



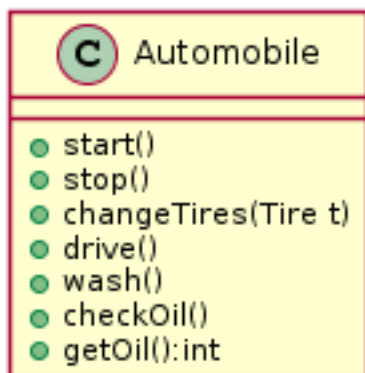
<b>Summer Semester 2020</b> <b>Part Prof. Wanner</b>		No. of pages: 8 Page no.: 2
Examination: Software Engineering 2	Semester: ST	
Name: First name:	Matricul.-No.:	

### **Exercise 2 (10 Points)**

a) Explain "Production-efficiency" in the Values System of Architectural Principles.

b) What is the problem with a Global Util Helper? Which principle is violated?

c) What is the problem with the following class? Draw a possible solution as UML diagram.

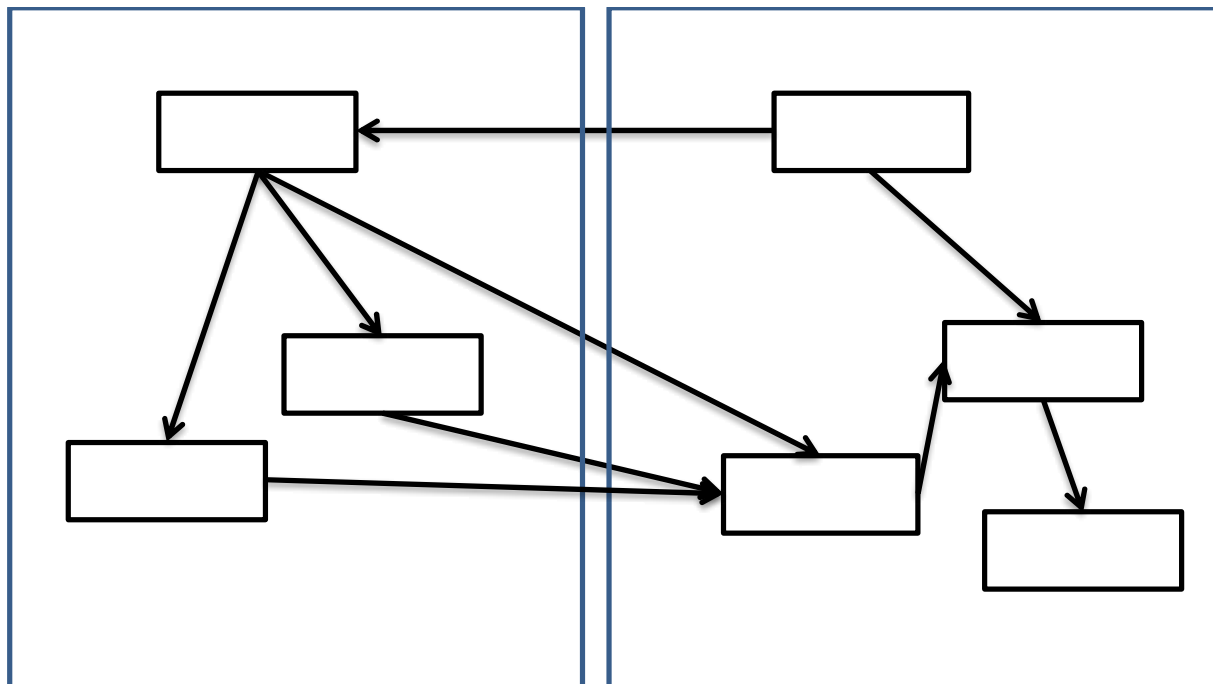


<b>Summer Semester 2020</b> <b>Part Prof. Wanner</b>	No. of pages: 8 Page no.: 3
Examination: Software Engineering 2	Semester: ST
Name: First name:	Matricul.-No.:

<b>Summer Semester 2020</b>		No. of pages:	8
<b>Part Prof. Wanner</b>		Page no.:	4
Examination:	Software Engineering 2	Semester:	ST
Name:	First name:	Matricul.-No.:	

### Exercise 3 (19 Points)

- a) Given is the following dependency graph of a system with two subsystems. Calculate the CD (Component Dependency) of all components and also calculate the CCD and the ACD.



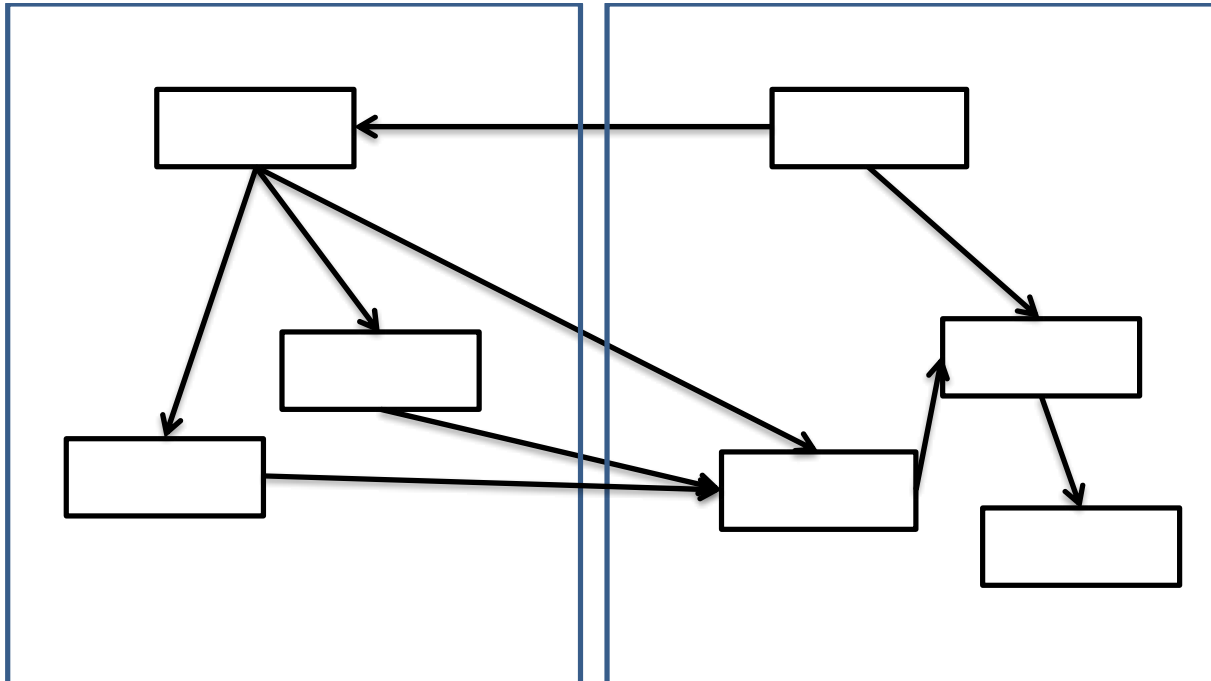
<b>Summer Semester 2020</b>		No. of pages:	8
<b>Part Prof. Wanner</b>		Page no.:	5
Examination:	Software Engineering 2	Semester:	ST
Name:	First name:	Matricul.-No.:	

b) Optimize the system by **decoupling** the two subsystems **and** eliminate the cycles.

c) Calculate the CD, the CCD and ACD of your solution for b) (treat interfaces like classes).

<b>Summer Semester 2020</b> <b>Part Prof. Wanner</b>		No. of pages: 8 Page no.: 6
Examination:	Software Engineering 2	Semester: ST
Name:	First name:	Matricul.-No.:

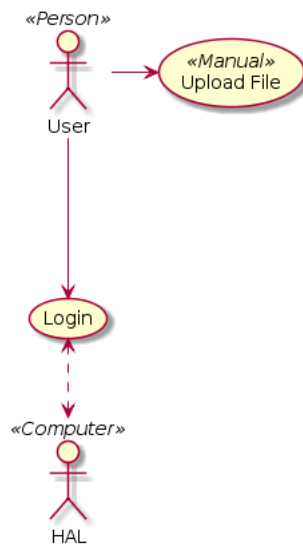
- d) Use the dependency graph from part a). Calculate the Instability (metric from Robert C. Martin) for each class. Mark the **two** most problematic classes in the diagram and explain why you marked it!



<b>Summer Semester 2020</b>		No. of pages:	8
<b>Part Prof. Wanner</b>		Page no.:	7
Examination:	Software Engineering 2	Semester:	ST
Name:	First name:	Matricul.-No.:	

#### **Exercise 4 (21 Points)**

- a) Draw the metamodel for the following UML-model (Use-Case diagram). Only include the necessary parts!



<b>Summer Semester 2020</b> <b>Part Prof. Wanner</b>	No. of pages: 8 Page no.: 8
Examination: Software Engineering 2	Semester: ST
Name: First name:	Matricul.-No.:

b) Draw the meta-metamodel for your solution of a)

c) What is Xtext and what is Xtend? Explain both.