

Tutorial: Learn to build UML profiles

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Lab 1 – A profile to express relational databases

Objectives:

- Build a profile
- Apply it on a model

Exercise:

1. Create a profile to express relational databases
 - A. Identify the concepts that you want to add to UML (Table, Primary key, etc.)
 - B. Identify the meta-classes that will be extended by the concepts newly introduced
 - C. Implement the profile within Papyrus
 - File -> New -> Papyrus Project -> Select “SW engineering - profile” as architectural context
2. Customize the notation associated to the stereotypes
 - A. Associate each of your stereotype with a dedicated icon. This icon will be displayed when you will use your stereotypes on a model. Note: icons can be found at <https://www.iconfinder.com/>.
3. Use your profile on a database model
 - A. Import the model that can be found in the subfolder “**Lab1-Profile-For-RelationalDatabases**”
 - B. Apply your profile on the imported model
 - Click on the root element of your model
 - In the property view select the “profile” tab
 - Click on the “+” button and reference the profile that is in your workspace.
 - C. Complete the database model (using your stereotypes) to satisfy the following requirements
 - A customer is identified by an “ID”
 - A customer can be client in zero or many banks
 - A bank handles zero or many account
 - A Bank is identified by an “ID”
 - A customer is the owner of a specific account
 - A account has only one owner
 - A customer can realize transactions.
 - A transaction takes place at a specific date.
 - A transaction is related to a specific account.
 - **Note: If you cannot fulfill all the requirements, this probably means you need to refine your profile.**

Lab 2 – Requirements modeling with SysML v1

REQUIREMENTS OF A RADIO ALARM CLOCK

«requirement» Simuler l'aube avant le reveil «Requirement» id= text=Une lumière doit s'allumer progressivement 30mn avant le reveil.	«requirement» Reveil automatique «Requirement» id= text=Le radio reveil doit assurer e l'utilisateur un reveil automatique e l'heure souhaitee avec une simulation d'aube et la radio ou un buzzer.	«requirement» Projection «Requirement» id= text=Un projecteur doit permettre d'afficher l'heure au plafond	«requirement» Visibilité «Requirement» id= text=La projection ne sera visible que si la piece est dans l'obscurite
«requirement» Cadran rotatif «Requirement» id= text=Le réglage de l'horloge et de l'alarme se fera par rotation d'un cadran: sens anti-horaire pour les heures, sens horaire pour les minutes.	«requirement» Réglage horloge «Requirement» id= text=On doit pouvoir regler facilement les heures et les minutes de l'affichage courant ainsi que de l'alarme	«requirement» Tension «Requirement» id= text=La tension d'alimentation devra etre 230V-50hz	«requirement» Secours «Requirement» id= text=Une pile devra permettre que les réglages ne soient pas perdus en cas de coupure de courant
«requirement» Dissipation «Requirement» id= text=La dissipation d'énergie du radio reveil ne doit pas dépasser 25W.	«requirement» Gestion radio «Requirement» id= text=On doit pouvoir changer facilement la station et le volume de la radio.	«requirement» Alimentation «Requirement» id= text=Le reveil sera alimente en le branchant sur le secteur	«requirement» Pile «Requirement» id= text=La pile de secours (non fournie) devra une pile 6LR61 9V

Exercise (using Papyrus)

1. Create an AlarmClock SysML project
2. Add a package called "requirements"
3. Create a requirements diagram
4. Identify composite requirements and decompose them into elementary requirements. Think about composition links.
5. Add derivation relationships if needed.

Expected outcome

The report (as a PDF) and the model should be send to ansgar.radermacher@cea.fr. Please zip your report and your model in an archive "FIRSTNAME-LASTNAME.zip"