

Introduction to

# DIA

*..drawing UML Diagrams*

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## What is DIA?

**DIA** is

An open-source Linux program used to create **diagrams**

Diagrams

- Flowcharts, Network Diagrams, Simple circuits, and..
- UML (Unified Modelling Language) diagrams

DIA File format

- An XML type compressed with GZip

- Installation
- Starting DIA on the CLAMV machines
- Working with UML diagrams
- Saving / Exporting DIA files
- Questions

- Linux Platforms
  - download DIA from <http://www.gnome.org/projects/dia/>
  - save the file in your applications folder
  - in the terminal window enter:
    - >tar -zxvf <filename>
    - >./configure
    - >make
- Windows (to date, DIA current version 0.94)  
<http://dia-installer.sourceforge.net/>

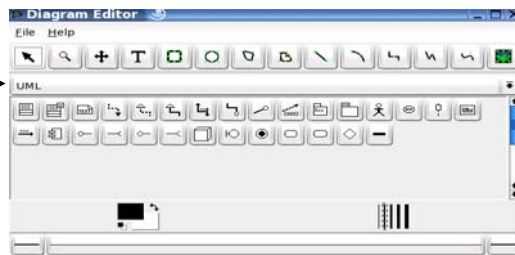
## Starting DIA

(1) Connect to the appropriate CLAMV machine:  
in your terminal type:

```
ssh -X [userID].[machine].clamv.iu-bremen.de
```

enter password, and then type: dia &

(2) Select UML



(3) Select **File -New Diagram** from the main menu

## UML (Unified Modelling Language)

A piece of software can be seen from different views:

- Use case diagram
- Class diagram
- State diagram
- Activity diagram
- Iteration Diagrams
  - Sequence diagram
  - Collaboration diagram
- Physical Diagrams
  - Component diagram
  - Deployment diagram

# How to draw: Class Diagram

Adding classes:

On the Diagram Editor window, click on the *class* icon.

*Suggested approach:*

1. Add as many class icons as you plan to use..

*Consider the following technique:*

1.1 From the requirements specification, pick all the nouns and noun phrases to identify prospective classes.

1.2 Discard nouns from the list when they are:

redundant, vague, represent an operation, event or attribute, or are outside the scope of the system.

2. Define properties for each class..

3. Establish relationships between classes..

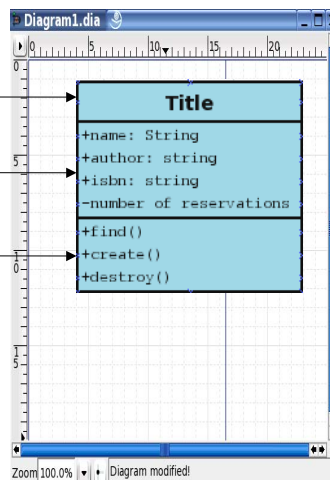


# Sample Class

Class name

data (attributes)

operations (methods)



+ public  
- private  
# protected

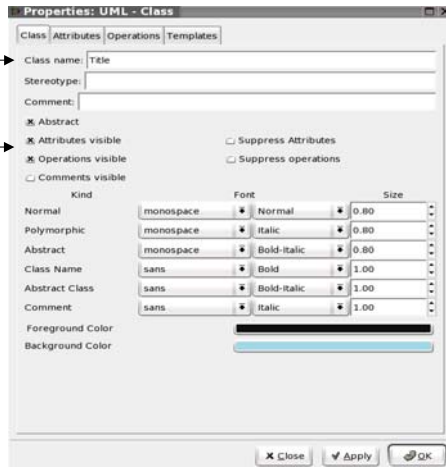
# Class: Properties Specification



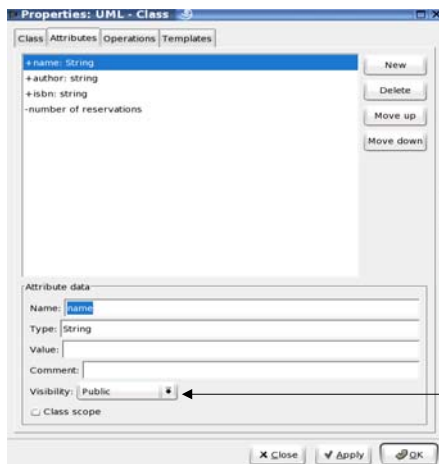
Double-click on the class icon

Enter *name* of the class

Define visibility in the diagram



# Class: Attributes definition



Click on *New* to add attributes

*Name* and *Type* of attribute

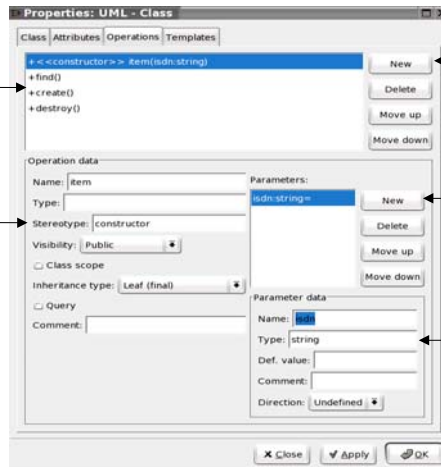
*Visibility* options include: *public*, *private*, *protected*

# Class: Constructor & Operations definition



Constructor and Operations are defined

Use it to define a constructor



Click on New to add operations

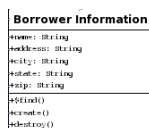
Click on New to specify parameters for the chosen operation

Parameter type

# Class: Icons for Associations



Class A



**Abstraction**

One class implements the other.



**Generalization**

One class is derived from the other.  
Every A is also a B.



**Aggregation**

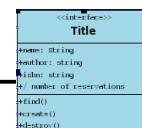
One class has a reference to the other.



**Composition**

A "has" relationship type.

Class B



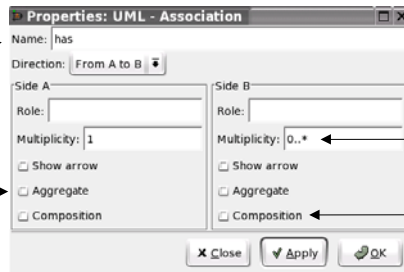
# Class: Relationships



Double click on the dark line connecting the two classes.

Choose an *appropriate* association name

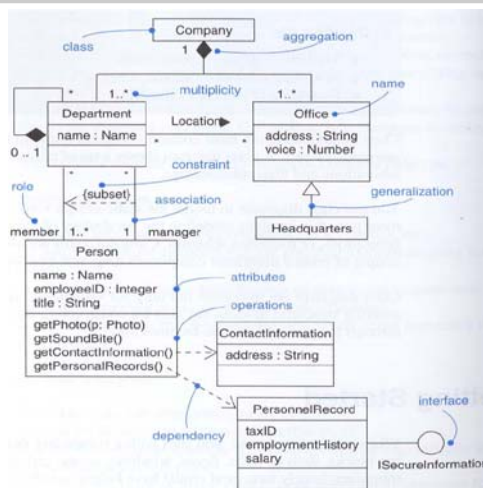
Aggregation: The other class is part of this one but also has an independent existence.



Example shows a 1 to Many association

Composition: The other class is part of this class / possesses a component of the other class

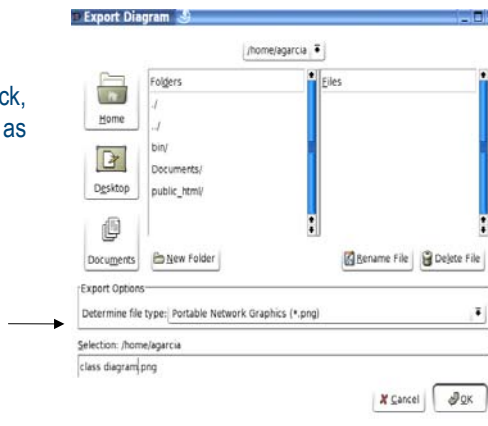
# Sample Class Diagram



Sample Class Diagram ([1] pag. 106)

## Saving/Exporting files

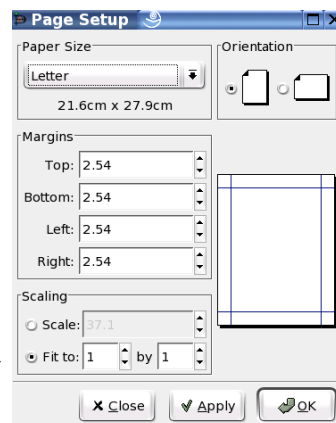
- Saving  
[Ctrl+Shift+S] or right click,  
file, save/save as
- Exporting  
Right click, file, export,  
select:  
.png (recommended)



## Printing DIA diagrams

- Printing  
Right click, File – Page Setup

Typically:  
Fit to 1 by 1 or Scale 30%





[1] The Unified Modelling Language User Guide,  
Grady Booch, James Rumbaugh, Ivar Jacobson

- The DIA website (downloads & tutorials)

<http://www.gnome.org/projects/dia/>

- A tutorial on UML:

<http://www-306.ibm.com/software/rational/uml/>

- What associations really mean:

<http://www.devx.com/enterprise/Article/28528>

- The On-line Resource for Embedded Systems

<http://www.esemagazine.co.uk/search/search.cgi>

(type UML in the search box..)

?

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