



Object oriented programming / modeling

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- Selected glossary
- Presentation of the topic
 - Generic programming
 - Object oriented programming and modeling
 - Inheritance
 - Polymorphism
 - Relevance of the topic
 - Sources
- (Language) practice
- Discussion

- Generic
- Redundant
- Class
- Object
- Implementation
- Inheritance
- Polymorphism

Object oriented programming / modeling

- easy to use

- limited scalability

(Exaggerated) example:

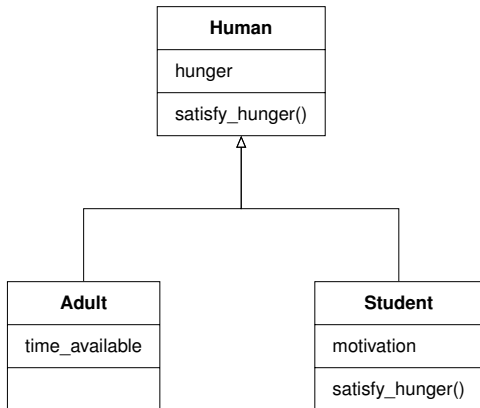
Programming a Human being:

Eating as ...

- ... an adult
- ... a student
- ... a child
- ... a baby

```
1  if ( adult ) {
2    cook_something();
3    eat();
4  } else if ( student ) {
5    call_pizza_service();
6    wait();
7    eat();
8  } else if ( child ) {
9    tell_mom_youre_hungry();
10   wait();
11   eat_only_dessert();
12 } else if ( baby ) {
13   while ( nothing_happens ) {
14     cry();
15   }
16   suck_delicious_milk_from_moms_breasts();
17 }
```

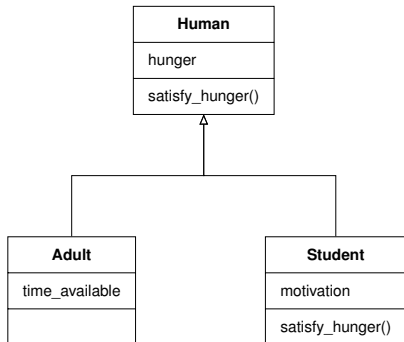

Model:



Class name

properties

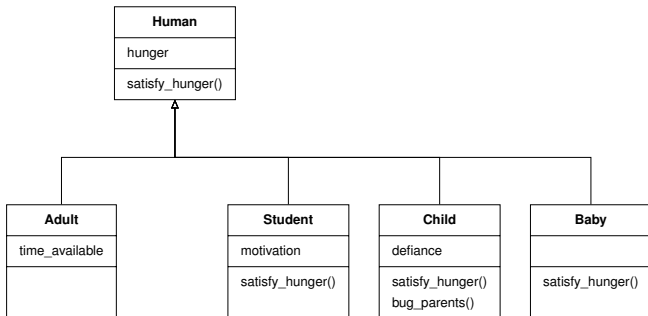
functions



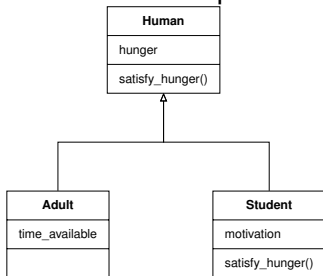
- Adult uses unchanged function (or may implement a new based on *time_available*)
- Student implements new function (and may use *parent*-function)

- easy to expand upon
- *child*-classes use
 - parent properties
 - parent functions⇒ **Inheritance**
- *child*-classes can change behavior of
 - parent properties
 - parent functions⇒ **Polymorphism**

Putting *inheritance* and *polymorphism* to use:



- Unified Modeling Language (UML) \Rightarrow Team coordination even for not computer science students



- Good coding practice for computer science students

Sources and tips for further reading:



Birgit Demuth. *Softwaretechnologie für Einsteiger.* 2. geänd. Aufl. München: Pearson, 2014. ISBN: 9781784340230.



Oracle. *Object-Oriented Programming Concepts.* [Online; accessed 20-April-2016]. URL:
<https://docs.oracle.com/javase/tutorial/java/concepts/>.



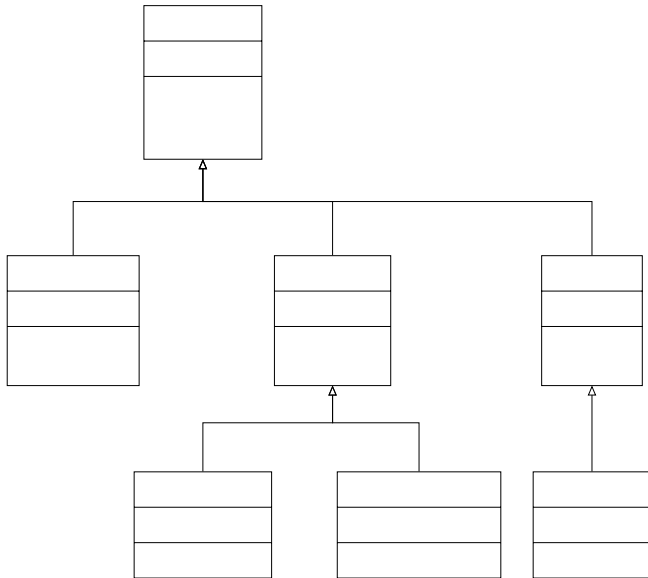
James Rumbaugh, Ivar Jacobson, and Grady Booch. *The unified modeling language reference manual.* 2. ed. Boston: Addison-Wesley, 2005. ISBN: 0321245628.

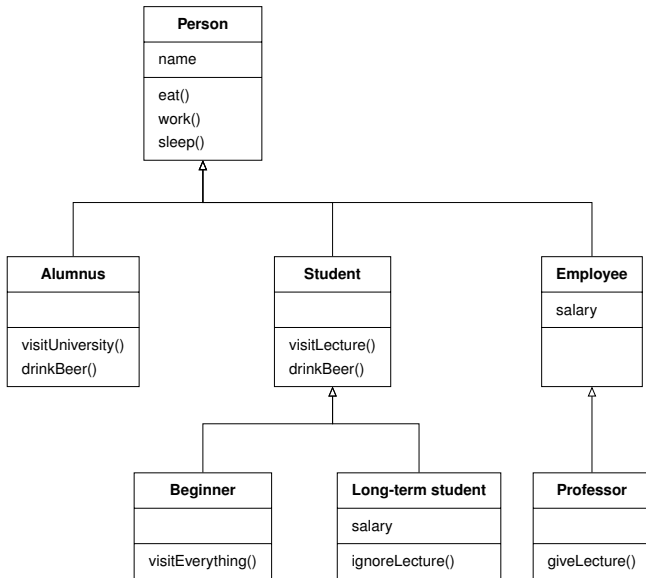


Al Sweigart. "Why is Object-Oriented Programming Useful? (With a Role Playing Game Example)". In: *The "Invent with Python" Blog* (Dec. 2014). [Online; accessed 20-April-2016]. URL:
<http://inventwithpython.com/blog/2014/12/02/why-is-object-oriented-programming-useful-with-an-role-playing-game-example/>.



Matt Weisfeld. "The Importance of Object-Oriented Programming in the Era of Mobile Development". In: *informIT.com* (Apr. 2013). [Online; accessed 20-April-2016]. URL:
<http://www.informit.com/articles/article.aspx?p=2036576>.





- Comprehensibility:
Generic > Object oriented ?
- Own experiences?
- Used in everyday applications?

Thank you for listening
and your collaboration!