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## Software Engineering

<http://proglang.informatik.uni-freiburg.de/teaching/swt/2009/>

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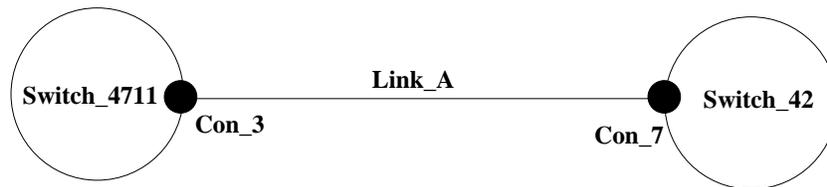
### Exercise Sheet 9

#### Exercise 1: Meta Modelling (6 Points)

Design a DSL for modelling networks. A network consists of the following parts:

- A **Switch** has a name (String) und some **Connectors**.
- A **Connector** has a name (String) and is associated to a **Switch**. Moreover, the **Connector** connects to another **Connector** over some **Link**.
- A **Link** has a name (String) and connects two **Connectors**.

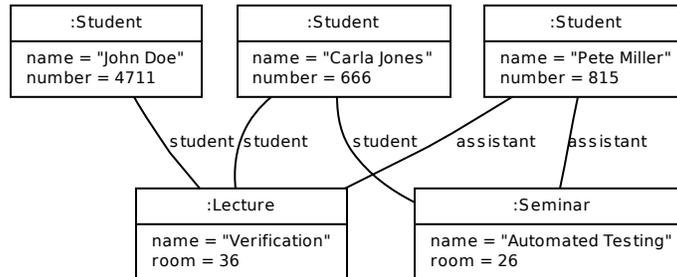
Here you see a graphical representation of a sample network:



1. Design a metamodel for modelling networks.
2. Draw a classifier diagram that shows the connection between the meta-model and the sample network from above.

#### Exercise 2: OMG's Four Metalevels (4 Points)

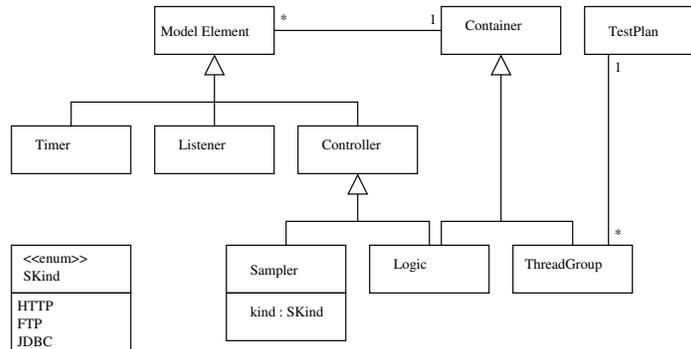
Consider the following Object diagram which acts as Layer M0 of OMG's four metalevels.



1. Provide an adequate model which acts as Layer M1.

### Exercise 3: jMeter Metamodel (10 Points)

Consider the following diagram which shows a rough metamodel for the performance testing tool jMeter (<http://jmeter.org>).



1. Refine the metamodel by extending the specification of Timer, Listener and Logic (as in Sampler). It should be possible to name all modelling elements.
2. Extend the metamodel by possible subelements of Sampler.  
(see [http://jakarta.apache.org/jmeter/usermanual/test\\_plan.html](http://jakarta.apache.org/jmeter/usermanual/test_plan.html))
3. Model each example in section 4.10 of the jMeter user manual as an instance of the metamodel using abstract syntax. (The graphics in this section represent the concrete syntax.)