Subject Area
- Design Patterns,
- Model Based Software Engineering.

Background
A design pattern (DP) is a general, repeatable solution to a commonly occurring problem in software design [1].

Model Based Software Engineering (MBSE) is an approach in which a system is modelled in terms of abstract models. The models are then used for analysis purpose as well as code-generation.

Objectives
The main objective of this project is to implement and evaluate a modelling language for architecture design patterns in the Eclipse Modelling Framework or related approaches.

Therefore, the following tasks have to be performed:

1) A language for the modelling of Software Architectures has to be studied and implemented using EMF [2] or related approaches.
2) Optionally, code should be generated for external tools in order to analyse the architecture.

The challenge of the project lies in the conceptualization of a suitable architecture with well-defined interfaces to allow for the generation of code for different tools.

Additional Information
- If desired, the student has the possibility to participate in a follow-up publication at a scientific venue.

Prerequisites
- Knowledge in modelling of distributed systems.
- Basic experience of a programming language such as Java or C#.
- Interest in Software Architectures and Model Based Software Engineering.

Further References
- [1] Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides. 1995. Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley Longman Publishing Co., Inc., Boston, MA, USA.

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