Analiza și Modelarea Sistemelor Software - Intro

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2025

Welcome

- Course: Software Systems Modelling / Analiza și Modelarea Sistemelor Software (AMSS)
- Instructor: Traian-Florin Șerbănuță
- Semester: Fall 2025
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Agenda

1. Introductions
2. Course overview
3. Why analysis & modeling?
4. Interactive exercise
5. Mini modeling challenge
6. Logistics & next steps

Who We Are

- Name
- Program
- One fun fact about you
- Your experience with software / modeling

Course Scope & Objectives

By the end of the course, students should get better at:

- Analyzing requirements of software systems
- Creating structural and behavioral UML models
- Applying (some) design patterns effectively
- Evaluating models for consistency and completeness

Course Structure

- **Structural diagrams**: class, package, component, deployment
- **Behavioral diagrams**: use case, state, activity, interaction
- **Model evaluation & testing**
- **Documentation & design patterns**
- **Project**

Assessments

- Project: 90%
  - teams consisting of 4-5 students (recommended)
  - there will be a single note for the entire team
  - documentation (50%) and presentation (50%)
- Participation: 20%

Why Analysis & Modeling?

- Software projects fail due to poor communication and unclear requirements
- Models help us:
  - Visualize systems
  - Detect errors early
  - Improve maintainability
  - Communicate across teams

Icebreaker: Model Your Morning Routine

Task: Draw a simple diagram of how you got from waking up to arriving in class.

- 5 minutes individual work
- Share with a neighbor
- Volunteers present their models

Mini Modeling Challenge

Scenario: A university library system.

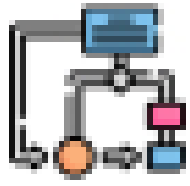
- Users: students, faculty, external
- Operations: borrow, return, renew, reserve
- Constraints: borrowing limits

Task: Sketch a simple class diagram and at least one use case.

Discussion

- Compare different group solutions
- What entities and relationships emerged?
- What use cases are most critical?
- What was challenging?

Logistics & Next Steps

- Join Teams page:  AMSS 2025/2026
- Course materials: https://traiansf.github.io/class/amss2025/
  - Materials from previous iteration of this class (prof. Claudia Chirita): GitHub
- Communication: Teams / email
- Next class: Requirements analysis

Homework

Readings

- Chapters 1 and 2 (and maybe 3) of Martin Fowler's UML Distilled
- Familiarize with some design patterns (and associated humour)

Setup

Install/find some software for drawing UML diagrams you are comfortable with

Examples:

- PlantUML (also available as VSCode extension)
- Mermaid, 4 Github, a la Markdown. Sintaxă diagrame de clasă
- Lucidchart
- app.diagrams
- Visual Paradigm
- Microsoft Paint / Word / pencil and paper

Thank You

- Today: introductions, overview, first modeling exercises
- Next: dive deeper into requirements analysis

Questions?