Advanced Programming

Course Description

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Lecturer
Computer Engineer
School of Engineering
Universidad Distrital Francisco José de Caldas

2024-III

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Outline

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Academic Experience

- **Computer Engineer**, M.Sc. in Computer Engineering, and *researcher* for 15 years.
- 7 years as **full-time associate professor** at colleges, for Computer Engineering programs.
- 3 years as **lecturer professor** for both colleges and goverment STEM programs.
- **Speaker** in Colombia, Brasil, Bolivia, at IEEE events and colleges.

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Overview

This course is designed to introduce undergraduate students to some `advanced topics` of **object-oriented modeling** and *good practices* of code implementation. This is **not** a course fully focus on **software architecture**, but it is part of main concepts of software achitecture.

Classes will consist of lectures, **discussions**, practical examples, and workshops. Also, you must take some readings from *software architecture*. In addition, there will be a **semester-long project**, as well one **exam**, four **workshops**, and ten additional **assignmens**.

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Goals

The main goal of this course is to provide undergraduate students with different **models** and **tools** for solving software problems using **object-oriented design**.

At the end of this course you should be able to **create** a software **backend solution** with a good level of **quality**. Also, you should be able to **design** robust software systems in an **agnostic** way.

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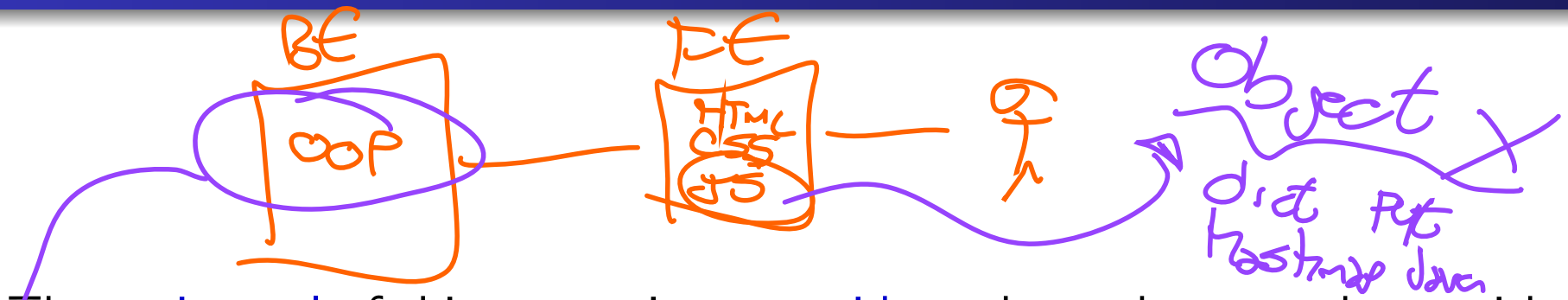

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Prerequisites

This is a basic course, so you must have some knowledge in:

- **Programming** in Java, Python, or C++.
- **Object-Oriented Programming** foundations.
- UML and **Class Diagrams** basic concepts.
- **Git** basic usage, and **GitHub** basic usage.
- **Data systems** and relational model basic concepts.
- Use of **IDEs** like VS Code, Eclipse, or PyCharm.

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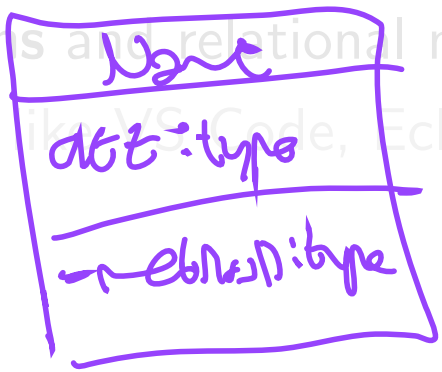

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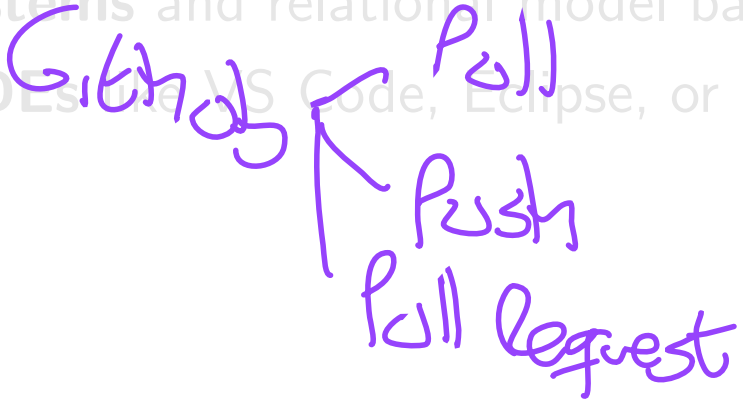

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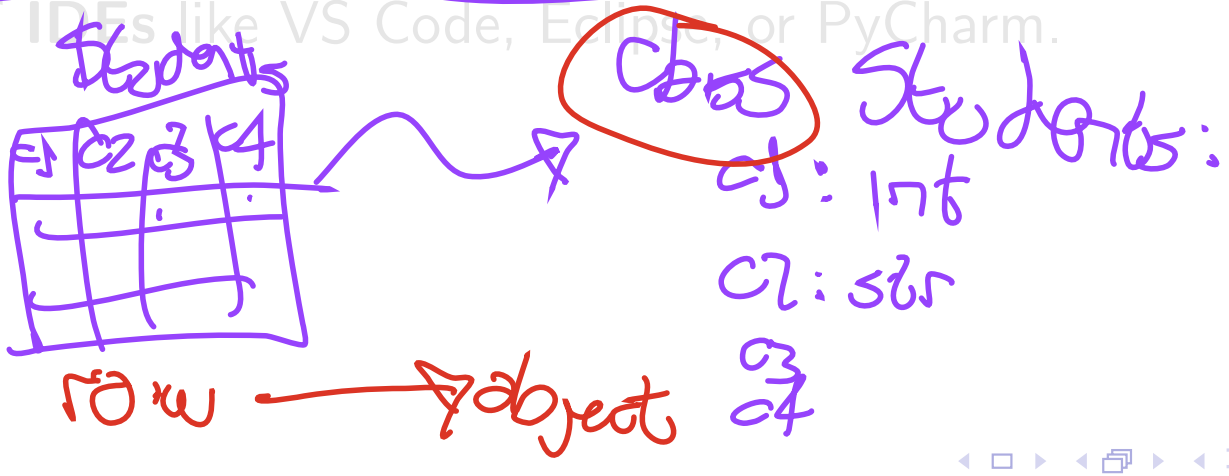

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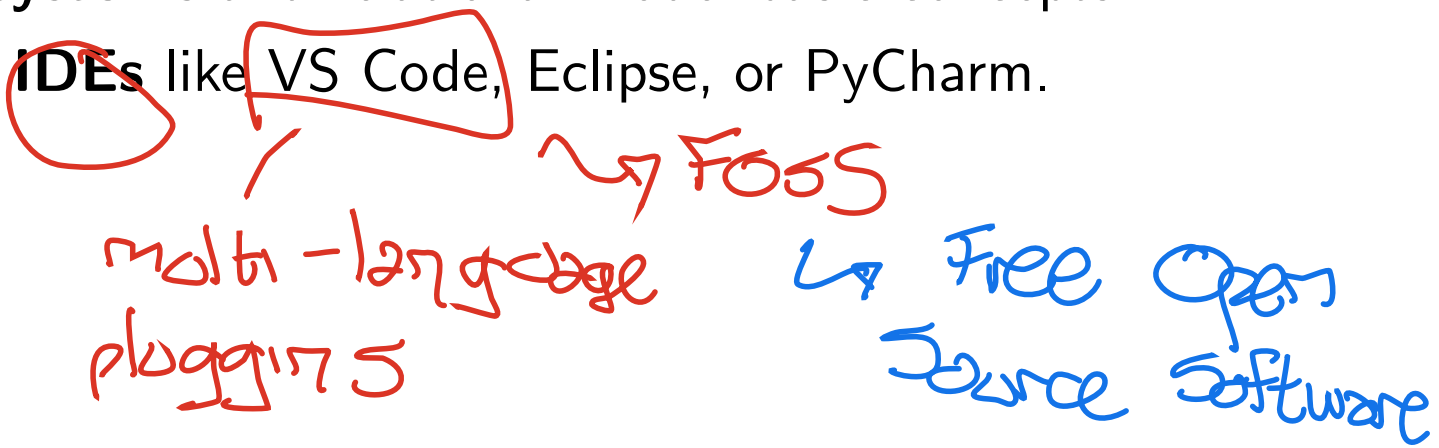

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Syllabus I

Period	Topic	Time
Period I	Object-Oriented Programming	2 classes
	UML and Class Diagrams	2 classes
	Workshop: Classes in Python	1 session
	Inheritance, Abstraction and Polymorphism	2 classes
	Classes, Packages, and Spaces	1 class
	Workshop on Object-Oriented Relations	1 session
	Paper Revision	1 session
Period II	Object-Oriented Design	3 classes
	Workshop on Object-Oriented Design	1 session
	Resources, Memory, Serialization	2 classes
	Workshop on Resures Management	1 session
	Test 1	1 session

Table: Schedule for Period I & II

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Syllabus II

Period	Topic	Time
Period III	UI with Python TKinter	3 classes
	Workshop on Python UI	1 session
	DataBases, DAOs, DTOs	1 class
	Workshop on PostgreSQL and SQLAlchemy	1 session
	Architecture on Layers and Monoliths	2 classes
	Workshop on Monoliths	1 session
	Questions and Answers	2 classes
	Final Test	1 session
	Projects Presentation	1 session

Table: Schedule for Period III

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Grades Percentages

Period	Item	Percentage
Period I	Assignments	5%
	Workshops	20%
	Project	10%
Period II	Assignments	5%
	Workshops	20%
	Course Test	10%
Period III	Paper + Poster	5%
	Project Report	10%
	Project on Production	15%

Table: DataBases Foundations Grades Distribution

Don't hate the player, hate the game

- All asignments must be submitted hand-written on **time** and in **english**. Grammar and spelling will **not** be evaluated.
- Copying and pasting from internet is **forbidden**. Please, **develop** your own solutions.
- Class attendance is **not mandatory**. If you **miss** classes, you must *study by yourself*.
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Code of Conduct

- Always be **respectful** to your classmates and to me. You must be **kind** with everyone inside (*and outside*) the classroom.
- There is no a better programming language, tool, or technology. There are only **better** or **worse** solutions.
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- **Clean Code: A Handbook of Agile Software Craftsmanship**, by Robert C. Martin.
- **Refactoring: Improving the Design of Existing Code**, by Martin Fowler.
- **Construcción de Software Orientado a Objetos**, by Bertrand Meyer.
- **Thinking Java**, by Bruce Eckel.
- **Java2 How To Program**, by Deitel & Deitel.

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- **Python 3 Object-Oriented Programming**, by Dusty Phillips.
- **Fluent Python: Clear, Concise, and Effective Programming**, by Luciano Ramalho.
- **Effective Python: 90 Specific Ways to Write Better Python**, by Brett Slatkin.
- **Python Cookbook: Recipes for Mastering Python 3**, by David Beazley.

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Thanks!

Questions?

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