

RAMDE - Engenharia Orientada a Requisitos e Modelos

Project - Assignment 3
Developing Modelling Languages

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Outline

- 1 Prerequisites
- 2 Description / Tasks
- 3 Deadlines

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Required: Team and Project Repository

It is the same team and repository for all the assignments.

- ❶ Have you already formed a team (2 students) to develop the project?
 - NO!!! What are you waiting for...
- ❷ Have you already informed the teacher by email of your team?
 - NO!!! Do it ASAP to "pam@isep.ipp.pt"
 - Do not forget to had your team mate(s) in "cc"
- ❸ Did you receive the link/invitation to the assigned team project repository?
 - NO!!! Please, contact the teacher reporting this issue (if necessary)
- ❹ Did you check that you have read/write access to the assigned team project repository?
 - NO!!! Do it ASAP
 - Please, contact the teacher in case you do not have read/write access to it

When you answer "Yes" to all these questions, then you are ready to proceed.

Software and Tools

Before proceeding to the assignment tasks, ensure that you have the following tools installed and properly operational:

- **Eclipse Modeling Tools**

- A reference tool solution for MDE and DSL development
- It provides implementations for standards such as **MOF** and **OCL**
- More info:

<https://www.eclipse.org/downloads/packages/release/2024-06/r>

- **Add OCL Support** features

- Use the "Install New Software" option of the "Help" menu
- Select option "2024-06 - <https://download.eclipse.org/releases/2024-06>"
- On the "filter" field type "OCL"
- Select for installation the "Modeling / OCL Classic SDK..." and the "Modeling / OCL Examples and Editors SDK"
- Complete the installation

- **Git**

- **Bitbucket** account registered with ISEP email

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Context

This assignment aims to develop a **modelling language** for *Moore* and another for *Mealy state machines*.

Your solution should be based on what is described about these two kinds of state machines on https://www.itemis.com/en/products/itemis-create/documentation/user-guide/overview_what_are_state_machines.

Read the available content in order to get knowing (at least):

- What a state machine is?
- What are **Moore** state machines?
- What are **Mealy** state machines?
- What are the differences between Moore and Mealy state machines?

Two Goals

This assignment consist on modelling a language, i.e. creating a metamodel, for the **state machines** domain in two sequential goals:

- 1 To **create two metamodels** for state machines
- 2 To **add OCL constraints** to the metamodels

Each goal has its own instructions, presented next.

Goal 1 - State Machine Metamodels

- ❶ Create a metamodel for **Moore** state machines
 - Explore the available editors
 - Create some state machine models using the **dynamic instances** option
 - Create some state machine models using a modelling environment created using the **genmodel** option
- ❷ Create another metamodel for **Mealy** state machines
 - Explore the available editors
 - Create some state machine models using the **dynamic instances** option
 - Create some state machine models using a modelling environment created using the **genmodel** option
- ❸ Explore the differences between the two metamodels
- ❹ Explore possible modelling alternatives
- ❺ Commit the code into your repository
- ❻ Report your work in the readme file of the repository, including images for the produced diagrams

Goal 2 - Adding OCL Constraints

- ❶ Enrich the two previously developed metamodels with OCL constraints to avoid, as much as possible, the possibility of building invalid state machine models
- ❷ Consider these examples as some possible constraints
 - Names must not be empty
 - Names must have at least 3 characters
 - Names must start with uppercase
 - Names must be unique
 - All States should be the target of at least one transition
 - There is one and only one state marked as the *initial state*
- ❸ Explore possible alternatives for previous tasks
- ❹ Commit the code into your repository
- ❺ Report your work in the readme file of the repository, including images for the produced diagrams

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Project Assignment(s) Deadline(s)

Project assignments are drawn up to be developed by students in a sequential order, i.e., first students develop assignment P1, then assignment P2 and so on...

The foreseen project assignments schedule is depicted in the following table:

Part	Assignment	Release Date	Deadline
1	P1	2024/09/23 (W2)	2024/11/03 (W7)
	P2	2024/09/30 (W3)	2024/11/03 (W7)
	P3	2024/10/14 (W5)	2024/11/03 (W7)
	P4	2024/10/28 (W7)	2024/11/03 (W7)
2	P5	2024/11/04 (W8)	2024/11/24 (W10)

Unless stated otherwise, these deadlines must be honoured.

References & Bibliography I

- [1] Alexandre Bragança. *Lectures Handouts on Requirements and Model-driven Engineering (RAMDE) 2023/24*. 2023.

Questions?

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Thank You!