



Softwareentwicklung

Praktikum

[Tutorium]

vision

& [Gruppe 21, 23]



UML

allgemein

Klassen

Assoziat.

UML Tool

Code gen.

- "Entwurfssprache"
- Analyse & Design
- UML 2.1 ist die aktuelle Notation
- Darstellung von Klassendiagrammen, Abläufen, ...



- <http://www.uml.org/>
- http://en.wikipedia.org/wiki/Unified_Modeling_Language



Klassen

allgemein

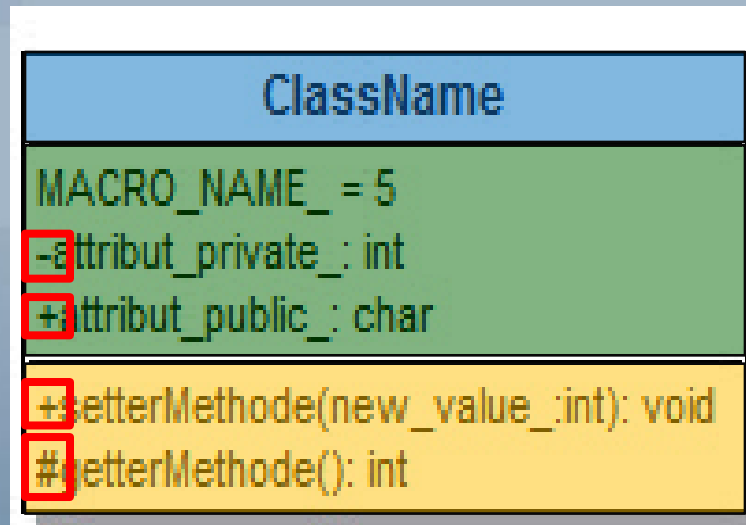
Klassen

Assoziat.

UML Tool

Code gen.

Name der Klasse



Attribute
(Variablen der Klasse)

Methoden
(Funktionen der Klasse)

- ... privat → nur die eigene Klasse kann zugreifen
- + ... public → jeder kann zugreifen
- # ... protected → Klasse selbst und ihre abgeleiteten koennen zugrieffen

Klasse vs. Objekt

Konstruktor aufruf (Werte)

ClassName

```
MACRO_NAME_ = 5  
-attribut_private_ : int  
+attribut_public_ : char  
+setterMethode(new_value_ :int): void  
#getterMethode(): int
```

:ClassAObject

```
-attribut_private_ : int = 10  
+attribut_public_ : char = c
```

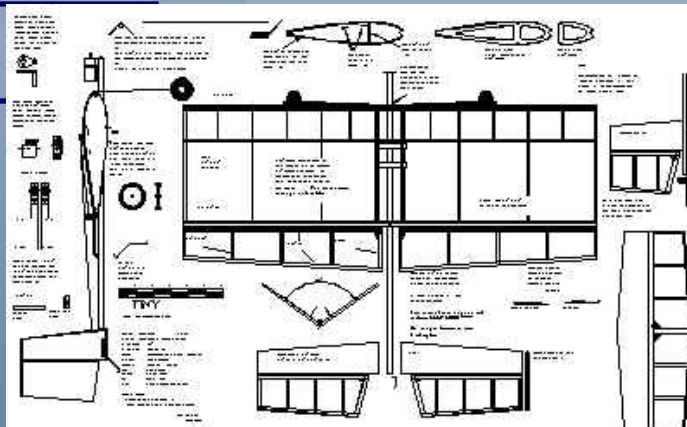
allg.

Kla

Ass

UM

Code



Modellbauer
(Klebstoff, Zeit, ...)

Assoziationen

allgemein

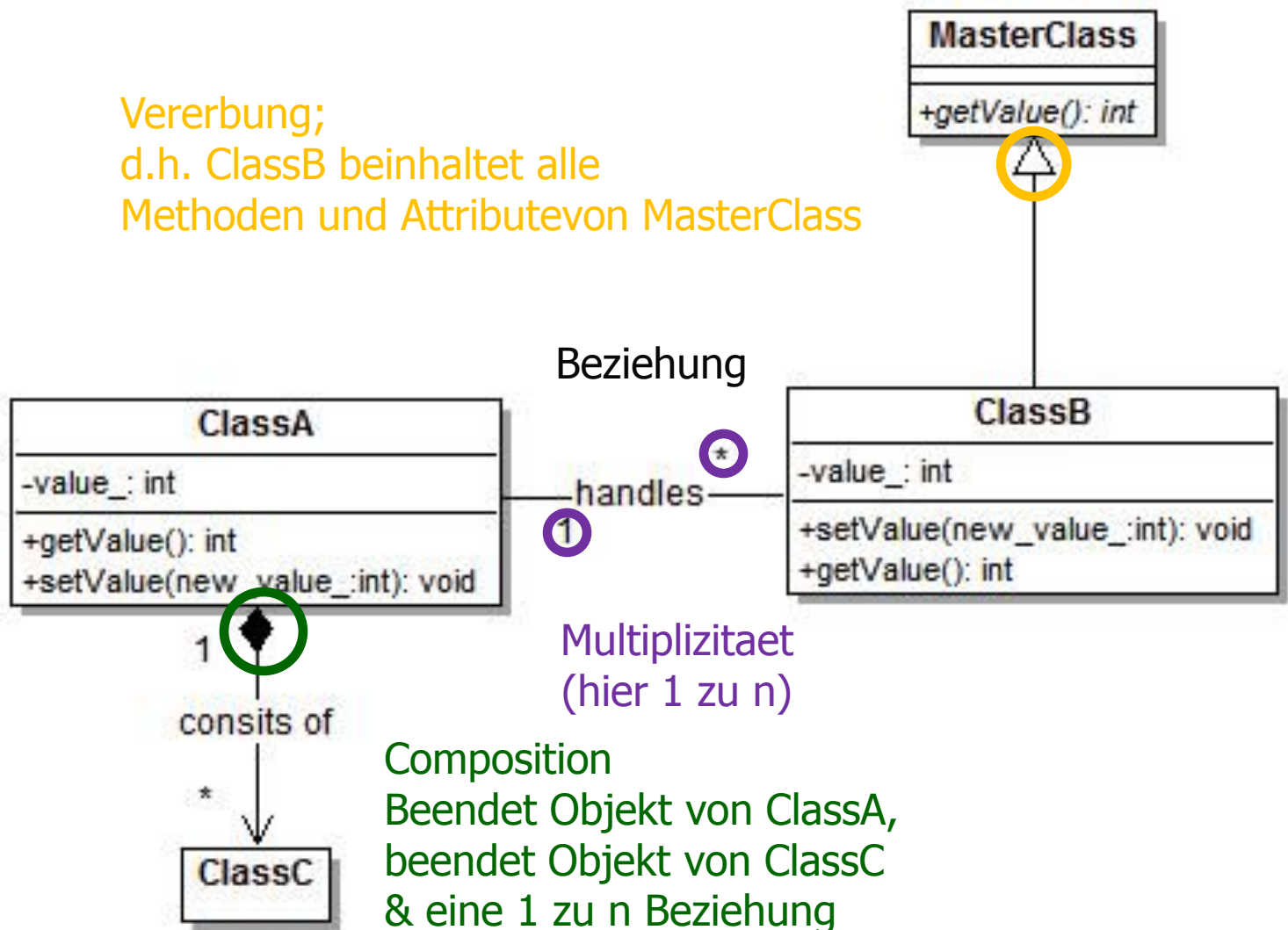
Klassen

Assoziat.

UML Tool

Code gen.

Vererbung;
d.h. ClassB beinhaltet alle
Methoden und Attribute von MasterClass



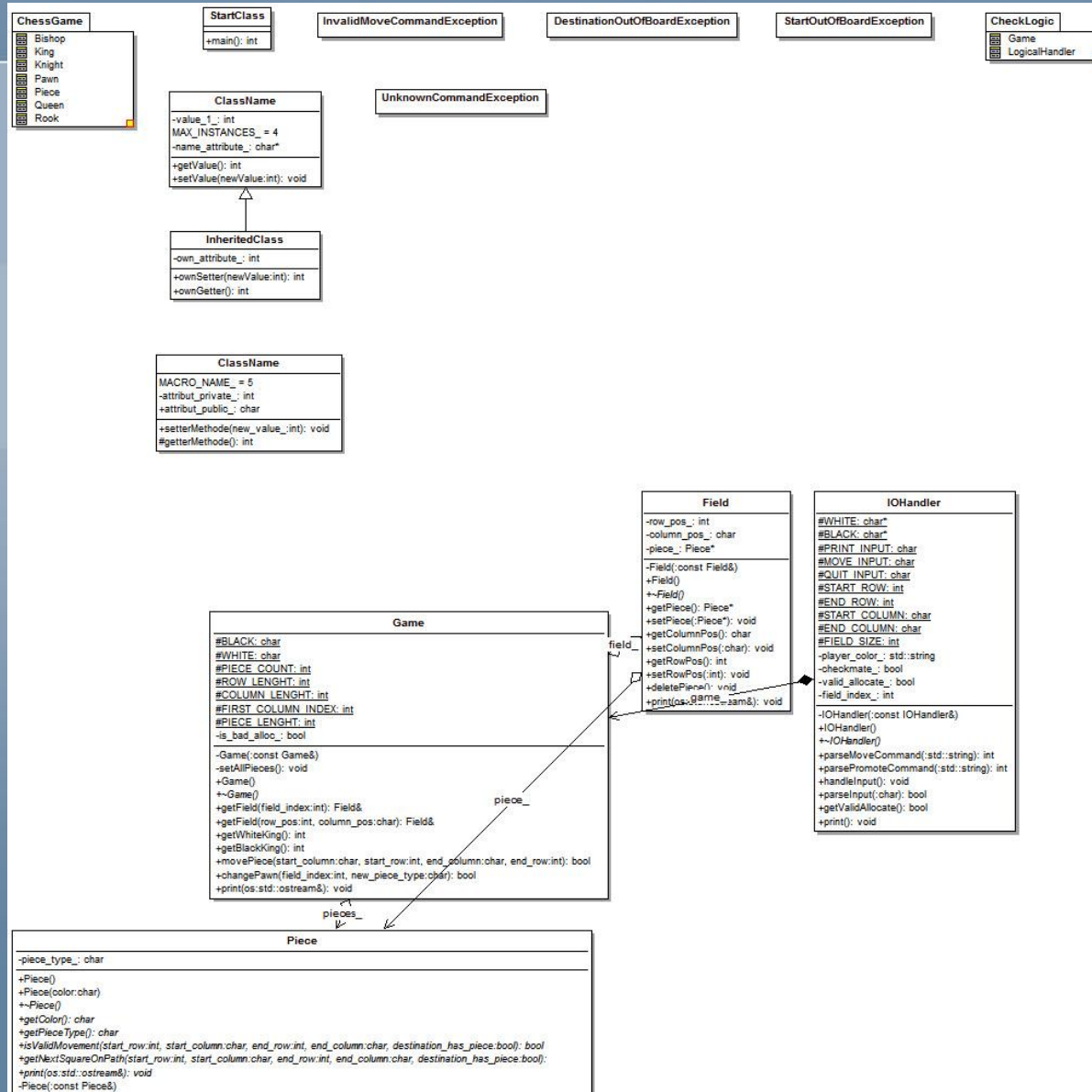
Beziehung

Multiplizitaet
(hier 1 zu n)

Composition

Beendet Objekt von ClassA,
beendet Objekt von ClassC
& eine 1 zu n Beziehung

Klassendiagramm



allgemein

Klassen

Assoziat.

UML Tool

Code gen.



UML Tools I

allgemein

Klassen

Assoziat.

UML Tool

Code gen.

- Umbrella 2.0 (Linux)
 - apt-get install umbrella
 - Kommt mit KDE, bei den meisten Distributionen schon dabei
- UMLStudio (Windows)
 - <http://www.pragsoft.com/download.html>
- Visual Paradigm
 - <http://www.visual-paradigm.com>

UML Tools II

allgemein

Klassen

Assoziat.

UML Tool

Code gen.

The screenshot shows a UML modeling tool interface with a class diagram. The diagram includes three classes: StartClass, ClassName, and InheritedClass. StartClass has a method +main(): int. ClassName has attributes -value_1_: int, MAX_INSTANCES_ = 4, and -name_attribute_: char*, and methods +getValue(): int and +setValue(newValue:int): void. InheritedClass has attributes -own_attribute_: int and methods +ownSetter(newValue:int): int and +ownGetter(): int. An inheritance arrow points from InheritedClass to ClassName. The interface includes a menu bar (File, Edit, Diagram, Code, Settings, Help), a toolbar, a UML Diagrams palette, a Diagram Navigator, and a Property window.

```
classDiagram
    class StartClass {
        +main(): int
    }
    class ClassName {
        -value_1_: int
        MAX_INSTANCES_ = 4
        -name_attribute_: char*
        +getValue(): int
        +setValue(newValue:int): void
    }
    class InheritedClass {
        -own_attribute_: int
        +ownSetter(newValue:int): int
        +ownGetter(): int
    }
    StartClass <|-- InheritedClass
    ClassName <|-- InheritedClass
```

Code generation

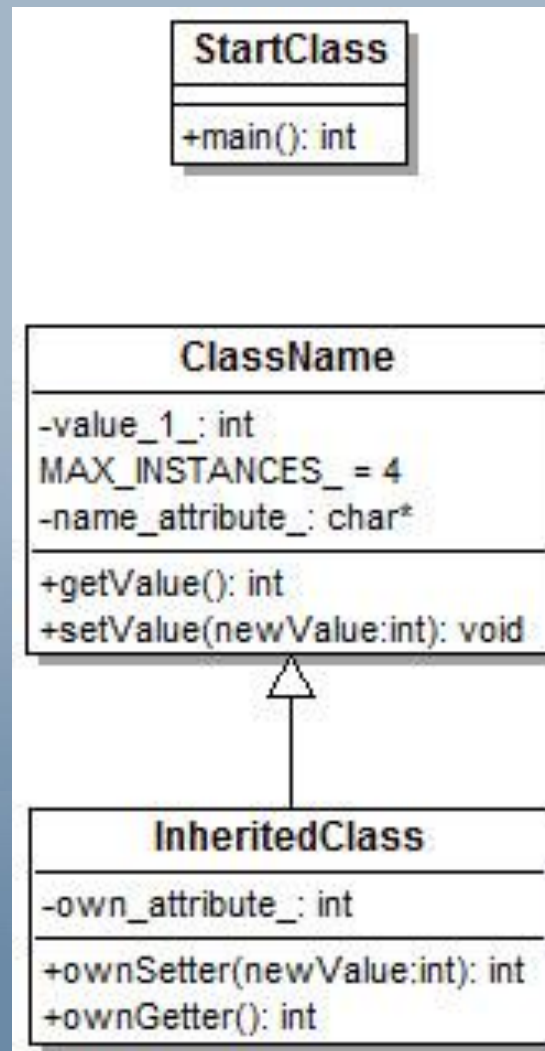
allgemein

Klassen

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UML Tool

Code gen.





Code ge

allgemein

Klassen

Assoziat.

UML Tool

Code gen.

```
1 //-----
2 /// Filename: StartClass.h
3 /// Description:
4 /// Authors: xxxxxxxx MatNr. xxxxxxxx
5 /// Group xx Tutor xxx
6 /// Date of Creation:
7 /// Last Changes:
8 //-----
9 // NOTE: please use a PRESERVE:BEGIN/PRESERVE:END comment block
10 // to preserve your hand-coding across code generations.
11
12 #ifndef _StartClass_H_
13 #define _StartClass_H_
14
15 #define exception_class
16 class StartClass {
17 public:
18     StartClass ();
19     StartClass (const StartClass &);
20     virtual ~StartClass ();
21     int main ();
22 };
23
24 #endif
25
```

```
2 ///Filename: ClassName
3 ///Description:
4 /// Authors: xxxxxxxx MatNr. xxxxxxxx
5 /// Group xx Tutor xxx
6 /// Date of Creation:
7 /// Last Changes:
8 //-----
9 // NOTE: please use a PRESERVE:BEGIN/PRESERVE:END comment block
10 // to preserve your hand-coding across code generations.
11
12
13 #include "ClassName.h"
14
15 // -----
16 ClassName::ClassName ()
17 {
18     // PRESERVE:BEGIN
19     // Insert your preservable code here...
20
21     // PRESERVE:END
22 }
23
24 // -----
25 ClassName::ClassName (const ClassName&)
26 {
27     // PRESERVE:BEGIN
28     // Insert your preservable code here...
29     // PRESERVE:END
30 }
31
32 // -----
33 ClassName::~~ClassName ()
34 {
35     // PRESERVE:BEGIN
36     // Insert your preservable code here...
37     // PRESERVE:END
38 }
39
40 // -----
41 int ClassName::getValue ()
42 {
43     // PRESERVE:BEGIN
44     // Insert your preservable code here...
45     // PRESERVE:END
46 }
47
48
49 // -----
50 void ClassName::setValue (const int newValue)
51 {
52     // PRESERVE:BEGIN
53     // Insert your preservable code here...
54     // PRESERVE:END
55 }
56
```



Fragen

allgemein

Klassen

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Code gen.

? Alle Klarheiten beseitigt ?

