https://github.com/UnivLille-Meta/Miage23>
- You have the right to kick out someone not working from your group!
 - read resources about the Mollasson



Grading

- One presentation
 - Week 5
- Two exams: week 7 and week 12
- Work done as exemplified by Pull Requests
- Short weekly report showing
 - what has been done
 - what's next
 - actions to learn (discord chat, watching videos)
 - actions to help others
 - PR



Schedule

Check Calendar file



Admin

- <https://github.com/UnivLille-Meta/Miage23> pour le cours
- All slides are at <https://rmod-files.lille.inria.fr/DesignCoffeeClub/2023-Miage/>



Resources

- Mooc <http://mooc.pharo.org>
- Discord <https://discord.gg/QewZMZA>
- Books: <http://books.pharo.org>
- Git:
 - <https://rmod-files.lille.inria.fr/DesignCoffeeClub/Slides/Support-1-BasicGit.pdf>
 - <https://rmod-files.lille.inria.fr/DesignCoffeeClub/Slides/Support-2-AdvancedGit.pdf>
 - <https://rmod-files.lille.inria.fr/DesignCoffeeClub/Slides/Support-2-PracticalGit.pdf>
- Agile programming Explained
- Design patterns
 - Smalltalk design pattern companion
 - Gang-of-four book (Gamma et al)
- Pharo by Example <http://books.pharo.org>
- Pharo with Style <http://books.pharo.org>



Conclusion

- A lecture with multiple objectives
- Remember you can learn a lot!

