BOUML

User Manual

BOUML

BOUML is a UML tool box allowing you to specify and generate code in C++, Java, Php, Python and IDL.

The main key points of BOUML are :

- it is free
- it runs under Linux, Sun Solaris, MacOS X and Windows
- it allows to program simultaneously in C++, Java, Php, Python and IDL
- thank to a full access to the generated forms, you are the master and you decide what must be generated
- it is extensible, and the external tools (I name them *plug-out* because they are executed outside BOUML) may be developed in C++ or Java, using BOUML for their definition as any other program (clearly I do not like very much language like *Visual Basic*, and I do not understand how this one can be imposed in a UML environment !)
- it is fast and doesn't need a lot of memory to manage several thousands of classes, see benchmark

To develop BOUML alone at home during the nights and weekends is hard and tiring ... perhaps crazy ! The reasons inciting me to do it are mainly : the pleasure to develop freely a tool and I hope to see it used by many people (I already had this very pleasant experience with two friends for Xcoral), and frankly a reaction to the very expensive price of the commercial UML tools.

The graphic part of BOUML is based on **Qt**, many thanks to Trolltech for this marvelous GUI application framework, clearly BOUML exists thanks to Qt. The implementation of BOUML is compatible with Qt version 2.4 up to (at least) the 3.3, but the Qt 4 releases can't be used because these releases are not compatible with the previous.

The documentation is written with OpenOffice.org writer, many thanks for this powerful and pleasant office suite. The screen copies are made with Ksnapshot and sometimes modified by Le Gimp to have burred areas, thanks to the authors for these practical tools.

Some of the examples given in this documentation spoke about the organs, describing an organ is very easy for me in French ... not in English ! I get the English translation of the words associated to the organs from a Marya J. Fancey documentation, thanks to her.

Copyright

BOUML is a free software distributed on the *Internet* (http://bouml.free.fr/, http://www.sourceforge.net/projects/bouml/ and http://bouml.sourceforge.net/)

Copying and distribution of the documentation or a part of the documentation and screnshots is permitted worldwide in any medium, provided a mention of *Bouml* or *http://bouml.free.fr* However, following the shocking behavior of administrators of Wikipedia, the distribution on all the Wikipedia sites of screenshot or any part of the documentation is forbidden without autorisation.

Apologies :-))

First I apologize for the poor quality of my English, and secondly it is clear that BOUML is not developed following all standard object principles UML help to diffuse, this is a little bit strange for an UML tool...

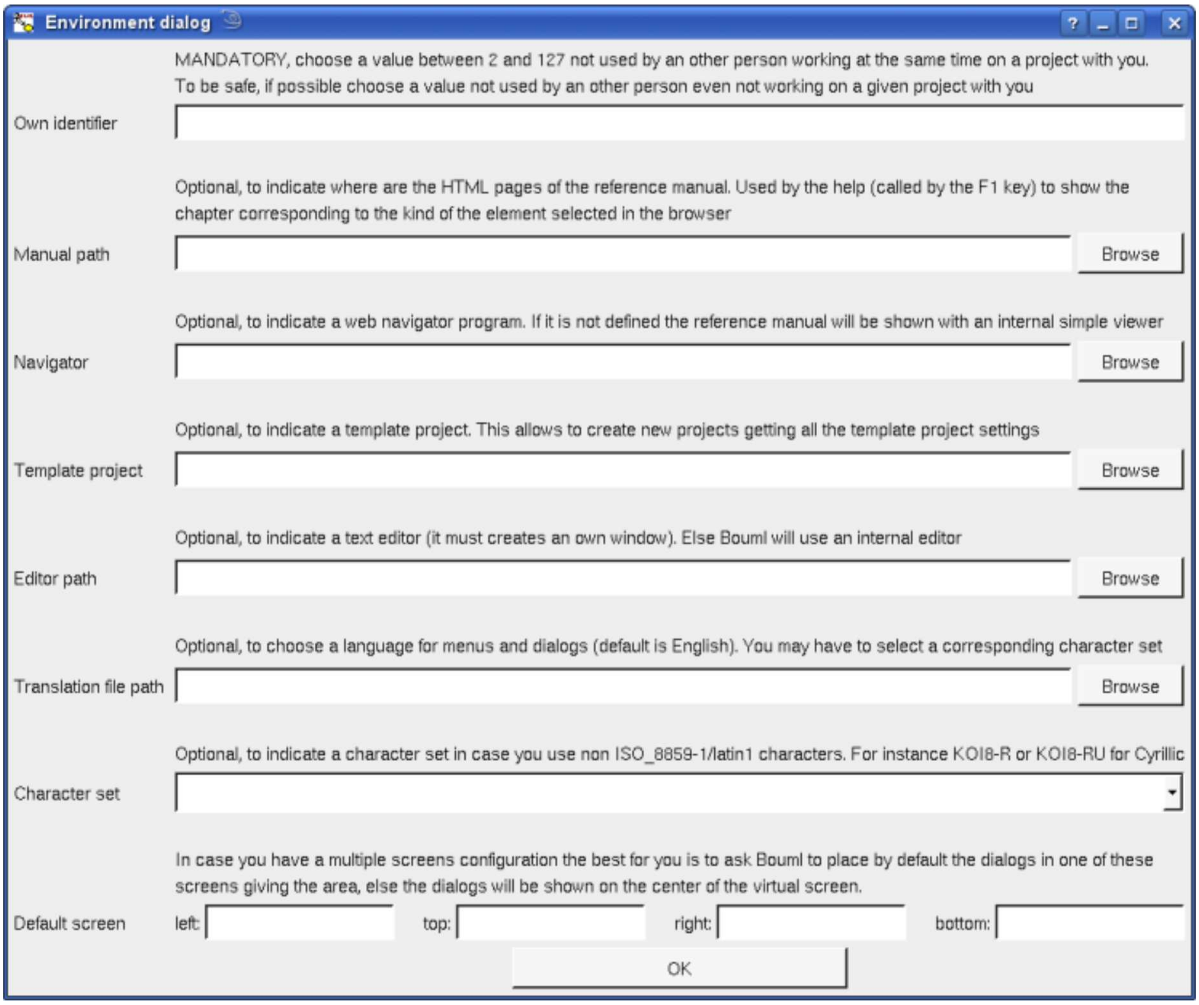
Nevertheless I hope the documentation is enough clear and consistent, and I am sure that BOUML is fast and not glutton in memory !

At least, this document describe BOUML, **not** the Unified Modeling Language.

Next : Starting

Starting

When you execute BOUML for the first time the environment dialog is shown, you must enter an own identifier (Multi users considerations). The other information are optional but it is recommended to specify a default screen in case you have a multiple screen configuration, and a character set if you want to use non latin1 characters.



Environment dialog

Own identifier: MANDATORY, choose a value between 2 and 127 not used by an other person working at the same time on a project with you. To be safe, if possible choose a value not used by an other person even not working on a given project with you

Manual path: Optional, to indicate where are the HTML pages of the reference manual. Used by the help (called by the F1 key) to show the chapter corresponding to the kind of the element selected in the browser

Navigator: Optional, to indicate a web navigator program. If it is not defined the reference manual will be shown with an internal simple viewer

Template project: Optional, to indicate a template project. This allows to create new projects getting all the template project settings

Editor path: Optional, to indicate a text editor (it must creates an own window). Else Bouml will use an internal editor

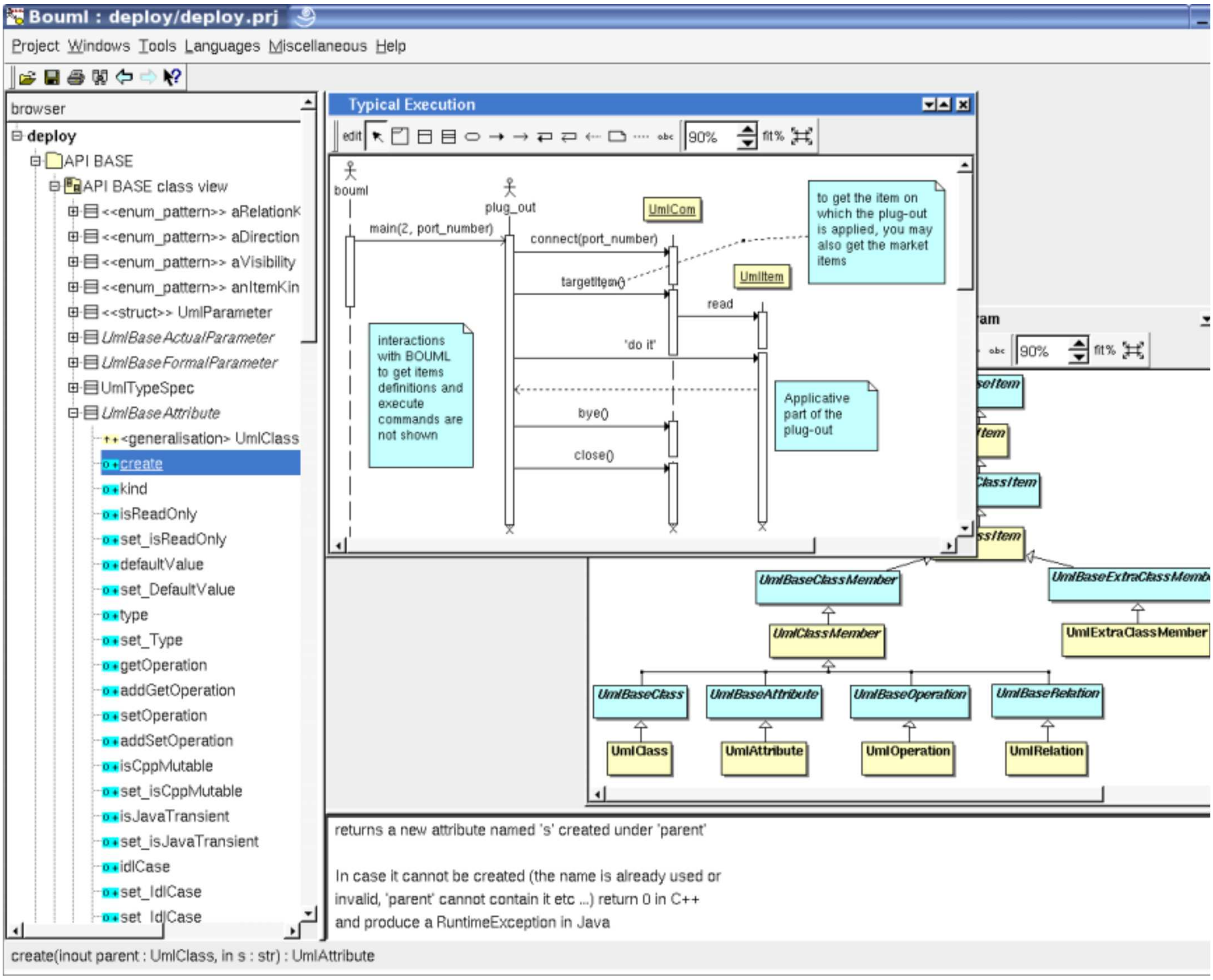
Translation file path: Optional, to choose a language for menus and dialogs (default is English). You may have to select a corresponding character set

Character set: Optional, to indicate a character set in case you use non ISO_8859-1/latin1 characters. For instance KOI8-R or KOI8-RU for Cyrillic

Default screen: In case you have a multiple screens configuration the best for you is to ask Bouml to place by default the dialogs in one of these screens giving the area, else the dialogs will be shown on the center of the virtual screen.

left: top: right: bottom:

After this annoyance you may use BOUML, open an already created project, or create a new one.



returns a new attribute named 's' created under 'parent'

In case it cannot be created (the name is already used or invalid, 'parent' cannot contain it etc ...) return 0 in C++ and produce a RuntimeException in Java

create(inout parent : UmlClass, in s : str) : UmlAttribute

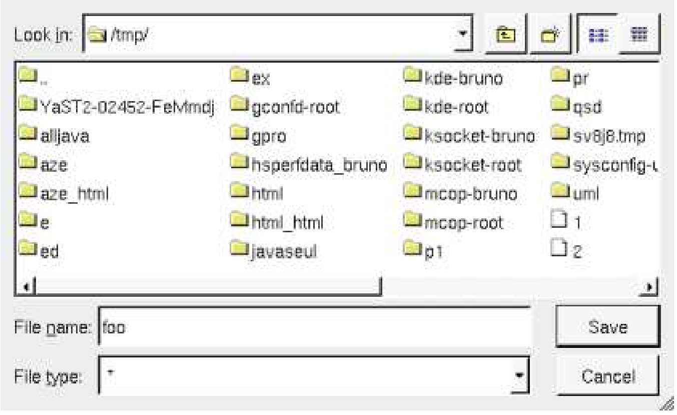
The *bouml* window is composed of three parts :

- The left sub-window display a browser presenting your project, the navigation may be done by the mouse or the keyboard's arrows. The bold font is used when an item is modifiable, an item is *read-only* when you do not have the write permission for the file(s) supporting it (see project files). The *system* items supporting the *plug-out*'s API (for instance *UmlBaseActor*) are also *read-only*.
- The bottom-right sub-window is used to display/modify the comment associated to the current selected item.
- The top-right part is used to display/modify the diagrams, these ones may be maximized or minimized.

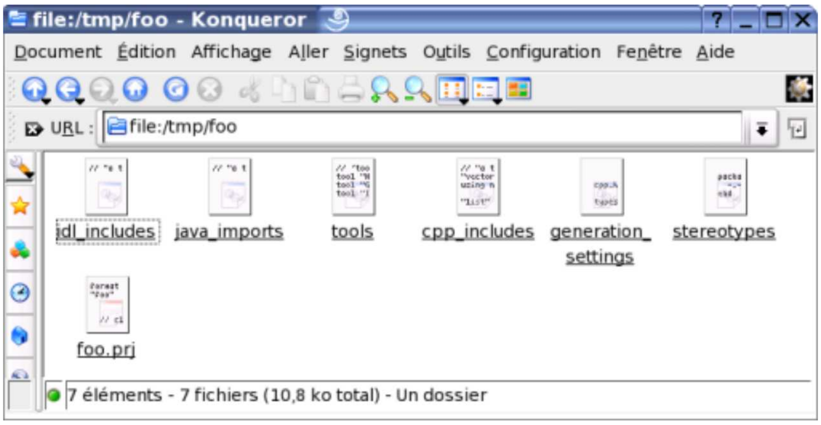
Project creation

A project creation is done through the entry *new* of the project menu.

When you create a new project, a file dialog appears (its aspect depend on the used system and window manager) and you have to select the directory where the project will be placed and its name, for instance in */tmp* (probably just for a trial !) with the name *foo*.



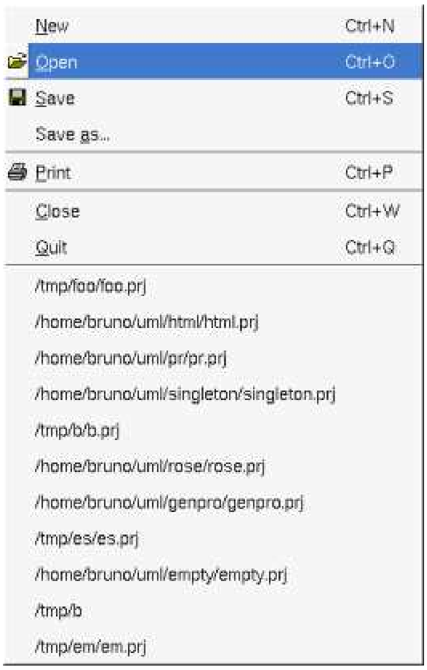
In this case BOUML create the directory foo under */tmp,* and place some files in */tmp/foo* including *foo.prj* which represents the project (see project files) :


file:/tmp/foo - Konqueror
Document Édition Affichage Aller Signets Outils Configuration Fenêtre Aide
URL : file:/tmp/foo
idl_includes
java_imports
tools
cpp_includes
generation_settings
stereotypes
foo.prj
7 éléments - 7 fichiers (10,8 ko total) - Un dossier

Do **not** rename or delete the files produced by BOUML nor the directory itself !

Project loading

You may associate a *.prj* file to *bouml* using your window manager capabilities, call *bouml* through a command line given the *.prj* file (see project files) in argument, or launch *bouml* then load a project using the project menu or the open icon, or the historic (the historic is saved in the file *.bouml* placed on your home directory) :


New Ctrl+N
Open Ctrl+O
Save Ctrl+S
Save as...
Print Ctrl+P
Close Ctrl+W
Quit Ctrl+Q
/tmp/foo/foo.prj
/home/bruno/uml/html/html.prj
/home/bruno/uml/pr/pr.prj
/home/bruno/uml/singleton/singleton.prj
/tmp/b/b.prj
/home/bruno/uml/rose/rose.prj
/home/bruno/uml/genpro/genpro.prj
/tmp/es/es.prj
/home/bruno/uml/empty/empty.prj
/tmp/b
/tmp/em/em.prj

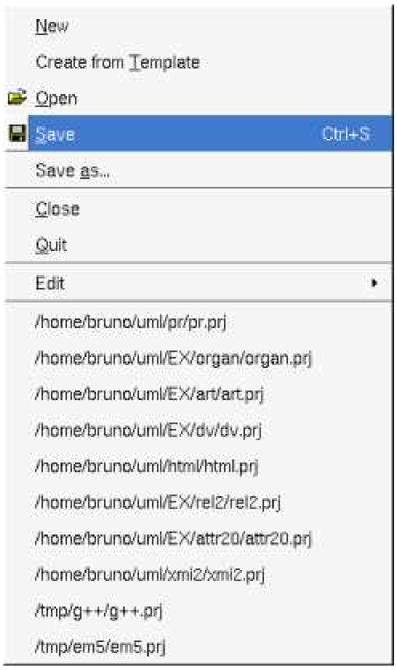
Previous : bouml

Next : top level menus

Top level menus

The menus accessible from the BOUML's window are :

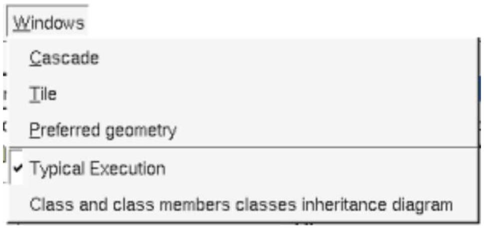
Project menu :


New
Create from Template
Open
Save Ctrl+S
Save as...
Close
Quit
Edit
/home/bruno/uml/pr/pr.prj
/home/bruno/uml/EX/organ/organ.prj
/home/bruno/uml/EX/art/art.prj
/home/bruno/uml/EX/dv/dv.prj
/home/bruno/uml/html/html.prj
/home/bruno/uml/EX/rel2/rel2.prj
/home/bruno/uml/EX/attr20/attr20.prj
/home/bruno/uml/xmi2/xmi2.prj
/tmp/g++/g++.prj
/tmp/em5/em5.prj

The *Project* menu allows to create a new project, load a project, save it in place or in a new location, print the current diagram, close the project, or quit *bouml*. The bottom of the menu contains the historic, the upper line correspond to last opened project, for instance the current one. When you try to close a modified project, perhaps to load an other one, BOUML ask for a saving.

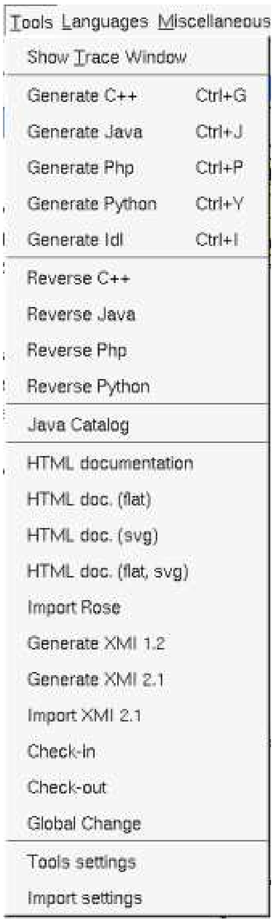
You can create a project from *a template* project if this one is defined through the environment dialog. The goal is to get the settings from this project (probably empty) rather than to get the default settings I decide to set. In this case, when you choose *create from template* the specified project is load and a *save-as* is automatically done.

Windows menu :



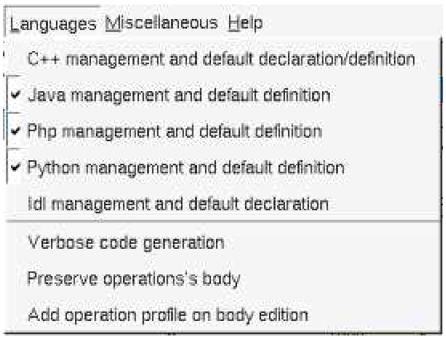
The *Windows* menu allows to select an opened diagram or change the sub-windows disposition.

Tools menu :



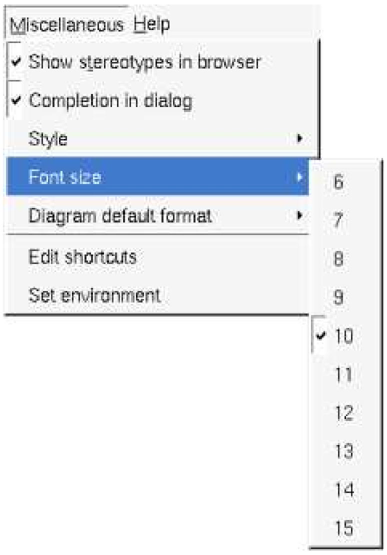
The *Tools* menu allows to (re)open the trace window where the *plug-outs* write their messages, to apply a *plug-out* on the project (independently of the browser item currently selected), to add/remove/modify the known *plug-outs* list (see plug-out), or to import the *plug-outs* list defined in an other project.

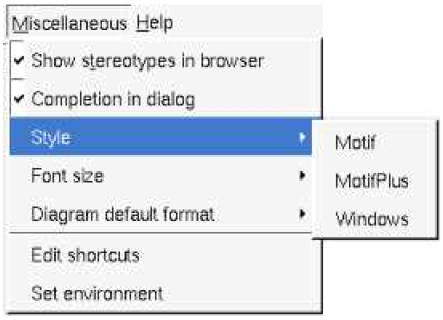
Language menu :

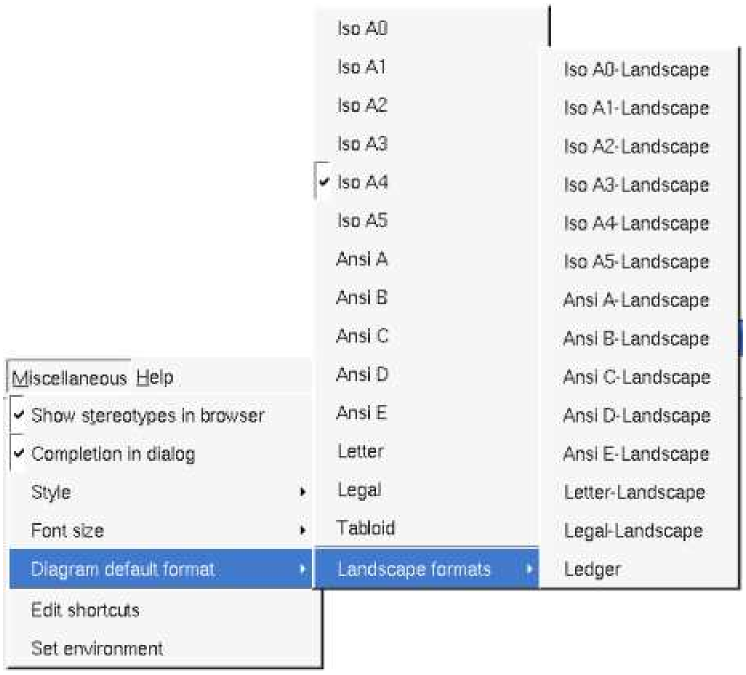

Languages Miscellaneous Help
C++ management and default declaration/definition
✓ Java management and default definition
✓ Php management and default definition
✓ Python management and default definition
Idl management and default declaration
Verbose code generation
Preserve operations's body
Add operation profile on body edition

The *Languages* menu allows to ask BOUML to produce or not a default definition/declaration (refer to the C++ generation, Java generation, Php generation, Python generation and Idl generation) when a browser item is created, and to select for which language(s) the dialogs shown through tabs. This menu also allows to update or not the body of the operation during the code generation (refer to the C++ generation, Java generation, Python generation and Php generation), to produce or not the operation's profile when you edit an operation's body through an external editor (refer to operation edition).

Miscellaneous menu :





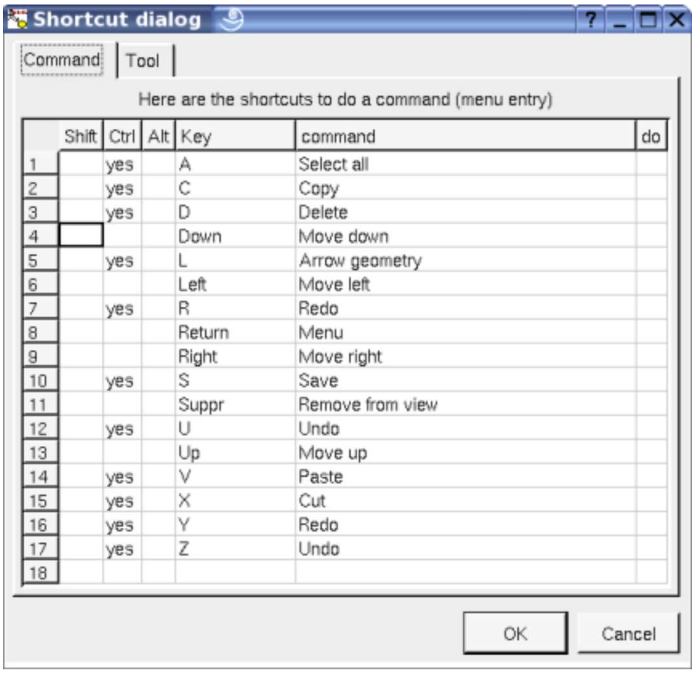


The *Miscellaneous* menu allows to show/hide the stereotypes in the browser, to ask for to have or not an auto completion/search in the lists of choices in the dialogs, to change the used style, to change the size of the font, to set the default diagram format, to edit the shortcuts and to set some environment information.

Note that sometimes changing the size of the base font does nothing because the desired font is not available. I had introduced this feature mainly because the default size under Linux and Windows is not the same, this may change the relative position of the objects and a relation drawn vertically with one font will be inclined with an other. Nevertheless because the fonts under Linux and Windows are not strictly the same, a diagram can't have the same aspect under the two operating systems. This size is memorized in the file memorizing the project, but BOUML allows to change the font size even when the file is read only (the new font size can't be saved).

Shortcut edition

When you select *Edit shortcuts* a dialog appears :



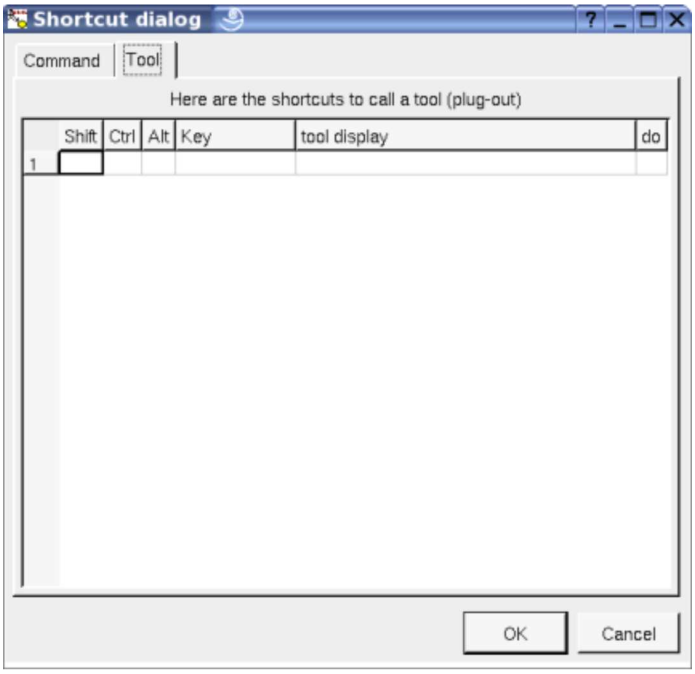
Here are the shortcuts to do a command (menu entry)

	Shift	Ctrl	Alt	Key	command	do
1		yes		A	Select all	
2		yes		C	Copy	
3		yes		D	Delete	
4				Down	Move down	
5		yes		L	Arrow geometry	
6				Left	Move left	
7		yes		R	Redo	
8				Return	Menu	
9				Right	Move right	
10		yes		S	Save	
11				Suppr	Remove from view	
12		yes		U	Undo	
13				Up	Move up	
14		yes		V	Paste	
15		yes		X	Cut	
16		yes		Y	Redo	
17		yes		Z	Undo	
18						

A shortcut is a key and the optional modifiers *shift, control* and alt. Under MacOS X *control* is replaced by the apple (⌘) and *alt* is named *option* on the old keyboards.

This first tab allows to define shortcuts to apply a command on the selected element(s). The available commands are proposed on a mouse click in the column *command*, their correspond to the menu entries. In the previous picture you see the default shortcuts.

The second tab allows to define shortcuts to apply a *plug-out* :



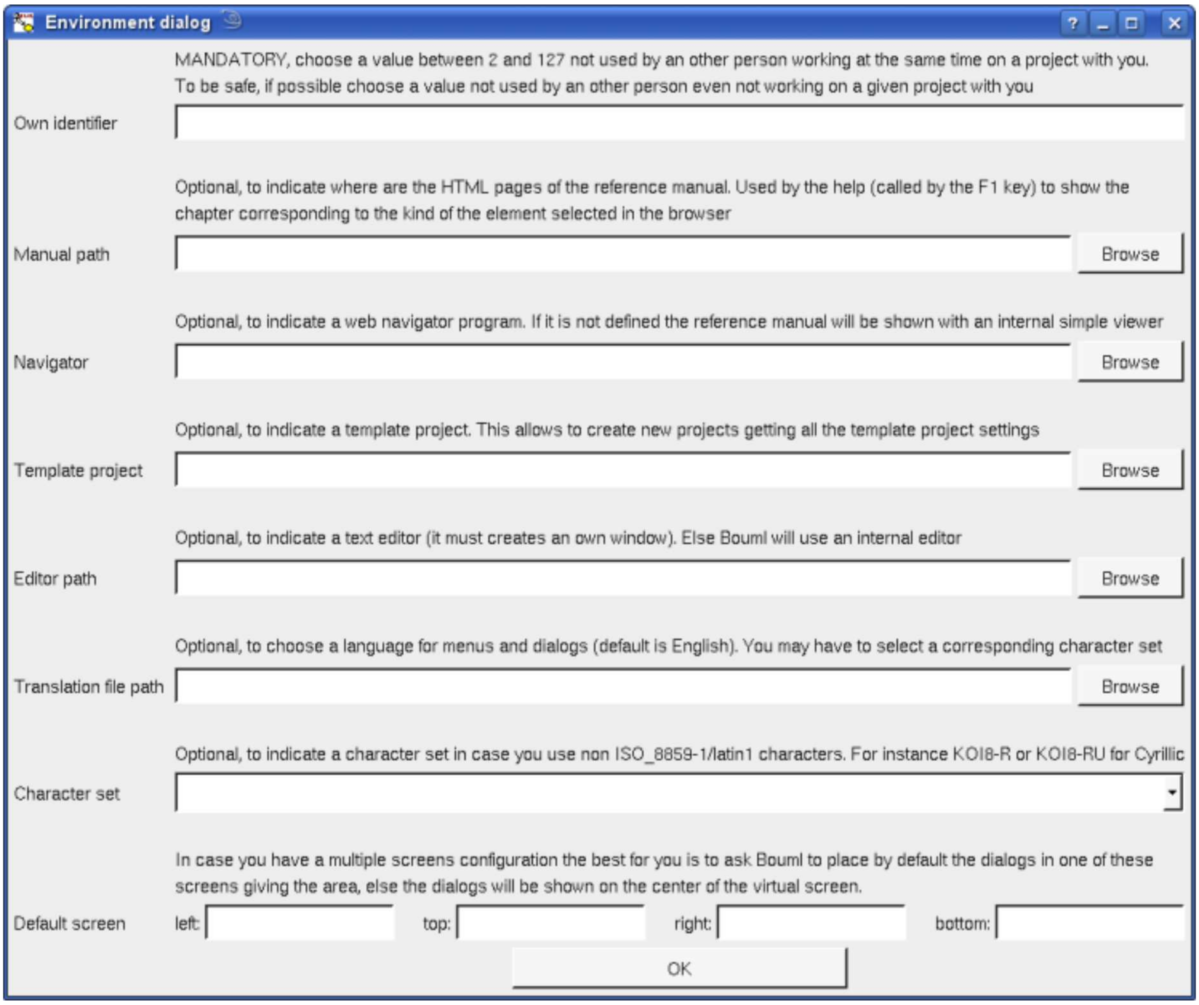
Here are the shortcuts to call a tool (plug-out)

	Shift	Ctrl	Alt	Key	tool display	do
1						

A *plug-out* is specified by its display specified through the *plug-out* editor. The available *plug-outs* are proposed on a mouse click in the column *tool display*.

As usual the last column *do* allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

Environment settings



Environment dialog

MANDATORY, choose a value between 2 and 127 not used by an other person working at the same time on a project with you. To be safe, if possible choose a value not used by an other person even not working on a given project with you

Own identifier

Optional, to indicate where are the HTML pages of the reference manual. Used by the help (called by the F1 key) to show the chapter corresponding to the kind of the element selected in the browser

Manual path [Browse]

Optional, to indicate a web navigator program. If it is not defined the reference manual will be shown with an internal simple viewer

Navigator [Browse]

Optional, to indicate a template project. This allows to create new projects getting all the template project settings

Template project [Browse]

Optional, to indicate a text editor (it must creates an own window). Else Bouml will use an internal editor

Editor path [Browse]

Optional, to choose a language for menus and dialogs (default is English). You may have to select a corresponding character set

Translation file path [Browse]

Optional, to indicate a character set in case you use non ISO_8859-1/latin1 characters. For instance KOI8-R or KOI8-RU for Cyrillic

Character set

In case you have a multiple screens configuration the best for you is to ask Bouml to place by default the dialogs in one of these screens giving the area, else the dialogs will be shown on the center of the virtual screen.

Default screen left: top: right: bottom:

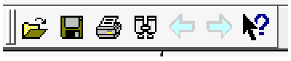
[OK]

You can't change you own identifier while a project is load, this means to change it start the modeler with loading a given project.

Under Windows one setup installs Bouml with the manual and the other without. I recommend to use the setup installing the documentation each time the documentation is updated, and it is placed under the directory *doc*. In the other cases the documentation may depend on how the packaging is made for your distribution, but in all the cases you can directly extract the archive to install the HTML documentation then indicate where it is.

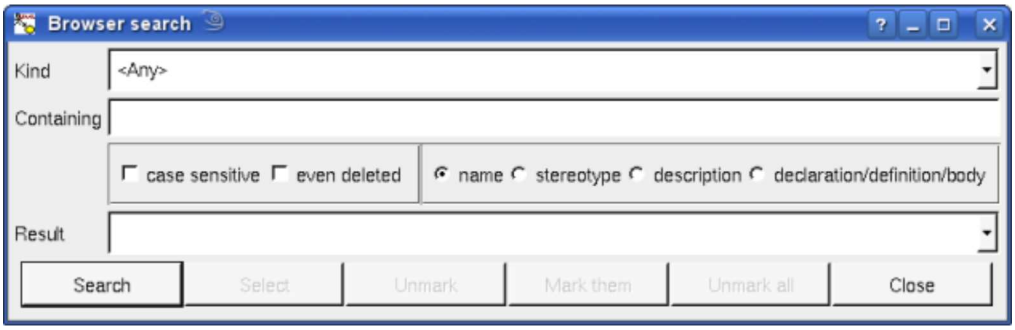
To specify a translation file allows to use a language different than the English for the menus and dialogs, for instance *fr.lang* allows to use the modeler in French. Note : when you change the language some global menus are unchanged and the description of buttons of already opened diagram too, to follow the new language for all exist then restart the modeler. If you choose a language needing a non latin-1 character set you also have to specify the right character set. If you are volunteer to add a new translation prevent me and I will send you the small tool I made for that and how to do, remark I do not deny that it is quite laborious to translate more that 2000 sentences.

Icons bar



These buttons allow to :

- **open** a project
- **save** the current project
- **print** the active diagram, a first menu appears to choose the printer or print in a file ans set properties, then a second dialog ask you to print the diagram on 1, 4 or 9 pages
- **search for** an elements through their names or stereotypes and may be kins, or to search for a string in the declarations/definitions or operation bodies :

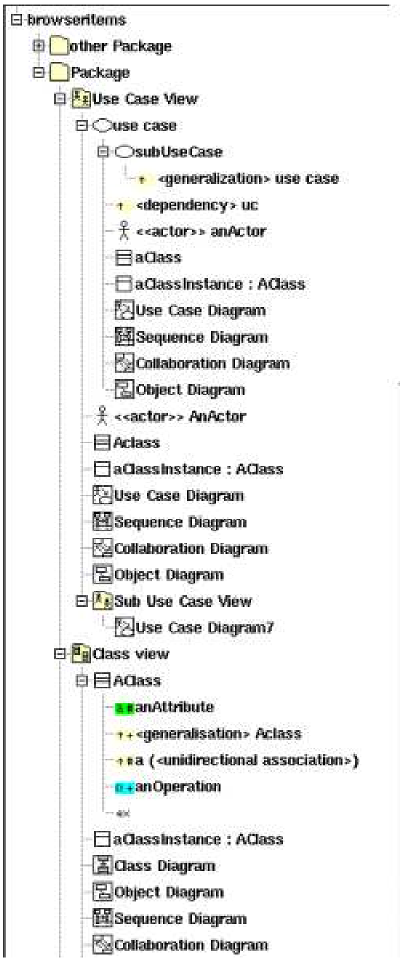

Browser search
Kind
<Any>
Containing
□ case sensitive □ even deleted
● name ○ stereotype ○ description ○ declaration/definition/body
Result
Search
Select
Unmark
Mark them
Unmark all
Close

- **navigate** in the historic of the last selected elements in the browser
- **describe** the behavior of a button or a menu entry, for that hit the button then the desired button or select a menu entry, a short description will be given. When you maintain the mouse on a button a very small description also appears.

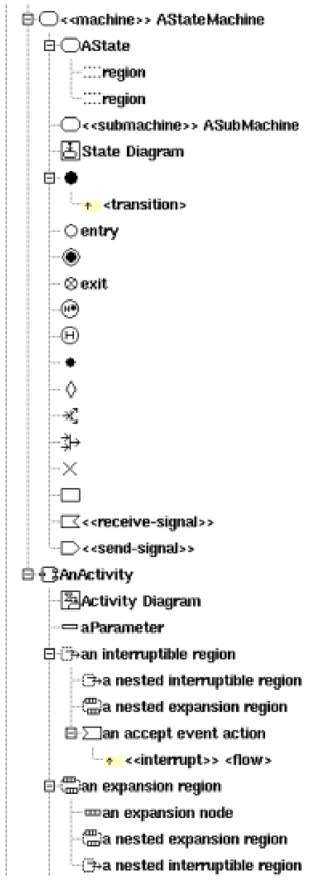
Previous : starting

Next : browser items

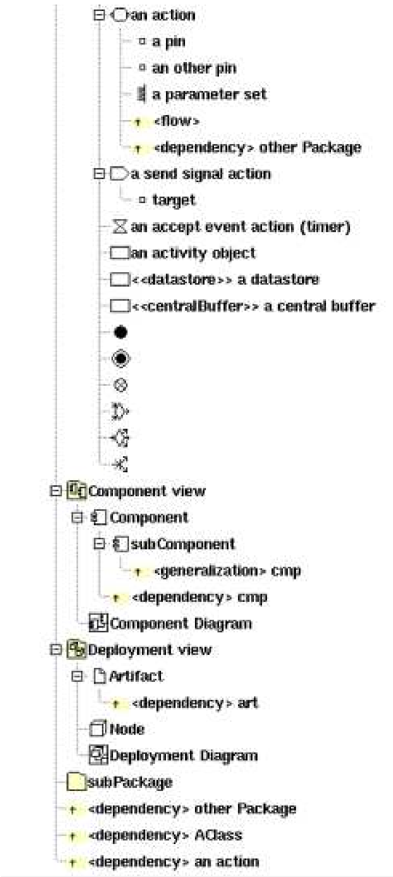
Browser items



```
browseritems
  other Package
  Package
    Use Case View
      use case
        subUseCase
          <generalization> use case
        <dependency> uc
        <<actor>> anActor
        aClass
        aClassInstance : AClass
        Use Case Diagram
        Sequence Diagram
        Collaboration Diagram
        Object Diagram
      <<actor>> AnActor
      Aclass
      aClassInstance : AClass
      Use Case Diagram
      Sequence Diagram
      Collaboration Diagram
      Object Diagram
      Sub Use Case View
        Use Case Diagram7
    Class view
      AClass
        anAttribute
        <generalisation> Aclass
        a (<unidirectional association>)
        anOperation
      aClassInstance : AClass
      Class Diagram
      Object Diagram
      Sequence Diagram
      Collaboration Diagram
```



```
      <<machine>> AStateMachine
        AState
          region
          region
        <<submachine>> ASubMachine
        State Diagram
        
          <transition>
        entry
        
        exit
        
        
        
        
        
        
        
        
        <<receive-signal>>
        <<send-signal>>
      AnActivity
        Activity Diagram
        aParameter
        an interruptible region
          a nested interruptible region
          a nested expansion region
          an accept event action
            <<interrupt>> <flow>
        an expansion region
          an expansion node
          a nested expansion region
          a nested interruptible region
```



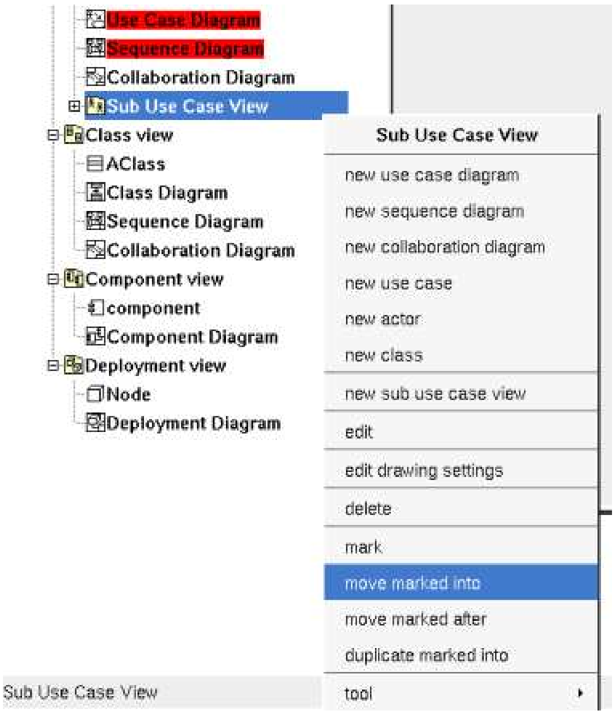
All the browser items may have a description, a stereotype (sometime without special meaning for BOUML, the default stereotypes may be defined for some types of item, and there are modeled stereotypes defined in profiles and simple stereotypes beign only a text), and user properties. The browser item's stereotype may be showed/hidden through the Miscellaneous menu.

The bold font is used when an item is modifiable, an item is *read-only* when you do not have the write permission for the file(s) supporting it (see Project files). The *system* items supporting of the *plug-out's* API (for instance *UmlBaseClass*) are also *read-only*, this help you to not modify them to have a chance to remain compatible with the future versions.

In Bouml there are 4 special types of containers, call views. Views can exist at many levels. These are used to provide structure and organization for diagrams and model elements. The sample browser items figure at the top of this page show the kinds of diagrams and model elements that can be put in each type of view. The context sensitive menus lets the user create only those diagrams and model elements appropriate to the particular type of view.

When you create a new item, this last is placed at the end of the items of the same container, using the left button of the mouse as for a *drag&drop* it is possible to move an item to place it in an other container (except for the relations) or to change the items order. The *drag & drop* from the browser to an opened diagram is also possible when it is legal. When you drag an item *it1* on a non-container item *it2*, *it1* will be placed just after *it2 at the same level*. When you drag an item *it1* on a container item *it2* which may contain *it1*, *it1* will be the first *it2*'s children, in case *it1* may be moved in *it2* or after *it2*, Bouml ask you to choose.

Multiple selection is not allowed in the browser using the classical way, I consider that it is to simple to loose a multiple selection through a wrong mouse click. I replace classical multiple selection with the possibility to mark browser items through the menu appearing on a right mouse click, or through a *control left mouse click*. Marked items are written on a red background, and may be moved or duplicated (under condition) :



On the example above at the menu appearing on the *use case view* propose to mark it, to move the marked items into it, to move the marked items after it (in this case only the order of the items is modified) or to duplicate the marked items into it. The menu is context dependent, for a marked item it proposes to unmark the item, or to unmark all the marked items, and for instance for a *component view* it just proposes to mark it because the two marked diagrams cannot be placed into the *component view* or after (the marked diagrams cannot be placed into the *package* containing the *component view*).

When you remove an item from the model, the icon contains a red cross (for instance ☒), note that a deleted item is **never** saved when you save your project, but it may be undeleted with or without its children until you close the project. Sometimes it is not possible to delete an items because this one contains read-only items or is referenced by a read-only relation.

The icons in the browser can be changed by using stereotypes defined in profiles, in some case these icons can also be used in the diagrams.

A double mouse click on an item allows to edit it except when the item have an associated diagram, in this case the diagram is showed. The other mouse buttons show a menu depending on the item kind.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control os is a shortcut to open a project

control d and *suppr* are a shortcut to delete the selected item

Package

A Package (may be the project itself) is first something like a directory and may contain :

- packages
- use case views
- class views
- component views
- deployment views
- relations

A package may indicate where the code must be produced by the generator for each language, and may specify the C++ namespace / Java package / Idl module. A generator producing code for an artifact looks at the package containing the deployment view where is the artifact to get these information.

A package stereotyped *profile* is used to define a profile.

Refer to package and profile for more information.

Use case view

A use case view may contain :

- sub use case view
- use cases
- classes, an actor is just a class having the stereotype *actor*
- class instances
- states
- activities
- use case diagrams
- object diagrams
- sequence diagrams
- collaboration diagrams

Refer to use case view for more information.

Class view

A class view is used to design the classes and may contain :

- classes
- class instances
- states
- activities
- class diagrams
- object diagrams
- sequence diagrams
- collaboration diagrams

Refer to class view for more information.

Component view

A component view may contains :

- components
- component diagrams

Refer to component view for more information.

Deployment view

A deployment view may contains :

- nodes
- artifact
- deployment diagrams

Refer to deployment view for more information.

Use case

A use case is ... a use case, but also a browser container and may contain :

- use cases
- actors
- classes
- class instances
- states
- activities
- relations
- use case diagrams
- object diagrams
- sequence diagrams
- collaboration diagrams

Refer to use case for more information.

Class

A *class* is the support to define a *class* (!), an *interface*, an *enum*, an *union*, a *struct*, an *exception*, or a *valuetype*, depending on the language. The stereotype specify what a class is, the way a stereotype is translated for each language may be specified through the *generation settings*

A class stereotyped *stereotype* define a stereotype in a profile.

Of course a class is also a browser container and may contain :

- (nested) classes
- relations
- attributes
- operations
- extra members

The order of the class's sub-items is very important because it is followed by the C++/Java/Idl generators.

Refer to class and profile for more information.

Relation

They are two kinds of relation : the relations between classes whose are considered by the source code generators, and the relations between the other items (inheritance and dependency)

To add a relation you have to use a diagram (obviously the relation drawing may be deleted just after !), it is not possible to add a relation through the browser. It is also not possible to move a relation out of the items containing it.

The icon in the browser indicate if a relation between classes is public (+), protected (#) or private (-). The *protected* visibility is translated in *private* in Idl.

A bi-directional relation between classes is supported by two items in the browser.

Generally the stereotype of a relation between classes is used to specify how a relation with a multiplicity different than 1 is translated in each language (refer to default stereotype and generation settings), for instance to produce a vector. The *friend* stereotype is a special case for a *dependency* and is used to produce a C++ *friend* declaration.

Refer to relation for more information.

Attribute

There is not restriction for the attributes, an attribute's type may be a class or an *int* for instance.

The icon in the browser indicate if the attribute is public (+), protected (#) or private (-). The *protected* visibility is translated in *private* in Idl.

Refer to attribute for more information.

Operation

The icon in the browser indicate if the operation is public (+), protected (#) or private (-). The *protected* visibility is translated in *private* in Idl.

Refer to operation for more information.

Extra member

An extra member is an alien allowing you to specify directly the generated code for each language. This allows to manage non UML items, for instance C++ pre-processor directives, Java attribute initializations etc ...

Refer to extra member for more information.

Class instance

A *modeled* class instance, a sequence diagram , object diagram or collaboration diagram may contain *modeled* class instances and *graphical* classes instances (out of the model).

Refer to class instance for more information.

State

A *state* represents a *state machine*, a *sub machine*, a *composite state* or a simple *state*

A *state* may contains :

- state diagrams
- sub-states
- regions
- pseudo states
- transitions
- actions
- receive signals (an action with the stereotype *receive-signal*)
- send signals (an action with the stereotype *send-signal*)

Refer to state and for more information.

Pseudo State

A pseudo state may be :

final state (for reasons of simplification)

initial

deep history

shallow history

join

fork

junction

choice

entry point

exit point

terminate

A *pseudo state* may contains :

- transitions

Refer to pseudo state for more information.

Activity

An activity may contains:

- activity diagrams
- parameters
- activity nodes
- activity partitions
- expansion and interruptible activity regions

Refer to activity for more information.

Expansion region

An expansion region may contains :

- expansion and interruptible activity sub regions
- expansion nodes
- control nodes
- action nodes
- object nodes

Refer to region for more information

Interruptible activity region

An interruptible activity region may contains :

- expansion and interruptible activity sub regions
- control nodes
- action nodes
- object nodes

Refer to region for more information

Activity node

An activity node may be :

activity action (opaque, accept event, accept timer event, read variable value, clear variable value, write variable value, add variable value, remove variable value, call behavior, call operation, send object, send signal, broadcast signal, unmarshall or value specification)

□ object nodes

control nodes (● initial, ◉ final, ⊗ flow final, merge, decision, fork, join)

Activity nodes may contain :

- flow
- ▫ pins (action only)

Refer to activity action, object node and control node for more information.

Component

A component is an autonomous unit with well defined interfaces that is replaceable within its environment.

A component may contains :

- relations
- components

Refer to component for more information.

Artifact

Artifacts are basically used to produce source file(s) when the stereotype is source, or to specified how libraries or an executable are composed.

A *source* artifact is (potentially) associated to classes, but you may directly give its source(s) contain for instance to define the C++ *main* function. The other artifacts may be associated to artifacts.

Note : In the old release of BOUML (up to the 1.5.1), the behavior of the artifact was defined at the component level.

An artifact may contains :

- relations

Refer to artifact for more information.

Node

To specify how the deployment is made, a node may represent a CPU, a device etc ...

Refer to node for more information.

Use case diagram

Refer to use case diagram for more information.

Sequence diagram

Refer to sequence diagram for more information.

Collaboration diagram

Refer to collaboration diagram for more information.

Class diagram

Refer to class diagram for more information.

Activity diagram

Refer to activity diagram for more information

State diagram

Refer to state diagram for more information

Object diagram

Refer to object diagram for more information

Component diagram

Refer to component diagram for more information.

Deployment diagram

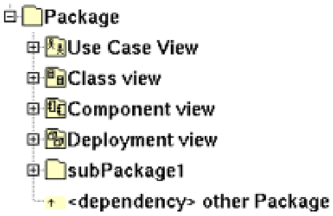
Refer to deployment diagram for more information.

Previous : top level menus

Next : package

Package

A Package is first something like a directory and may contain other packages, use case views, class views, component views and deployment views, and dependencies, in any order :



A package allows also to indicate where the code must be produced by the generator for each language, and to specify the C++ namespace / Java package / Python package / Idl module. A generator producing code for a component looks at the package containing the component view where is the component to get these information.

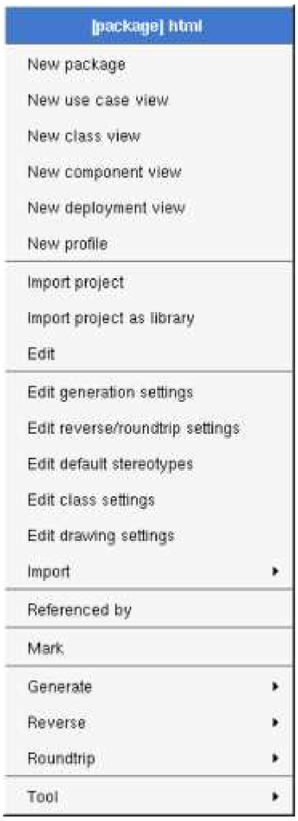
The *project* is in fact the top level package.

The packages stereotyped *profile* define a profile, refer to the chapter profile.

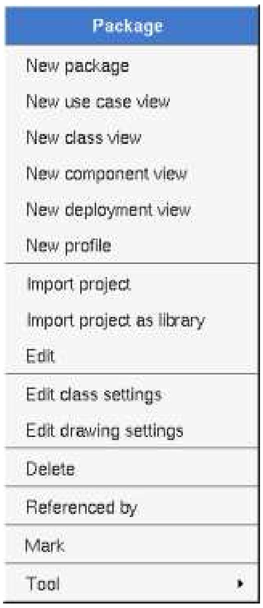
The relation between packages are dependencies and inheritances. Because here the inheritance is very soft, A inherits on B when A contains a class inheriting an other one defined in B, BOUML accept that circular inheritances.

Menus

The project and package menus appearing with a right mouse click on their representation in the browser are something like this, supposing them not *read-only* nor deleted :



project menu



(non project) package menu

Menu : import project

import project allows to import a BOUML project into the current package as a standard package with its contain. Note that the imported project's default settings are not imported. It is not possible to import a project formated by a release of BOUML less than

1.3, then to import an older project you have to reformat it. To do this, load the project to import with a release greater or equal to 1.3, edit the project package, hit *Ok* (BOUML doesn't check if something is really modified) then save the project.

Menu : import project as library

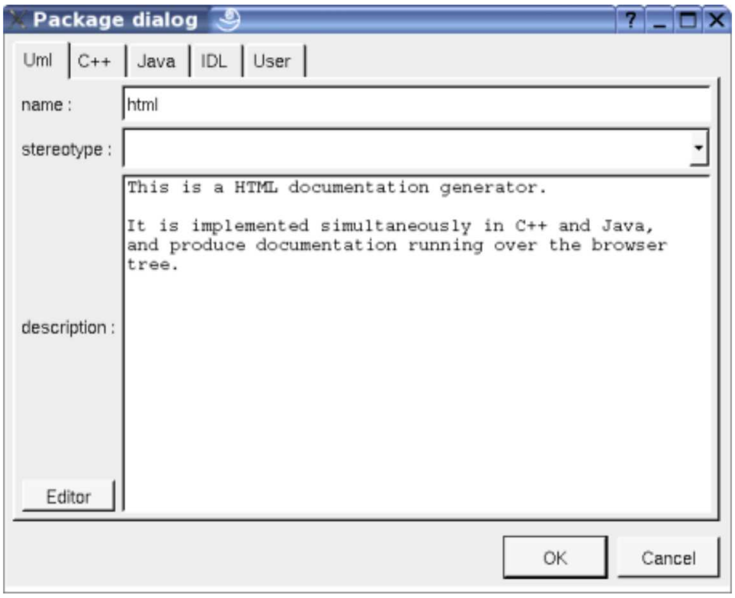
Allows to import a project as a library. A project imported as a library can't be modified in the importing project, but it can be updated to follow changes done in the imported project. In case the project imported as library contains others projects imported as library this ones are not considered like that, this means you can't update these sub projects separately but you have to ask for to update the container project you directly imported. This feature is dedicated to use projects defining libraries, not to work at several on the same project, for that see Project control and Project synchro

Menu : Update imported library

To update a project imported as a library to take into account all the changes done since the last update ot the initial importation. To simplify management you can't update a project imported as library while the project is modified, this means you have to save first your project or to reload it to forget changes you don't want, and at the end of the update the project is saved, so you can't undo an update.

Menu : edit

edit allows to show/modify the project/packages properties with the following dialog (here Php is not selected in the top level menu *Languages*, so its tab is not visible) :



name : html

stereotype :

description :

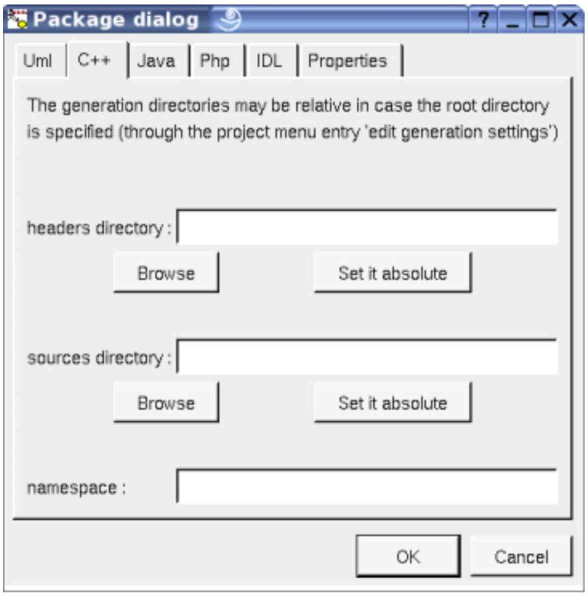
```
This is a HTML documentation generator.

It is implemented simultaneously in C++ and Java,
and produce documentation running over the browser
tree.
```

The project's name cannot be changed through this dialog, use *save as* in the *project menu*.

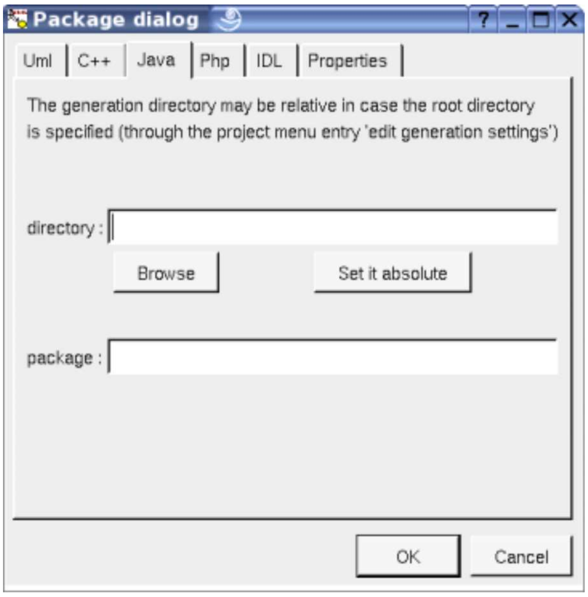
The *stereotype* of the project and packages doesn't have a special meaning for BOUML.

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

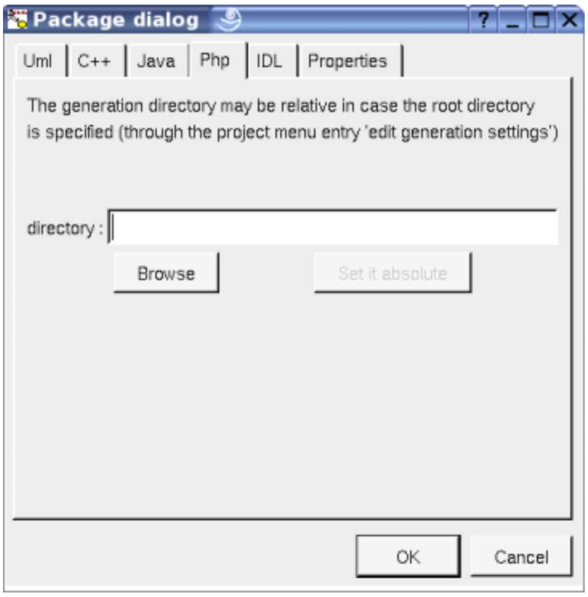
The C++, Java, Php, Python and Idl tabs (visible only i these languages are all set in the *Languages* menu) allow to specify the directory where the generation are made and the *namespace/package/module* :



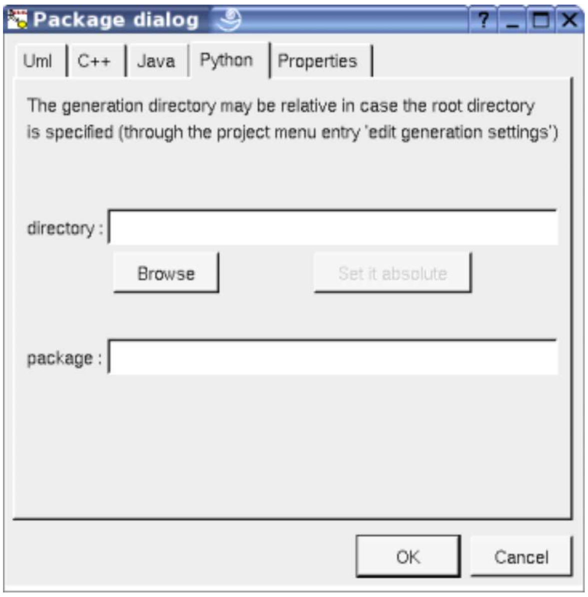
The generation directories may be relative in case the root directory is specified (through the project menu entry 'edit generation settings')



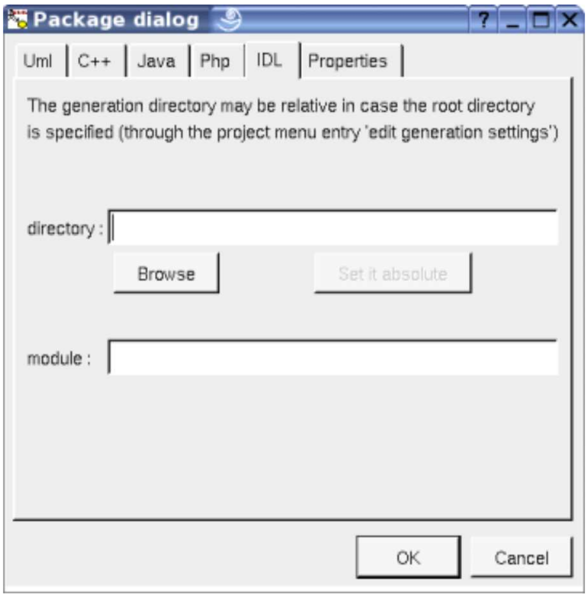
The generation directory may be relative in case the root directory is specified (through the project menu entry 'edit generation settings')



The generation directory may be relative in case the root directory is specified (through the project menu entry 'edit generation settings')



The generation directory may be relative in case the root directory is specified (through the project menu entry 'edit generation settings')



The generation directory may be relative in case the root directory is specified (through the project menu entry 'edit generation settings')

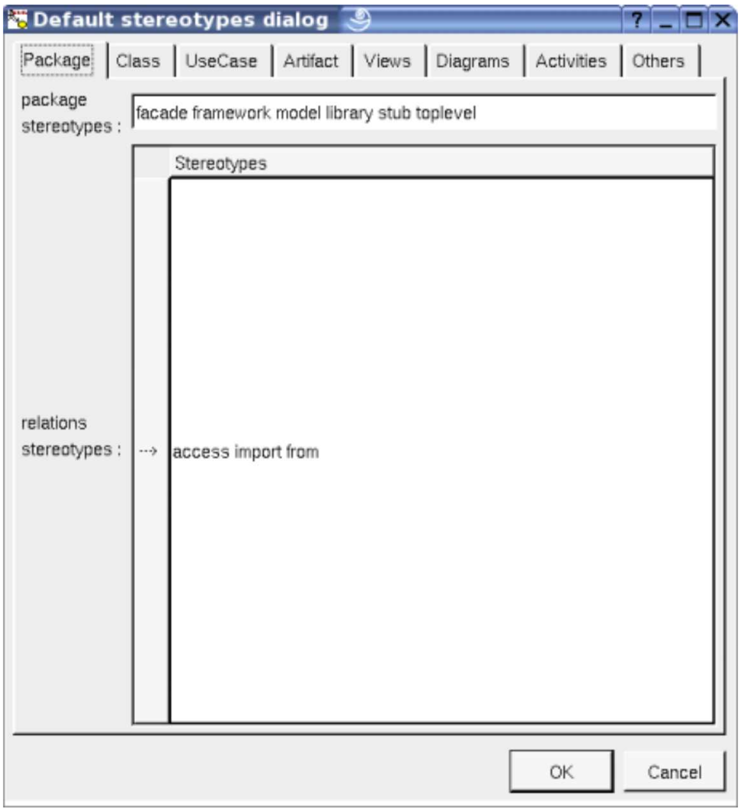
When a directory specification is empty, the generation is made in the directory specified through the last tab of the *generation settings* dialog. As it is mentioned in the dialogs, in case a root directory is specified through the *generation settings* dialog, the directory specifications in the three dialogs above may be relative, the directory(ies) used by the code generators will be the *root* directory collapsed with the appropriate relative directory. This allows to move all the generated files changing only one path.

When a *namespace/java package/python package/module* specification is empty, the generated code will not be placed in a namespace/package/module (!), else you have to specify the full *namespace/package/module* specification : this allows to have a browser's package tree different than the *namespaces/packages/modules* imbrication.

For instance in case the C++ *namespace* is mynamespace, the generated code will be placed in the *namespace mynamespace* (!). In case the C++ *namespace* is *mynamespace::subnamespace::subsubnamespace*, the generated code will be placed in the *namespace subsubnamespace* itself nested in the *namespace subnamespace* itself nested in the *namespace mynamespace*. In Java and Python the separator is a "**.**" rather than "**::**". In Idl the separator is "**::**".

Menu : edit default stereotypes

This entry is only available in the project's menu. Allows to set a default stereotypes list for some kinds of object, the dialog's tab associated to the packages is :



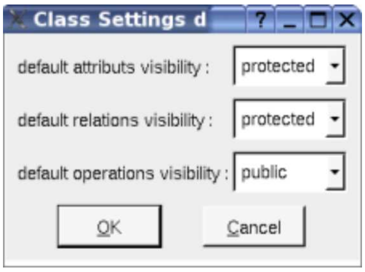
package stereotypes : facade framework model library stub toplevel

relations stereotypes : ⇢ access import from

As you can see, it is possible to set a default stereotypes list for the packages and the *dependency* relation starting from a package. In the lists the stereotypes must be separated by a space.

The stereotypes *import* and *from* are specially known by the Python generator and allow to add *import* and *from .. import* * forms.

Menu : edit class settings



default attributs visibility : protected

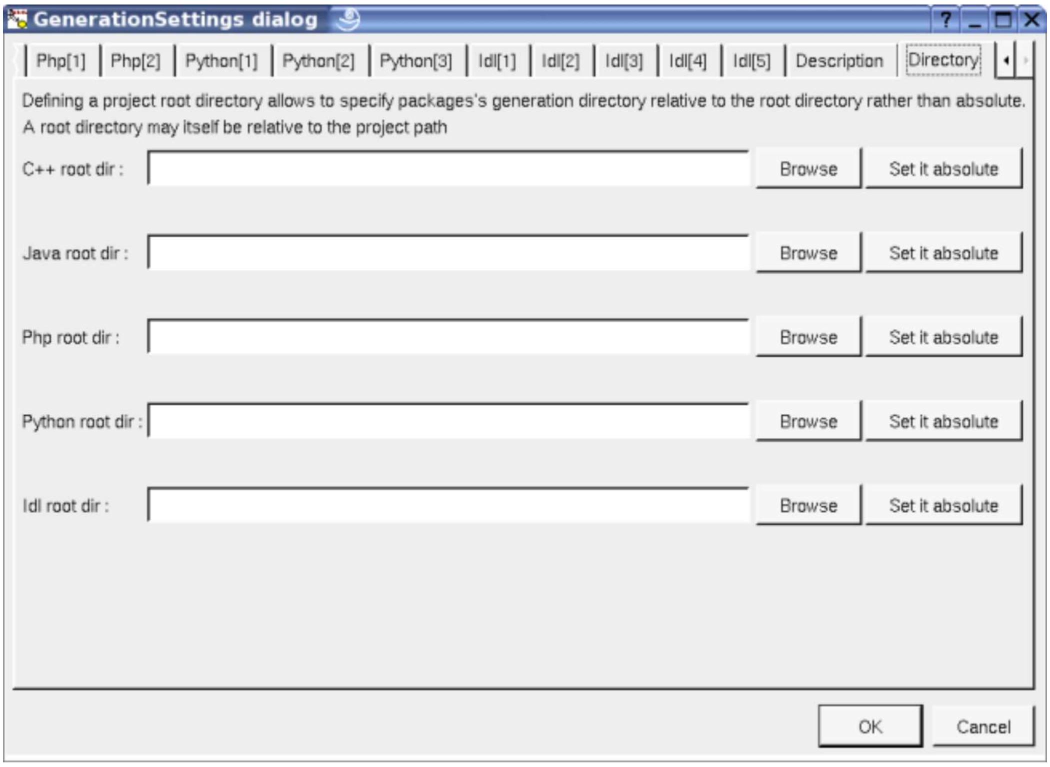
default relations visibility : protected

default operations visibility : public

As you can see, this setting allows to set a default visibility at the UML level for the attributes, relations and operations. This setting may be redefined in nested packages and class views. At the project level you have to choose between *public, protected* and *private*, elsewhere you may also choose *default*, this means that the visibility of the upper level is followed (which itself may be *default* etc ... up to the *project* level). When you create a new package or class view the visibilities are set to *default*.

Menu : edit generation settings

The biggest menu in BOUML, used to specify a default definition/declaration for all the generated forms. This entry is only available in the project's menu, for the package point of view the associated dialog's tab is the last one named D*irectory* :



GenerationSettings dialog

Php[1] | Php[2] | Python[1] | Python[2] | Python[3] | Idl[1] | Idl[2] | Idl[3] | Idl[4] | Idl[5] | Description | Directory

Defining a project root directory allows to specify packages's generation directory relative to the root directory rather than absolute.
A root directory may itself be relative to the project path

C++ root dir : [ ] Browse | Set it absolute

Java root dir : [ ] Browse | Set it absolute

Php root dir : [ ] Browse | Set it absolute

Python root dir : [ ] Browse | Set it absolute

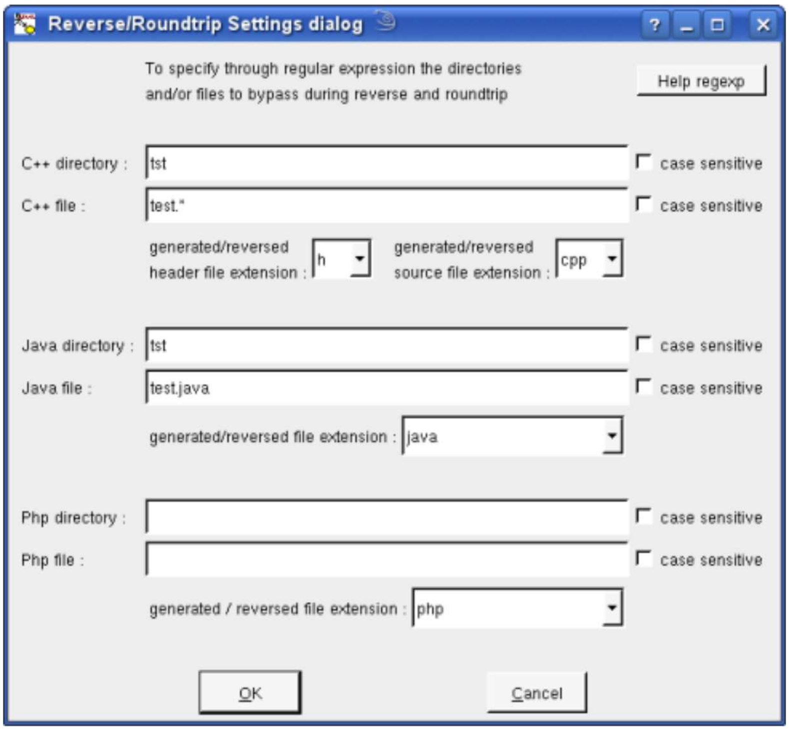
Idl root dir : [ ] Browse | Set it absolute

OK | Cancel

This one allows to specify a *root* directory where the generations will be made, this the possibility to change it at each package level as it was previously said. This *root* directory may be relative to the project. The *browse* buttons call a file browser.

Menu : edit reverse/roundtrip settings

To specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs :



Reverse/Roundtrip Settings dialog

To specify through regular expression the directories
and/or files to bypass during reverse and roundtrip

Help regexp

C++ directory : tst □ case sensitive

C++ file : test.* □ case sensitive

generated/reversed header file extension : h

generated/reversed source file extension : cpp

Java directory : tst □ case sensitive

Java file : test.java □ case sensitive

generated/reversed file extension : java

Php directory : □ case sensitive

Php file : □ case sensitive

generated / reversed file extension : php

OK | Cancel

Menu : edit drawing settings

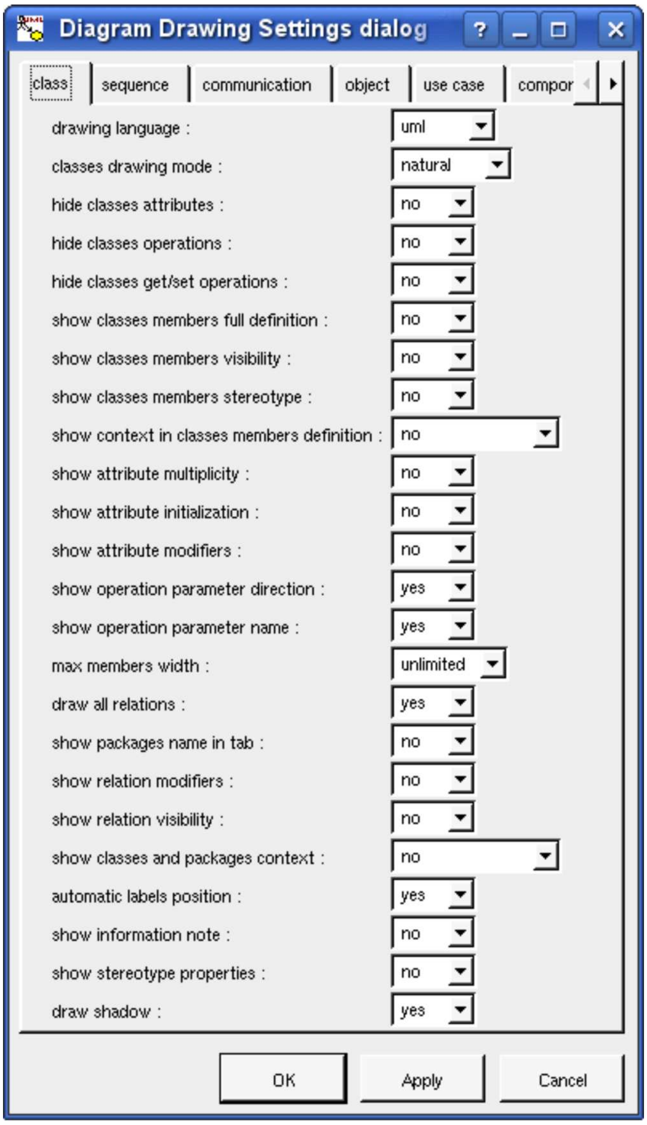


Diagram Drawing Settings dialog

drawing language : uml

classes drawing mode : natural

hide classes attributes : no

hide classes operations : no

hide classes get/set operations : no

show classes members full definition : no

show classes members visibility : no

show classes members stereotype : no

show context in classes members definition : no

show attribute multiplicity : no

show attribute initialization : no

show attribute modifiers : no

show operation parameter direction : yes

show operation parameter name : yes

max members width : unlimited

draw all relations : yes

show packages name in tab : no

show relation modifiers : no

show relation visibility : no

show classes and packages context : no

automatic labels position : yes

show information note : no

show stereotype properties : no

draw shadow : yes

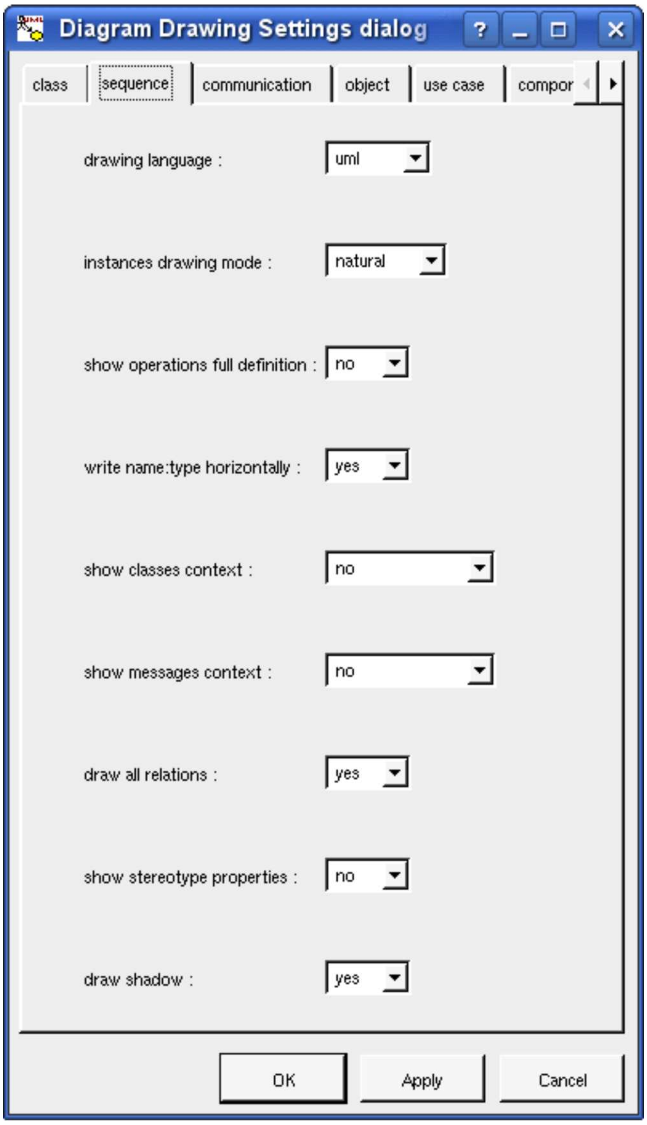


Diagram Drawing Settings dialog

drawing language : uml

instances drawing mode : natural

show operations full definition : no

write name:type horizontally : yes

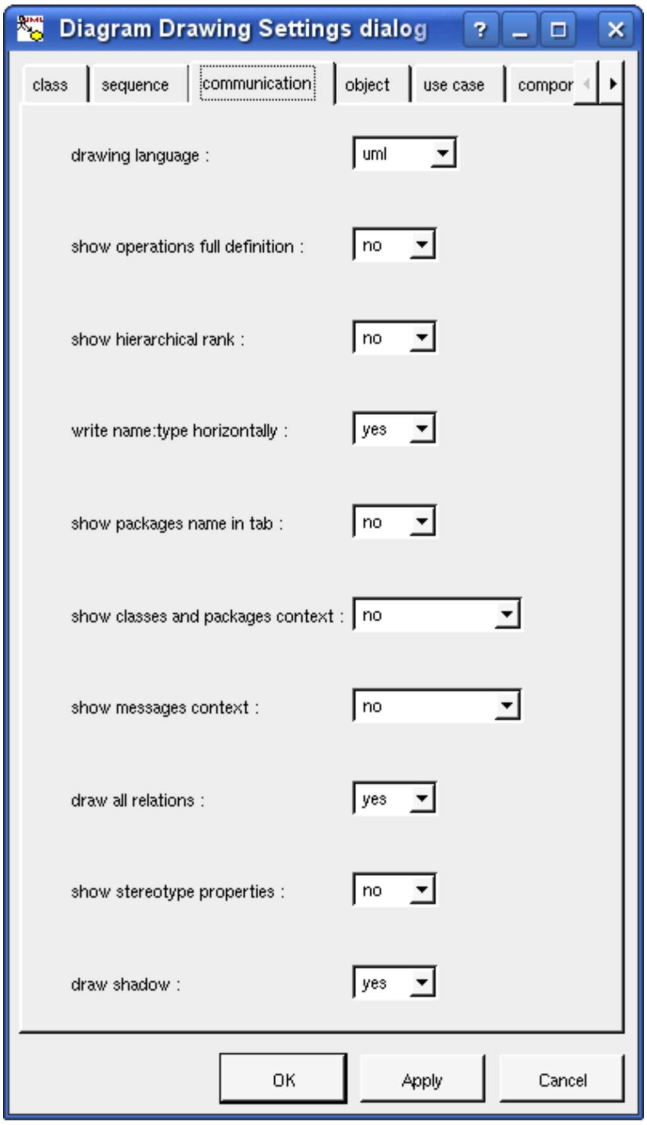
show classes context : no

show messages context : no

draw all relations : yes

show stereotype properties : no

draw shadow : yes



drawing language : uml

show operations full definition : no

show hierarchical rank : no

write name:type horizontally : yes

show packages name in tab : no

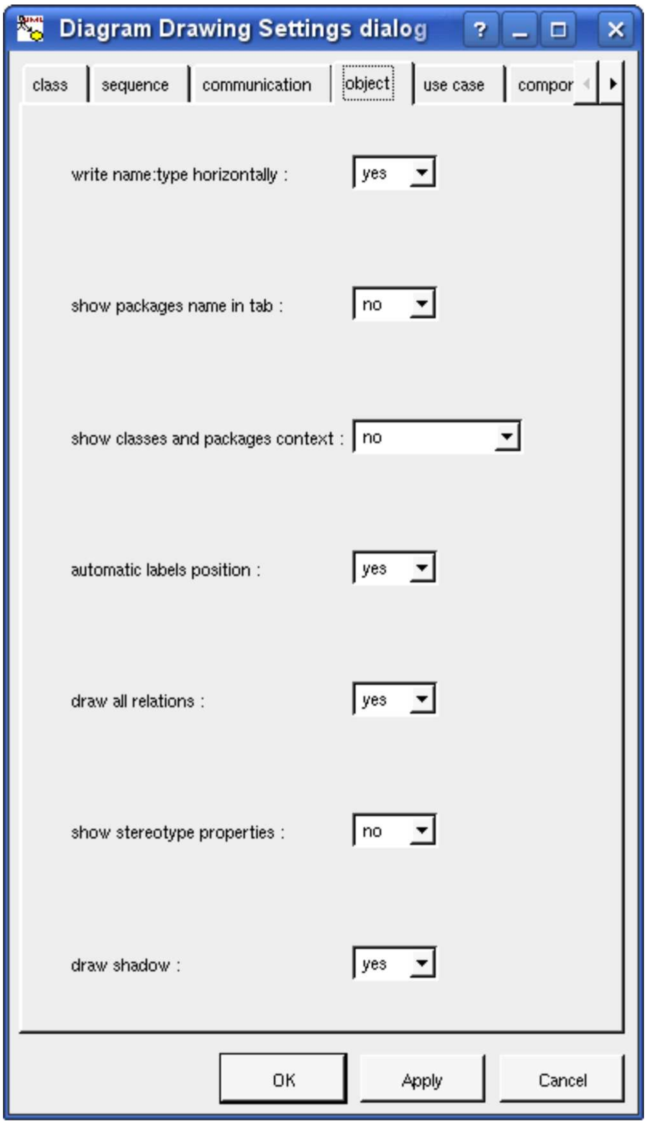
show classes and packages context : no

show messages context : no

draw all relations : yes

show stereotype properties : no

draw shadow : yes



write name:type horizontally : yes

show packages name in tab : no

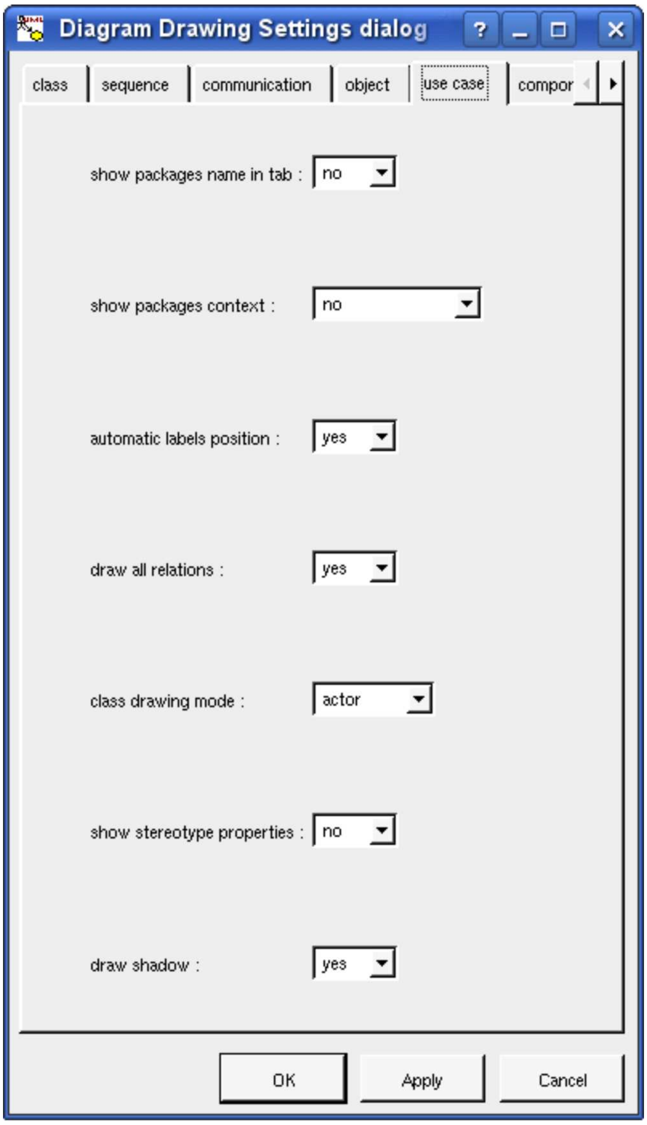
show classes and packages context : no

automatic labels position : yes

draw all relations : yes

show stereotype properties : no

draw shadow : yes



show packages name in tab : no

show packages context : no

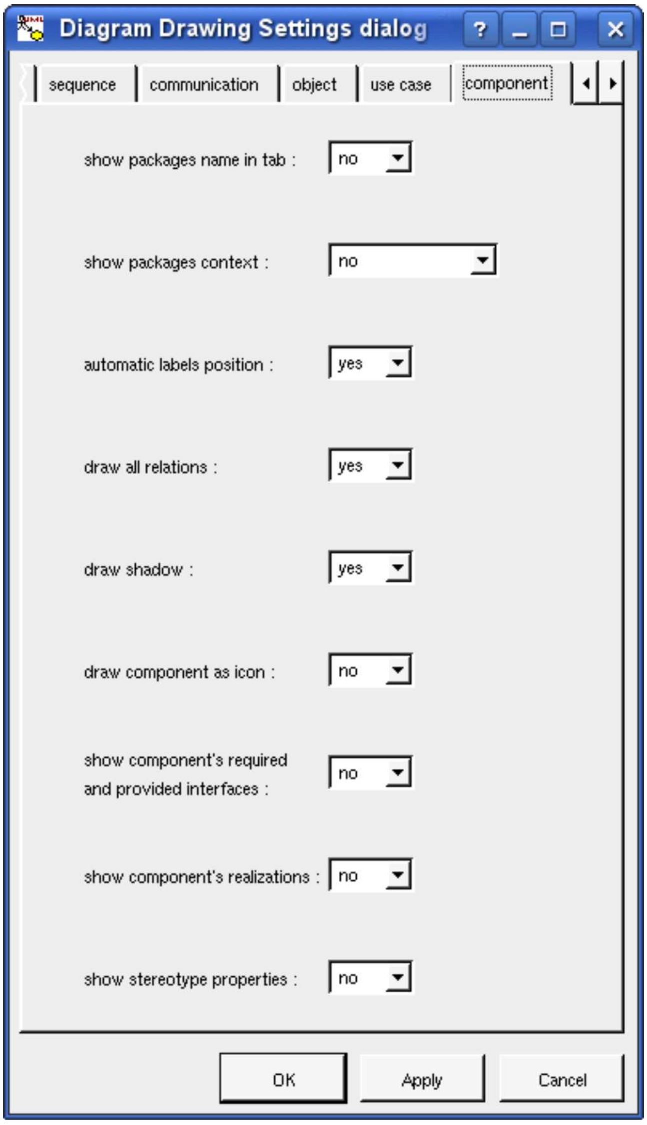
automatic labels position : yes

draw all relations : yes

class drawing mode : actor

show stereotype properties : no

draw shadow : yes



show packages name in tab : no

show packages context : no

automatic labels position : yes

draw all relations : yes

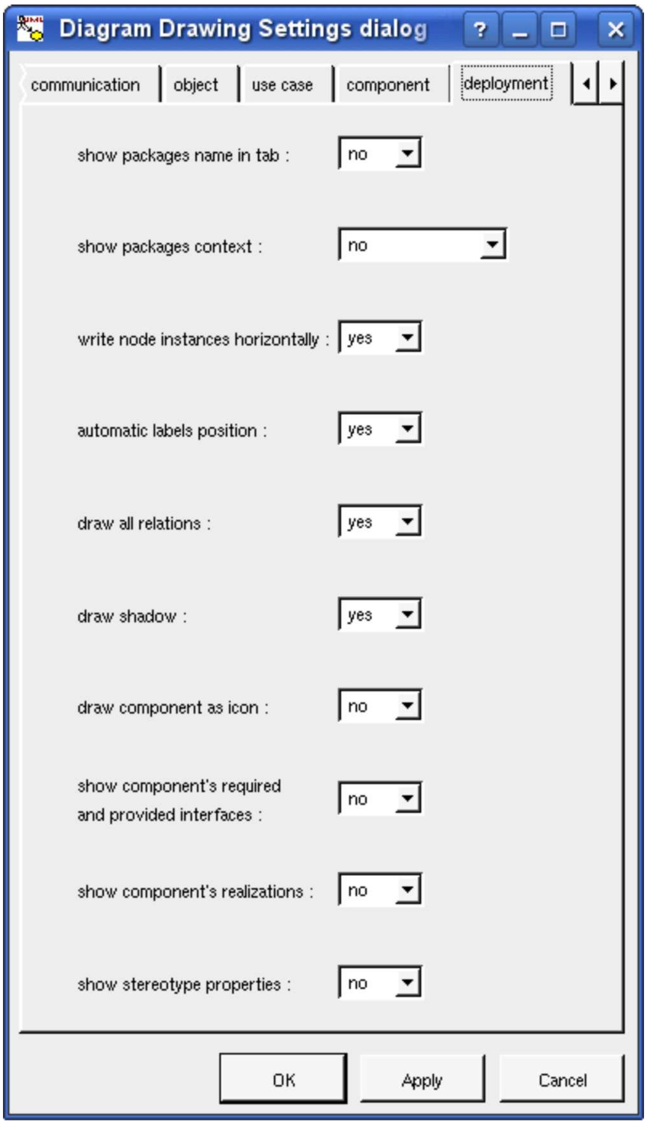
draw shadow : yes

draw component as icon : no

show component's required and provided interfaces : no

show component's realizations : no

show stereotype properties : no



show packages name in tab : no

show packages context : no

write node instances horizontally : yes

automatic labels position : yes

draw all relations : yes

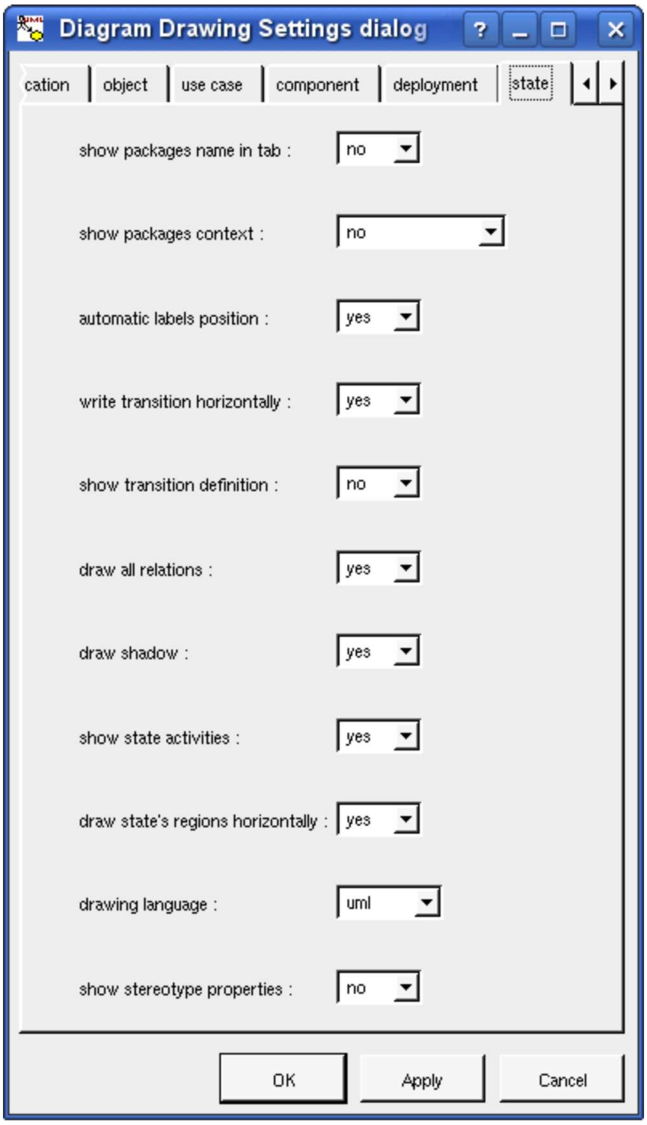
draw shadow : yes

draw component as icon : no

show component's required and provided interfaces : no

show component's realizations : no

show stereotype properties : no



show packages name in tab : no

show packages context : no

automatic labels position : yes

write transition horizontally : yes

show transition definition : no

draw all relations : yes

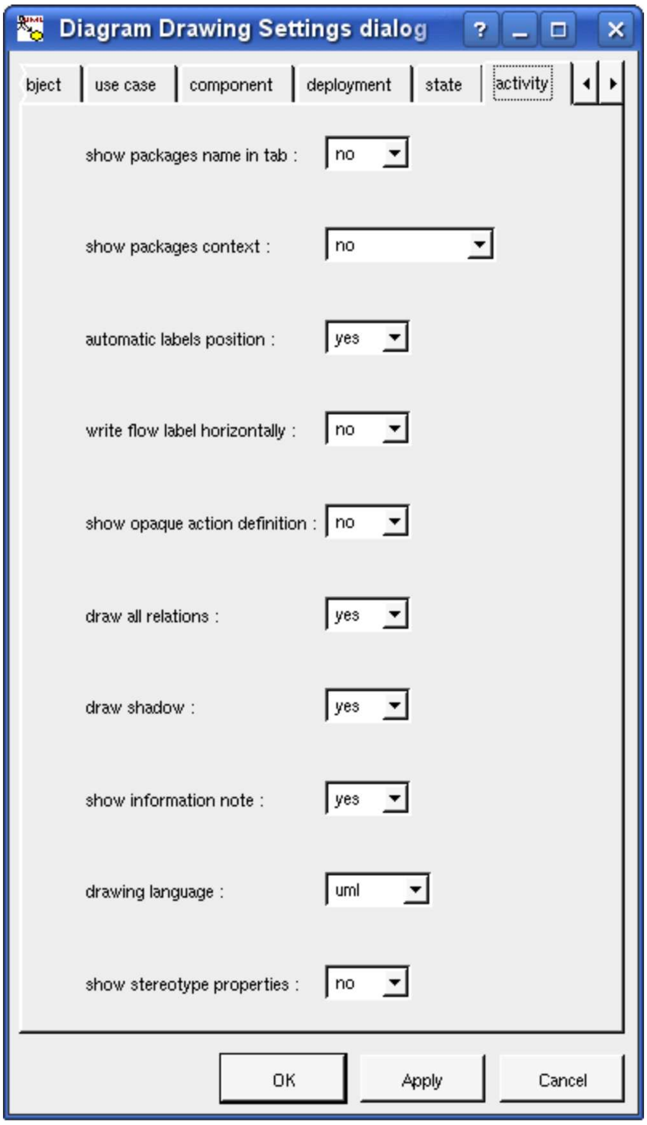
draw shadow : yes

show state activities : yes

draw state's regions horizontally : yes

drawing language : uml

show stereotype properties : no



show packages name in tab : no

show packages context : no

automatic labels position : yes

write flow label horizontally : no

show opaque action definition : no

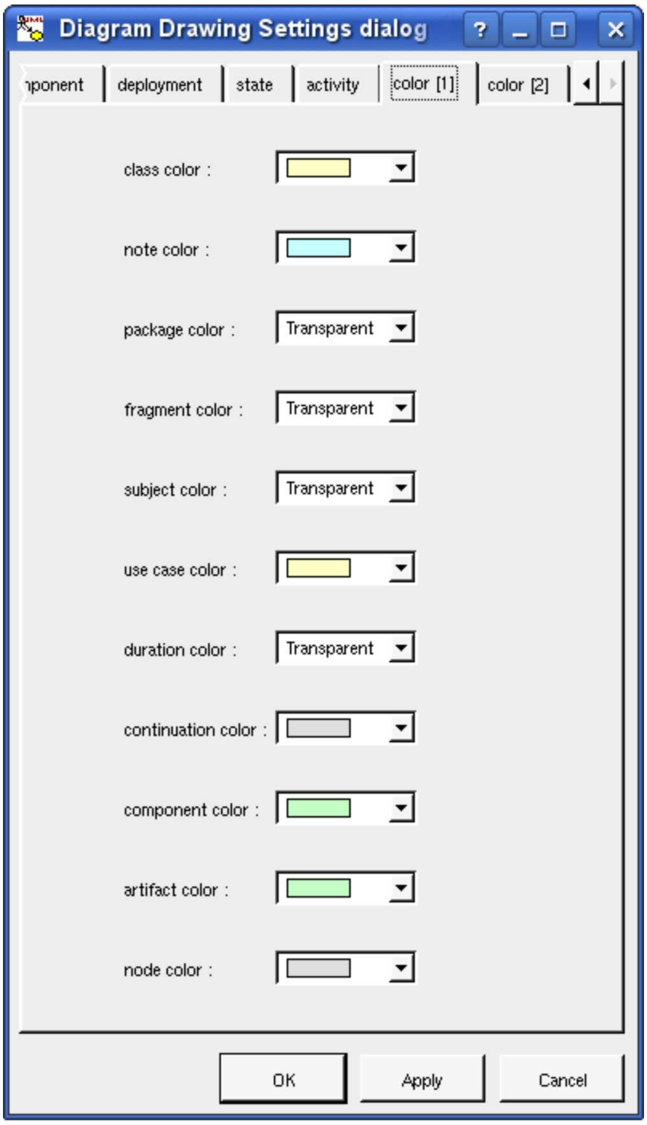
draw all relations : yes

draw shadow : yes

show information note : yes

drawing language : uml

show stereotype properties : no



class color : 🟨

note color : 🟦

package color : Transparent

fragment color : Transparent

subject color : Transparent

use case color : 🟨

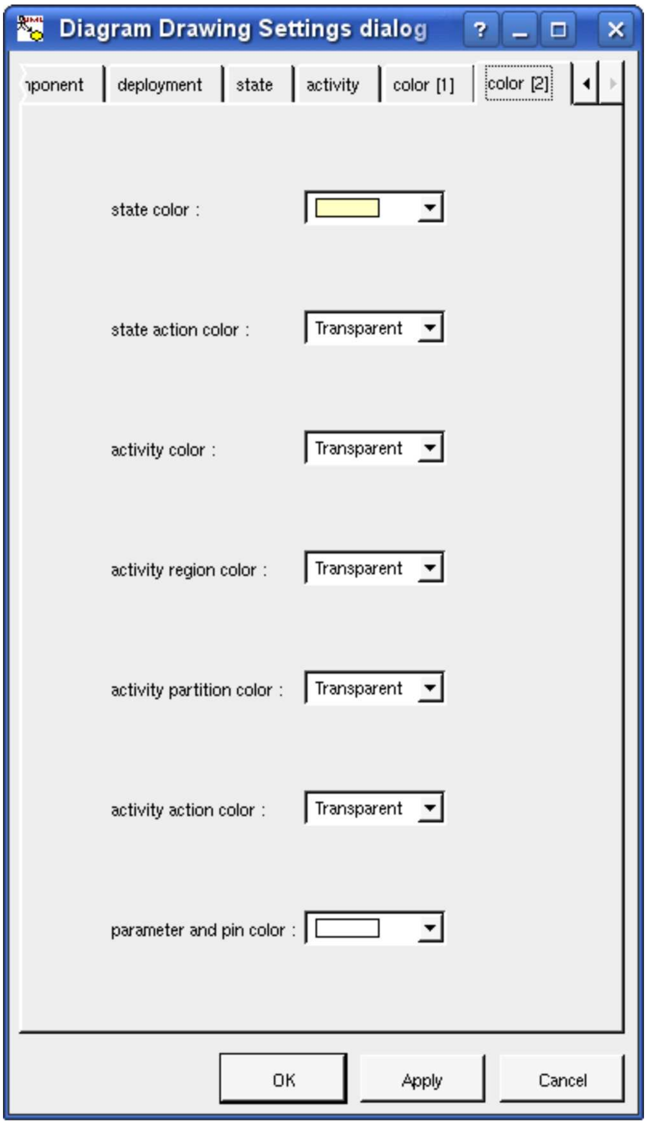
duration color : Transparent

continuation color : ⬜

component color : 🟩

artifact color : 🟩

node color : ⬜



state color : 🟨

state action color : Transparent

activity color : Transparent

activity region color : Transparent

activity partition color : Transparent

activity action color : Transparent

parameter and pin color : □

This dialog allows to specify how the diagrams must be drawn by default, at the package level you may specify all the drawing settings because a package may contain indirectly all the kinds of diagram. Except at *project* level you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).

Refer to drawing for the settings concerning the packages.

Menu : import

Allows to import the generation settings (except the specification of the base directories) or the default stereotypes from an other project.

Menu : delete

The *delete* entry is only present when the package is not *read-only*. Note that this entry is proposed even the package cannot be deleted because a children at any sub-level is read-only or referenced by a read-only relation, these cases are checked when you ask for the deletion for performance purpose (else the menu may take too many time to appears).

Delete the package and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : referenced by

To know who are the packages referencing the current one class through a relation.

Menu : mark

See mark

Menu : generate

To generate the C++/Java/Idl code of all the sub-items. To generate C++/Java/Idl code for all the project, do it at the project level or through the Tools menu. Note that the generators does not re-write a file when it is not necessary, to not change the last modification date of the files for nothing, *make* will appreciate !

Refer to C++ generator, Java generator, Php generator, Python generator and Idl generator for more details.

Menu : reverse

To reverse sources placing the result into the current package.

Refer to C++ reverse, Java reverse, Java catalog , Php reverse and Python reverse for more details.

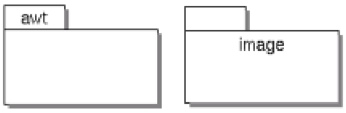
Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the project/package.

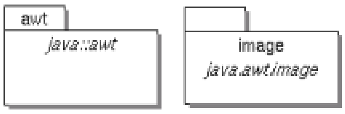
Drawing

When a package is drawn in a diagram, the available options are :

- *package name in tab* : to indicate if the package's name must be written in the tab which is the small rectangle on the top :



- *show classes and packages context* : to indicate if the context where the package is defined must be written, it is not the case just above. The context may be the “UML context” which is the path of the package in the browser (choice followed for *awt* below), or the C++ namespace specified by the package, or the Java package specified by the package (choice followed for *picture* below), or the Python package specified by the package or at least the Idl module :



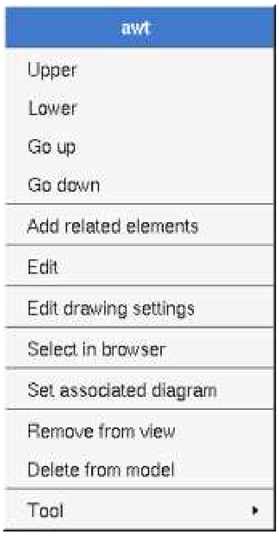
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the package is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.
- *package color* : when you create a new project, the packages are transparent by default.

In all the diagrams, a package may be resized.

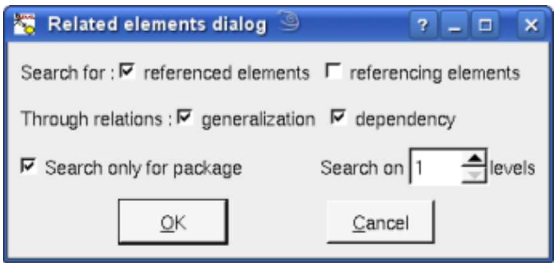
If the package is stereotyped by a stereotype part of a profile and this stereotype has an associated icon, this icon will be used unchanged when the scale is 100% else it is resized.

When you move a package in a diagram, the artifacts, classes, components, deployment nodes, sub-packages and use cases defined in the package (not through an other one) and in collision with the package at the beginning of the move are also moved. If you want to also move the connected elements, do a very short move (for instance use the keyboard arrows to do a move and its opposite) then ask for *select linked items* and restart the move. Note : contrarilly to the states when you resize a package the sub-elements are not moved to stay in it.

A right mouse click on a package in a diagram calls the following menu :



the *add related elements* menu allows to add elements having a relation with the current element, the following dialog is shown :



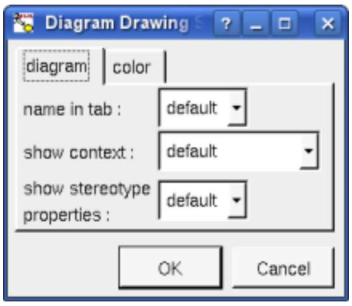
Search for : ☑ referenced elements ☐ referencing elements

Through relations : ☑ generalization ☑ dependency

☑ Search only for package

Search on 1 levels

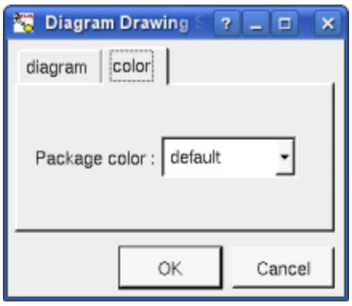
The *drawing settings* concerns only the picture for which the menu is called.



name in tab : default

show context : default

show stereotype properties : default



Package color : default

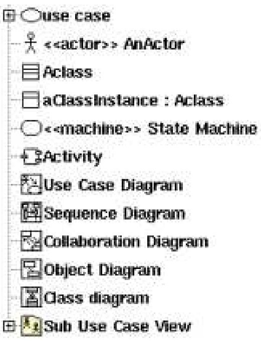
set associated diagram allows to automatically open the current diagram when a double mouse click is made on the package representation in a diagram or the browser. After that the only way to edit the package is to choose the *edit* entry in the menu.

Previous : browser items

Next : use case views

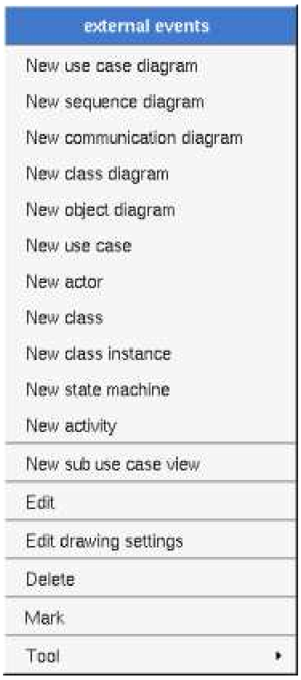
Use case view

A use case view may contain other use case views, use cases, actors, classes, class instances, activities, state machines, use case diagrams, object diagrams, sequence diagrams, collaboration diagrams and class diagrams in any order :



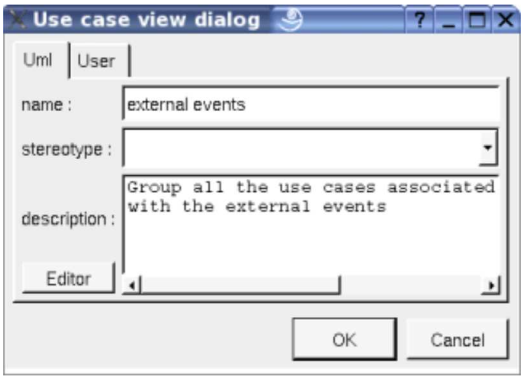
Menus

The menu appearing with a right mouse click on a use case view in the browser is something like this, supposing it is not *read-only* nor deleted :



Menu : edit

edit allows to show/modify the use case view properties with the following dialog :



name : external events

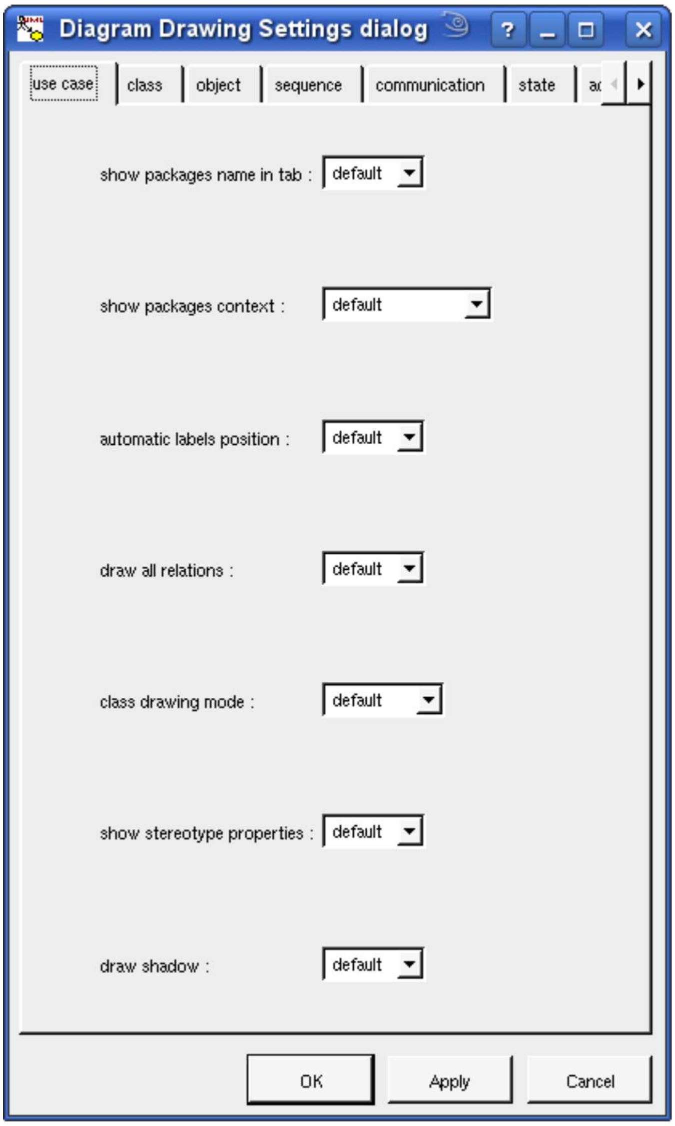
stereotype :

description : Group all the use cases associated with the external events

The *stereotype* of a use case view doesn't have a special meaning for BOUML.

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : edit drawing settings



show packages name in tab : default

show packages context : default

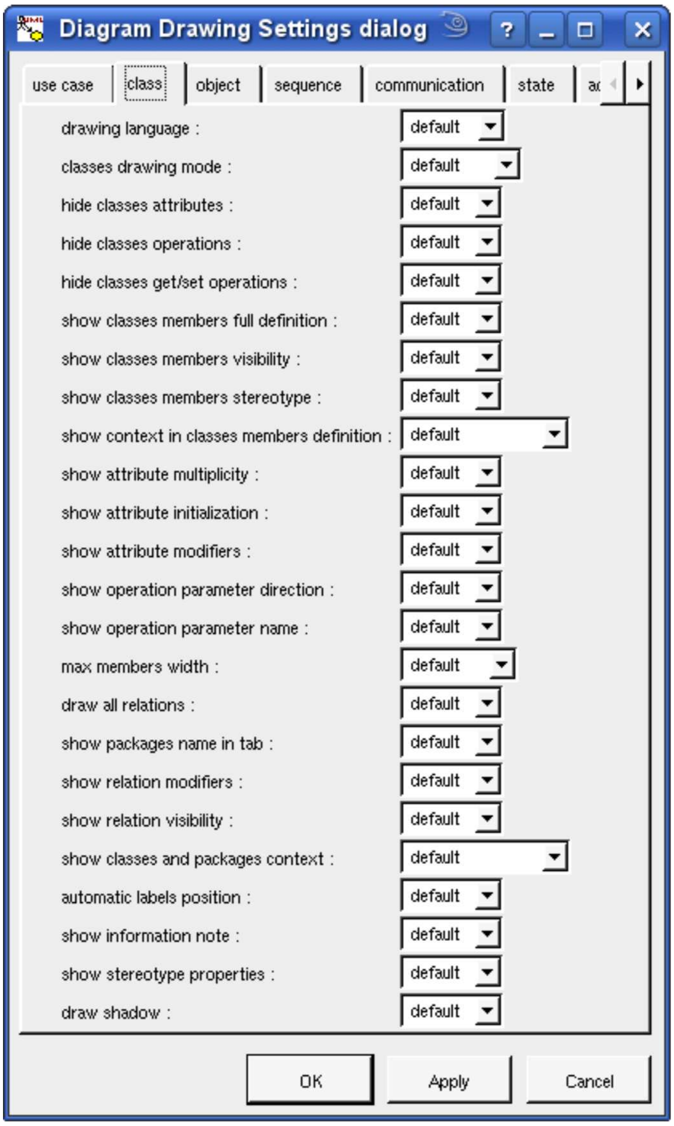
automatic labels position : default

draw all relations : default

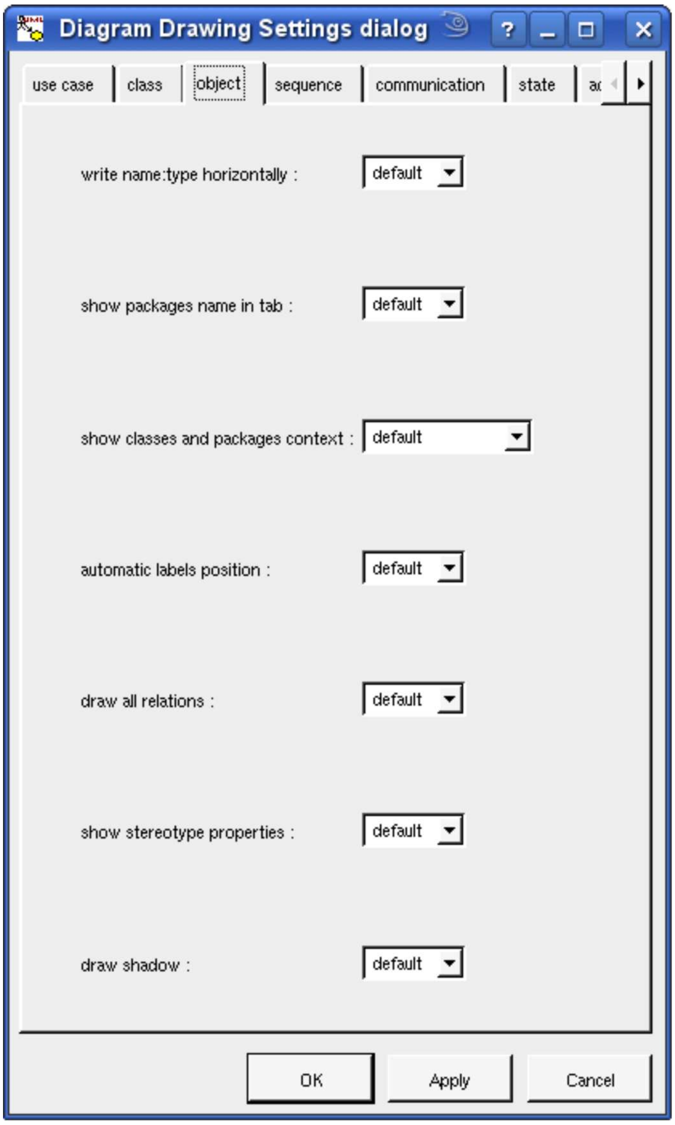
class drawing mode : default

show stereotype properties : default

draw shadow : default



drawing language : default
classes drawing mode : default
hide classes attributes : default
hide classes operations : default
hide classes get/set operations : default
show classes members full definition : default
show classes members visibility : default
show classes members stereotype : default
show context in classes members definition : default
show attribute multiplicity : default
show attribute initialization : default
show attribute modifiers : default
show operation parameter direction : default
show operation parameter name : default
max members width : default
draw all relations : default
show packages name in tab : default
show relation modifiers : default
show relation visibility : default
show classes and packages context : default
automatic labels position : default
show information note : default
show stereotype properties : default
draw shadow : default



write name:type horizontally : default

show packages name in tab : default

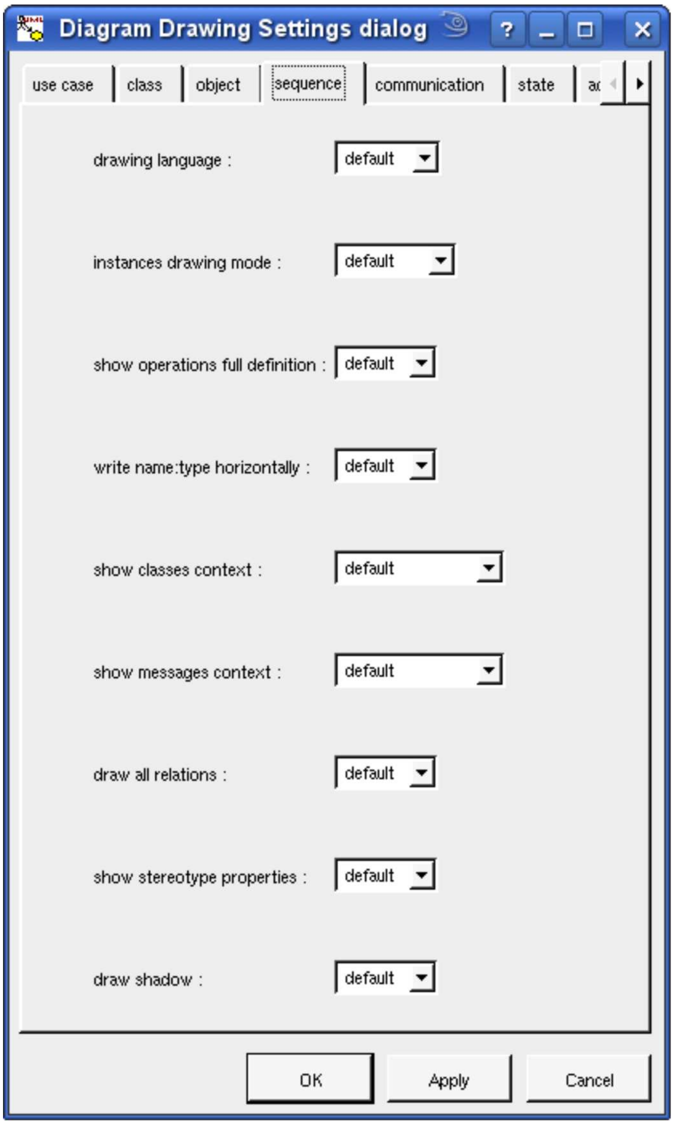
show classes and packages context : default

automatic labels position : default

draw all relations : default

show stereotype properties : default

draw shadow : default



drawing language : default

instances drawing mode : default

show operations full definition : default

write name:type horizontally : default

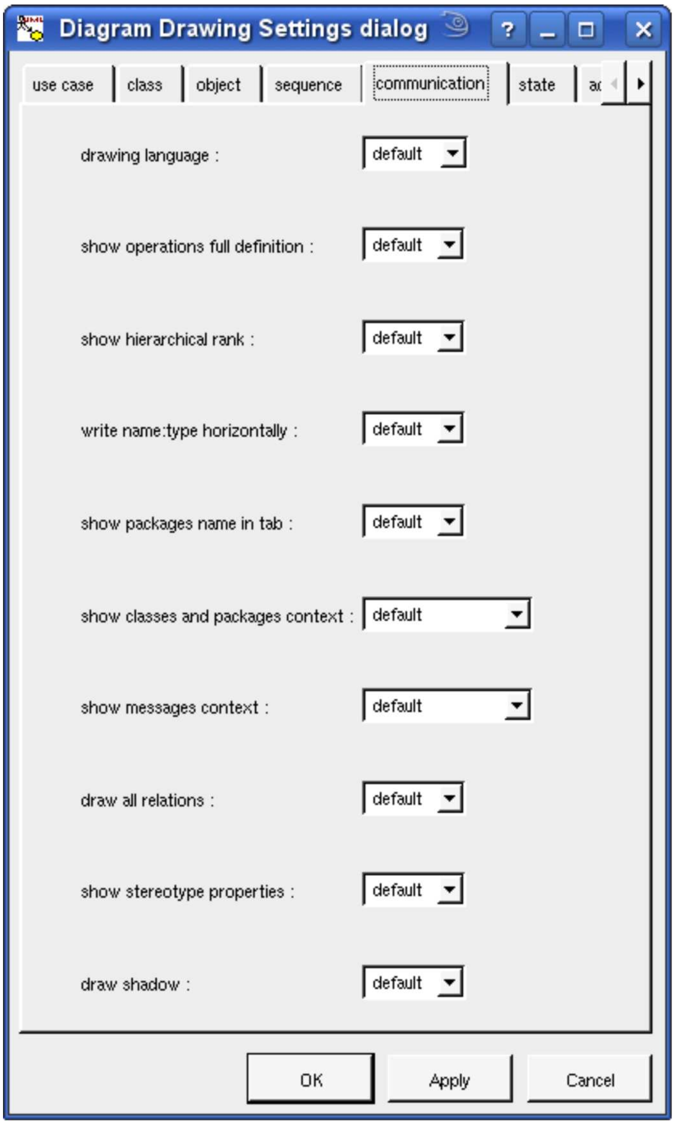
show classes context : default

show messages context : default

draw all relations : default

show stereotype properties : default

draw shadow : default



drawing language : default

show operations full definition : default

show hierarchical rank : default

write name:type horizontally : default

show packages name in tab : default

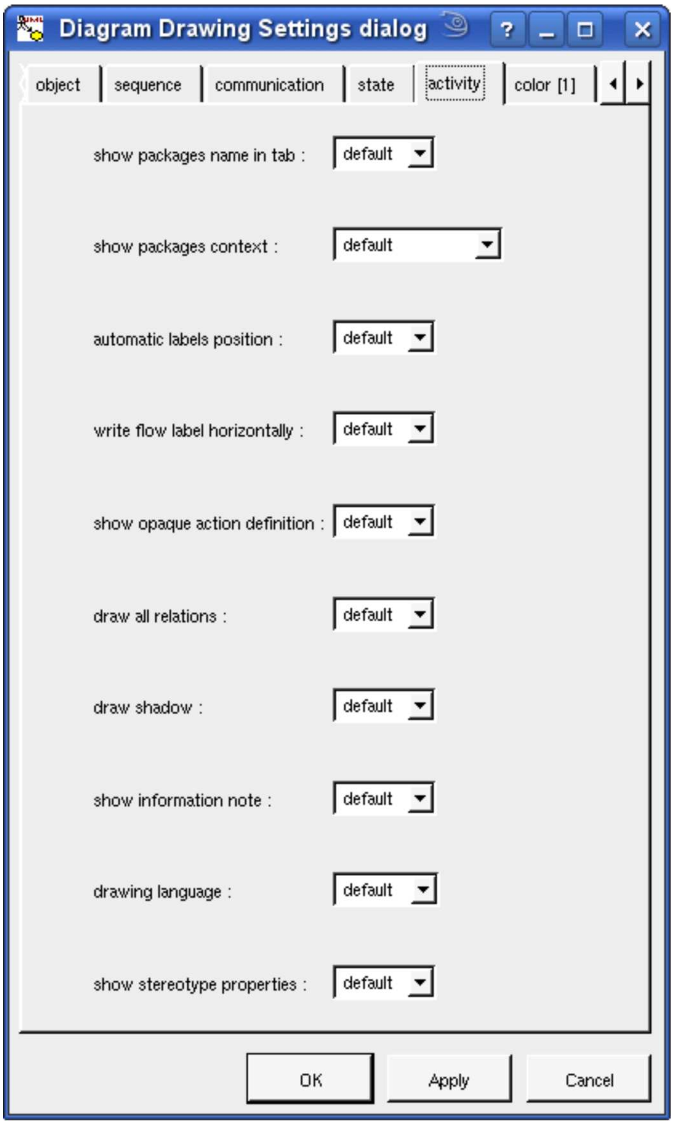
show classes and packages context : default

show messages context : default

draw all relations : default

show stereotype properties : default

draw shadow : default



show packages name in tab : default

show packages context : default

automatic labels position : default

write flow label horizontally : default

show opaque action definition : default

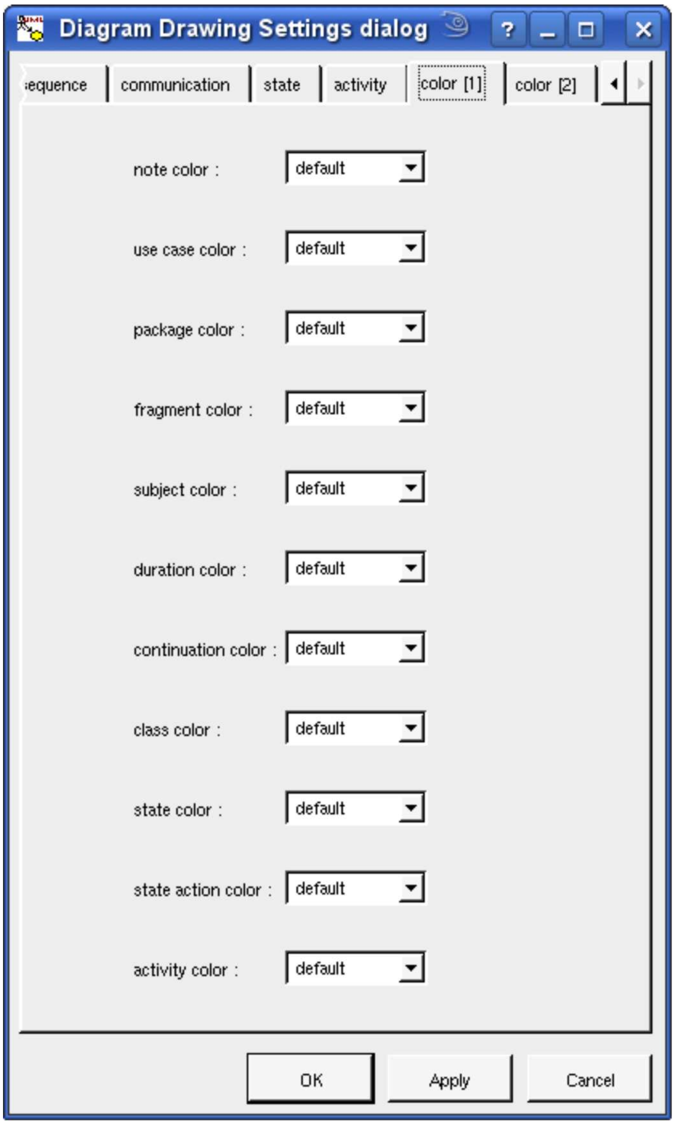
draw all relations : default

draw shadow : default

show information note : default

drawing language : default

show stereotype properties : default



note color : default

use case color : default

package color : default

fragment color : default

subject color : default

duration color : default

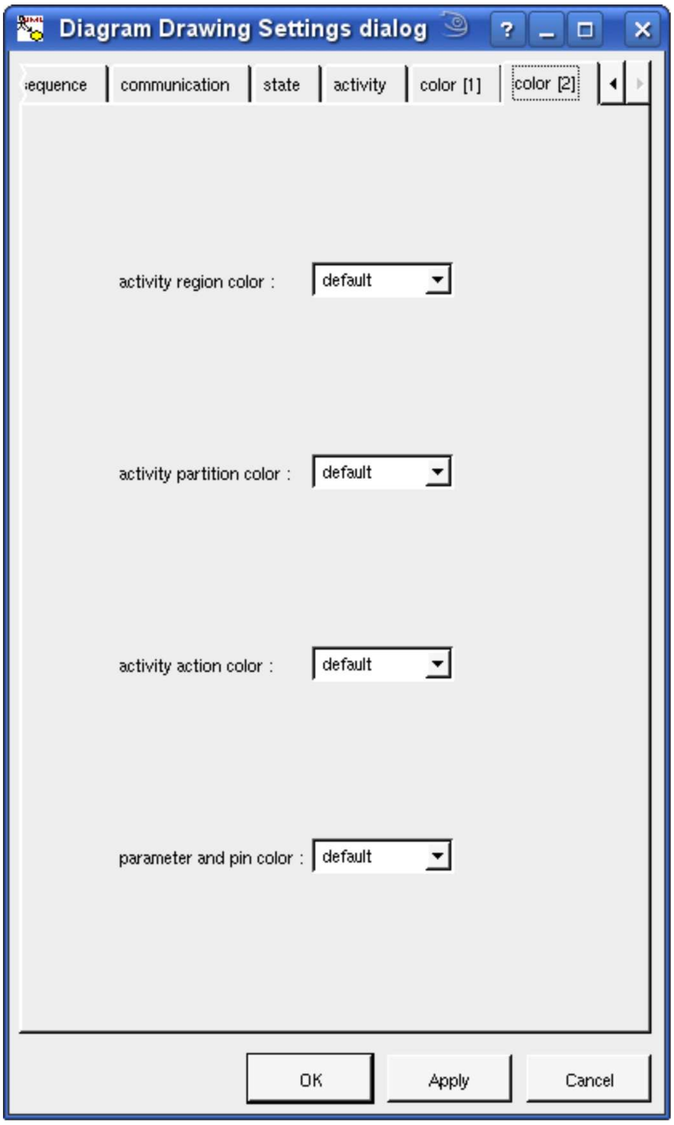
continuation color : default

class color : default

state color : default

state action color : default

activity color : default



activity region color : default

activity partition color : default

activity action color : default

parameter and pin color : default

This dialog allows to specify how the sub diagrams must be drawn by default.

Menu : delete

The *delete* entry is only present when the package is not *read-only*.

Delete the use case view and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

Menu : tools

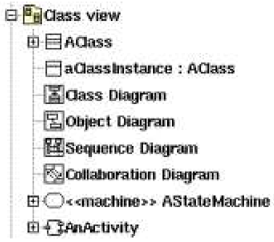
The menu entry *tool* not present above is present in case at least a *plug-out* may be applied on the use case view.

Previous : package

Next : class view

Class view

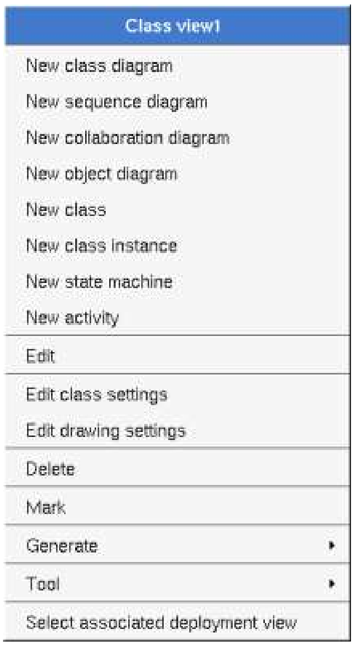
A class view is used to design the classes and may contain classes, class instances, states, activities, class diagrams, object diagrams, sequence diagrams and collaboration diagrams in any order :



A class view may have an associated deployment view, in this case the menu of the sub-classes propose a shortcut to create an artifact in the associated deployment view (refer to class menu).

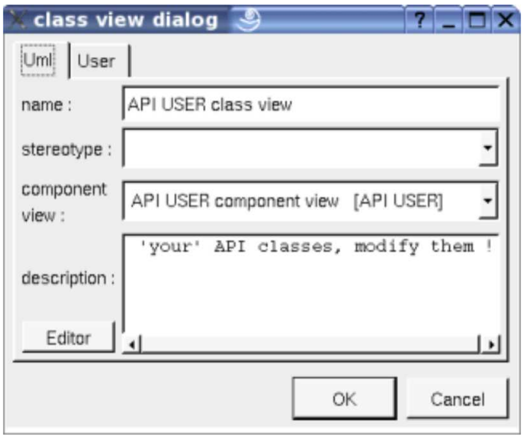
Menus

The menu appearing with a right mouse click on a class view in the browser is something like this, supposing it is not *read-only* nor deleted :



The menu entry *select associated deployment view* is only present when the class view has an associated deployment view, this feature allows to quickly associate an artifact to a class (see class menu). The menu entry *new stereotype* is only present when the class view is placed inside a profile.

Menu : edit



name : API USER class view

stereotype :

component view : API USER component view [API USER]

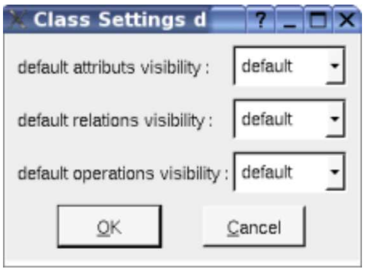
description : 'your' API classes, modify them !

The *stereotype* of a class view doesn't have a special meaning for BOUML.

As you can see, the association with a deployment view is made through this menu.

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : edit class settings



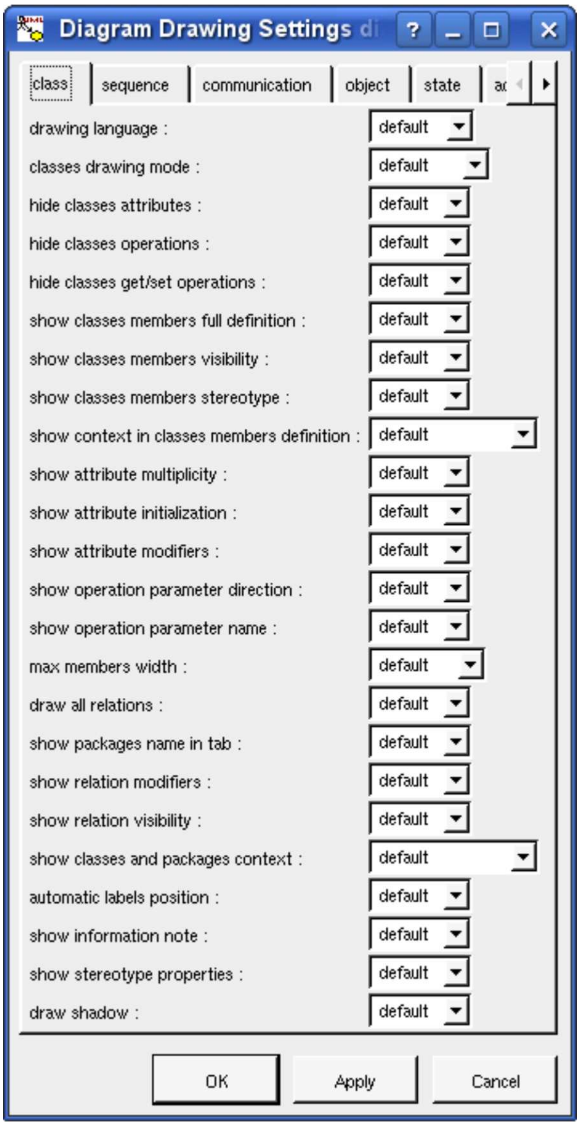
default attributs visibility : default

default relations visibility : default

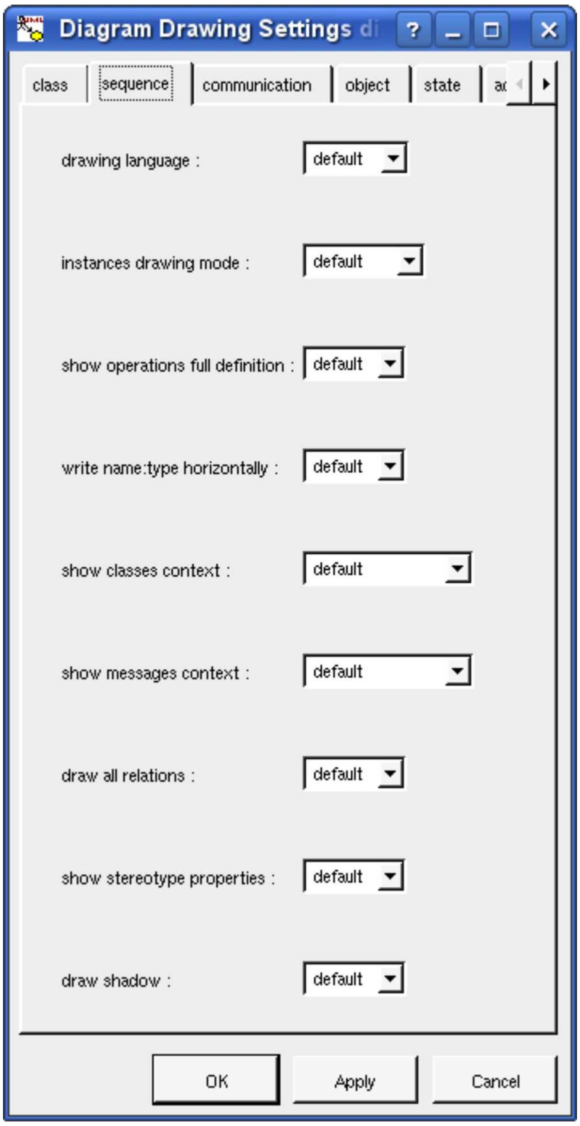
default operations visibility : default

This setting allows to set a default visibility at the UML level for the attributes, relations and operations of the classes defined in the class view. *default* means that the visibility of the upper level is followed (which itself may be *default* etc ... up to the *project* level). When you create a new class view the visibilities are set to *default*.

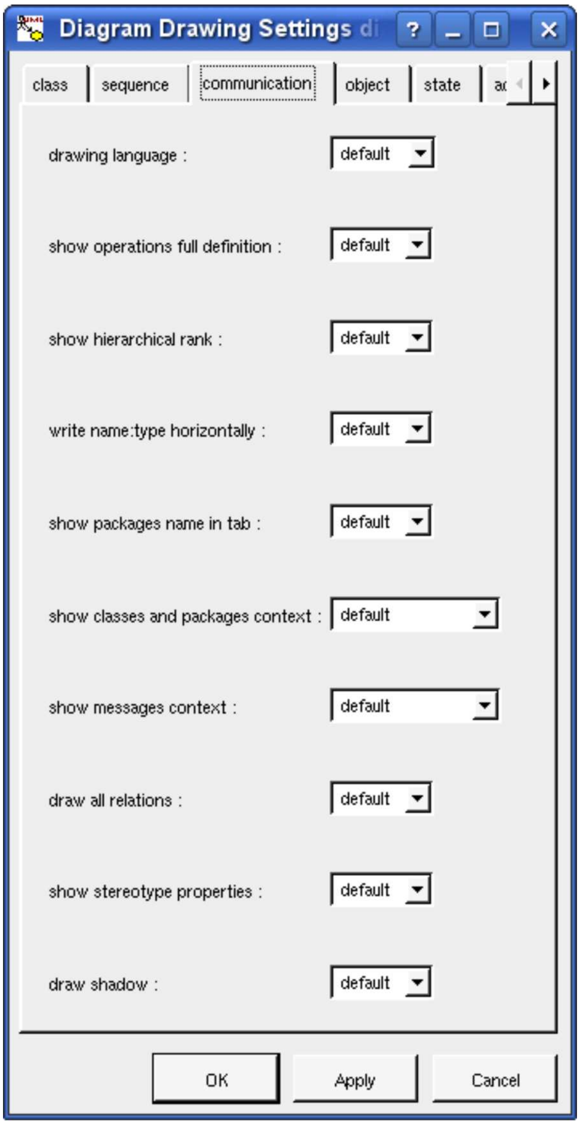
Menu : edit drawing settings



drawing language : default
classes drawing mode : default
hide classes attributes : default
hide classes operations : default
hide classes get/set operations : default
show classes members full definition : default
show classes members visibility : default
show classes members stereotype : default
show context in classes members definition : default
show attribute multiplicity : default
show attribute initialization : default
show attribute modifiers : default
show operation parameter direction : default
show operation parameter name : default
max members width : default
draw all relations : default
show packages name in tab : default
show relation modifiers : default
show relation visibility : default
show classes and packages context : default
automatic labels position : default
show information note : default
show stereotype properties : default
draw shadow : default



drawing language : default
instances drawing mode : default
show operations full definition : default
write name:type horizontally : default
show classes context : default
show messages context : default
draw all relations : default
show stereotype properties : default
draw shadow : default



drawing language : default

show operations full definition : default

show hierarchical rank : default

write name:type horizontally : default

show packages name in tab : default

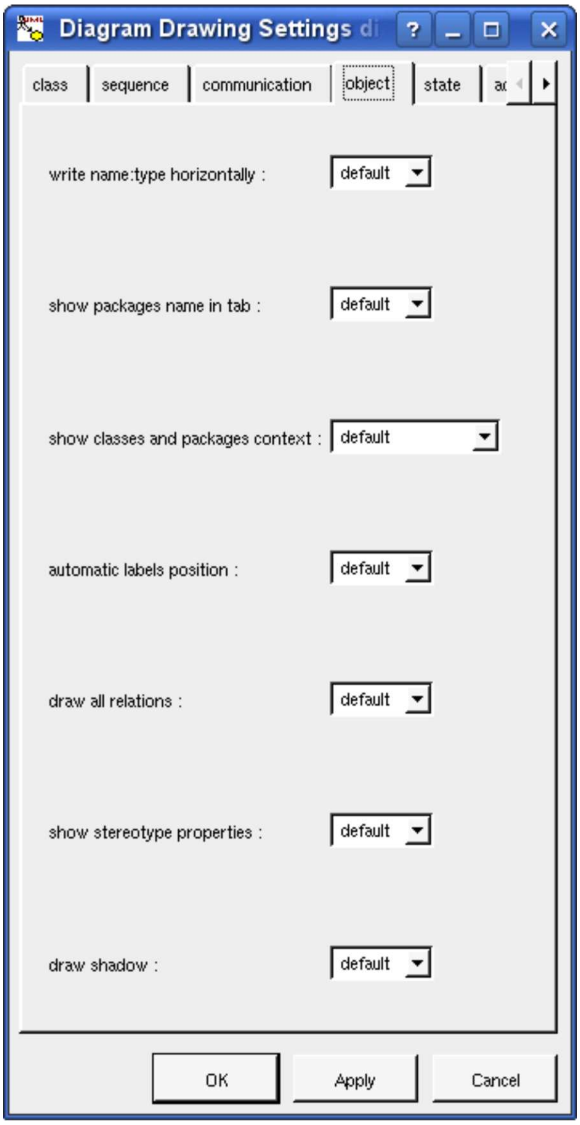
show classes and packages context : default

show messages context : default

draw all relations : default

show stereotype properties : default

draw shadow : default



write name:type horizontally : default

show packages name in tab : default

show classes and packages context : default

automatic labels position : default

draw all relations : default

show stereotype properties : default

draw shadow : default

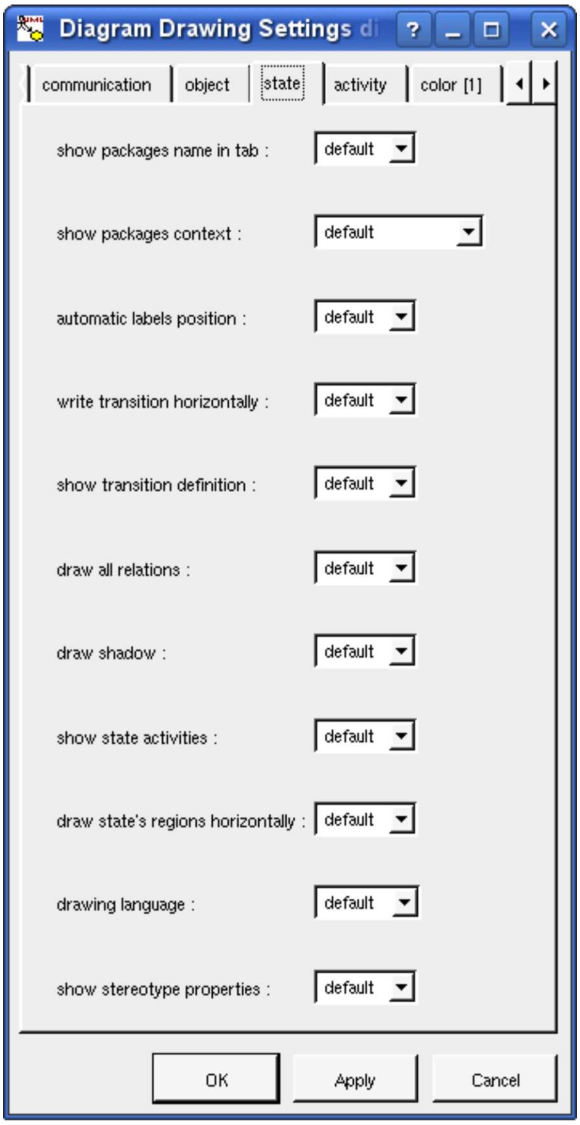


Diagram Drawing Settings di

communication | object | state | activity | color [1]

show packages name in tab : default

show packages context : default

automatic labels position : default

write transition horizontally : default

show transition definition : default

draw all relations : default

draw shadow : default

show state activities : default

draw state's regions horizontally : default

drawing language : default

show stereotype properties : default

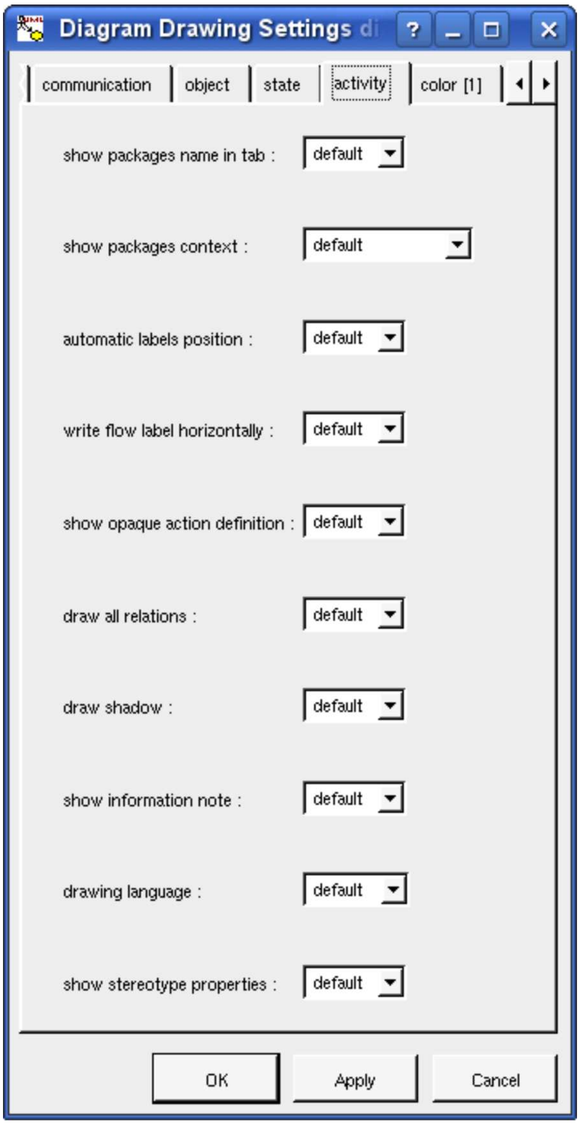


Diagram Drawing Settings di

communication | object | state | activity | color [1]

show packages name in tab : default

show packages context : default

automatic labels position : default

write flow label horizontally : default

show opaque action definition : default

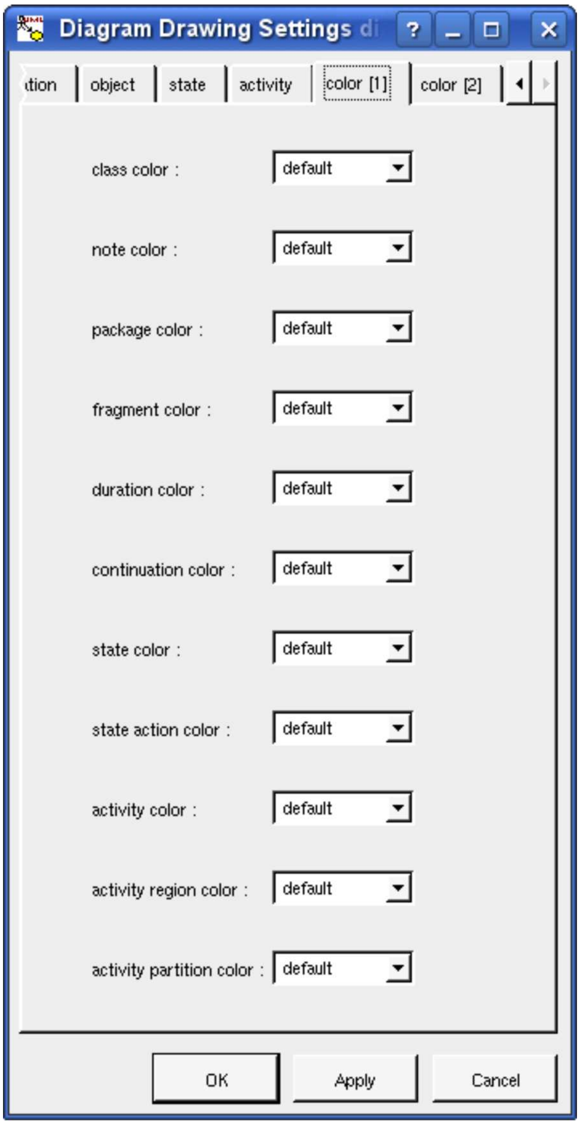
draw all relations : default

draw shadow : default

show information note : default

drawing language : default

show stereotype properties : default



class color : default

note color : default

package color : default

fragment color : default

duration color : default

continuation color : default

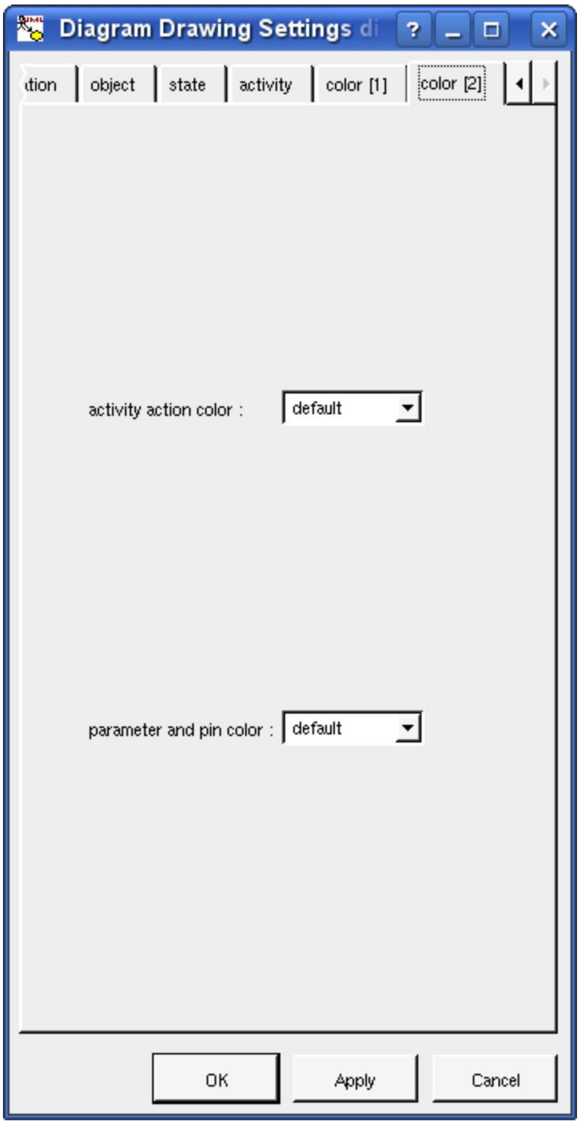
state color : default

state action color : default

activity color : default

activity region color : default

activity partition color : default



activity action color : default

parameter and pin color : default

This dialog allows to specify how the class view's diagrams must be drawn by default.

Menu : delete

The menu entry *delete* is only present when the class view is not *read-only*.

Delete the class view and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

Menu : generate

To generate the C++/Java/Idl code of all the sub-items. Refer to C++ generator, Java generator and Idl generator for more details.

Menu : tools

The menu entry *tool* is present in case at least a *plug-out* may be applied on the class view.

Menu : select associated deployment view

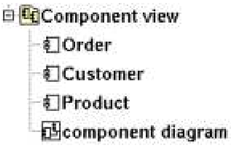
Only present when the class view has an associated deployment view, select it as you do this manually, except that you do not have to search it !

Previous : use case view

Next : component view

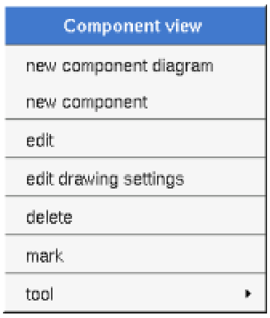
Component view

A component view may contains components and component diagrams in any order :

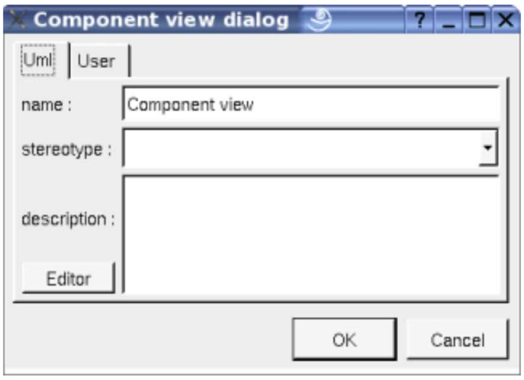


Menus

The menu appearing with a right mouse click on a component view in the browser is something like this, supposing it is not *read-only* nor deleted :



Menu : edit



name : Component view

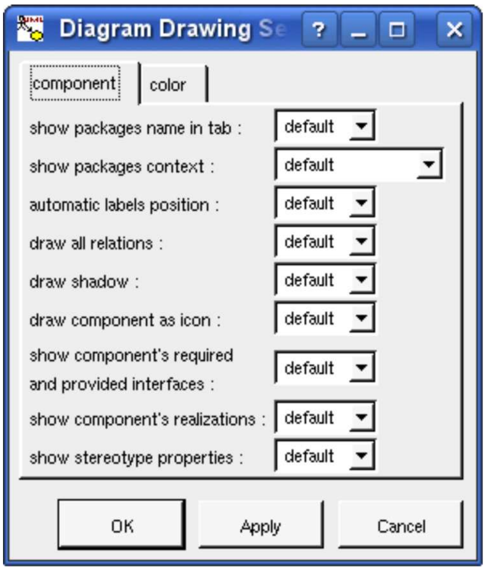
stereotype :

description :

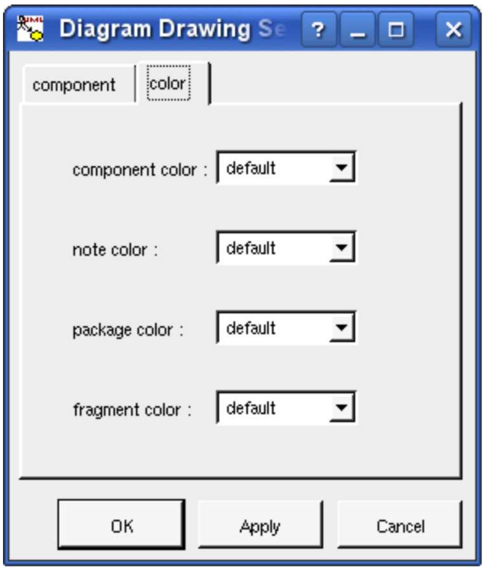
The *stereotype* of a component view doesn't have a special meaning for BOUML.

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : edit drawing settings



show packages name in tab : default
show packages context : default
automatic labels position : default
draw all relations : default
draw shadow : default
draw component as icon : default
show component's required and provided interfaces : default
show component's realizations : default
show stereotype properties : default



component color : default
note color : default
package color : default
fragment color : default

This dialog allows to specify how the component diagrams must be drawn by default.

Menu : delete

The menu entry *delete* is only present when the class view is not *read-only*.

Delete the component view and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

Menu : tools

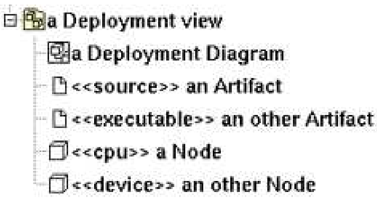
The menu entry *tool* not present above is present in case at least a *plug-out* may be applied on the component view.

Previous : class view

Next : deployment view

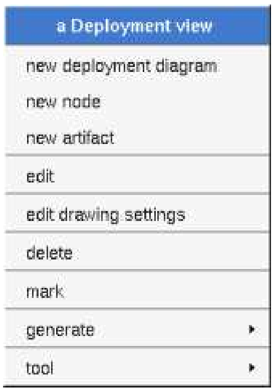
Deployment view

A deployment view may contains nodes, artifacts and deployment diagrams in any order :

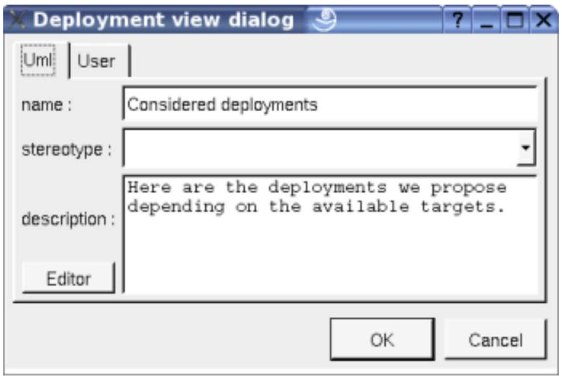


Menus

The menu appearing with a right mouse click on a deployment view in the browser is something like this, supposing it is not *read-only* nor deleted :



Menu : edit



name : Considered deployments

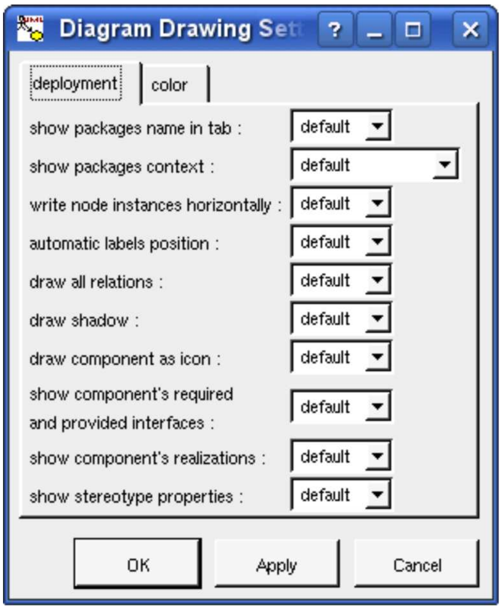
stereotype :

description : Here are the deployments we propose depending on the available targets.

The *stereotype* of a deployment view doesn't have a special meaning for BOUML.

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : edit drawing settings



show packages name in tab : default

show packages context : default

write node instances horizontally : default

automatic labels position : default

draw all relations : default

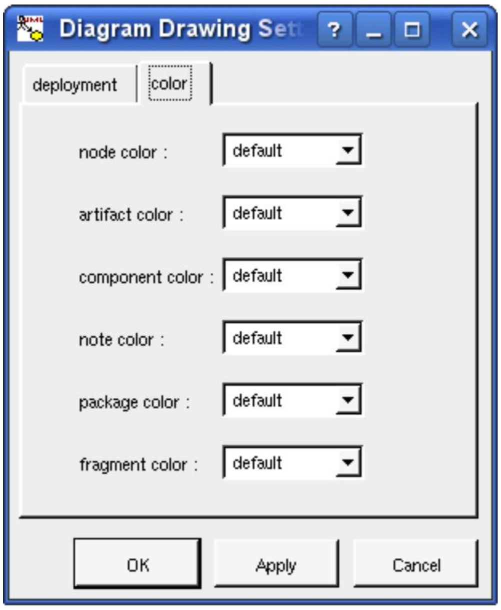
draw shadow : default

draw component as icon : default

show component's required and provided interfaces : default

show component's realizations : default

show stereotype properties : default



node color : default

artifact color : default

component color : default

note color : default

package color : default

fragment color : default

This dialog allows to specify how the deployment diagrams must be drawn by default.

Menu : delete

The menu entry *delete* is only present when the class view is not *read-only*.

Delete the deployment view and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

Menu : tools

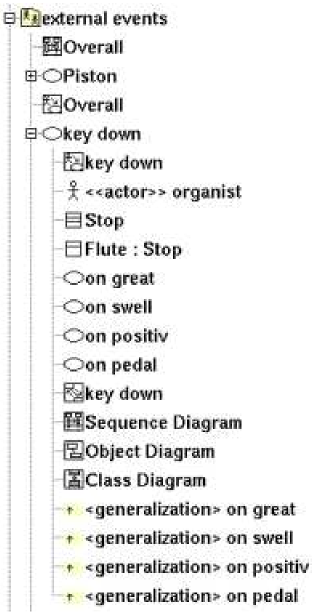
The menu entry *tool* not present above is present in case at least a *plug-out* may be applied on the component view. The selected tool is called and applied on the current deployment view.

Previous : component view

Next : use case

Use case

In the browser, an use case may contain other use cases, actors (classes stereotyped *actor*), classes, class instances, state machine, activities, use case diagrams, sequence diagrams, collaboration diagrams, object diagrams, class diagrams, and the relations, in any order :

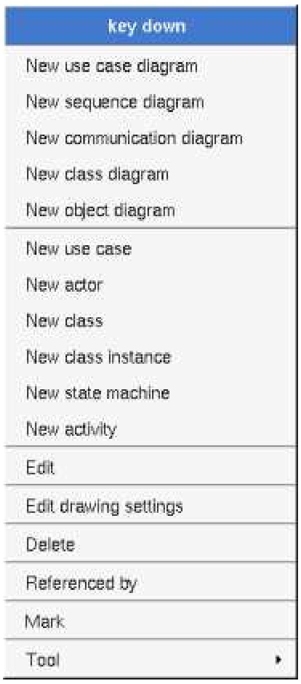


Define a use case nested in an other one in the browser is a practical way when a use case is refined into sub use cases.

The relations between use cases presented in the browser are the inheritance and dependency.

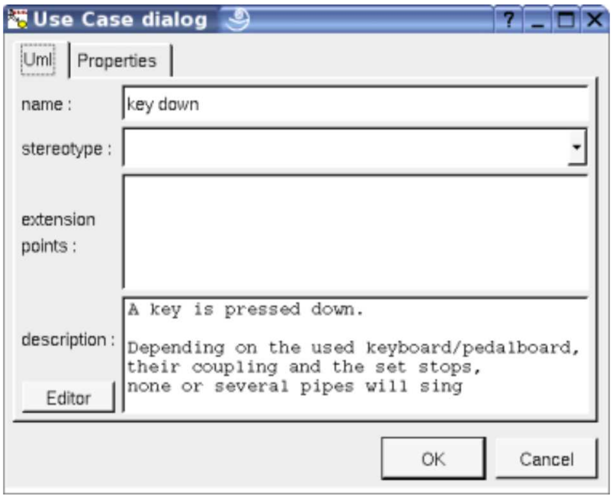
Menus

The menu appearing with a right mouse click on a use case in the browser are something like this, supposing it is not *read-only* nor deleted :



Menu : edit

edit allows to show/modify the use case properties with the following dialog :



name : key down

stereotype :

extension points :

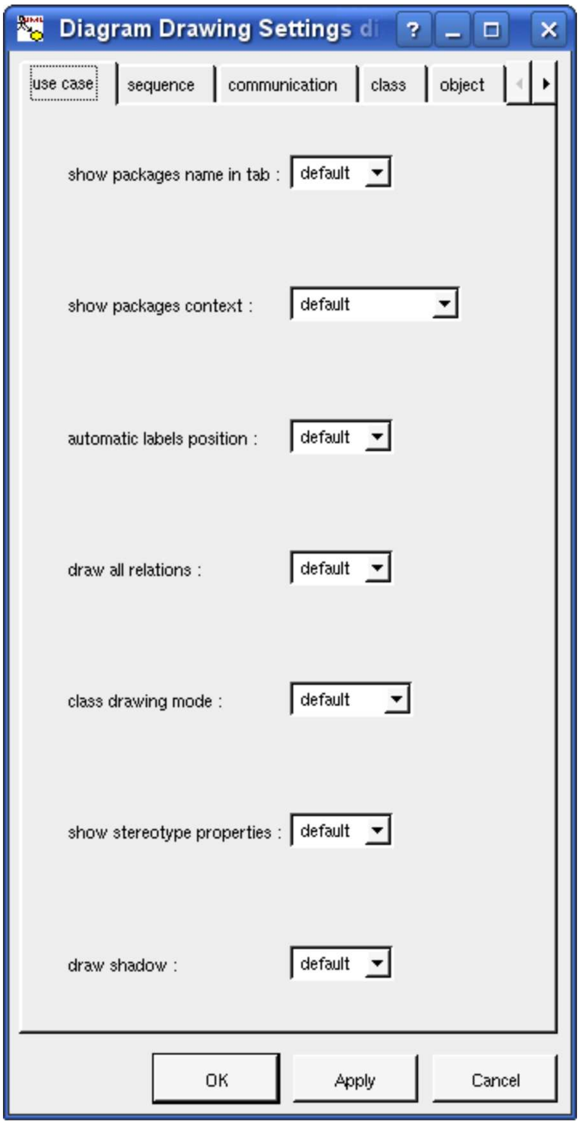
description : A key is pressed down.

Depending on the used keyboard/pedalboard,
their coupling and the set stops,
none or several pipes will sing

The *stereotype* of a use cases doesn't have a special meaning for BOUML.

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : edit drawing settings



show packages name in tab : default

show packages context : default

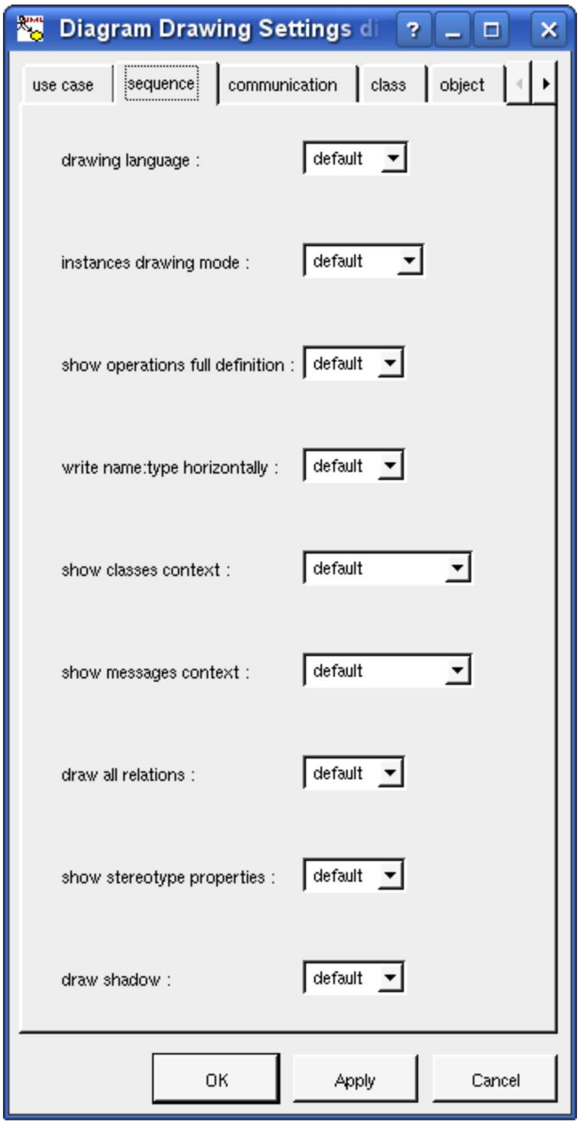
automatic labels position : default

draw all relations : default

class drawing mode : default

show stereotype properties : default

draw shadow : default



drawing language : default

instances drawing mode : default

show operations full definition : default

write name:type horizontally : default

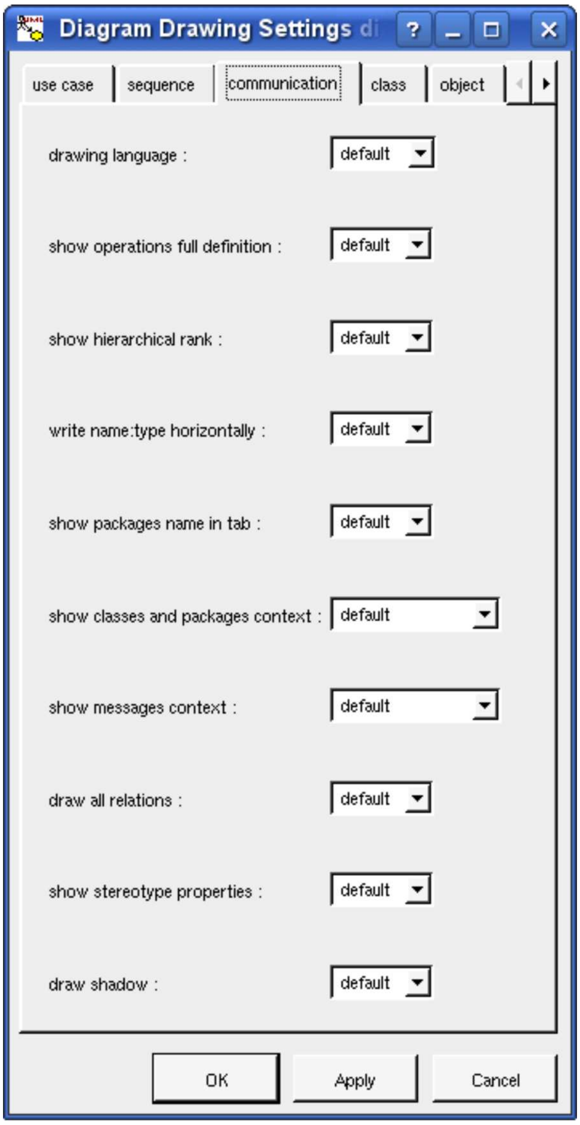
show classes context : default

show messages context : default

draw all relations : default

show stereotype properties : default

draw shadow : default



drawing language : default

show operations full definition : default

show hierarchical rank : default

write name:type horizontally : default

show packages name in tab : default

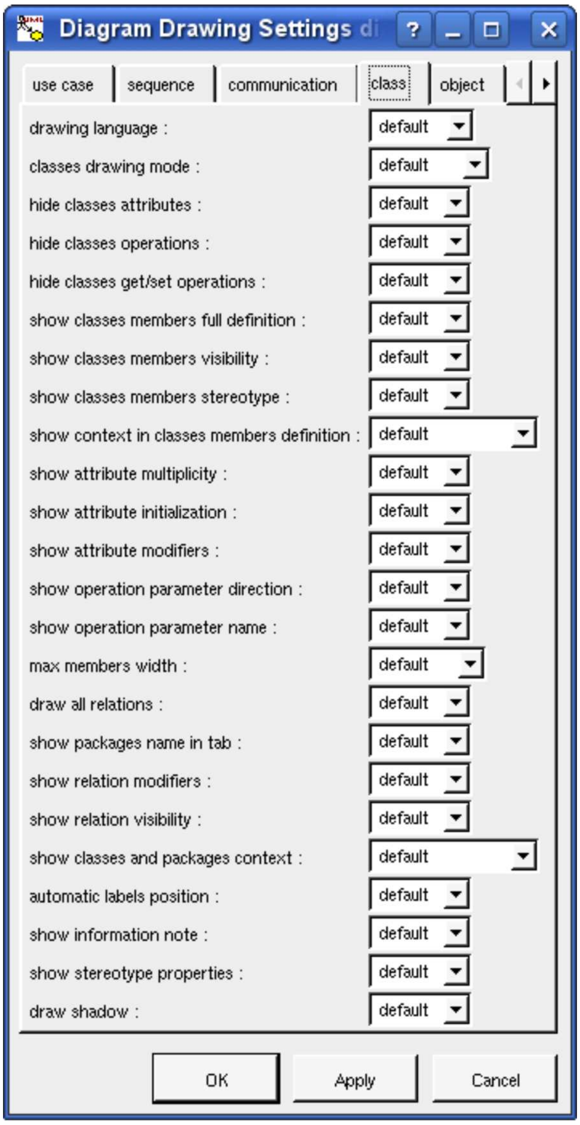
show classes and packages context : default

show messages context : default

draw all relations : default

show stereotype properties : default

draw shadow : default



drawing language : default

classes drawing mode : default

hide classes attributes : default

hide classes operations : default

hide classes get/set operations : default

show classes members full definition : default

show classes members visibility : default

show classes members stereotype : default

show context in classes members definition : default

show attribute multiplicity : default

show attribute initialization : default

show attribute modifiers : default

show operation parameter direction : default

show operation parameter name : default

max members width : default

draw all relations : default

show packages name in tab : default

show relation modifiers : default

show relation visibility : default

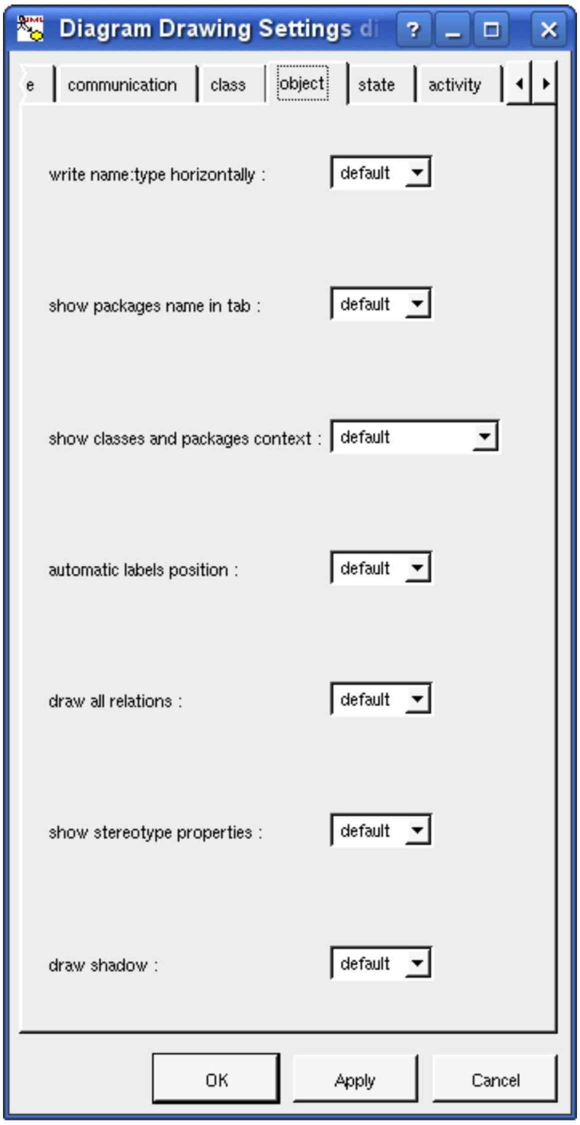
show classes and packages context : default

automatic labels position : default

show information note : default

show stereotype properties : default

draw shadow : default



write name:type horizontally : default

show packages name in tab : default

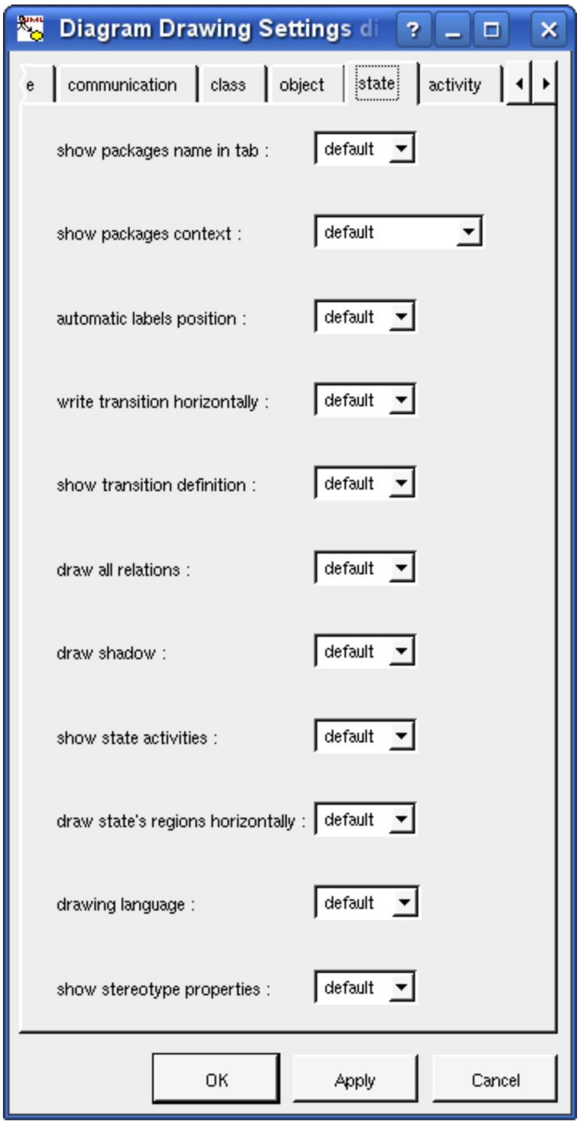
show classes and packages context : default

automatic labels position : default

draw all relations : default

show stereotype properties : default

draw shadow : default



show packages name in tab : default

show packages context : default

automatic labels position : default

write transition horizontally : default

show transition definition : default

draw all relations : default

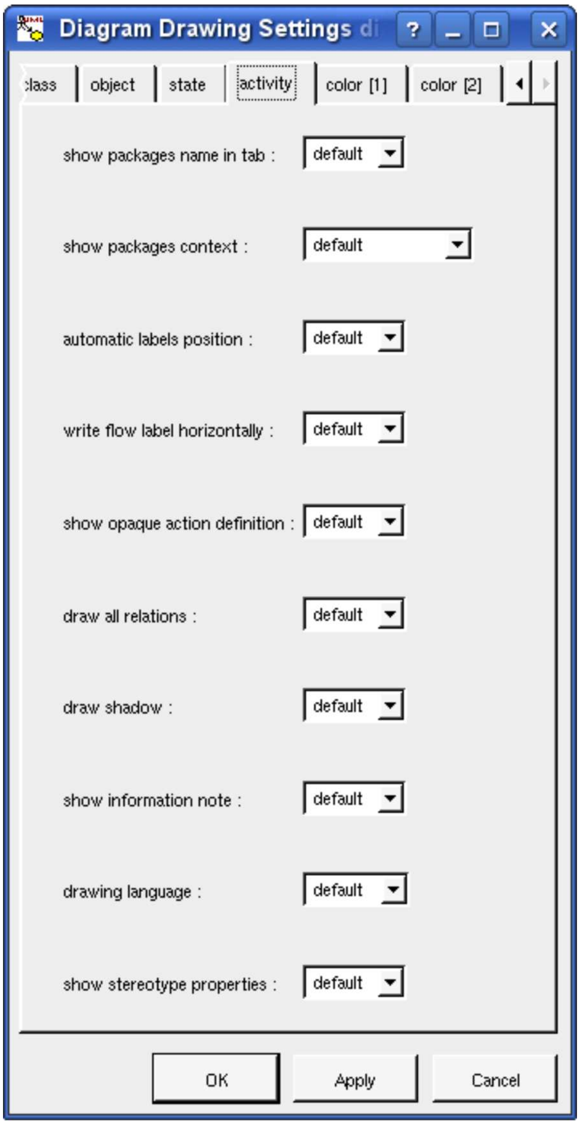
draw shadow : default

show state activities : default

draw state's regions horizontally : default

drawing language : default

show stereotype properties : default



show packages name in tab : default

show packages context : default

automatic labels position : default

write flow label horizontally : default

show opaque action definition : default

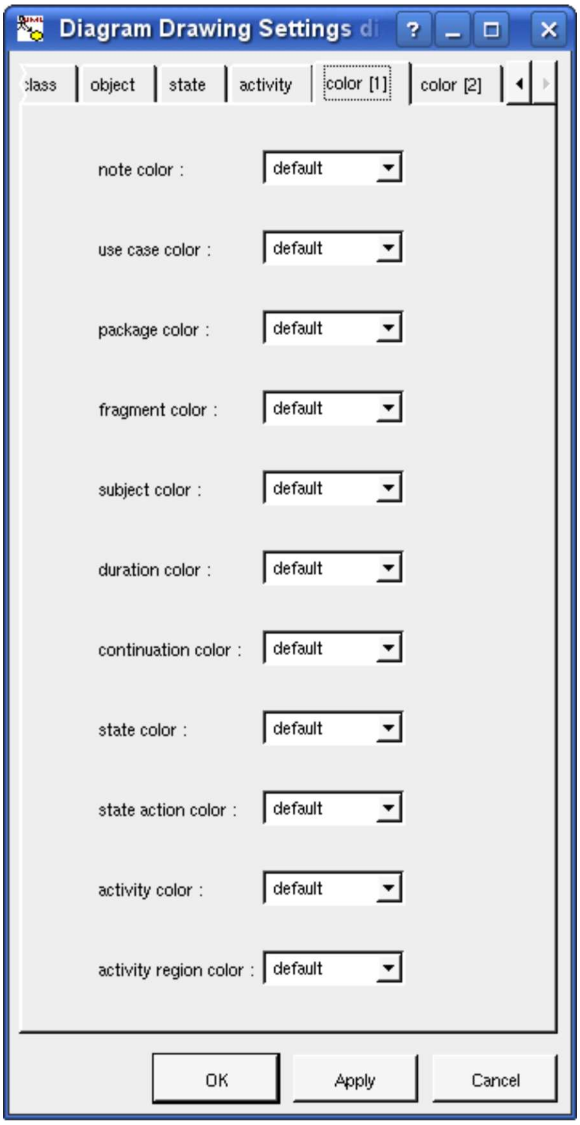
draw all relations : default

draw shadow : default

show information note : default

drawing language : default

show stereotype properties : default



note color : default

use case color : default

package color : default

fragment color : default

subject color : default

duration color : default

continuation color : default

state color : default

state action color : default

activity color : default

activity region color : default

This dialog allows to specify how the sub diagrams must be drawn by default.

Refer to drawing, for the settings concerning the use cases.

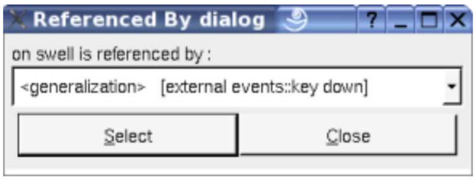
Menu : delete

The *delete* entry is only present when the use case is not *read-only*.

Delete the use case and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : referenced by

To know who reference the use case through a dependency or an inheritance, show a dialog, for instance :



on swell is referenced by :

<generalization>   [external events::key down]

Menu : mark

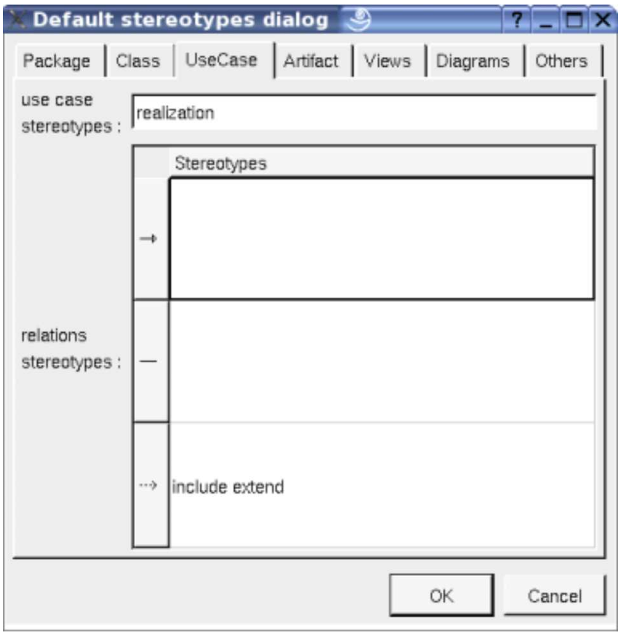
See mark

Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the use case. The selected tool is called and applied on the current use case.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the use cases :



use case stereotypes : realization

relations stereotypes :

	Stereotypes
→	
—	
⇢	include extend

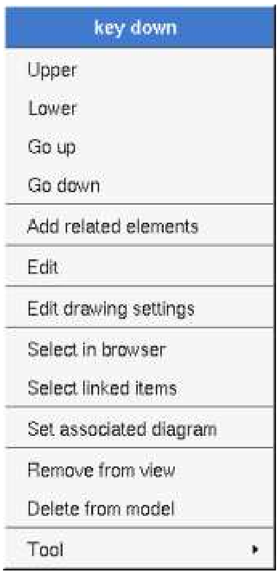
UML propose a simple line for the relation between use cases and actors/classes. I propose also an arrow because I prefer this representation.

Drawing

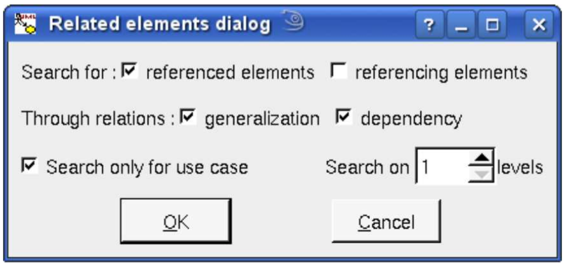
A use case is drawn in a diagram with a sizable ellipse, the available options are :

- *use case color*
- *automatic label position* : this concerns the relation's labels, by default BOUML automatically move the labels associated to a relation accordingly to its extremities. If you do not like how BOUML place the labels, set this option to *false* and you will be the master (note that the *labels default position* entry of the relation's menus in the diagrams remains available to help you when you are lost).

A right mouse click on a use case in a diagram calls the following menu :



the *add related elements* menu allows to add elements having a relation with the current element, the following dialog is shown :



Search for : ☑ referenced elements □ referencing elements

Through relations : ☑ generalization ☑ dependency

☑ Search only for use case

Search on 1 levels

The *drawing settings* concerns only the picture for which the menu is called.

select linked items select all the items connected with the current one through any line

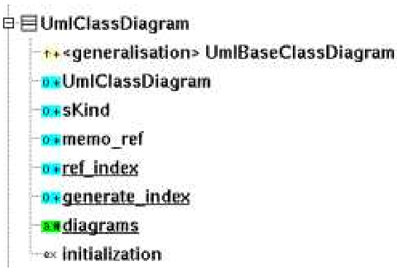
set associated diagram allows to automatically open the current diagram when a double mouse click is made on the use case representation in a diagram or the browser. After that the only way to edit the use case is to choose the *edit* entry in the menu.

Previous : deployment view

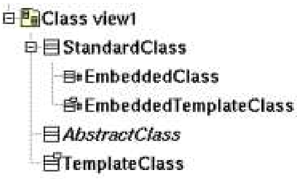
Next : class

Class

A class may contain nested classes, relations, attributes, operations , extra members and dependencies on packages. The order of the class's sub-items is very important because it is followed by the C++/Java/Php/python/Idl generators.


UmlClassDiagram
<generalisation> UmlBaseClassDiagram
UmlClassDiagram
sKind
memo_ref
ref_index
generate_index
diagrams
initialization

The representation of a class in the browser indicates if the class is abstract or is a template class, furthermore a nested class icon has a reduced size :


Class view1
StandardClass
EmbeddedClass
EmbeddedTemplateClass
AbstractClass
TemplateClass

A *class* is the support to define all kinds of class depending on the languages, the stereotype specify what a class is. The way a stereotype is translated for each language is configured and is specified through the *generation settings*. You can set a default list of stereotypes for the classes and their relations through the *edit default stereotype* entry of the project's menu.

Some stereotypes have a special meaning for BOUML :

- *typedef* : a class having this stereotype may have an associated base type used to construct the typedef. It is not possible to add a relation/attribute/operation to a class stereotyped *typedef*, nor to define it as a *template* (but it may instantiate a *template*). This stereotype doesn't have sense in Java.

- *enum* : a class having this stereotype is an *enum*, need at least the JDK 5 in Java. Because a Java JDK 5 enum may have attributes, relations and operations, it is possible to add these kinds of members to a class having the stereotype enum, but their default definitions are empty in C++ and Idl. it is not possible to define or instantiate a *template,*they are not yet managed in Java. In Php an enum produces a class having only *const* variables

- *enum_pattern* : a class having this stereotype is an *enum* even in Java for which a special definition compatible with JDK release less than 5 is produced. it is not possible to add a relation/operation to a class stereotyped *enum* nor to define or instantiate a *template*.

- *union* : a class having this stereotype cannot instantiate a *template*

- *actor* : just to change the representation, not relevant for the code generators

- *stereotype* : indicate the class support a stereotype part of a profile, refer to the chapter describing the profiles.

- *metaclass* : indicate the class is a *meta class*, refer to the chapter describing the profiles.

Obviously because you may change the stereotype at any time, it is possible to define for instance a class with an operation and after that to change its stereotype to *enum_pattern* ... In this case BOUML does nothing, for instance it does not delete itself the operation to help you to come back to a more appropriate stereotype without undesirable modifications.

The extend of the previous stereotypes include C++ and Java and Idl both. This means for instance that you cannot add an operation to an *enum_pattern* independently of the translation of this stereotype in C++/Java/Php/Python/Idl specified through the *generation settings*. But it is also possible to have stereotypes with an extend limited to each language through the definition of new stereotypes. For instance, if you define the stereotype *eiu* which is translated by *enum* in C++, *interface* in Java, *class* in Php and Python and *union* in IDL through the *generation settings*, you will have exactly that you want : magic ! isn't it ?

The stereotypes known at each language level by BOUML are :

- **C++** : *class* (or empty stereotype)*, enum, struct, typedef* and *union*

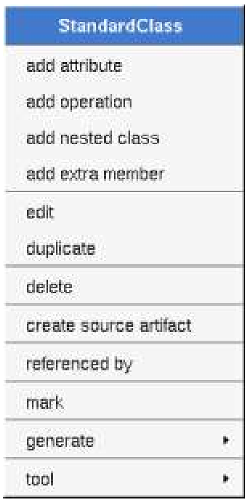
- **Java** : *class* (or empty stereotype)*, enum, enum_pattern, interface* and *@interface*

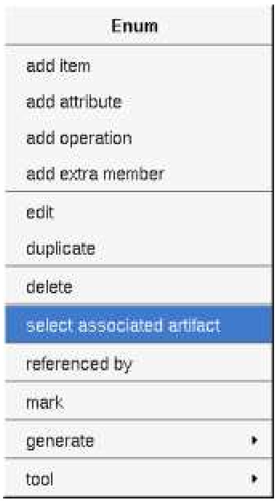
- **Php** : *class* (or empty stereotype)*, enum, interface*
- **Python** : *class* (or empty stereotype)*, enum* (produce also a class)
- **Idl** : *enum, exception, interface, struct, typedef, union* and *valuetype*

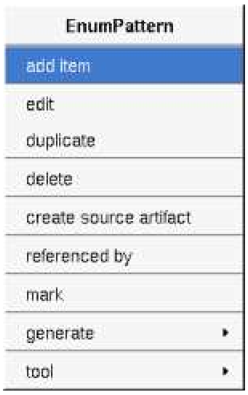
The class's properties will be exposed below.

Menus

The class menu appearing with a right mouse click on its representation in the browser depend on the stereotype and the artifact association, it is something like these, supposing the class not *read-only* nor deleted (see also menu in a diagram) :







Menu : add ...

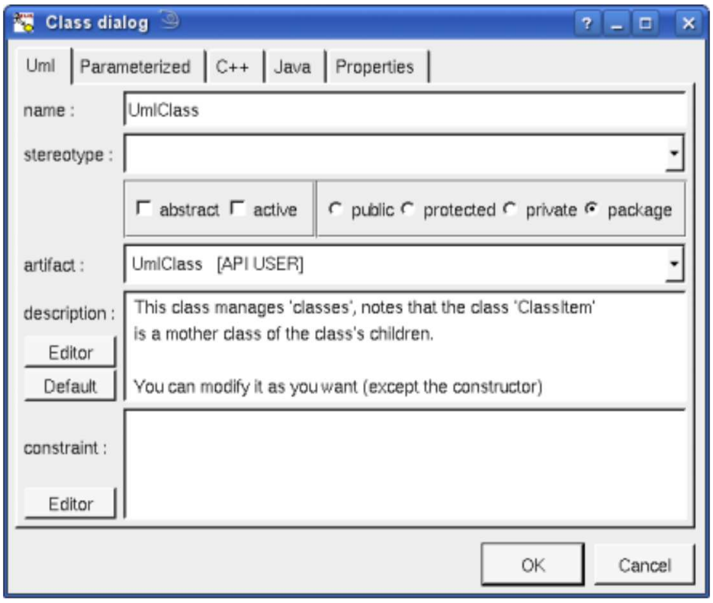
The first entries of the menu allowing to add something may not be present depending of the class's stereotype.

Menu : edit

edit allows to show/modify the class properties. In case the class is read-only, the fields of the dialog are also read-only. Note that for consistency purpose you cannot edit a class while any other edition is made, and while a class is edited all the other editions are impossible.

Class dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



name : UmlClass

stereotype :

□ abstract □ active

○ public ○ protected ○ private ● package

artifact : UmlClass [API USER]

description :

This class manages 'classes', notes that the class 'ClassItem'
is a mother class of the class's children.

You can modify it as you want (except the constructor)

constraint :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

abstract allows to declare that the class is an abstract class (not instanciable).

active allows to indicate that the class is active, active classes have a special representation

The artifact used to produce the class source code must be chosen in the proposed list or the field may be empty. Obviously a nested class can't have an associated artifact, but a nested class has a visibility.

The ***description*** will be generated in the class source code (in case the *${comment}* or *${description}* macro appears in the class definition) as a comment.

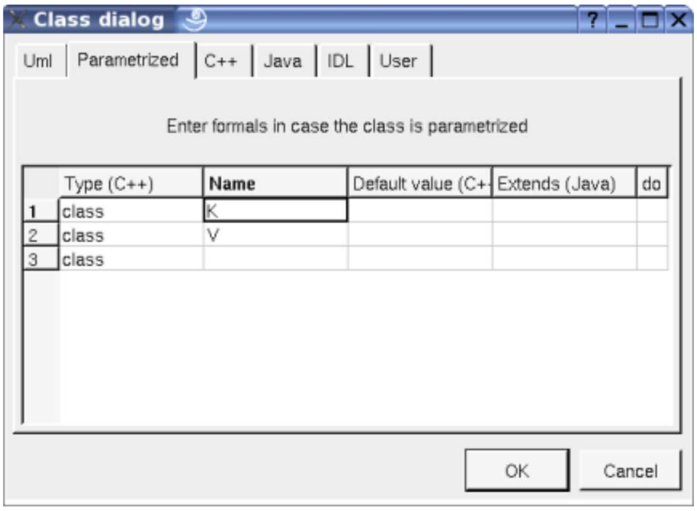
The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

The ***default*** button visible above associated to the description allows to set the description with a default contain specified through the *generation settings*. Useful to generate comments compatible *Java Doc* or *Doxygen* for instance.

Class dialog, tab Parametrized

The *parametrized* tab allows to specify the formals of a *template / generic* class.

For instance with :



Enter formals in case the class is parametrized

	Type (C++)	Name	Default value (C+	Extends (Java)	do
1	class	K			
2	class	V			
3	class				

if the class have the default proposed class definition, the C++ class definition (named *Dict*) is :

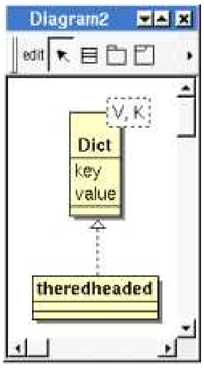
```
template<class V, class K = string> class Dict ...
```

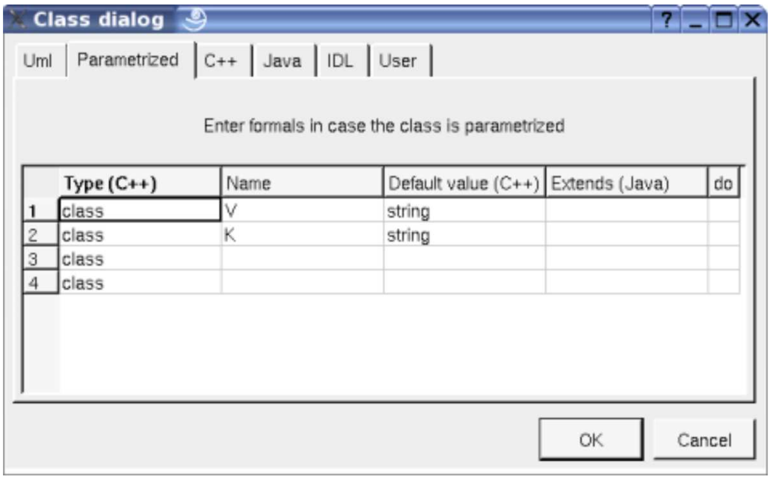
As usual the last column *do* allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

Class dialog, tab Instantiate

The *instantiate* tab allows to specify the actual of a class inheriting templates classes. It appears only when the edited class inherits or realizes at least a template class. Obviously, a template class may inherit another ones.

For instance with this definition of *Dict* :





Enter formals in case the class is parametrized

	Type (C++)	Name	Default value (C++)	Extends (Java)	do
1	class	V	string		
2	class	K	string		
3	class				
4	class				

if the class have the default proposed class definition, the C++ class definition of *theredheaded* is :

```
class theredheaded : public Dict<string, string> ...
```

the Java class definition is :

```
class theredheaded extends Dict<String, String> ...
```

When the class *theredheaded* is edited only the *actuals* are editable in the tab *Instantiate*, both for C++ and Java.

Supposing you have a template class *vector* and you want to define a vector or boolean, obviously the right definition is not :

```
class vectorOfBoolean : public vector<bool> {...}
```

the right definition is :

```
template<> class vector<bool> {...}
```

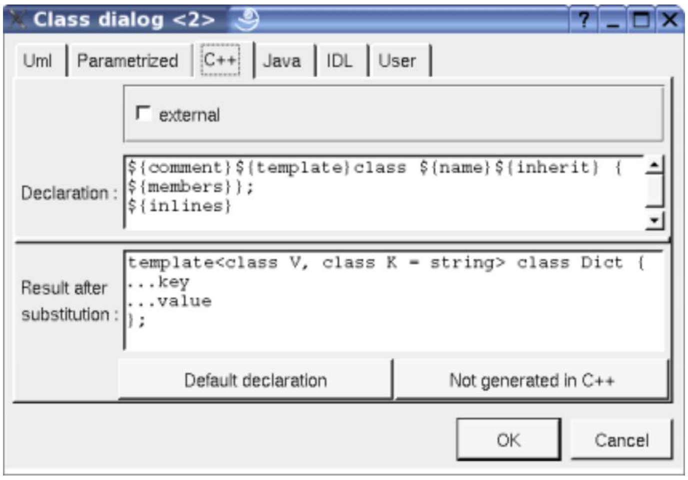
To do this you just have to define the class named *vector<bool>*

As usual the last column do allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

Class dialog, tab C++

This tab allows to give the C++ definition of the class, it is visible only when C++ is set through the *Languages* menu.

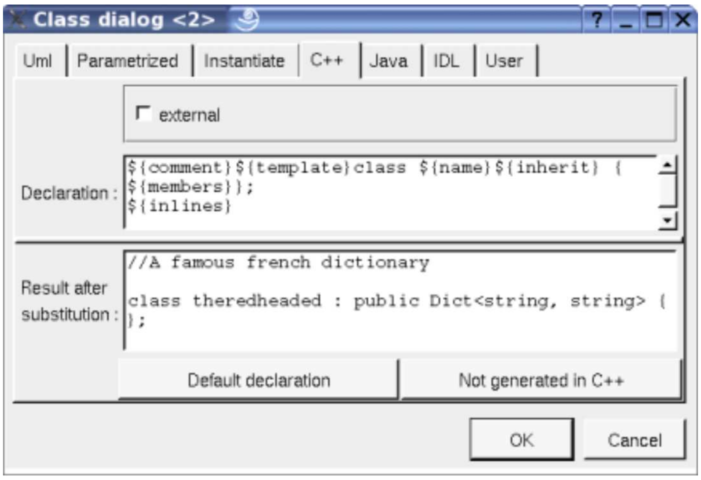
Template definition :



```
${comment}${template}class ${name}${inherit} {
${members}};
${inlines}
```

```
template<class V, class K = string> class Dict {
...key
...value
};
```

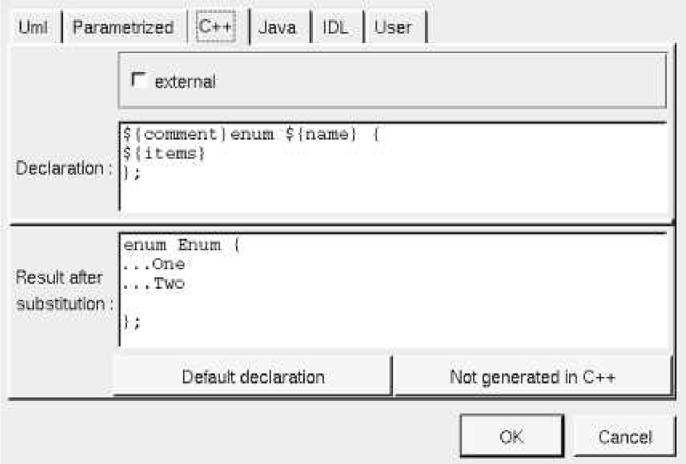
Template instantiation (of course a class may be both a template definition and a template instantiation) :



```
${comment}${template}class ${name}${inherit} {
${members}};
${inlines}
```

```
//A famous french dictionary

class theredheaded : public Dict<string, string> {
};
```

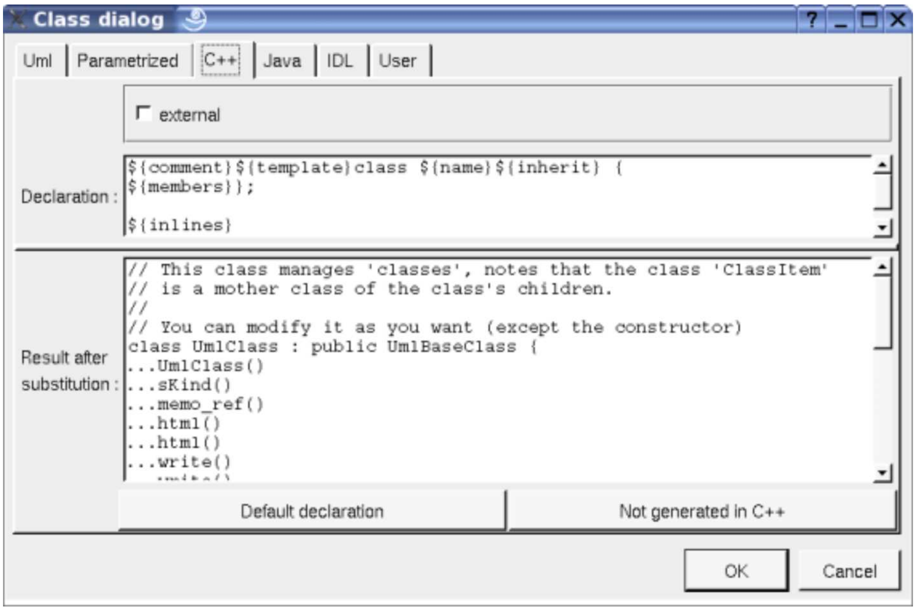
Enum (class with the stereotype *enum* or *enum_pattern*) :



```
${comment}enum ${name} {
${items}
};
```

```
enum Enum {
...One
...Two

};
```

Standard class :



☐ external

Declaration :

```
${comment}${template}class ${name}${inherit} {
${members}};

${inlines}
```

Result after substitution :

```
// This class manages 'classes', notes that the class 'ClassItem'
// is a mother class of the class's children.
//
// You can modify it as you want (except the constructor)
class UmlClass : public UmlBaseClass {
...UmlClass()
...sKind()
...memo_ref()
...html()
...html()
...write()
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for C++ (supposing you do not modify the C++ code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the class stereotype (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code. For instance if you do not want to follow the inheritance specified by the class's relations, you just have to replace *${inherit}* by anything you want.

When you do not want to have this class defined in C++ (but it must be defined in Java or Idl, so the class must have an associated artifact), empties the declaration manually or using the button ***not generated in C++*** (an other way is to empty the C++ definition of the artifact).

The ***external*** check box must be used when the class must not be defined in C++ by BOUML, but you want to specify the name of the class (to not follow the *Uml/Java/Idl* name) and/or the included files and/or *using* forms or any other forms needed to use it.

${template} produce a template declaration in case the class is a template class, else an empty string.

${members} produce the declaration and definition of the class members (relations, attributes, operations and extra members) following the browser order and repartition in the header and source files.

${inline} produce the definition of the operations and extra members declared *inline*, may be an empty string.

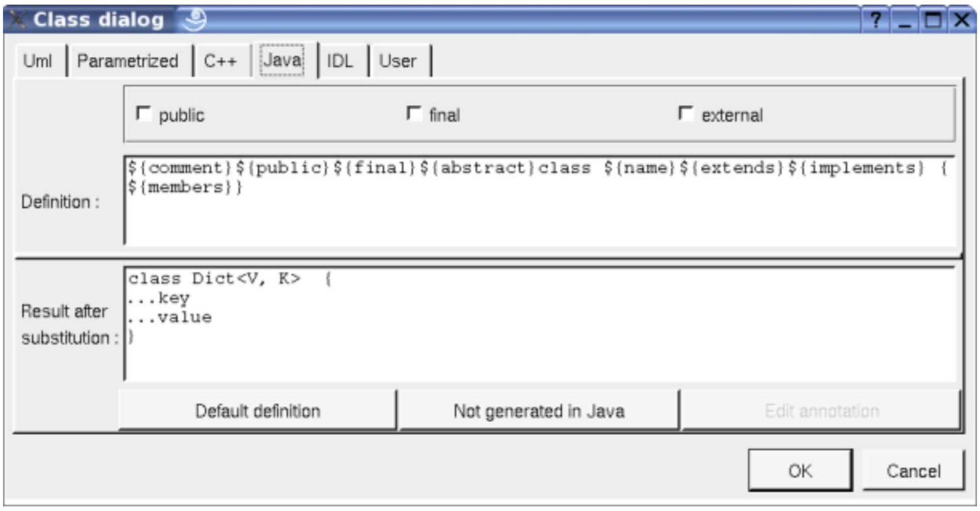
Refer to the *generation settings* for more details.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Class dialog, tab Java

This tab allows to give the Java definition of the class, it is visible only when Java is set through the *Languages* menu

Generic definition :



☐ public ☐ final ☐ external

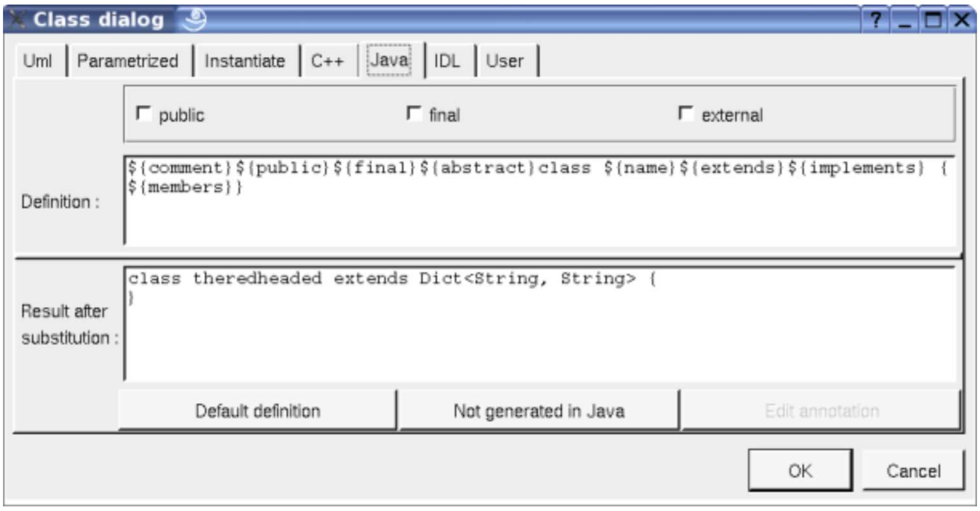
Definition :

```
${comment}${public}${final}${abstract}class ${name}${extends}${implements} {
${members}}
```

Result after substitution :

```
class Dict<V, K>  {
...key
...value
}
```

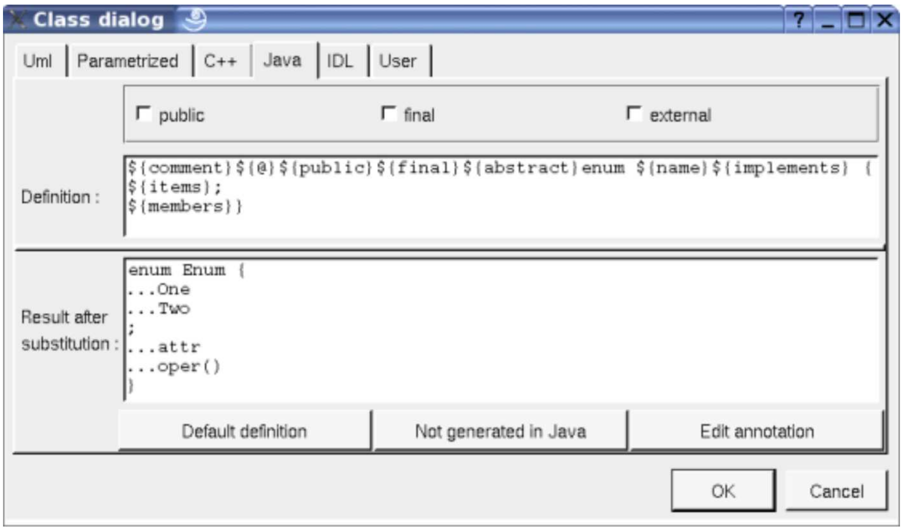
Generic instantiation :



```
${comment}${public}${final}${abstract}class ${name}${extends}${implements} {
${members}}
```

```
class theredheaded extends Dict<String, String> {
}
```

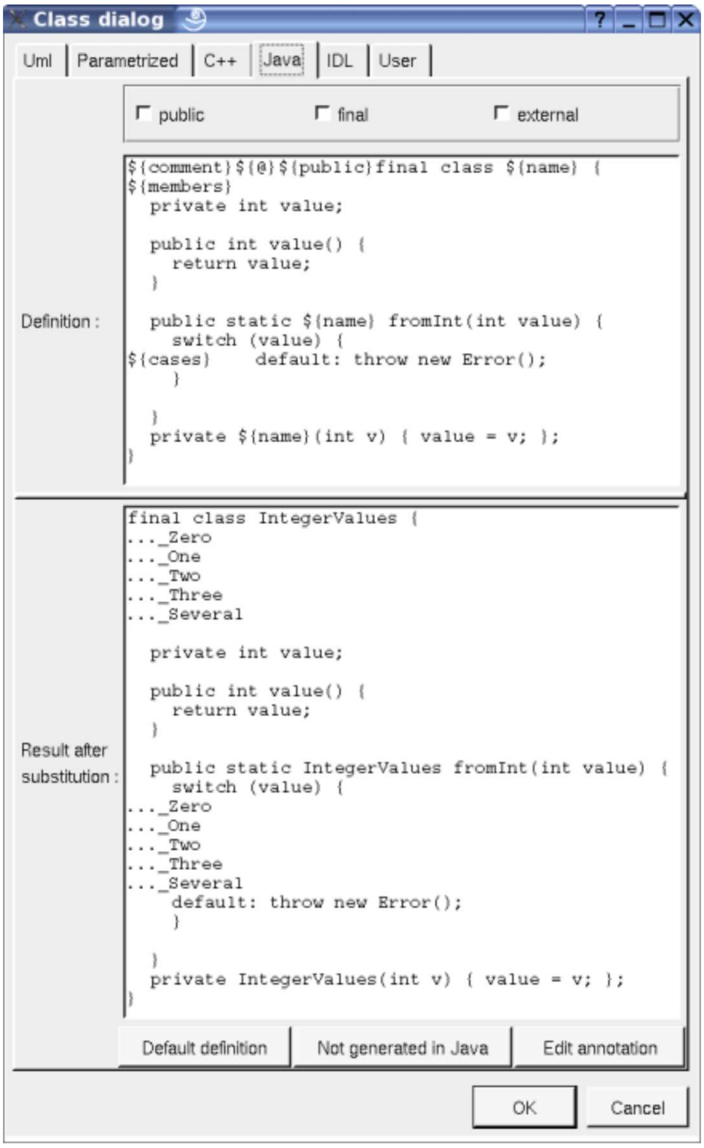
For a JDK 5 *enum* (class with the stereotype *enum*) :



```
${comment}${@}${public}${final}${abstract}enum ${name}${implements} {
${items};
${members}}
```

```
enum Enum {
...One
...Two
;
...attr
...oper()
}
```

For a class with the Java stereotype *enum_pattern* :



□ public □ final □ external

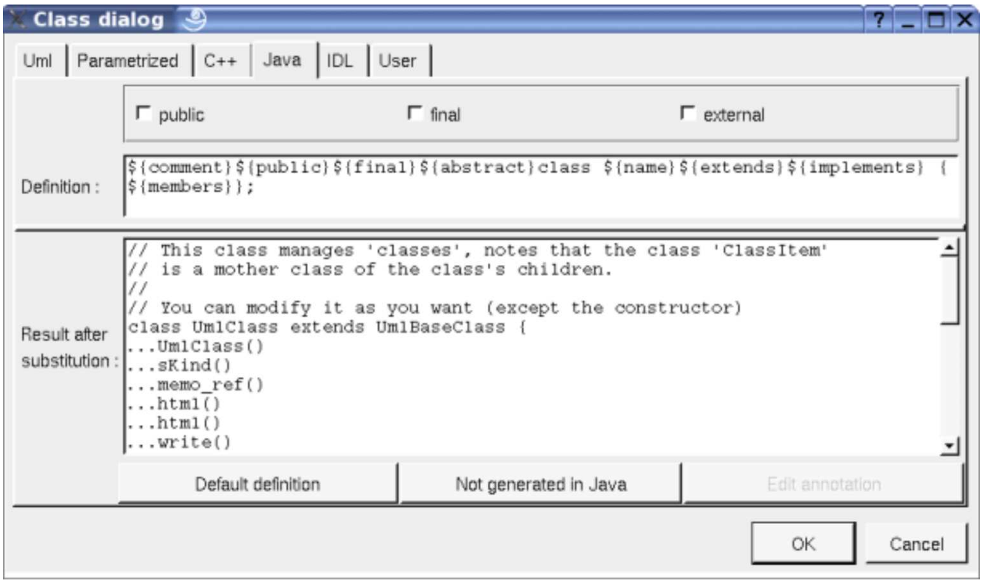
Definition :

```
${comment}${@}${public}final class ${name} {
${members}
  private int value;

  public int value() {
    return value;
  }

  public static ${name} fromInt(int value) {
    switch (value) {
${cases}     default: throw new Error();
    }

  }
  private ${name}(int v) { value = v; };
}
```

Result after substitution :

```
final class IntegerValues {
..._Zero
..._One
..._Two
..._Three
..._Several

  private int value;

  public int value() {
    return value;
  }

  public static IntegerValues fromInt(int value) {
    switch (value) {
..._Zero
..._One
..._Two
..._Three
..._Several
    default: throw new Error();
    }

  }
  private IntegerValues(int v) { value = v; };
}
```

Standard class :



□ public □ final □ external

Definition :

```
${comment}${public}${final}${abstract}class ${name}${extends}${implements} {
${members}};
```

Result after substitution :

```
// This class manages 'classes', notes that the class 'ClassItem'
// is a mother class of the class's children.
//
// You can modify it as you want (except the constructor)
class UmlClass extends UmlBaseClass {
...UmlClass()
...sKind()
...memo_ref()
...html()
...html()
...write()
```

${public} produce an empty string when the check box ***public*** is not checked, else produce *public* (!)

${final} produce an empty string when the check box ***final*** is not checked, else produce *final* (!!)

The ***external*** check box must be used when the class must not be defined in Java by BOUML, but you want to specify the name of the class (to not follow the *Uml/C++/Idl* name).

${members} produce the declaration of the class members (relations, attributes, operations and extra members) following the browser

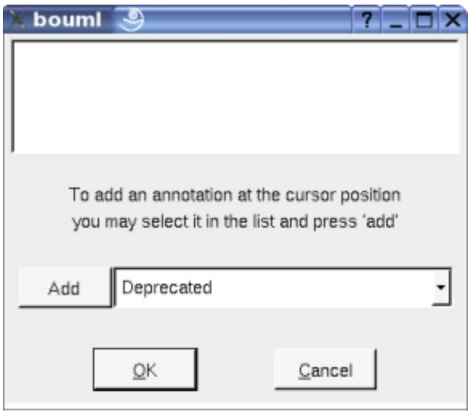
order, doesn't produce the enumeration items of an *enum.* In an *enum*, an attribute is not an enumeration item when its stereotype is *attribute*.

${items} produces the enumeration items of an *enum*. an attribute is an enumeration item when its stereotype is not *attribute*.

${extend} is replaced by the class inheritance

${implement} is replaced by the interface inheritance

${@} produces the annotations, when it is present in the definition the button *Edit annotation* is active, a specific dialog allows you to enter the annotations proposing the default annotations (*Deprecated* ...) and the ones defined through the classes stereotyped *@interface* :

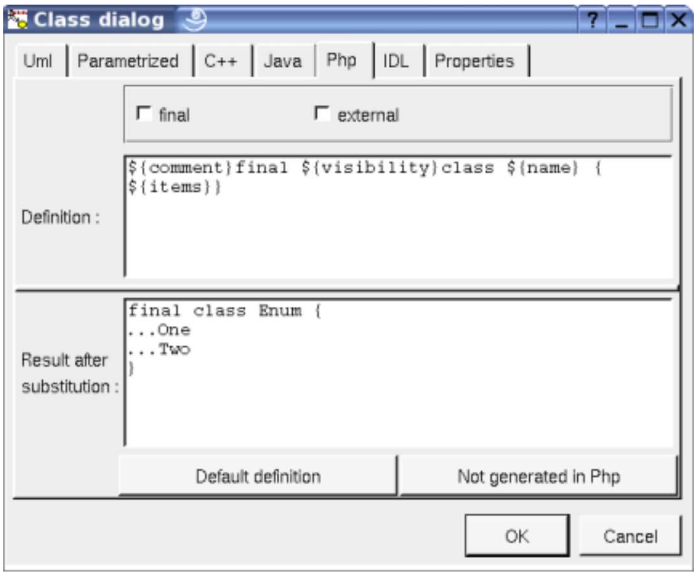

bouml
To add an annotation at the cursor position
you may select it in the list and press 'add'
Add
Deprecated
OK
Cancel

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Class dialog, tab Php

This tab allows to give the Php definition of the class, it is visible only when Php is set through the *Languages* menu

For an *enum* (class with the stereotype *enum*) :



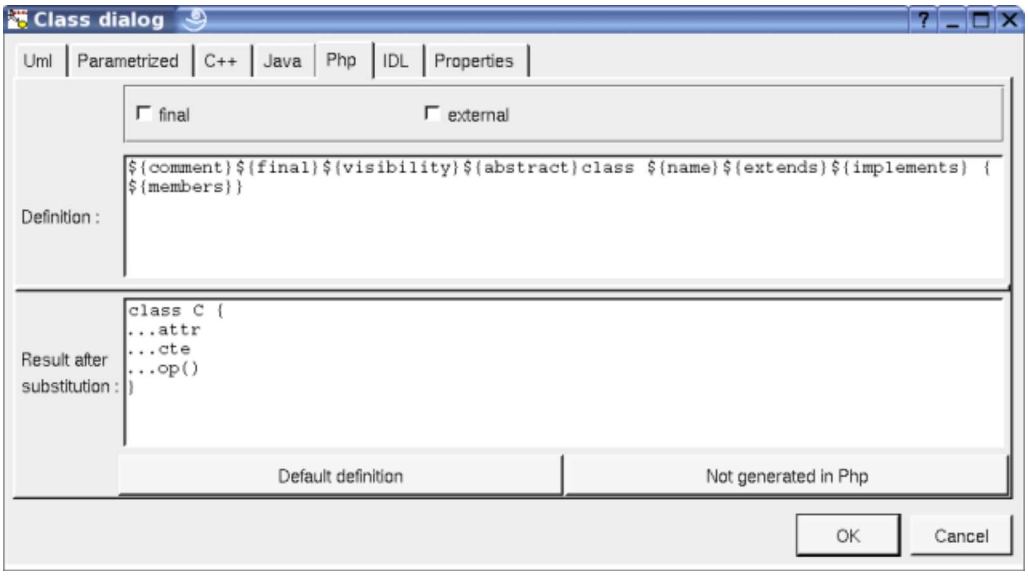
Definition :

```
${comment}final ${visibility}class ${name} {
${items}}
```

Result after substitution :

```
final class Enum {
...One
...Two
}
```

Standard class :



Definition :

```
${comment}${final}${visibility}${abstract}class ${name}${extends}${implements} {
${members}}
```

Result after substitution :

```
class C {
...attr
...cte
...op()
}
```

${visibility} produce an empty string when the visibility except if this one is *package*. If you want to generate Php 4, set the visibility to *package*

${final} produce an empty string when the check box ***final*** is not checked, else produce *final* (!!)

${abstract} produce an empty string when the check box ***abstract*** is not checked, else produce *abstract* (!!)

The ***external*** check box must be used when the class must not be defined in Php by BOUML, but you want to specify the name of the class (to not follow the *Uml/C++/Php/Python/Idl* name). An optional second line may be given to specify the *require_once* form to produce in artifact containing classes referencing this external class.

${members} produce the declaration of the class members (relations, attributes, operations and extra members) following the browser order

${items} produces the enumeration items of an *enum*. other members are not produced

${extend} is replaced by the class inheritance

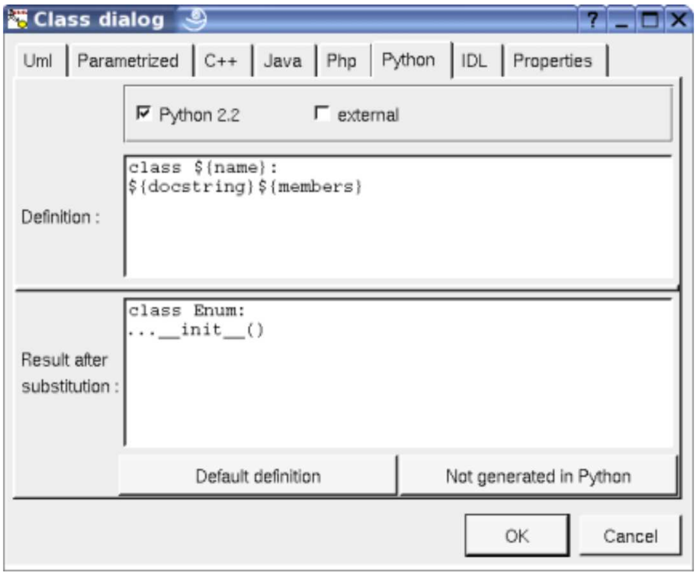
${implement} is replaced by the interface inheritance

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Class dialog, tab Python

This tab allows to give the Php definition of the class, it is visible only when Php is set through the *Languages* menu

For an *enum* (class with the stereotype *enum*), recall the instance attributes are produced in the operation *__init__* :



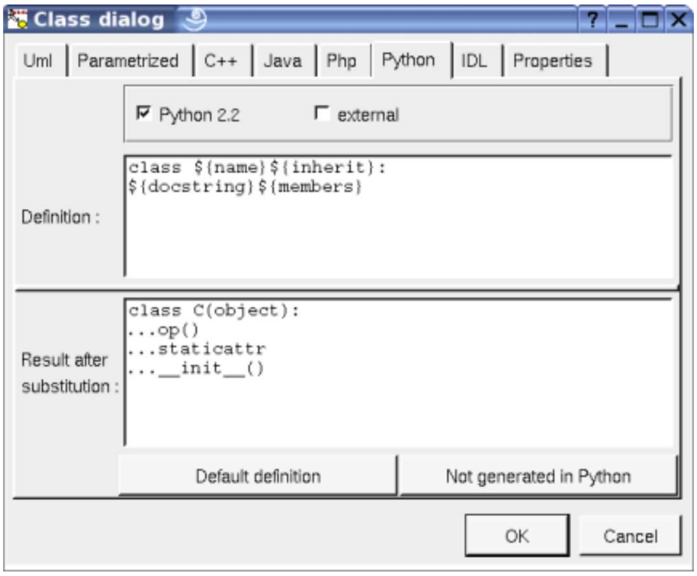
Definition :

```
class ${name}:
${docstring}${members}
```

Result after substitution :

```
class Enum:
...__init__()
```

Standard class :



☑ Python 2.2 □ external

Definition :

```
class ${name}${inherit}:
${docstring}${members}
```

Result after substitution :

```
class C(object):
...op()
...staticattr
...__init__()
```

The ***Python 2.2*** check box allows to ask for classes introduced by Python 2.2, the default value of this toggle is the one specified by the generation settings

The ***external*** check box must be used when the class must not be defined in Python by BOUML, but you want to specify the name of the class (to not follow the *Uml/C++/Php/Python/Idl* name) on the first line (*${name}* by default), may be followed by *import* forms whose will be produced by the code generator.

${members} produce the declaration of the class members (relations, attributes, operations, extra members and sub classes) following the browser order. Note that the instance attributes are produced at the beginning of the body of the operation __*init*__.

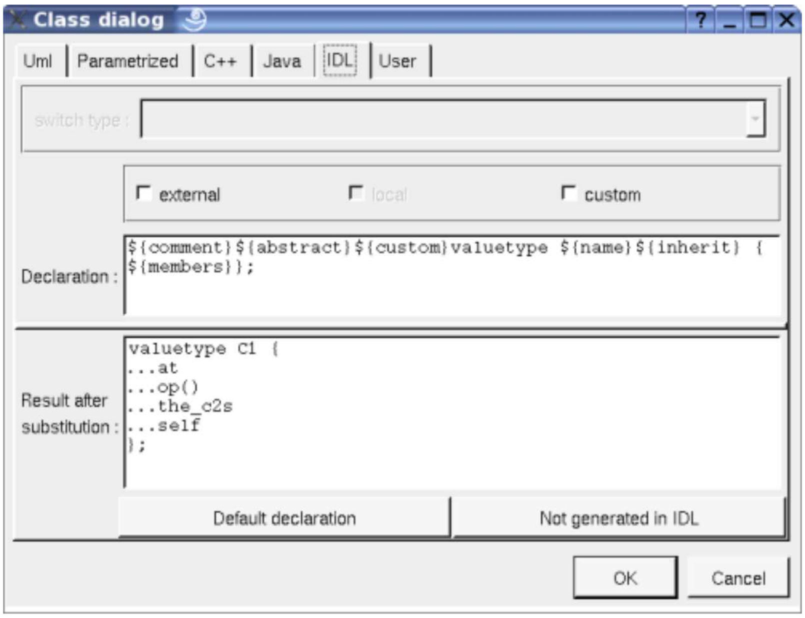
${inherit} is replaced by the inheritance, a class without inheritance inherits of *object* if the toggle *Python 2.2* is set

${docstring}* is replaced by the description of the class placed between ””” and followed by a newline. If the description is empty nothing is produced. You can replace it by *${comment} or *${description}* if you prefer.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Class dialog, tab Idl

This tab allows to give the Idl definition of the class, it is visible only when Idl is set through the *Languages* menu



□ external □ local □ custom

Declaration :

```
${comment}${abstract}${custom}valuetype ${name}${inherit} {
${members}};
```

Result after substitution :

```
valuetype C1 {
...at
...op()
...the_c2s
...self
};
```

${local} produce an empty string when the check box ***local*** is not checked, else produce *local* (!!), this one is only available when the stereotype of the class is *interface* in Idl (see generation settings).

${custom} produce an empty string when the check box ***custom*** is not checked, else produce *custom* (!), custom is available when the stereotype of the class is *valuetype* in Idl (see generation settings).

The ***external*** check box must be used when the class must not be defined in Idl by BOUML, but you want to specify the name of the class (to not follow the *Uml/C++/Java* name) and/or the included files needed to use it. Not yet implemented in the Idl generator.

${members} produce the declaration of the class members (relations, attributes, operations and extra members) following the browser order.

Refer to the *generation settings* for more details.

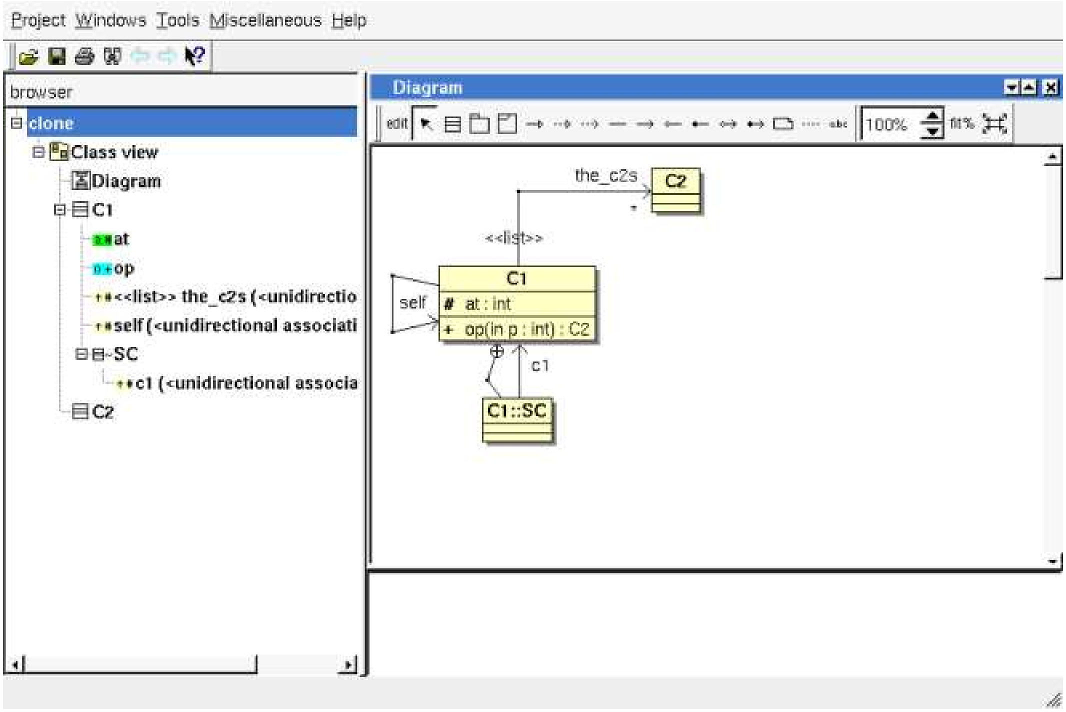
The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Menu : duplicate

The menu entry *duplicate* clone the class and all its children, including the nested classes.

The self relations (a self relation is a relation between a class and itself) are specially managed : they became a self relation to the clone.

For instance, if the initial situation is the following :



Project Windows Tools Miscellaneous Help
browser
clone
Class view
Diagram
C1
at
op
<<list>> the_c2s (<unidirectio
self (<unidirectional associati
~SC
c1 (<unidirectional associa
C2
Diagram
edit
100%
fit%
the_c2s
C2
*
<<list>>
C1
self
# at : int
+ op(in p : int) : C2
c1
C1::SC

After the duplication of *C1* into the new class *C3* :

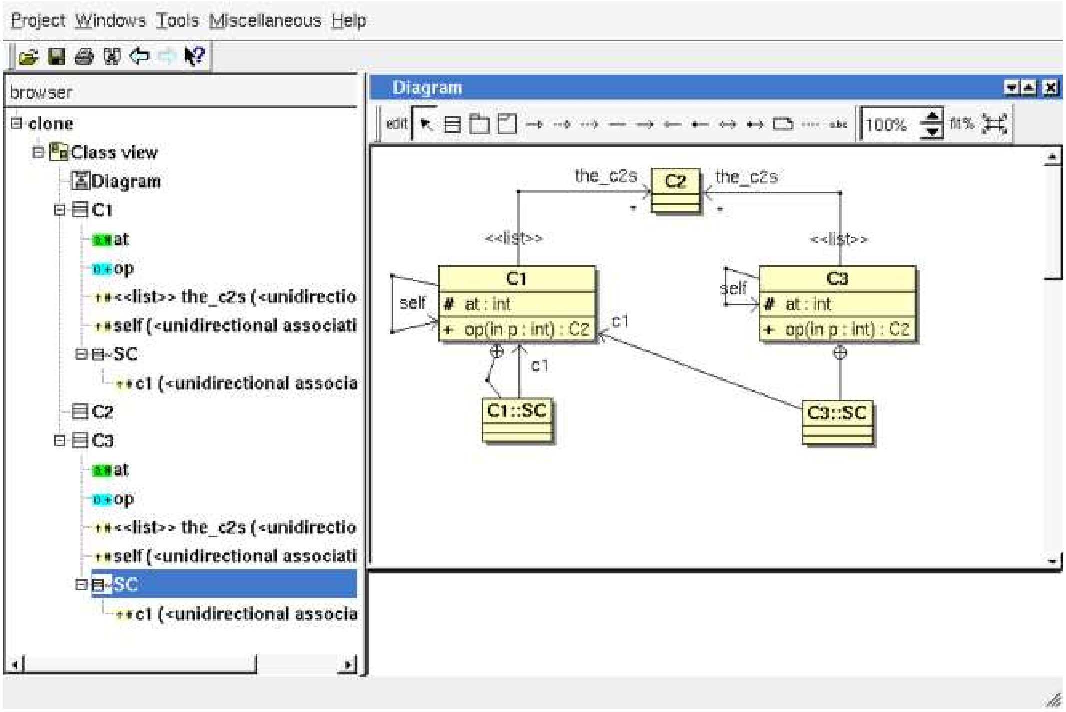

Project Windows Tools Miscellaneous Help
browser
clone
Class view
Diagram
C1
at
op
<<list>> the_c2s (<unidirectio
self (<unidirectional associati
SC
c1 (<unidirectional associa
C2
C3
at
op
<<list>> the_c2s (<unidirectio
self (<unidirectional associati
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Diagram
edit
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the_c2s
C2
the_c2s
<<list>>
<<list>>
C1
self
# at : int
+ op(in p : int) : C2
c1
C3
self
# at : int
+ op(in p : int) : C2
c1
C1::SC
C3::SC

Note that the duplication of the relation *c1* of *C3::SC* is still a relation to C1, because only the self relation are specially managed, not all the relation to the duplicated class (the context of the inner class(es) SC is visible thanks to the *drawing setting* “*show context*” and also to the inner class relation).

Menu : create source artifact

The menu entry *create source artifact* is present when the class does not have an associated artifact, but the class view containing the class have an associated deployment view. Choosing this entry a new artifact having the name of the current class and the stereotype *source* is created in the deployment view associated to the class view containing the current class.

To quickly create is needed the associated *deployment view* and associate an *artifact* to all the classes of a class view use the *plug-out* deploy.

Menu : select associated artifact

This menu entry is present when the class have an associated artifact, to quickly select this one, the current class may also be quickly selected from its associated artifact.

Menu : select associated component
Menu : select an associated component

This menu entry is present when the class have an associated component(s), to quickly select this one, the current class may also be quickly selected from its associated component.

Menu : referenced by

To know who reference the current class

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the class is not *read-only*.

Delete the class and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : generate

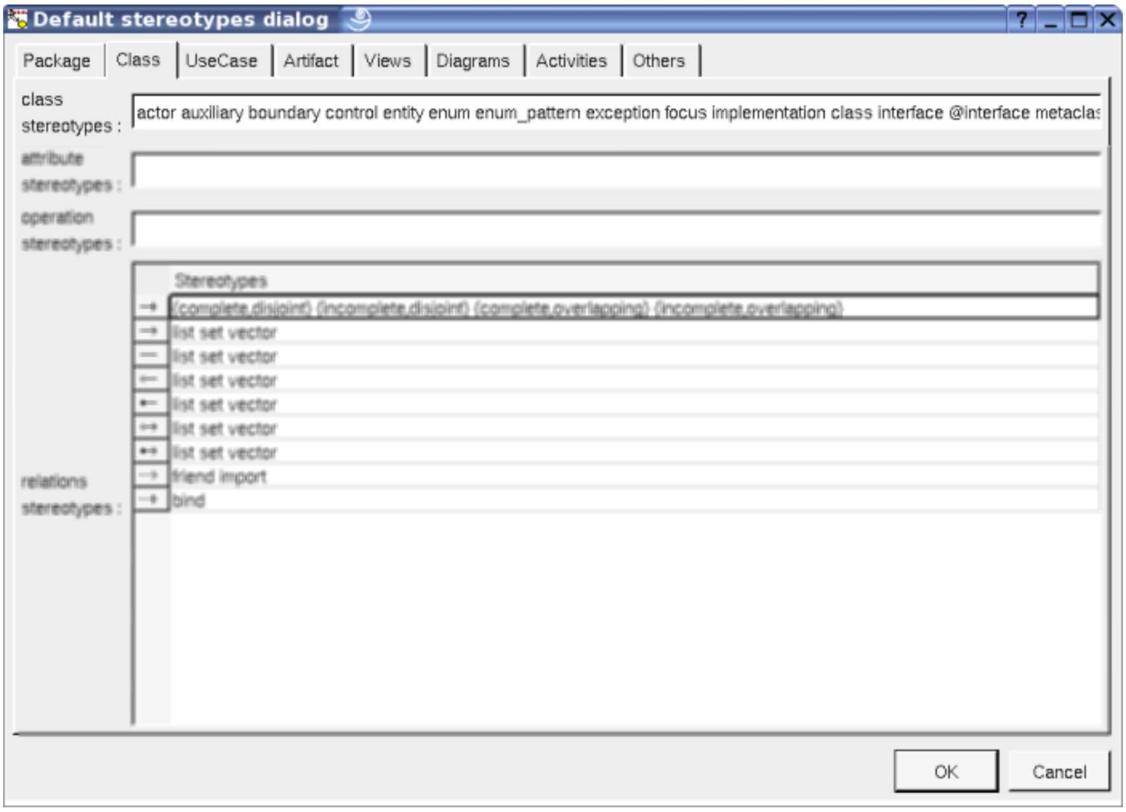
To generate source code for the languages for whose the class and the associated artifact have a definition.

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a class. The selected tool is called and applied on the current class.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the classes :



class stereotypes : actor auxiliary boundary control entity enum enum_pattern exception focus implementation class interface @interface metaclas

attribute stereotypes :

operation stereotypes :

relations stereotypes :

	Stereotypes
→	{complete,disjoint} {incomplete,disjoint} {complete,overlapping} {incomplete,overlapping}
→	list set vector
—	list set vector
←	list set vector
•—	list set vector
↔	list set vector
•↔	list set vector
⇢	friend import
⇢	bind

As you can see, it is possible to set a default stereotypes list for the classes and all the relations between classes.

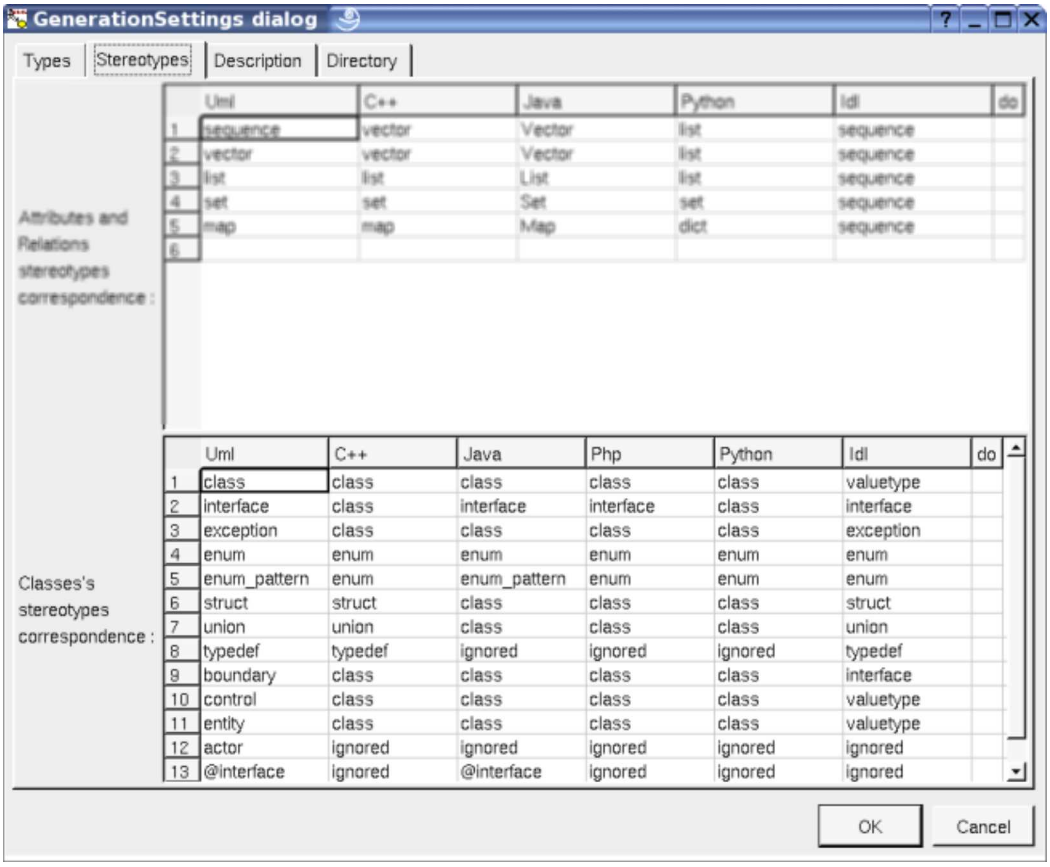
The code generators does not distinguish the generalization and the realization, even they do not have the same meaning in UML.

Generation settings

This very important dialog allows to specify many default definitions concerning the classes, more details will be given in C++ generator, Java generator, Php generator, Python generator and Idl generator.

The tabs associated to a given language are only visible when the corresponding language is set through the *Languages* menu.

The tab *Stereotypes* allows to specify how the class's stereotypes are translated in each language :



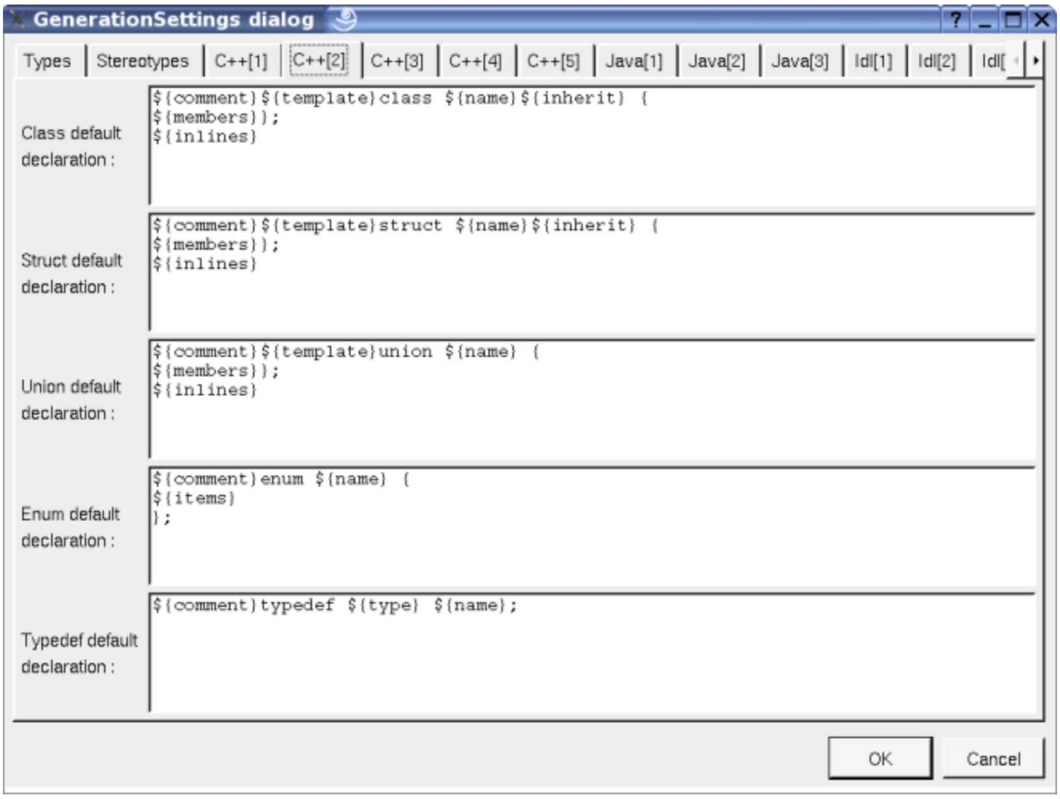
Attributes and Relations stereotypes correspondence :

	Uml	C++	Java	Python	Idl	do
1	sequence	vector	Vector	list	sequence	
2	vector	vector	Vector	list	sequence	
3	list	list	List	list	sequence	
4	set	set	Set	set	sequence	
5	map	map	Map	dict	sequence	
6						

Classes's stereotypes correspondence :

	Uml	C++	Java	Php	Python	Idl	do
1	class	class	class	class	class	valuetype	
2	interface	class	interface	interface	class	interface	
3	exception	class	class	class	class	exception	
4	enum	enum	enum	enum	enum	enum	
5	enum_pattern	enum	enum_pattern	enum	enum	enum	
6	struct	struct	class	class	class	struct	
7	union	union	class	class	class	union	
8	typedef	typedef	ignored	ignored	ignored	typedef	
9	boundary	class	class	class	class	interface	
10	control	class	class	class	class	valuetype	
11	entity	class	class	class	class	valuetype	
12	actor	ignored	ignored	ignored	ignored	ignored	
13	@interface	ignored	@interface	ignored	ignored	ignored	

The second *C++* tab allows to define the default C++ class definition depending on the stereotype :



Class default declaration :

```
${comment}${template}class ${name}${inherit} {
${members}};
${inlines}
```

Struct default declaration :

```
${comment}${template}struct ${name}${inherit} {
${members}};
${inlines}
```

Union default declaration :

```
${comment}${template}union ${name} {
${members}};
${inlines}
```

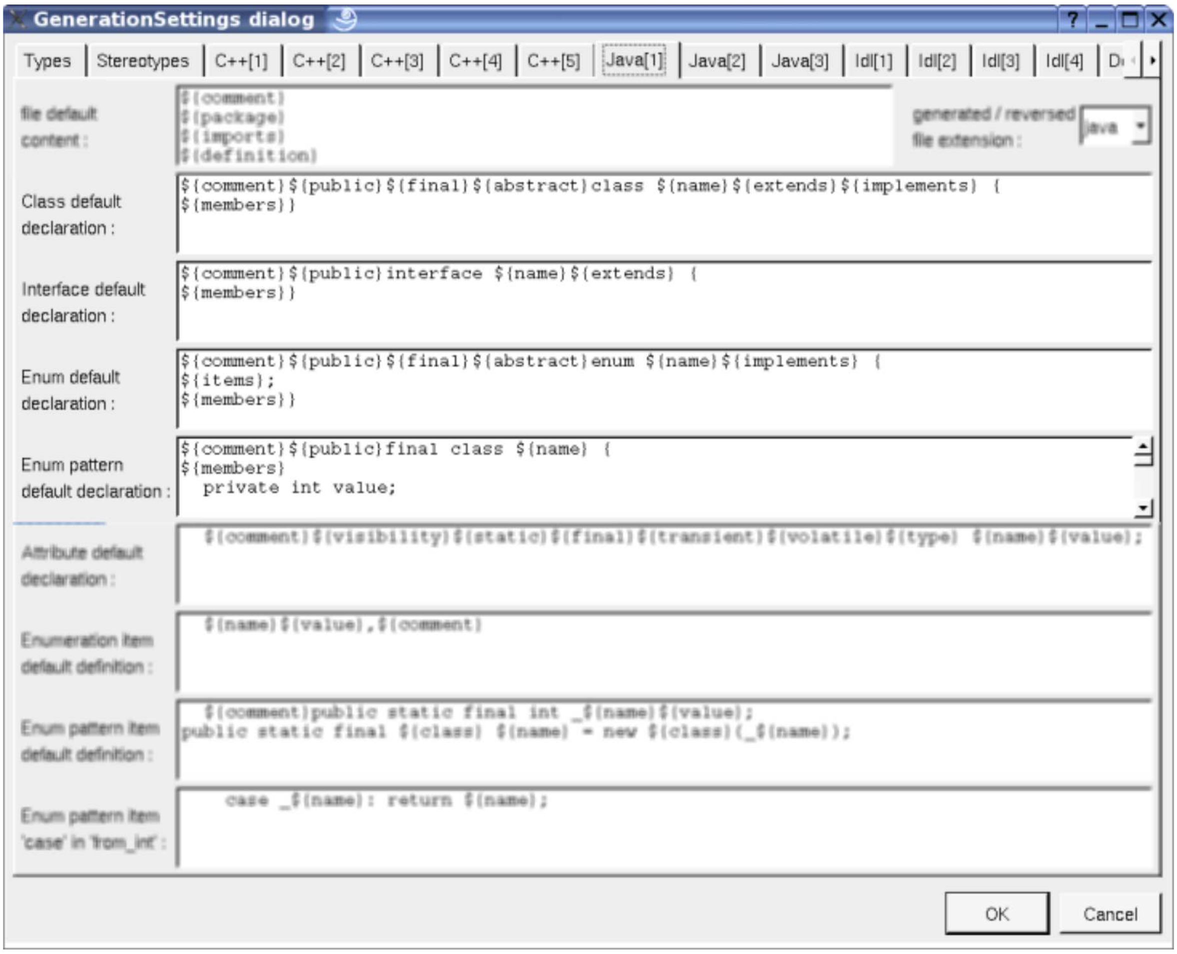
Enum default declaration :

```
${comment}enum ${name} {
${items}
};
```

Typedef default declaration :

```
${comment}typedef ${type} ${name};
```

The first *Java* tab allows to define the default Java class definition depending on the stereotype :



file default content :

```
${comment}
${package}
${imports}
${definition}
```

generated / reversed file extension : java

Class default declaration :

```
${comment}${public}${final}${abstract}class ${name}${extends}${implements} {
${members}}
```

Interface default declaration :

```
${comment}${public}interface ${name}${extends} {
${members}}
```

Enum default declaration :

```
${comment}${public}${final}${abstract}enum ${name}${implements} {
${items};
${members}}
```

Enum pattern default declaration :

```
${comment}${public}final class ${name} {
${members}
  private int value;
```

Attribute default declaration :

```
  ${comment}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

Enumeration item default definition :

```
  ${name}${value},${comment}
```

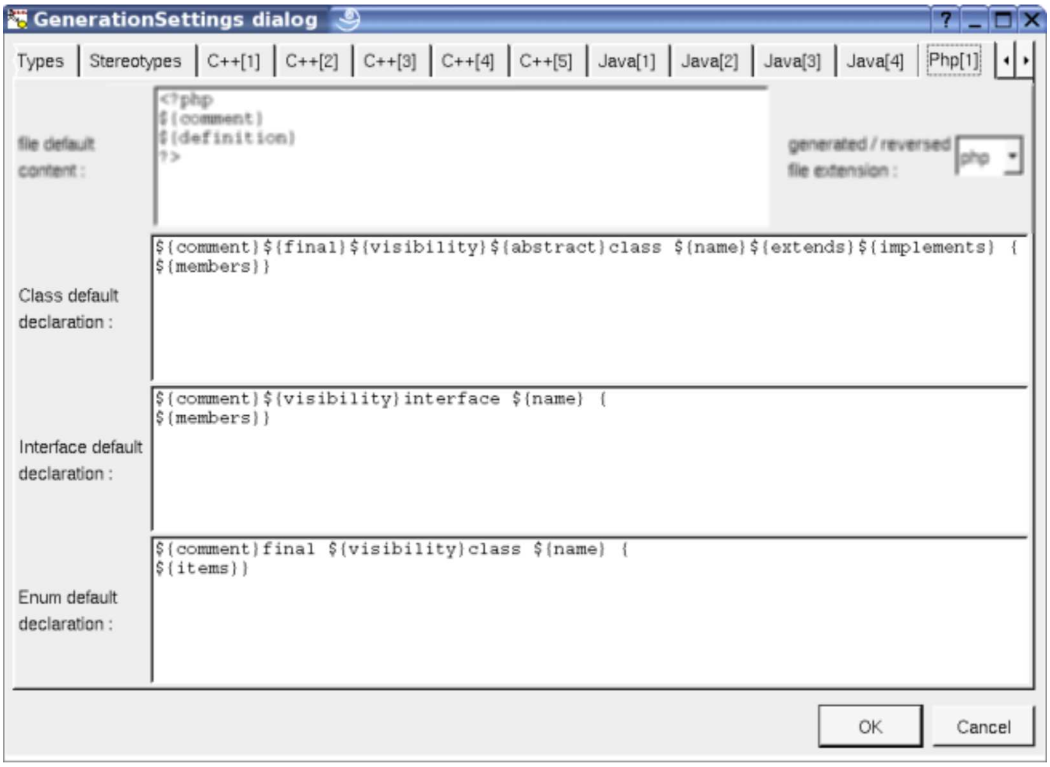
Enum pattern item default definition :

```
  ${comment}public static final int _${name}${value};
public static final ${class} ${name} = new ${class}(_${name});
```

Enum pattern item 'case' in 'from_int' :

```
    case _${name}: return ${name};
```

The first *Php* tab allows to define the default Php class definition depending on the stereotype :



file default content :

```
<?php
${comment}
${definition}
?>
```

generated / reversed file extension : php

Class default declaration :

```
${comment}${final}${visibility}${abstract}class ${name}${extends}${implements} {
${members}}
```

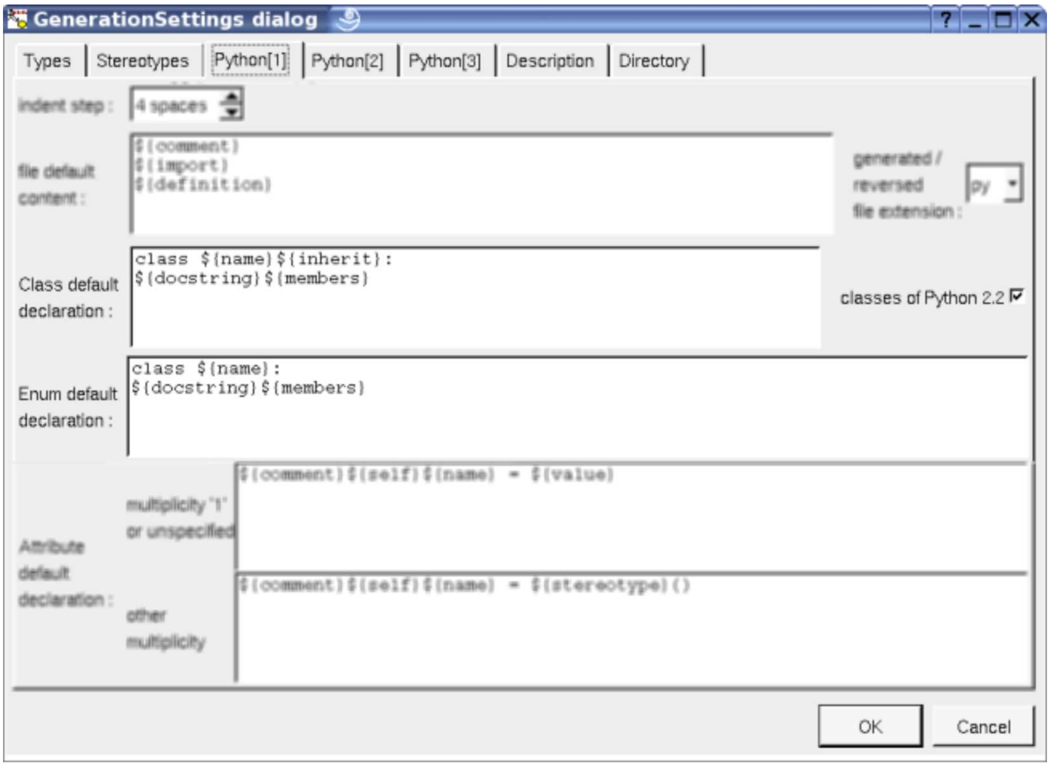
Interface default declaration :

```
${comment}${visibility}interface ${name} {
${members}}
```

Enum default declaration :

```
${comment}final ${visibility}class ${name} {
${items}}
```

The first *Python* tab allows to define the default Python class definition depending on the stereotype, and to use *Python 2.2* classes or not by default :



indent step : 4 spaces

file default content :
```
${comment}
${import}
${definition}
```

generated / reversed file extension : py

Class default declaration :
```
class ${name}${inherit}:
${docstring}${members}
```

classes of Python 2.2 ☑

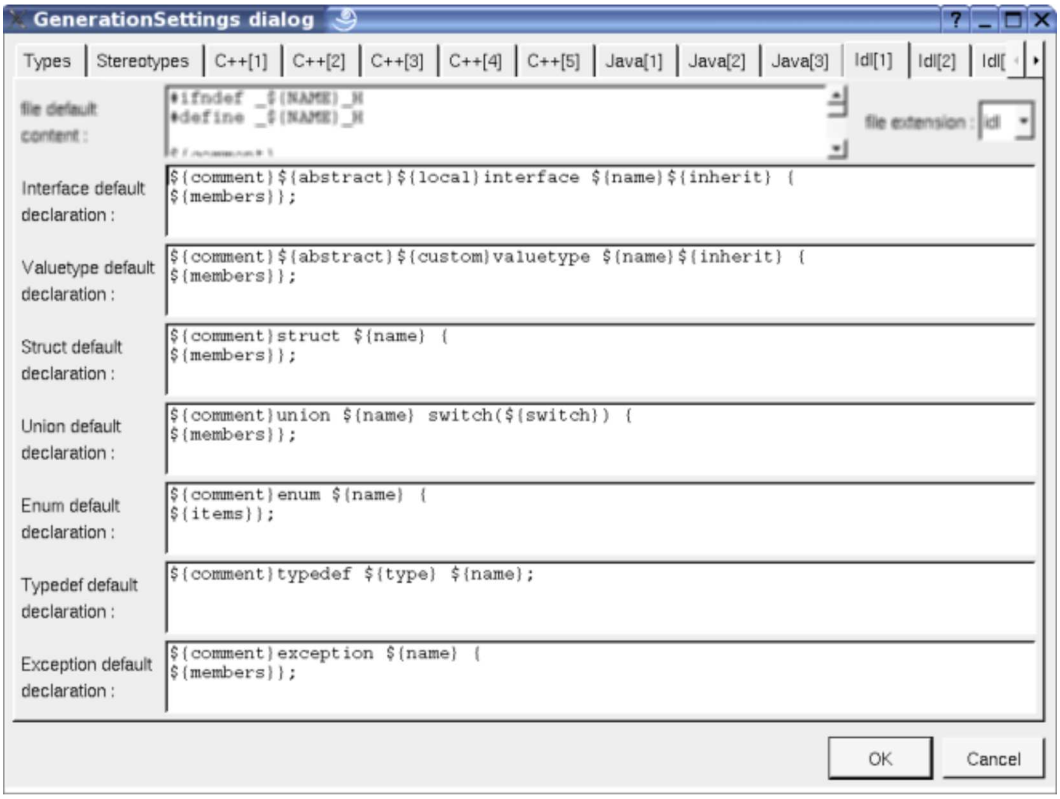
Enum default declaration :
```
class ${name}:
${docstring}${members}
```

Attribute default declaration :

multiplicity "1" or unspecified
```
${comment}${self}${name} = ${value}
```

other multiplicity
```
${comment}${self}${name} = ${stereotype}()
```

The first *Idl* tab allows to define the default Idl class definition depending on the stereotype :



file default content :
```
#ifndef _${NAME}_H
#define _${NAME}_H
${comment}
```

file extension : idl

Interface default declaration :
```
${comment}${abstract}${local}interface ${name}${inherit} {
${members}};
```

Valuetype default declaration :
```
${comment}${abstract}${custom}valuetype ${name}${inherit} {
${members}};
```

Struct default declaration :
```
${comment}struct ${name} {
${members}};
```

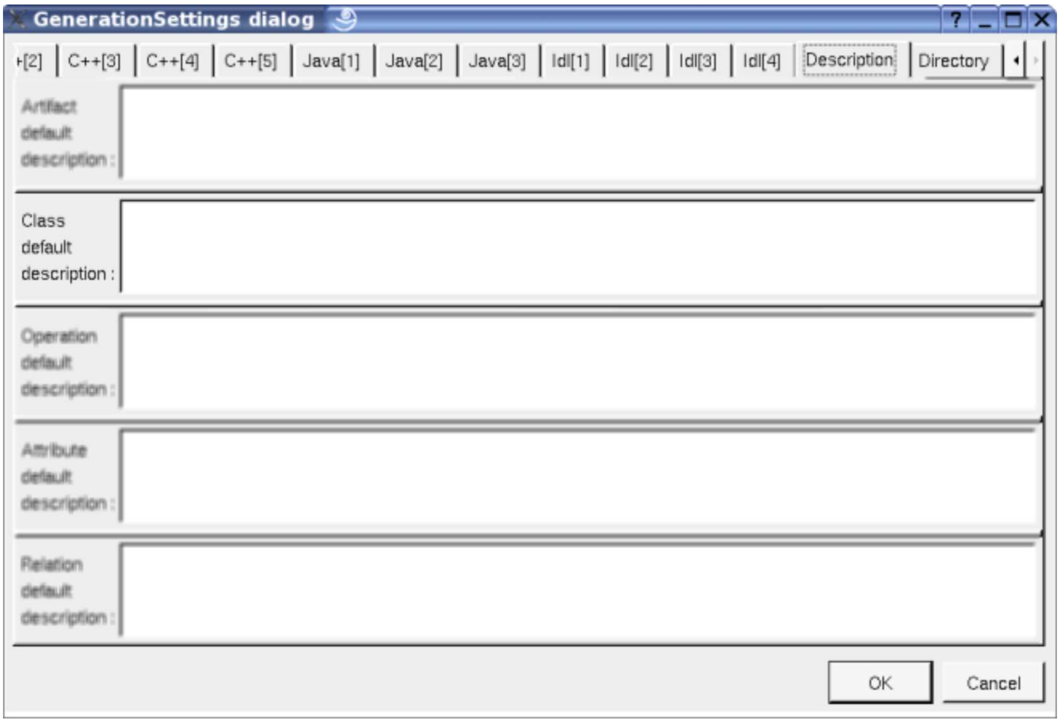
Union default declaration :
```
${comment}union ${name} switch(${switch}) {
${members}};
```

Enum default declaration :
```
${comment}enum ${name} {
${items}};
```

Typedef default declaration :
```
${comment}typedef ${type} ${name};
```

Exception default declaration :
```
${comment}exception ${name} {
${members}};
```

The tab *Description* allows to set a default description (the default description is used when you hit the button *default* in the description part of a class of the class dialog) :



Artifact default description :

Class default description :

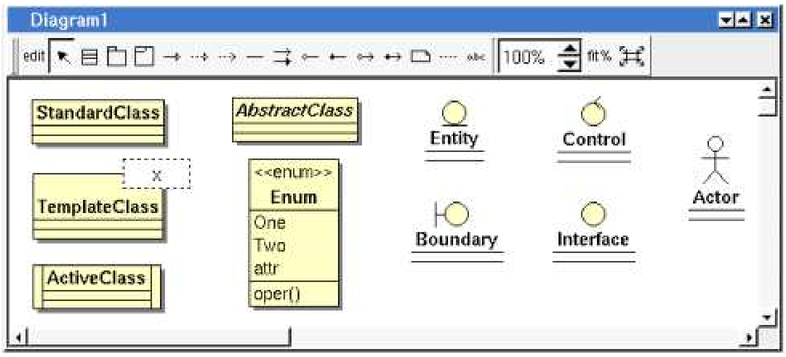
Operation default description :

Attribute default description :

Relation default description :

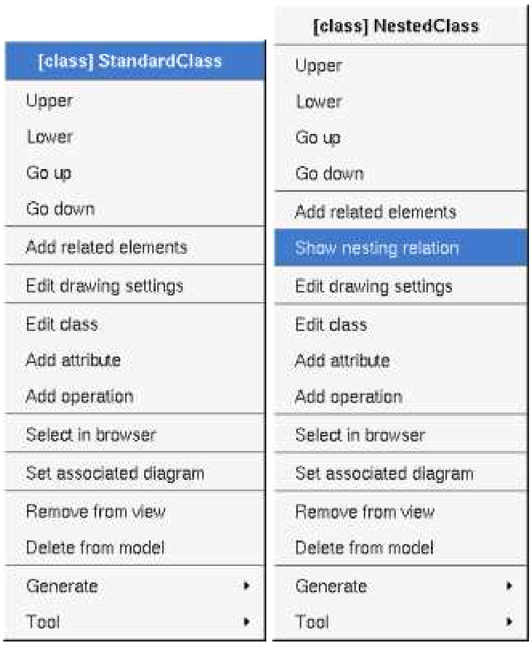
Drawing

A class is drawn in a diagram as a rectangle or an icon depending on the class's stereotype and the drawing settings :



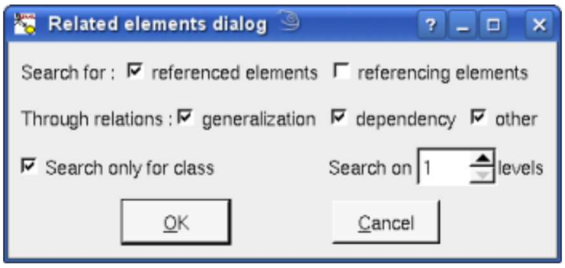
If the class is stereotyped by a stereotype part of a profile and this stereotype has an associated icon, this icon will be used when the *drawing mode* is *natural*, the image is unchanged when the scale is 100% else it is resized.

A right mouse click on a class in a diagram calls the following menu (supposing the class editable) :



Menu : add related elements

to add elements having a relation with the current element, the following dialog is shown :



Search for : ☑ referenced elements ☐ referencing elements

Through relations : ☑ generalization ☑ dependency ☑ other

☑ Search only for class Search on 1 levels

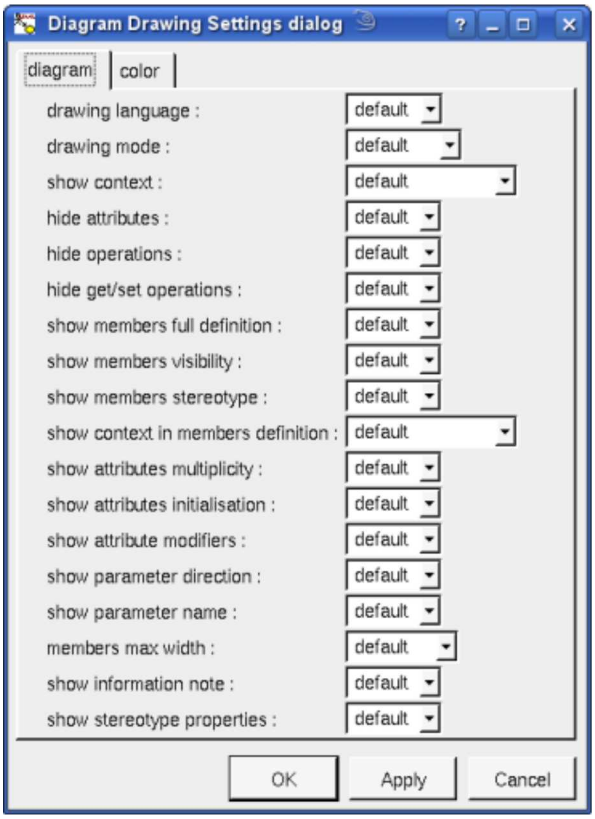
Menu : show nesting relation

only present when the class is nested and its container class present but the nesting relation is not shown because *draw all relation* is set to false, allows to show the nesting relation.

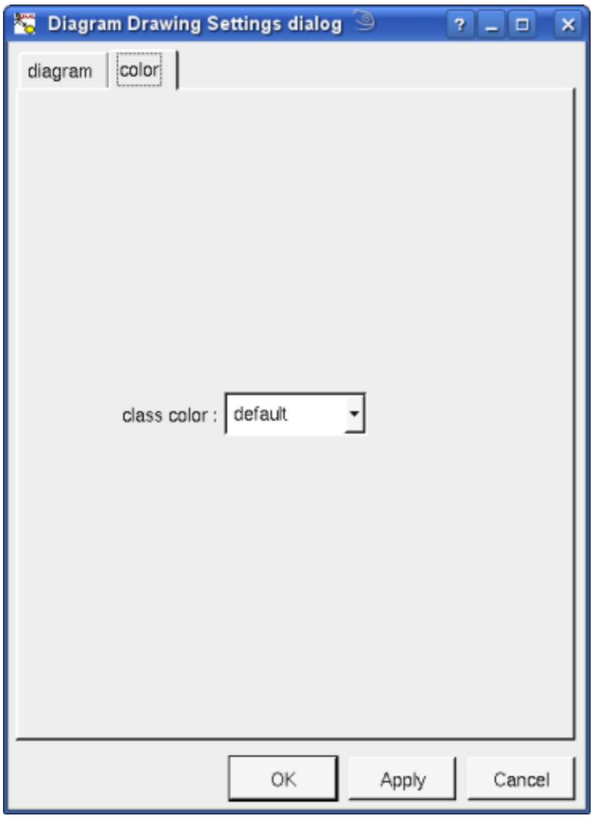
Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a class in a diagram, all the settings are set to *default*.



drawing language : default
drawing mode : default
show context : default
hide attributes : default
hide operations : default
hide get/set operations : default
show members full definition : default
show members visibility : default
show members stereotype : default
show context in members definition : default
show attributes multiplicity : default
show attributes initialisation : default
show attribute modifiers : default
show parameter direction : default
show parameter name : default
members max width : default
show information note : default
show stereotype properties : default

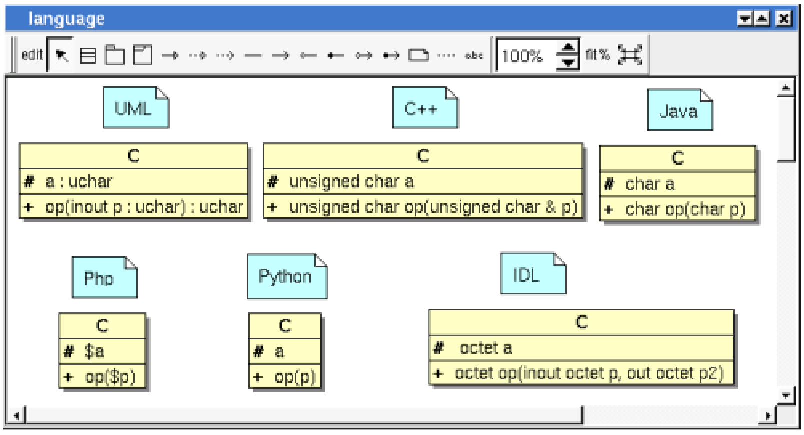


class color : default

drawing language :

Allows to choose how the operations and attributes of the class must be written in case *show full members definition* is true (at the class level or an upper level), this may hide an operation or an attribute when it is not defined for the chosen language.

For instance, the class *C* has the attribute *a* having the type *uchar* (supposed translated *unsigned char* in C++, *char* in Java and *octet* in Idl), the operation *op* returning an *uchar* and having the *input* parameter *p* having the type *uchar* and only in Idl a second *out* parameter *p2* of the same type. The C picture is, depending on the *drawing language* :



UML:
```
C
# a : uchar
+ op(inout p : uchar) : uchar
```

C++:
```
C
# unsigned char a
+ unsigned char op(unsigned char & p)
```

Java:
```
C
# char a
+ char op(char p)
```

Php:
```
C
# $a
+ op($p)
```

Python:
```
C
# a
+ op(p)
```

IDL:
```
C
# octet a
+ octet op(inout octet p, out octet p2)
```

drawing mode :

Allows to draw the class using a rectangle or an icon :

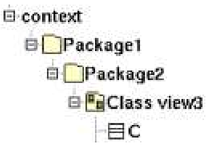
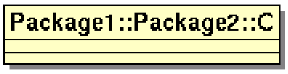
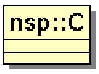
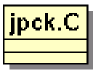
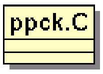
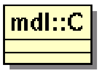
- *class* : to draw a rectangle whatever the stereotype of the class
- *control* : to draw the *control* icon whatever the stereotype of the class
- *boundary* : to draw the *boundary* icon whatever the stereotype of the class
- *entity* : to draw the *entity* icon whatever the stereotype of the class
- *actor* : to an actor whatever the stereotype of the class

- *natural* : the draw the class depending on its the stereotype

show context :

To indicate if the context where the class is defined must be written, and if yes, how. The context may be the "UML context" which is the path of the class in the browser, or the C++ *namespace*, or the Java *package* or at least the Idl *module*. In case the class has an associated artifact, the *namespace/package/module* is the one specified by the package containing the artifact, else by the package containing the class itself. Obviously nothing is written in case the *namespace/package/module* is not specified.

For instance, the package *Package2* specify the C++ *namespace nsp,* the Java *package* jpck, the python package *ppck* and the Idl *module mdl*. The C picture is, depending on the *show context* :

	UML	C++ namespace	Java package	Python package	Idl module
					

hide attributes :

To hide or not the attributes, it is also possible to specify the visibility for each one.

hide operations :

To hide or not the operations, it is also possible to specify the visibility for each one.

hide get/set operations :

To hide or not the 'official' getter and setter operations

show full members definition :

To write all the attribute/operation definitions, or just their names. See also *drawing language*.

show members visibility :

To write or not the visibility

show members stereotype :

To write or not the stereotype

show context in members definition :

to write or not the context of classes indicated in the full member definitions

show attributes multiplicity :

To write or not the multiplicity of the attributes when the drawing language is UML and you ask to show for full members definition

show attributes initialization :

To write or not the default value of the attributes when you ask to show for full members definition

show attributes modifiers :

To write or not the modifiers when you ask to show for full members definition, except for the / indicating the attribute is derived which is writtent even you don't ask for the full members definition

member max width :

To limit the width (in characters) used to produce the definition of the operations and attributes. When the width is greater that the max width, the string is cut and ... is added. Doesn't take into account the stereotype.

show parameter direction :

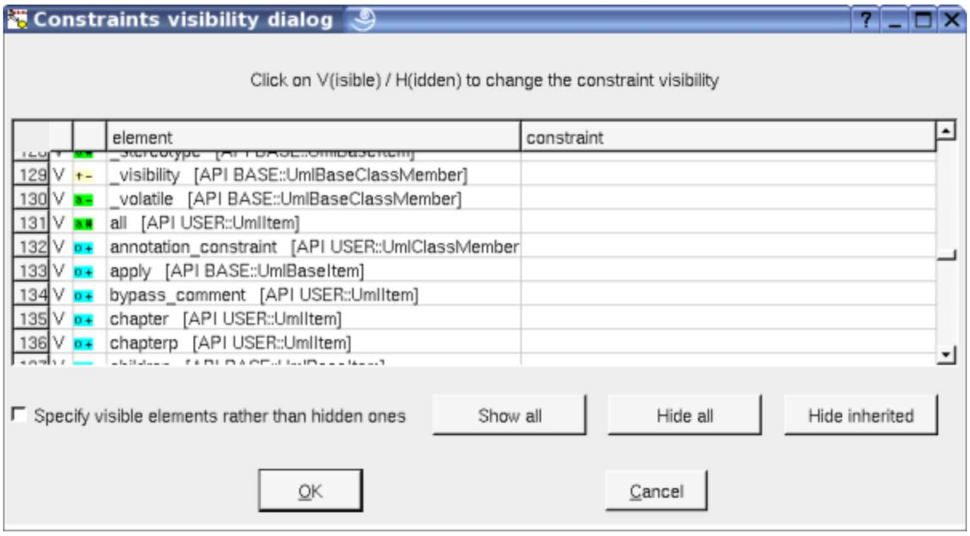
To write or not the direction of the operation's parameters

show parameter name :

To write or not the name of the operation's parameters

show information note :

To show or not the constraints as a note. This note is able to contain the constraints of the class itself, the constraints of its members and the inherited constraints. To choose which constraint must be written, edit the node and a dedicated dialog will appears :



Click on V(isible) / H(idden) to change the constraint visibility

			element	constraint
128	V	a#	_stereotype [API BASE::UmlBaseItem]	
129	V	+-	_visibility [API BASE::UmlBaseClassMember]	
130	V	a-	_volatile [API BASE::UmlBaseClassMember]	
131	V	a#	all [API USER::UmlItem]	
132	V	o+	annotation_constraint [API USER::UmlClassMember	
133	V	o+	apply [API BASE::UmlBaseItem]	
134	V	o+	bypass_comment [API USER::UmlItem]	
135	V	o+	chapter [API USER::UmlItem]	
136	V	o+	chapterp [API USER::UmlItem]	
137	V		children [API BASE::UmlBaseItem]	

☐ Specify visible elements rather than hidden ones

show stereotype properties :

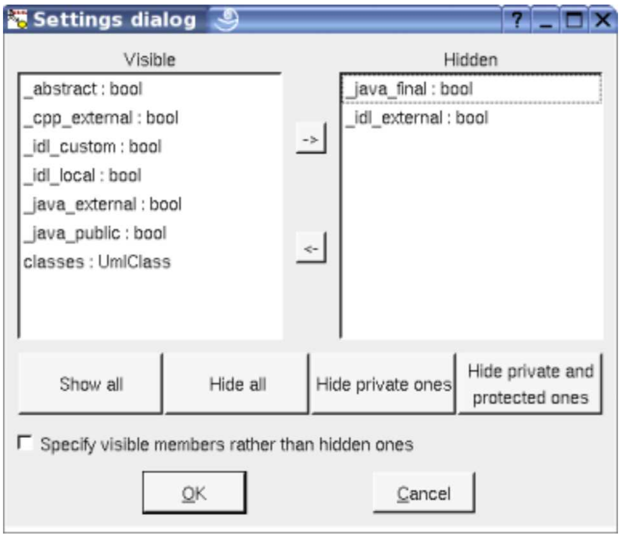
to indicate through a note the (non empty) value of the stereotype properties in case the class is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

class color :

To specify the fill color.

Menu : individual attribute visibility :

To specify the hidden / written attributes of the class through the following dialog :



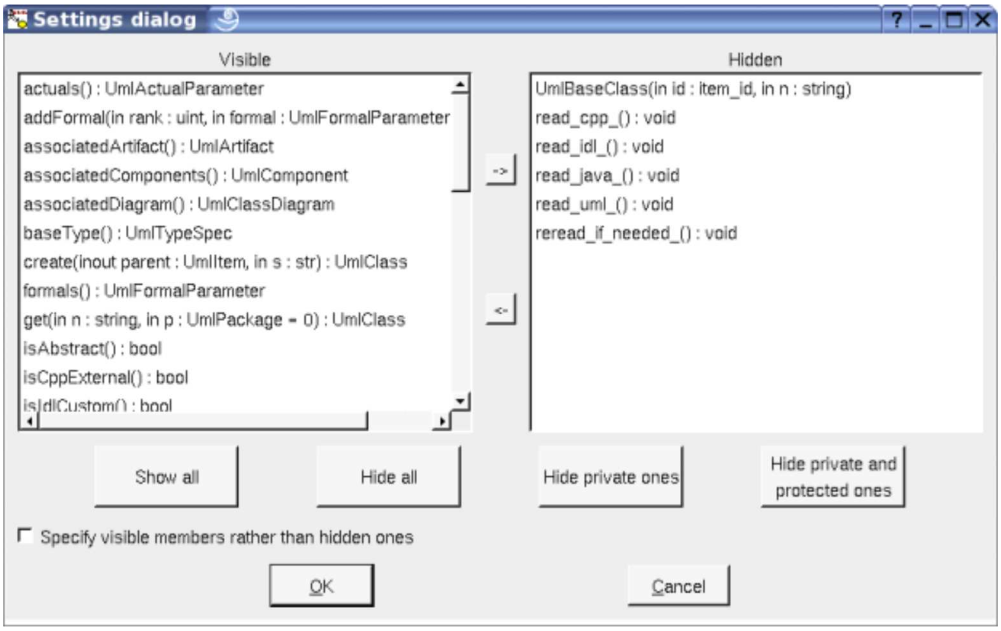
Visible	Hidden
_abstract : bool	_java_final : bool
_cpp_external : bool	_idl_external : bool
_idl_custom : bool	
_idl_local : bool	
_java_external : bool	
_java_public : bool	
classes : UmlClass	

☐ Specify visible members rather than hidden ones

If you set *specify visible members rather than hidden ones*, when you will add new attributes these ones will not be added in the class picture.

Menu : individual operation visibility :

To specify the hidden / written operations of the class through the following dialog :



Visible:

actuals() : UmlActualParameter
addFormal(in rank : uint, in formal : UmlFormalParameter
associatedArtifact() : UmlArtifact
associatedComponents() : UmlComponent
associatedDiagram() : UmlClassDiagram
baseType() : UmlTypeSpec
create(inout parent : UmlItem, in s : str) : UmlClass
formals() : UmlFormalParameter
get(in n : string, in p : UmlPackage = 0) : UmlClass
isAbstract() : bool
isCppExternal() : bool
isIdlCustom() : bool

Hidden:

UmlBaseClass(in id : item_id, in n : string)
read_cpp_() : void
read_idl_() : void
read_java_() : void
read_uml_() : void
reread_if_needed_() : void

☐ Specify visible members rather than hidden ones

If you set *specify visible members rather than hidden ones*, when you will add new operations these ones will not be added in the class picture.

Menu : set associated diagram

set associated diagram allows to automatically open the current diagram when a double mouse click is made on the class representation in a diagram or the browser. After that the only way to edit the class is to choose the *edit* entry in the menu.

Menu tools :

Appears only when at least one *plug-out* is associated to the classes. To apply a *plug-out* on the class.

Previous : use case

Next : relation

Relation

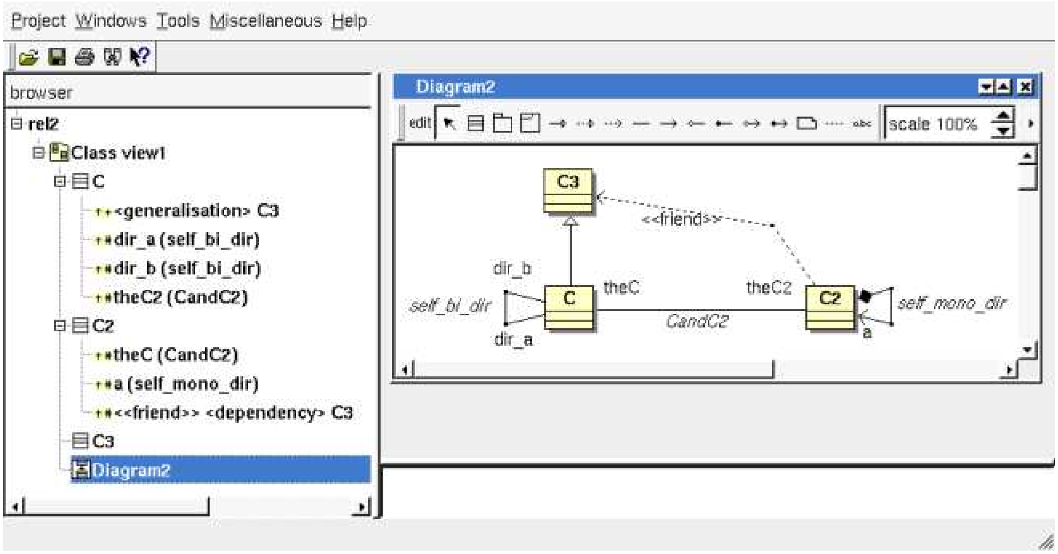
We consider in this chapter only the relations between classes. To add a relation to a class you have to use a class diagram (obviously the diagram or the relation drawing may be deleted just after !), it is not possible to add a relation through the browser. It is also not possible to move a relation into an other class or elsewhere.

The icon in the browser indicates if the relation is public (+), protected (#), private (-) or package (~). The *protected* and *package* visibilities are translated in *private* in Idl. The *package* visibility is translated in *private* in C++, and doesn't produce a visibility in Php (use this case to produce Php 4 code). A class relation is underlined.

A bi-directional relation is supported by two relation items in the browser.

A relation have a name, a stereotype, may have one or two roles and multiplicity (one by direction). Note that it is not possible to specify a stereotype for each direction of a bi directional relation, frankly I avow that the main reason is to simplify as it is possible the drawing of the relations in the diagrams with the associated labels.

In the browser are written the name of the relations (by default its kind) between parenthesis, the role(s) of the associations and aggregations, the end class of the generalization, realization and dependency. The stereotype may be may be showed/hidden through the Miscellaneous menu. The name of a relation is not used by the code generators.



Generally the relation's stereotype is used to specify how a relation with a multiplicity different than 1 is translated in each language, for instance to produce a vector. The *friend* stereotype is a special case for a *dependency* and is used to produce a C++ *friend* declaration.

There are several kinds of relation :

- *generalization* : to produce an inheritance
- *realization* : produce also an inheritance, the code generators do not distinguish a *realization* and a *generalization*.
- *dependency* : only the *dependency* having the stereotype friend are considered by the C++ code generator.
- *unidirectional association* : to define a directional relation, the code generators will produce an attribute having the role name. In C++ the default generated code use pointer(s).
- *directional aggregation* : to define a directional relation, the code generators do not distinguish association and aggregation.
- *directional composition (directional aggregation by value)* : to define a directional composition, the code generators will produce an attribute having the role name. In C++ the default generated code does not use pointer(s).
- *association* : to define a bi-directional relation, the code generators will produce two attributes whose names are the roles's name.
- *aggregation* : to define a bi-directional aggregation, the code generators will produce two attributes whose names are the roles's name. This kind of relation may considered to be a shortcut to define two (directional) aggregations.
- *composition (aggregation by value)* : to define a bi-directional composition, the code generators will produce two attributes whose names are the roles's name. This kind of relation may considered to be a shortcut to define two (directional) aggregations by value.

By default, the example above produce the following codes (the visibility may be replaced by *var* to be compatible with Php 4) :

C++	Java	Php	Idl

`class C : public C3 {`
`  protected:`
`    C * dir_a;`
`    C * dir_b;`
`    C2 * theC2;`
`};`
 	
`class C2 {`
`  protected:`
`    C * theC;`
`    C2 a;`
`  friend class C3;`
`};`
	`class C extends C3 {`
	`  protected C dir_a;`
	`  protected C dir_b;`
	`  protected C2 theC2;`
	`}`
	
	`class C2 {`
	`  protected C theC;`
	`  protected C2 a;`
	`}`
		`class C extends C3 {`
		`  protected $dir_a;`
		`  protected $dir_b;`
		`  protected $theC2;`
		`}`
		
		`class C2 {`
		`  protected $theC;`
		`  protected $a;`
		`}`
			`valuetype C : C3 {`
			`  private C dir_a;`
			`  private C dir_b;`
			`  private C2 theC2;`
			`};`
			
			`valuetype C2 {`
			`  private C theC;`
			`  private C2 a;`
			`};`

The multiplicity and stereotype may be used to produce the appropriate code with a natural and intuitive way. For instance the *C*'s relation *theC2* with the stereotype *vector* and multiplicity * will produce (depending on the generation settings) :

C++	Java	Idl
`vector<C2 *> theC2;`	`protected Vector theC2;`	`private sequence<C2> theC2;`

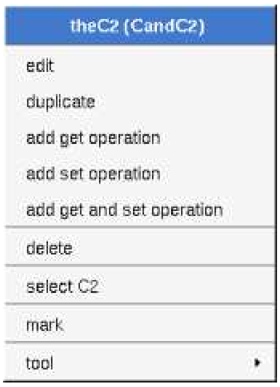
With the stereotype *vector* and the multiplicity 12, the *C*'s relation *theC2* will produce (depending on the generation settings) :

C++	Java	Idl
`C2 * theC2[12];`	`protected C2[] theC2;`	`private sequence<C2,12> theC2;`

Refer to the C++ Generator, Java generator, Php Generator, Python Generator and Idl generator for additional information.

Menus

The relation menu appearing with a right mouse click on its representation in the browser is something like these, supposing it is not *read-only* nor deleted (see also menu in a diagram) :

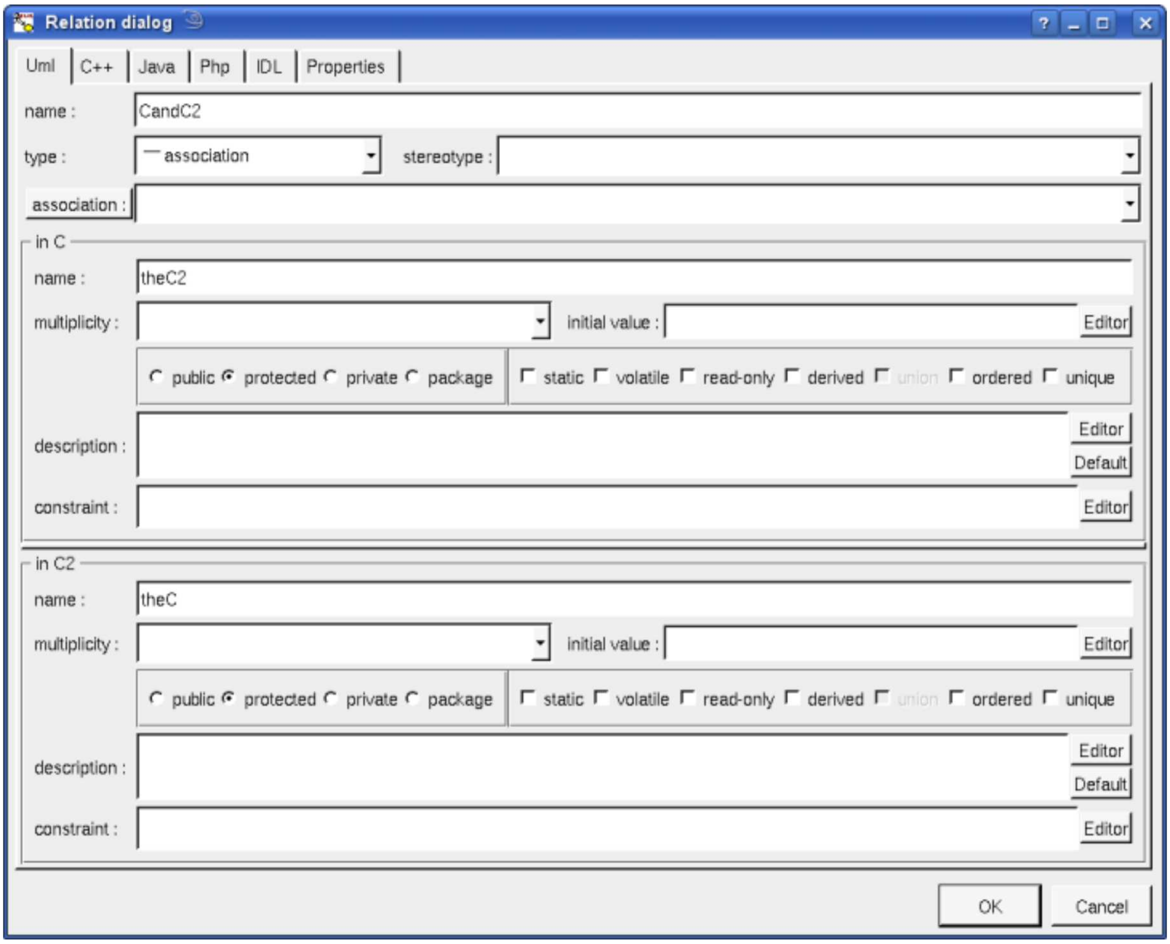


Menu : edit

edit allows to show/modify the relations properties. In case the relation is read-only, the fields of the dialog are also read-only.

Relation dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



name : CandC2

type : association

stereotype :

association :

in C

name : theC2

multiplicity :

initial value :

○ public ● protected ○ private ○ package

□ static □ volatile □ read-only □ derived □ union □ ordered □ unique

description :

constraint :

in C2

name : theC

multiplicity :

initial value :

○ public ● protected ○ private ○ package

□ static □ volatile □ read-only □ derived □ union □ ordered □ unique

description :

constraint :

Here the two roles are editable because the relation is bi-directional, and because it is an association or aggregation.

The default ***name*** of a relation is its kind between < and >, for instance <*association*>, the default name does not appears in a diagram.

It is possible to change the kind of the relation through the combo box ***type***, but it is not possible to reverse a relation, the role A is always attached to the start class used to draw the relation, and the role B is only available when the relation is bi-directional.

The proposed ***stereotypes*** are the default ones specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The stereotype and the multiplicity are used both (may be with the stereotype of the class(es) in Idl) to compute the default declaration.

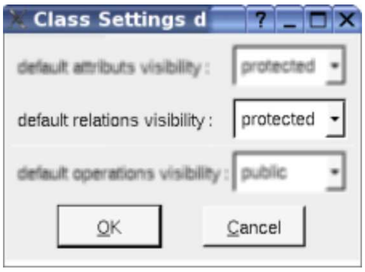
Association allows to define a *class association*, to produce it in the generated code use the keyword *${association}*

By default, the names of the generated attributes are the ***role names***.

The ***multiplicity*** is used to compute the default declaration and the generated code for each language, the proposed ones are not the alone know by the code generators, you may also use a number or a number between [] (they are not distinguished by BOUML) to specify a vector, or a sequence or numbers each between [] to specify a multi dimensioned array.

The ***initial value*** give the default value of the generated attribute(s), in C++ it is taken into account only when the relation is a class relation (static). By default the generated form is exactly the one you give, this means that you have to give the '=' when it must be generated, this allows to give the arguments of a constructor.

The ***visibility*** may be chosen with the *radio buttons*, the relations have a default visibility set through the class settings :



default attributs visibility : protected

default relations visibility : protected

default operations visibility : public

By default the ***description*** is used to produce comments by the code generators.

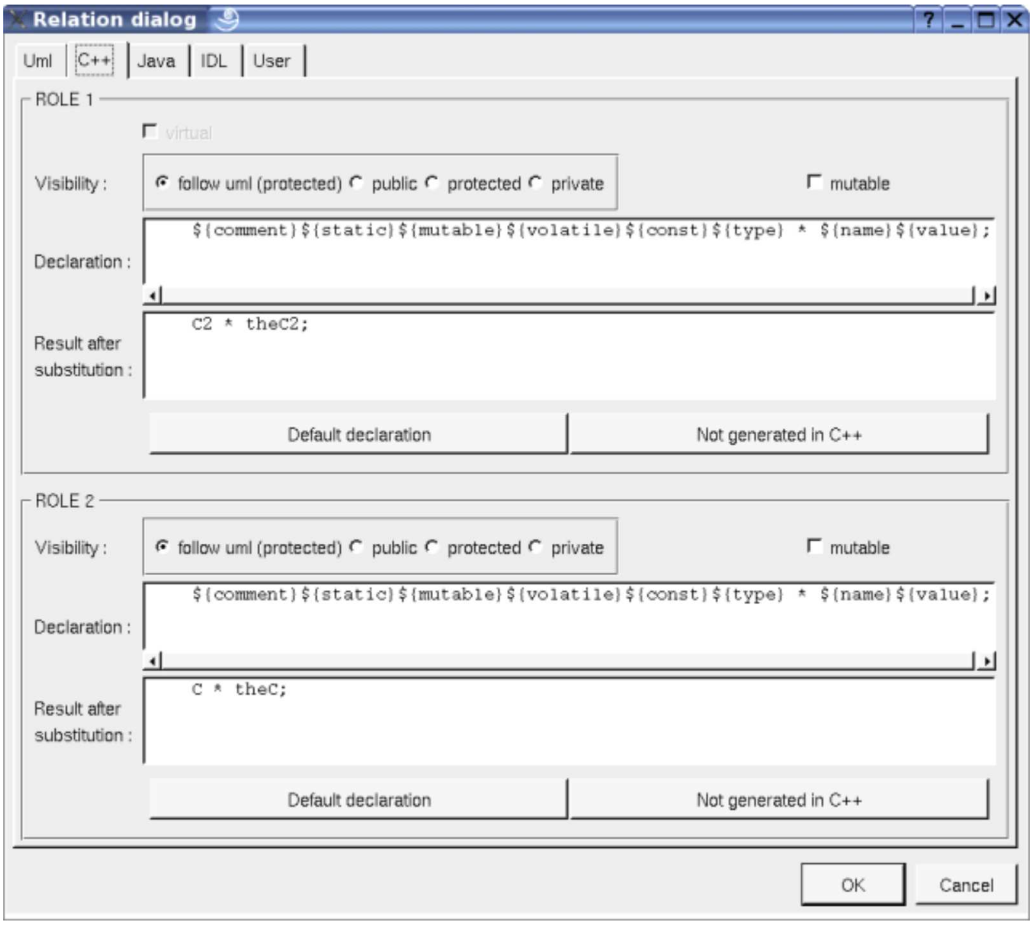
The ***editor*** button visible above and associated here to the description and initial value, allows to edit the description or initial value in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

The ***default*** button visible above associated to the description allows to set the description with a default contain specified through the *generation settings*. Useful to generate comments compatible Java Doc or Doxygen for instance.

Relation dialog, tab C++

This tab allows to give the C++ definition of the relation, it is visible only when C++ is set through the *Languages* menu

For an association or an aggregation without multiplicity :



ROLE 1

□ virtual

Visibility : ● follow uml (protected) ○ public ○ protected ○ private □ mutable

Declaration :

```
    ${comment}${static}${mutable}${volatile}${const}${type} * ${name}${value};
```

Result after substitution :

```
    C2 * theC2;
```

ROLE 2

Visibility : ● follow uml (protected) ○ public ○ protected ○ private □ mutable

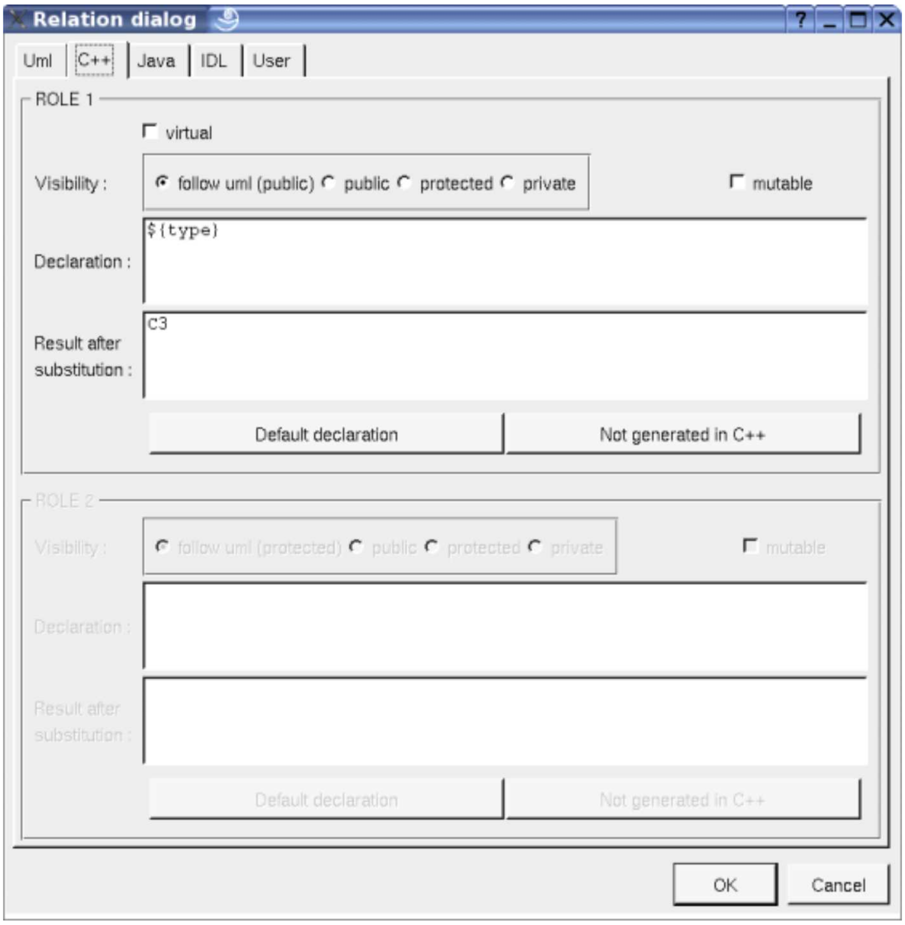
Declaration :

```
    ${comment}${static}${mutable}${volatile}${const}${type} * ${name}${value};
```

Result after substitution :

```
    C * theC;
```

for a generalization, realization or a dependency :



ROLE 1: □ virtual; Visibility : ● follow uml (public) ○ public ○ protected ○ private; □ mutable

Declaration :

```
${type}
```

Result after substitution :

```
C3
```

ROLE 2: Visibility : ● follow uml (protected) ○ public ○ protected ○ private; □ mutable

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for C++ (supposing you do not modify the C++ code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype and multiplicity (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this relation defined in C++, empties the declaration manually or using the button ***not generated in C++***.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it.

${static} produce an empty string when the relation is not an class relation (see the UML tab), else produce *static*

${const} produce an empty string when the relation is not read only (see the UML tab), else produce *const*

${type} is replaced by the class pointed by the relation (see the UML tab)

${name} is replaced by the relation's role name (see the UML tab)

${inverse_name} is replaced by the name of the inverse role (see the UML tab)

${stereotype} is replaced by the stereotype translated in C++ (first tab of the *generation setting* dialog)

${multiplicity} is replaced by the multiplicity (see the UML tab)

${value} is replaced in the source file by the initial value of the relation (see the UML tab)

${h_value} is replaced in the header file by the initial value of the relation (see the UML tab)

${mutable} produce an empty string when the check box ***mutable*** is not checked, else produce *mutable*

${volatile} produce an empty string when the check box ***volatile*** is not checked (see the UML tab), else produce *volatile*

${association} produce the association (may be the class forming a class-association with the relation)

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

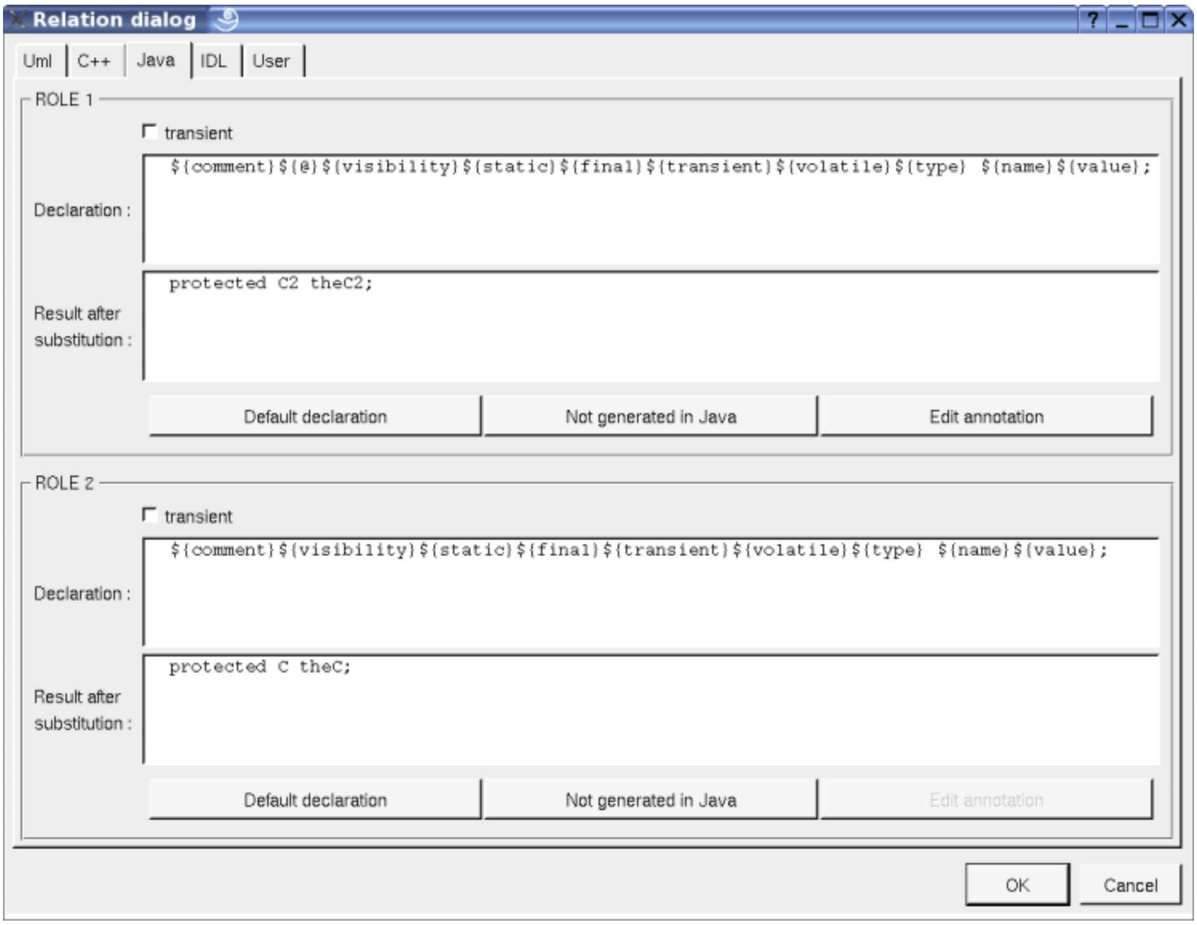
When the check box ***virtual*** is checked the inheritance is *virtual*.

Refer to the *generation settings* and the C++ Generator for more details and explanation of the other keywords.

Relation dialog, tab Java

This tab allows to give the Java definition of the relation, it is visible only when Java is set through the *Languages* menu

For an association or an aggregation without multiplicity :



ROLE 1 Declaration :

```
${comment}${@}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

Result after substitution :

```
protected C2 theC2;
```

ROLE 2 Declaration :

```
${comment}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

Result after substitution :

```
protected C theC;
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Java (supposing you do not modify the Java code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype and multiplicity (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this relation defined in Java, empties the declaration manually or using the button ***not generated in Java***.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it replacing *${visibility}* by the desired one.

${static} produce an empty string when the relation is not an class relation (see the UML tab), else produce *static*

${final} produce an empty string when the relation is not read only (see the UML tab), else produce *final*

*${volatile} produce an empty string when the check box **volatile** is not checked (see the UML tab), else produce volatile*

${transient} produce an empty string when check box ***transient*** is not checked, else produce *transient*

${type} is replaced by the class pointed by the relation (see the UML tab)

${stereotype} is replaced by the stereotype translated in Java (first tab of the *generation setting* dialog)

${multiplicity} is replaced by the multiplicity, a form [123] become [], (see the UML tab)

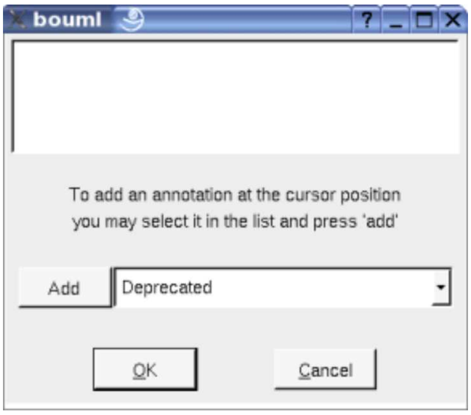
${name} is replaced by the relation's role name (see the UML tab)

${inverse_name} is replaced by the name of the inverse role (see the UML tab)

${value} is replaced by the initial value of the relation (see the UML tab)

${association} produce the association (may be the class forming a class-association with the relation)

${@} produces the annotations, when it is present in the definition the button *Edit annotation* is active, a specific dialog allows you to enter the annotations proposing the default annotations (*Deprecated* ...) and the ones defined through the classes stereotyped *@interface* :

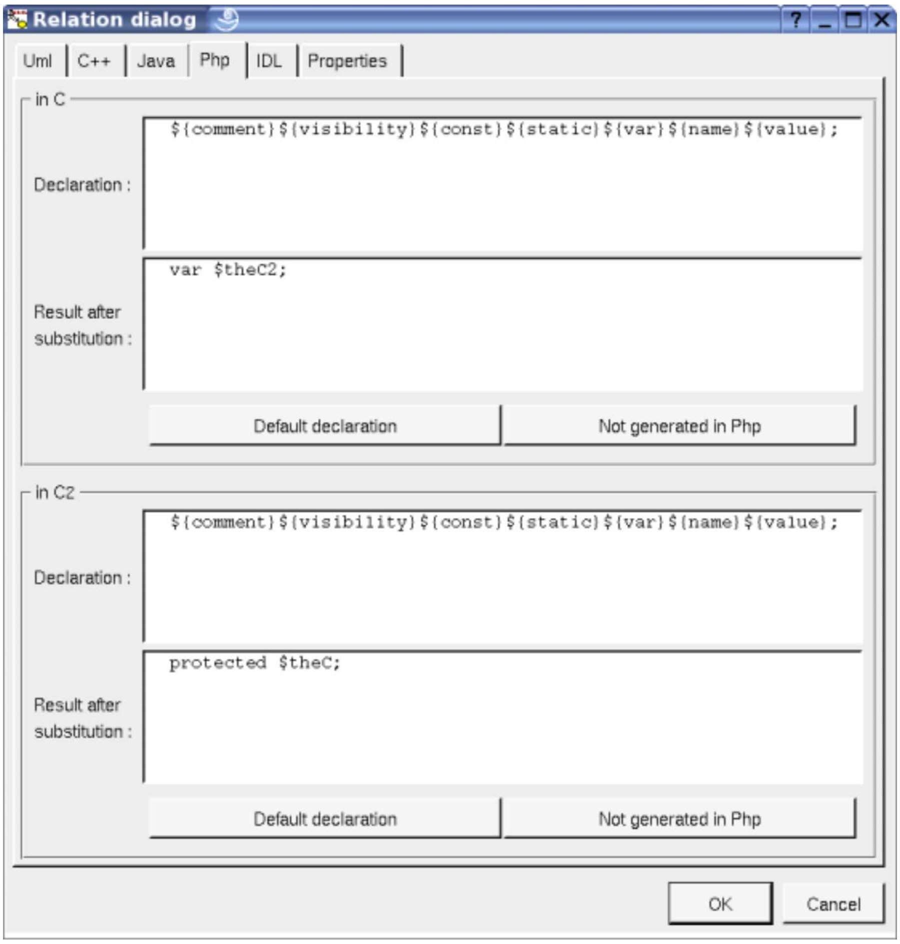

bouml
To add an annotation at the cursor position
you may select it in the list and press 'add'
Add
Deprecated
OK
Cancel

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Refer to the *generation settings* and Java generator for more details and explanation of the other keywords.

Relation dialog, tab Php

This tab allows to give the Php definition of the relation, it is visible only when Php is set through the *Languages* menu



in C — Declaration :

```
${comment}${visibility}${const}${static}${var}${name}${value};
```

Result after substitution :

```
var $theC2;
```

in C2 — Declaration :

```
${comment}${visibility}${const}${static}${var}${name}${value};
```

Result after substitution :

```
protected $theC;
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Php (supposing you do not modify the Php code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype and multiplicity (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this relation defined in Php, empties the declaration manually or using the button ***not generated in***

Php.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it replacing *${visibility}* by the desired one, to not generate the visibility set it to *package*

${static} produce an empty string when the relation is not an class relation (see the UML tab), else produce *static*

${const} produce an empty string when the relation is not read only (see the UML tab), else produce *const*

${var} produce *var* when the relation is not read only nor static(see the UML tab) and the visibility is not *package*, else produce an empty string

${name} is replaced by the relation's role name (see the UML tab)

${inverse_name} is replaced by the name of the inverse role (see the UML tab)

${value} is replaced by the initial value of the relation (see the UML tab)

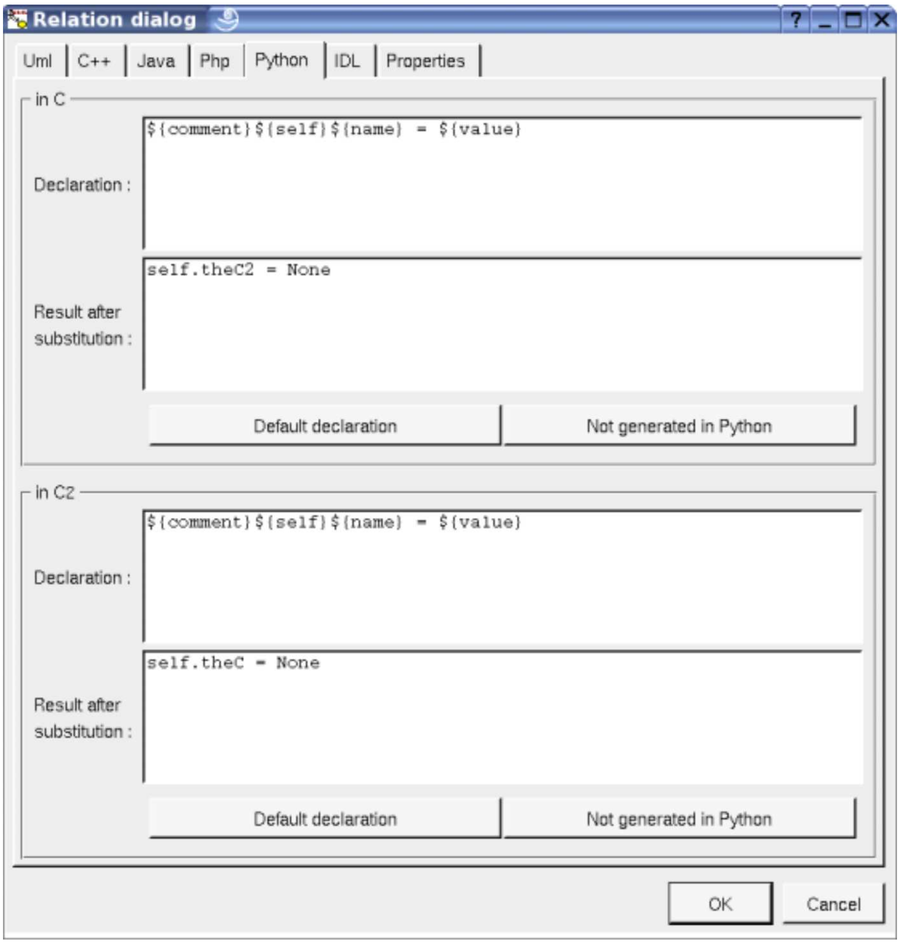
The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Refer to the *generation settings* and Php generator for more details and explanation of the other keywords.

Relation dialog, tab Python

This tab allows to give the Python definition of the relation, it is visible only when Python is set through the *Languages* menu

For an association or an aggregation without multiplicity or having the multiplicity 1:



in C

Declaration :
```
${comment}${self}${name} = ${value}
```

Result after substitution :
```
self.theC2 = None
```

in C2

Declaration :
```
${comment}${self}${name} = ${value}
```

Result after substitution :
```
self.theC = None
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Java (supposing you do not modify the Java code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype and multiplicity (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this relation defined in Java, empties the declaration manually or using the button ***not generated in Python***.

The instance relations are automatically produced at the beginning of the body of the operation *__init__* (this operation is produced for each class even when you don't define it). The static relation are produced inside the class definition.

${comment} produces a comment from the UML description, adding a # at the beginning or each line, following the current indent. A newline is produced if needed at the end to not have something else generated on the same line after the comment.

${description}* is like for *${comment} but without adding #.

${self} inside the operation *__init__* this produces the name of the first parameter followed by a dot, else nothing.

${type} produces the type of the relation, it is used by default when the relation is a composition to create an instance of this type, can also be used in a comment for a form *@var*

${multiplicity} produces the multiplicity of the relation, probably used inside a comment

${stereotype} is replaced by the translation in Python of the relation's stereotype (see the UML tab)

${name} is replaced by the role name (see the UML tab)

${inverse_name} is replaced by the name of the inverse role (see the UML tab)

${value} is replaced by the initial value of the relation (see UML tab) if it is not empty, else *None*

${association} produce the association (may be the class forming a class-association with the relation)

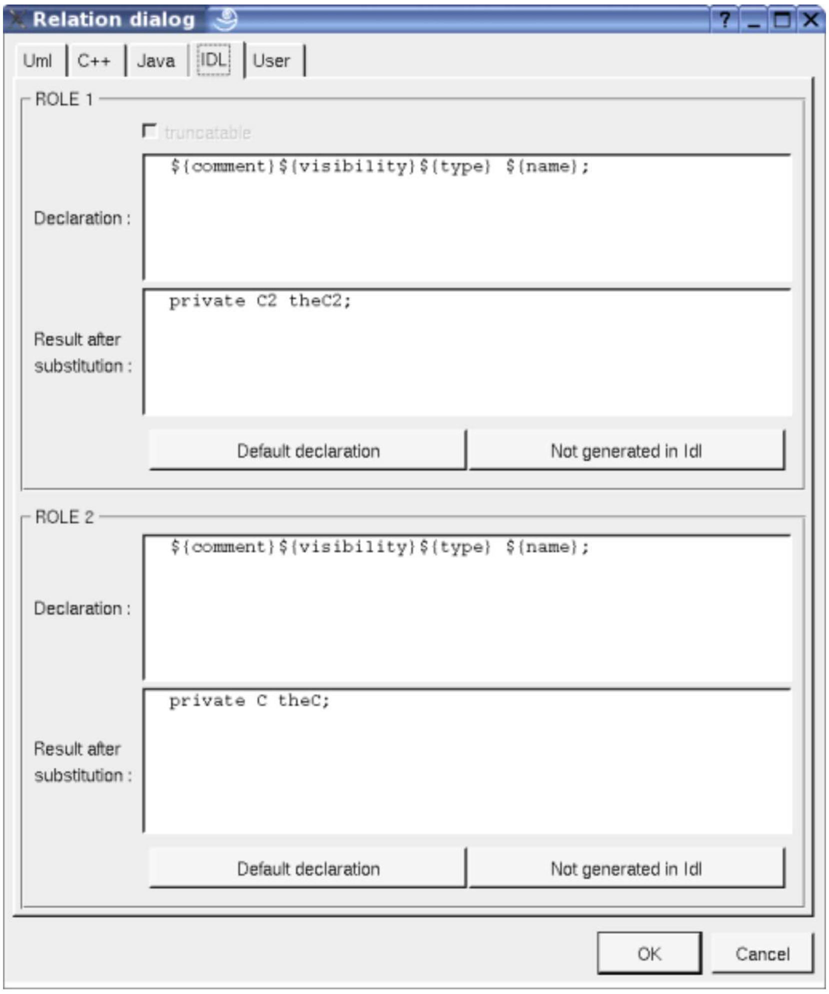
The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Refer to the *generation settings* and Python generator for more details and explanation of the other keywords.

Relation dialog, tab Idl

This tab allows to give the Idl definition of the relation, it is visible only when Idl is set through the *Languages* menu

For an association or an aggregation without multiplicity :



ROLE 1 Declaration:

```
${comment}${visibility}${type} ${name};
```

Result after substitution:

```
private C2 theC2;
```

ROLE 2 Declaration:

```
${comment}${visibility}${type} ${name};
```

Result after substitution:

```
private C theC;
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Idl (supposing you do not modify the Idl code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype of the class, the stereotype and multiplicity of the relation (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this relation defined in Idl, empties the declaration manually or using the button ***not generated in Idl***

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it replacing *${visibility}* by the desired one.

${type} is replaced by the class pointed by the relation (see the UML tab)

${name} is replaced by the relation's role name (see the UML tab)

${inverse_name} is replaced by the name of the inverse role (see the UML tab)

The check box ***truncatable*** is available when the relation is an attribute or a generalization or a realization, and allows to produce the Idl keyword *truncatable.*

The forms @{property} are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Refer to the *generation settings* and Idl generator for more details and explanation of the other keywords.

Menu : duplicate

The menu entry *duplicate* clone the relation in the two directions when the relation is bi-directional. The name of the role(s) is empty in the new relation(s).

Menu : add ...

These entries allow to produce get and set operations on the relation, contrarily to the similar operations made by hand, these two ones are linked to the associated relation to be updated, or deleted when the relations is deleted. The default name of the operations and their characteristics are set through the *generation settings*.

By default, the get and set operations generated for the *C's* relation *theC2* are :

C++	Java	Php

`inline const C2 * C::get_theC2() const {`
`   return theC2;`
`}`
 	
`void C::set_theC2(C2 * value) {`
`   theC2 = value;`
`}`
	`public final C2 get_theC2() {`
	`   return theC2;`
	`}`
	
	`public void set_theC2(C2 value) {`
	`   theC2 = value;`
	`}`
		`final public function getTheC2()`
		`{`
		`   return $this->theC2;`
		`}`
		
		`public function setTheC2($value)`
		`{`
		`   $this->theC2 = $value;`
		`}`

Python	Idl

`def getTheC2(self):`
`      return self.theC2`
 	
`def setTheC2(self, value):`
`      self.theC2 = value`
	`C2 get_theC2();`
	
	`void set_theC2(C2 value);`

Menu : delete

The menu entry *delete* is only present when the relation is not *read-only*.

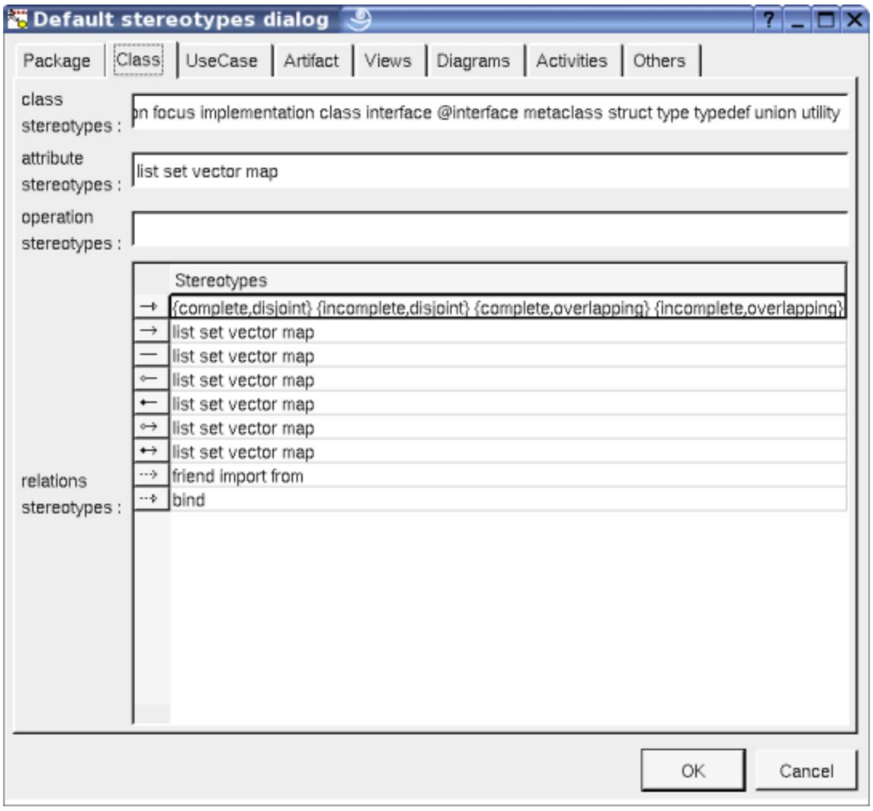
Delete the relation, associated get and set operations when they exist, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the relations :



class stereotypes : n focus implementation class interface @interface metaclass struct type typedef union utility

attribute stereotypes : list set vector map

operation stereotypes :

relations stereotypes :

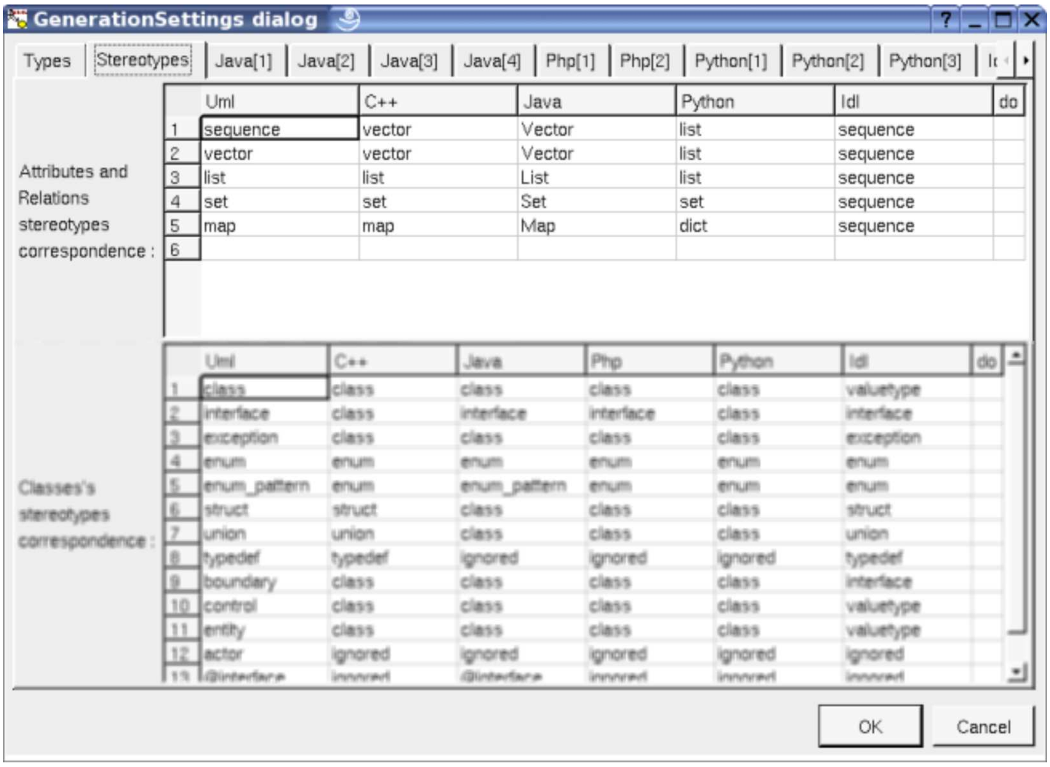
	Stereotypes
→	{complete,disjoint} {incomplete,disjoint} {complete,overlapping} {incomplete,overlapping}
→	list set vector map
—	list set vector map
←	list set vector map
←	list set vector map
↔	list set vector map
↔	list set vector map
⇢	friend import from
⇢	bind

As you can see it is possible to specify a default stereotypes list for each kind of relation. Associated to a multiplicity the stereotype is used by the code generators to produce the desired forms, the translation in each language of the UML stereotype is specified through the *generation settings*.

Generation settings

This very important dialog allows to specify many default definitions concerning the relations, more details will be given in C++ generator, Java generator, Python generator and Idl generator.

The tab *Stereotypes* allows to specify how the relation's stereotypes are translated in each language except Php :



Attributes and Relations stereotypes correspondence :

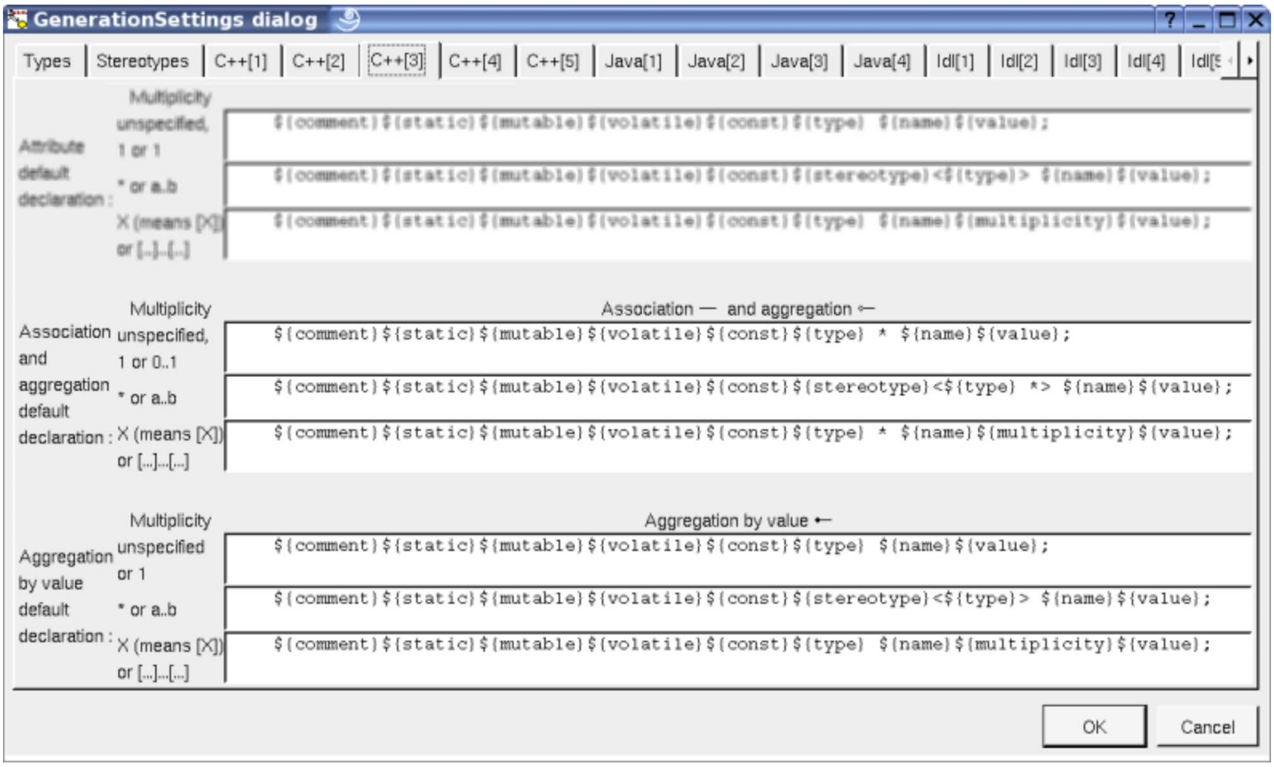
	Uml	C++	Java	Python	Idl	do
1	sequence	vector	Vector	list	sequence	
2	vector	vector	Vector	list	sequence	
3	list	list	List	list	sequence	
4	set	set	Set	set	sequence	
5	map	map	Map	dict	sequence	
6						

Classes's stereotypes correspondence :

	Uml	C++	Java	Php	Python	Idl	do
1	class	class	class	class	class	valuetype	
2	interface	class	interface	interface	class	interface	
3	exception	class	class	class	class	exception	
4	enum	enum	enum	enum	enum	enum	
5	enum_pattern	enum	enum_pattern	enum	enum	enum	
6	struct	struct	class	class	class	struct	
7	union	union	class	class	class	union	
8	typedef	typedef	ignored	ignored	ignored	typedef	
9	boundary	class	class	class	class	interface	
10	control	class	class	class	class	valuetype	
11	entity	class	class	class	class	valuetype	
12	actor	ignored	ignored	ignored	ignored	ignored	
13	@interface	ignored	@interface	ignored	ignored	ignored	

As usual the last column *do* allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

The third C++ tab allows to specify the default C++ generated code for the relations :



Attribute default declaration :

Multiplicity unspecified, 1 or 1
```
${comment}${static}${mutable}${volatile}${const}${type} ${name}${value};
```
* or a..b
```
${comment}${static}${mutable}${volatile}${const}${stereotype}<${type}> ${name}${value};
```
X (means [X]) or [...]...[...]
```
${comment}${static}${mutable}${volatile}${const}${type} ${name}${multiplicity}${value};
```

Association — and aggregation ◇—

Association and aggregation default declaration :

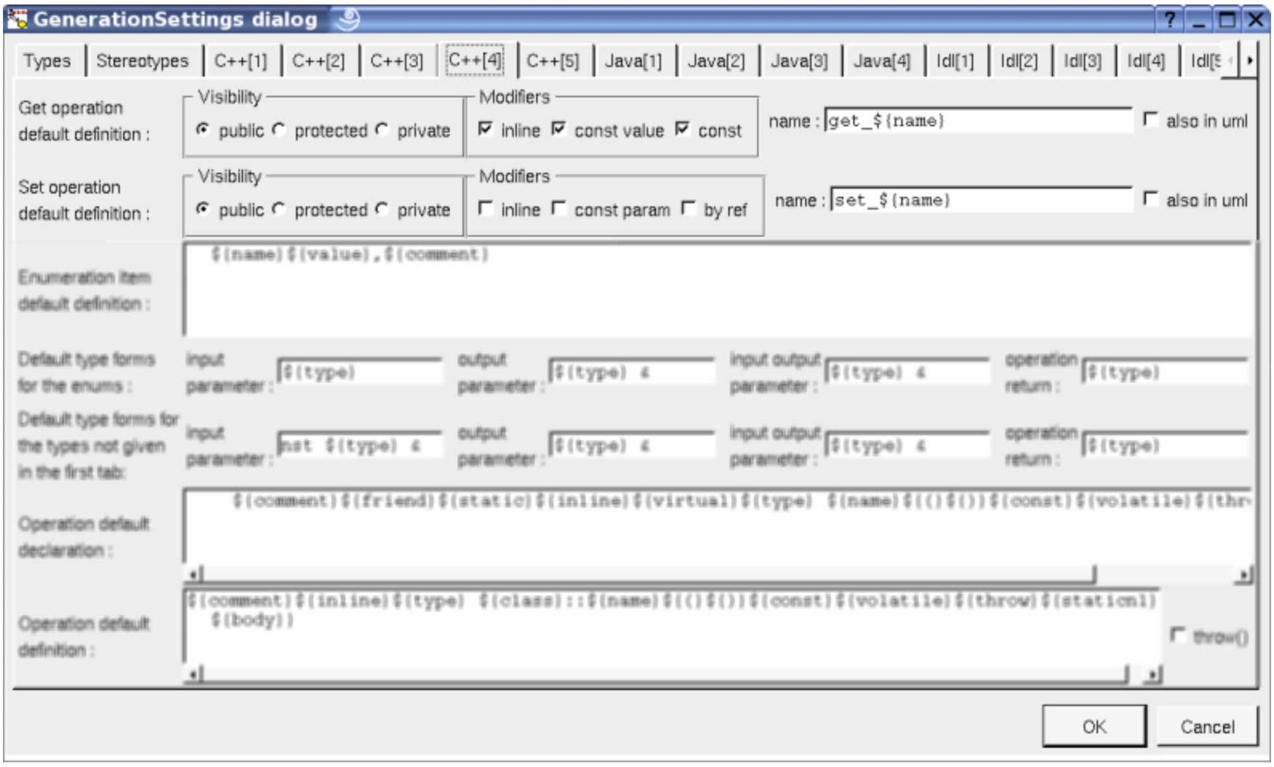
Multiplicity unspecified, 1 or 0..1
```
${comment}${static}${mutable}${volatile}${const}${type} * ${name}${value};
```
* or a..b
```
${comment}${static}${mutable}${volatile}${const}${stereotype}<${type} *> ${name}${value};
```
X (means [X]) or [...]...[...]
```
${comment}${static}${mutable}${volatile}${const}${type} * ${name}${multiplicity}${value};
```

Aggregation by value ◆—

Aggregation by value default declaration :

Multiplicity unspecified or 1
```
${comment}${static}${mutable}${volatile}${const}${type} ${name}${value};
```
* or a..b
```
${comment}${static}${mutable}${volatile}${const}${stereotype}<${type}> ${name}${value};
```
X (means [X]) or [...]...[...]
```
${comment}${static}${mutable}${volatile}${const}${type} ${name}${multiplicity}${value};
```

The fourth C++ tab allows to specify the get and set operations specificities in C++ :



Get operation default definition : Visibility ● public ○ protected ○ private Modifiers ☑ inline ☑ const value ☑ const name : get_${name} □ also in uml

Set operation default definition : Visibility ● public ○ protected ○ private Modifiers □ inline □ const param □ by ref name : set_${name} □ also in uml

Enumeration item default definition :

```
  ${name}${value},${comment}
```

Default type forms for the enums : input parameter : ${type} output parameter : ${type} & input output parameter : ${type} & operation return : ${type}

Default type forms for the types not given in the first tab: input parameter : nst ${type} & output parameter : ${type} & input output parameter : ${type} & operation return : ${type}

Operation default declaration :

```
    ${comment}${friend}${static}${inline}${virtual}${type} ${name}${(}${)}${const}${volatile}${thr
```

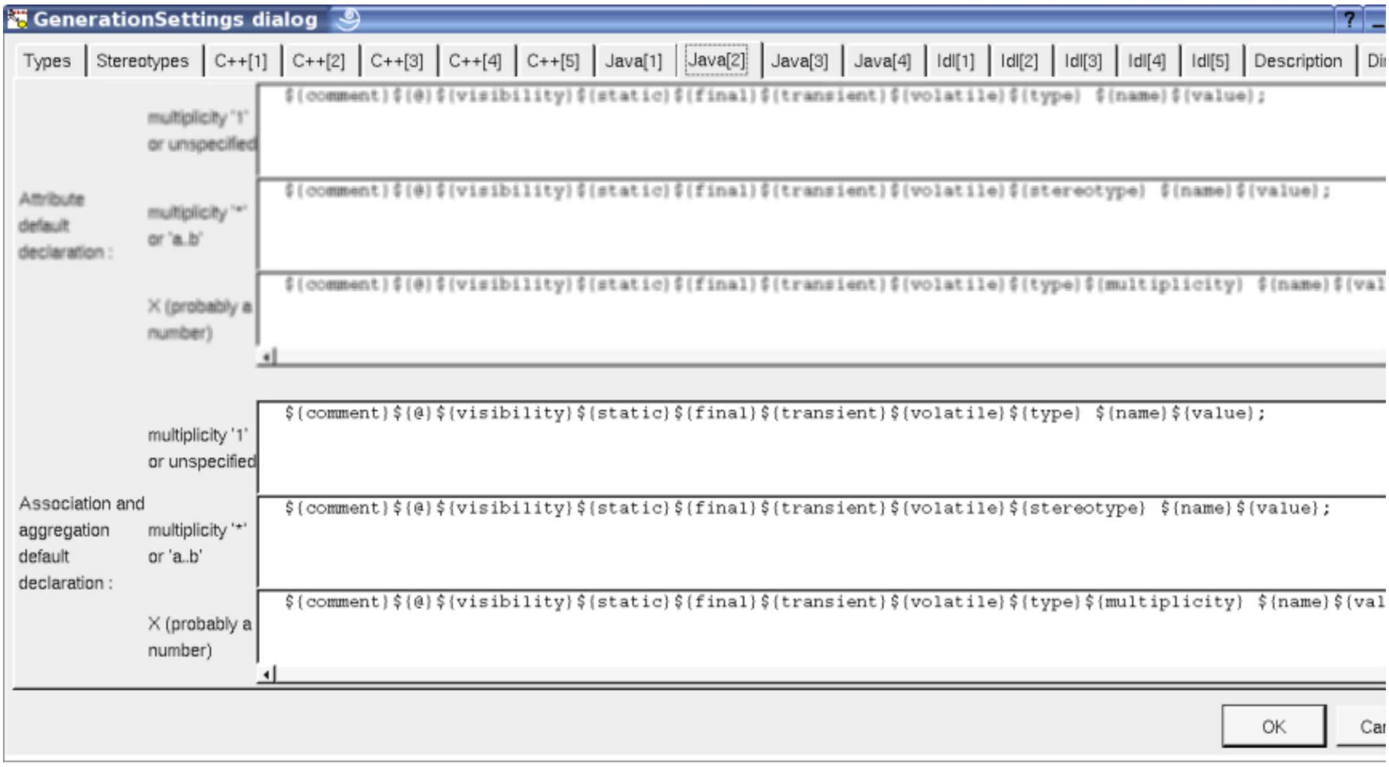
Operation default definition :

```
${comment}${inline}${type} ${class}::${name}${(}${)}${const}${volatile}${throw}${staticnl}
  ${body}}
```

□ throw()

The form in from of *also in uml* allows to specify the name of the operation in C++, the same rule is followed in UML if *also in uml* is set.

The second Java tab allows to specify the default Java generated code for the relations in Java :



Attribute default declaration :

multiplicity '1' or unspecified

```
  ${comment}${@}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

multiplicity '*' or 'a..b'

```
  ${comment}${@}${visibility}${static}${final}${transient}${volatile}${stereotype} ${name}${value};
```

X (probably a number)

```
  ${comment}${@}${visibility}${static}${final}${transient}${volatile}${type}${multiplicity} ${name}${val
```

Association and aggregation default declaration :

multiplicity '1' or unspecified

```
  ${comment}${@}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

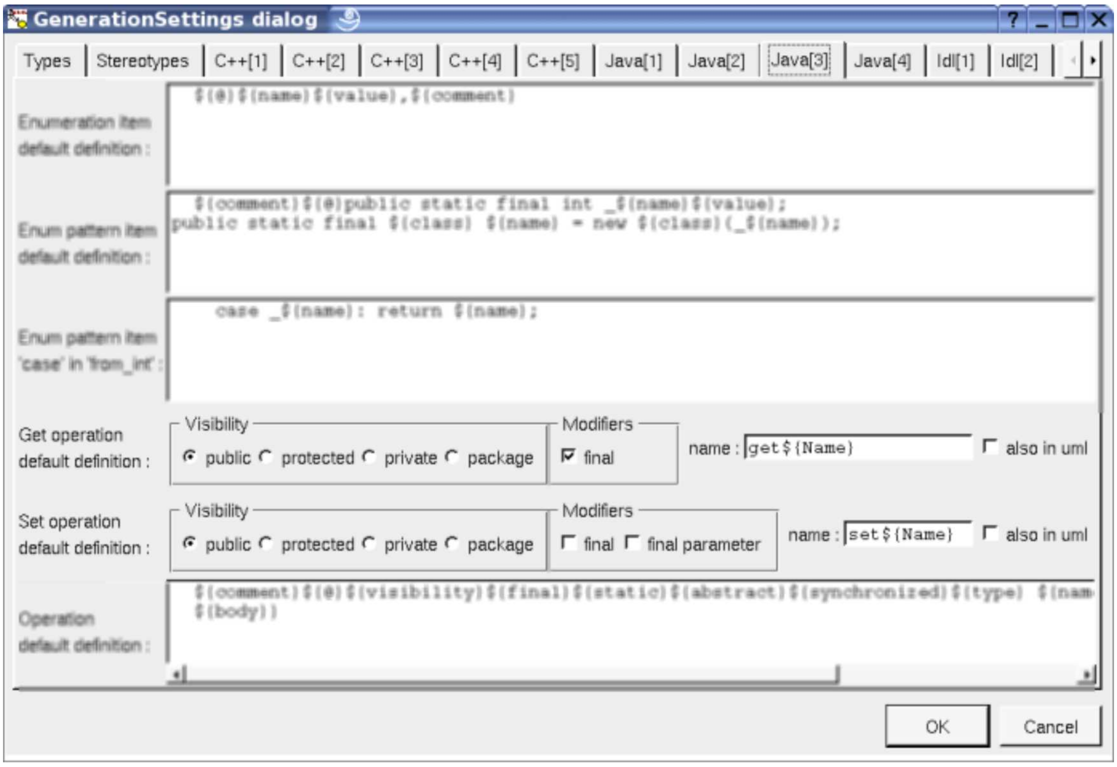
multiplicity '*' or 'a..b'

```
  ${comment}${@}${visibility}${static}${final}${transient}${volatile}${stereotype} ${name}${value};
```

X (probably a number)

```
  ${comment}${@}${visibility}${static}${final}${transient}${volatile}${type}${multiplicity} ${name}${val
```

The third Java tab allows to specify the get and set operations specificities in Java :



Enumeration item default definition :
```
  ${@}${name}${value},${comment}
```

Enum pattern item default definition :
```
  ${comment}${@}public static final int _${name}${value};
public static final ${class} ${name} = new ${class}(_${name});
```

Enum pattern item 'case' in 'from_int' :
```
    case _${name}: return ${name};
```

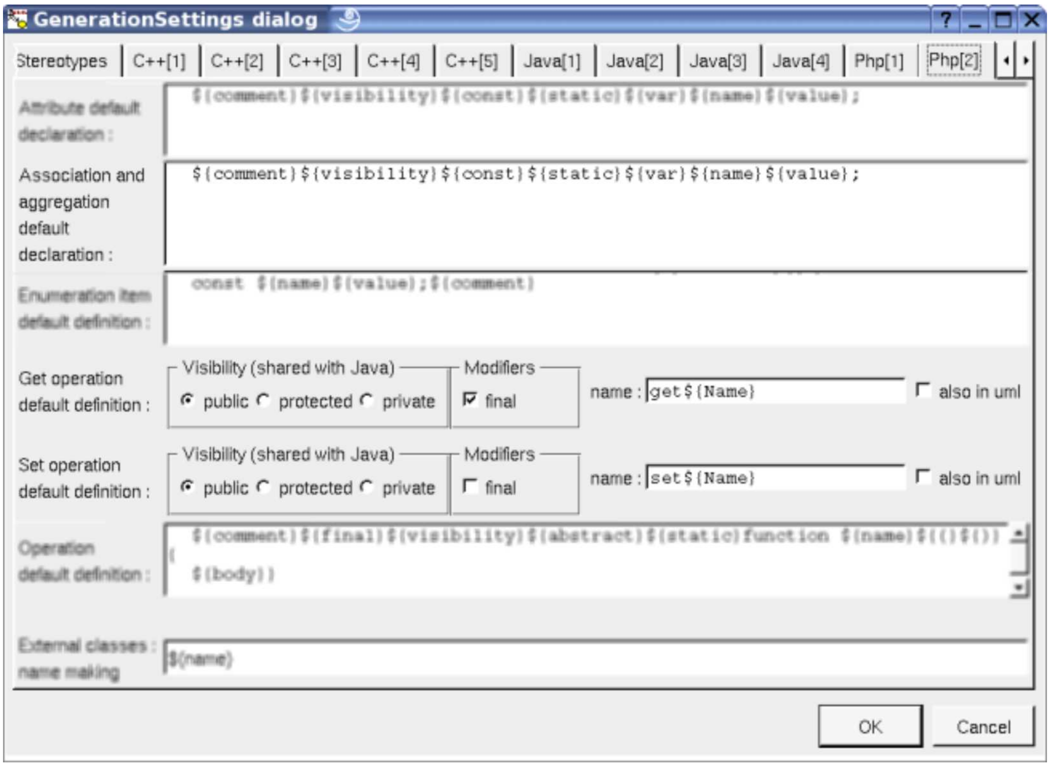
Get operation default definition : Visibility ● public ○ protected ○ private ○ package Modifiers ☑ final name : get${Name} □ also in uml

Set operation default definition : Visibility ● public ○ protected ○ private ○ package Modifiers □ final □ final parameter name : set${Name} □ also in uml

Operation default definition :
```
  ${comment}${@}${visibility}${final}${static}${abstract}${synchronized}${type} ${nam
  ${body}}
```

The form in from of *also in uml* allows to specify the name of the operation in Java, the same rule is followed in UML if *also in uml* is set.

The second Php tab allows to specify the default Php generated code for the relations and to specify the get and set operations specificities in Php :



Attribute default declaration :
```
  ${comment}${visibility}${const}${static}${var}${name}${value};
```

Association and aggregation default declaration :
```
  ${comment}${visibility}${const}${static}${var}${name}${value};
```

Enumeration item default definition :
```
  const ${name}${value};${comment}
```

Get operation default definition : Visibility (shared with Java) ● public ○ protected ○ private Modifiers ☑ final name : get${Name} □ also in uml

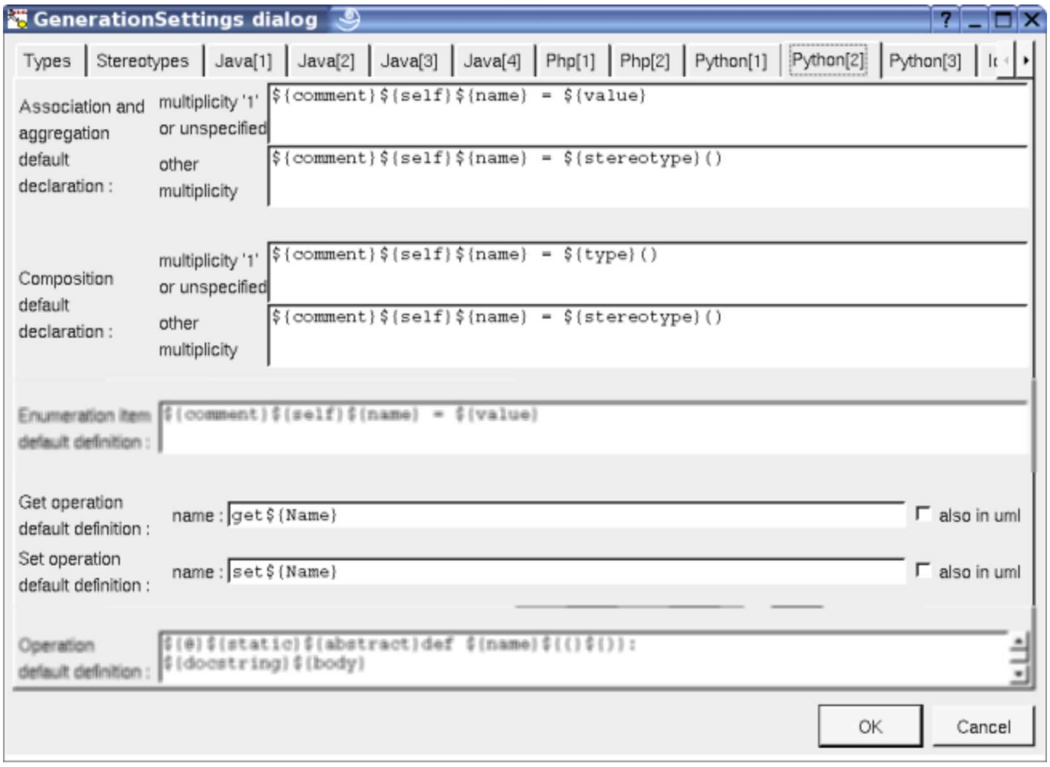
Set operation default definition : Visibility (shared with Java) ● public ○ protected ○ private Modifiers □ final name : set${Name} □ also in uml

Operation default definition :
```
  ${comment}${final}${visibility}${abstract}${static}function ${name}${(}${)}
{
  ${body}}
```

External classes : name making : ${name}

The form in from of *also in uml* allows to specify the name of the operation in Php, the same rule is followed in UML if *also in uml* is set.

The second Python tab allows to specify the default Python generated code for the relations and to specify the get and set operations specificities in Python :



Association and aggregation default declaration :
- multiplicity '1' or unspecified : `${comment}${self}${name} = ${value}`
- other multiplicity : `${comment}${self}${name} = ${stereotype}()`

Composition default declaration :
- multiplicity '1' or unspecified : `${comment}${self}${name} = ${type}()`
- other multiplicity : `${comment}${self}${name} = ${stereotype}()`

Enumeration item default definition : `${comment}${self}${name} = ${value}`

Get operation default definition : name : `get${Name}` □ also in uml

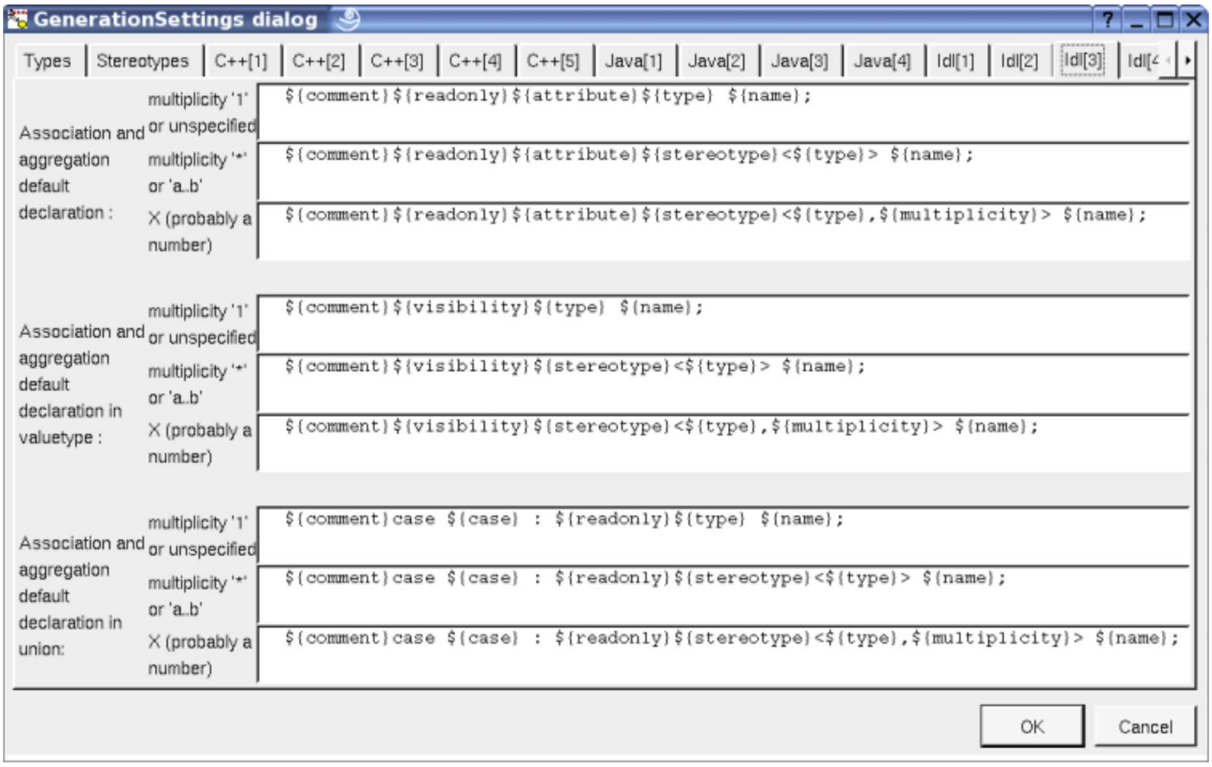
Set operation default definition : name : `set${Name}` □ also in uml

Operation default definition :

```
${@}${static}${abstract}def ${name}${(}${)}:
${docstring}${body}
```

The form in from of *also in uml* allows to specify the name of the operation in Python, the same rule is followed in UML if *also in uml* is set.

The third Idl tab allows to specify the default Idl generated code for the relations :

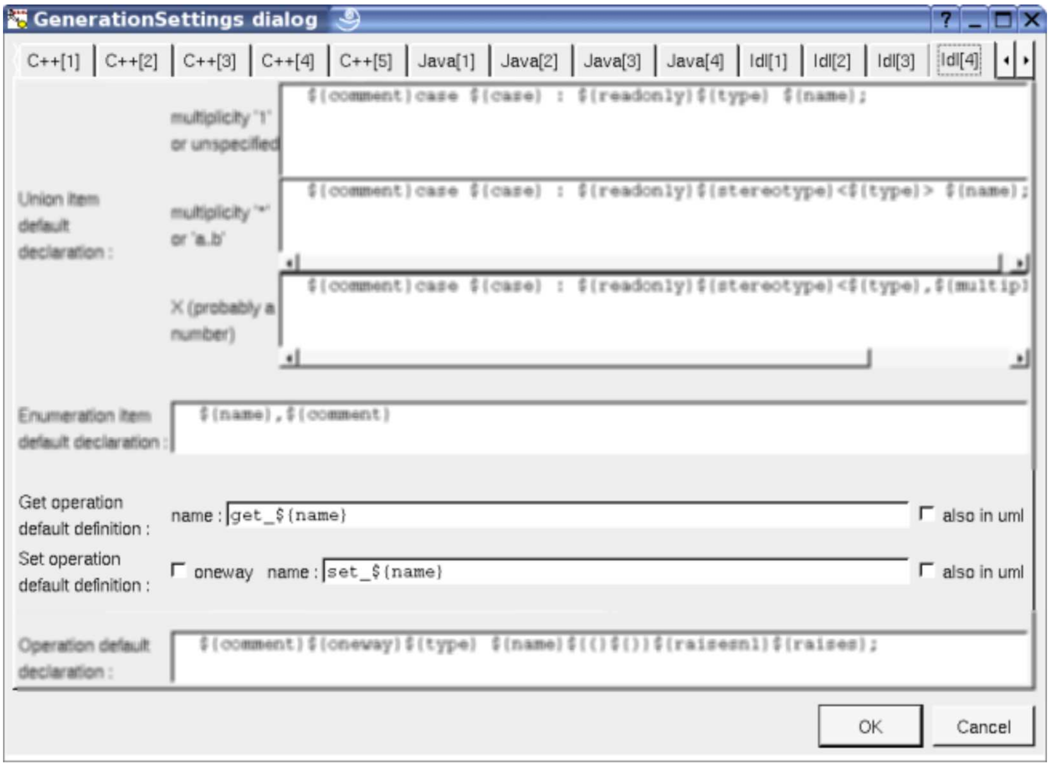


Association and aggregation default declaration :
- multiplicity '1' or unspecified : `${comment}${readonly}${attribute}${type} ${name};`
- multiplicity '*' or 'a..b' : `${comment}${readonly}${attribute}${stereotype}<${type}> ${name};`
- X (probably a number) : `${comment}${readonly}${attribute}${stereotype}<${type},${multiplicity}> ${name};`

Association and aggregation default declaration in valuetype :
- multiplicity '1' or unspecified : `${comment}${visibility}${type} ${name};`
- multiplicity '*' or 'a..b' : `${comment}${visibility}${stereotype}<${type}> ${name};`
- X (probably a number) : `${comment}${visibility}${stereotype}<${type},${multiplicity}> ${name};`

Association and aggregation default declaration in union:
- multiplicity '1' or unspecified : `${comment}case ${case} : ${readonly}${type} ${name};`
- multiplicity '*' or 'a..b' : `${comment}case ${case} : ${readonly}${stereotype}<${type}> ${name};`
- X (probably a number) : `${comment}case ${case} : ${readonly}${stereotype}<${type},${multiplicity}> ${name};`

At least the third Idl tab allows to specify the get and set operations specificities in Idl :



Union item default declaration :

multiplicity '1' or unspecified : `${comment}case ${case} : ${readonly}${type} ${name};`

multiplicity '*' or 'a..b' : `${comment}case ${case} : ${readonly}${stereotype}<${type}> ${name};`

X (probably a number) : `${comment}case ${case} : ${readonly}${stereotype}<${type},${multip}`

Enumeration item default declaration : `${name},${comment}`

Get operation default definition : name : `get_${name}` □ also in uml

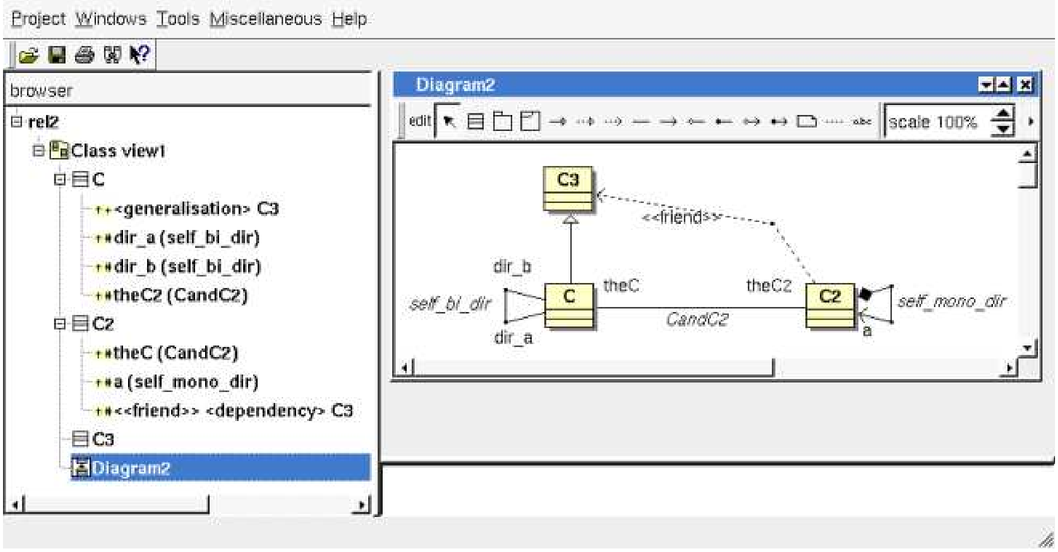
Set operation default definition : □ oneway name : `set_${name}` □ also in uml

Operation default declaration : `${comment}${oneway}${type} ${name}${(}${)}${raisesnl}${raises};`

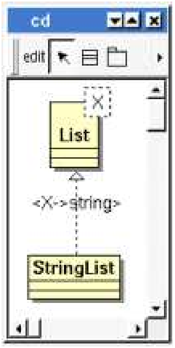
The form in from of *also in uml* allows to specify the name of the operation in Idl, the same rule is followed in UML if *also in uml* is set.

Drawing

A relation is drawn in a diagram with a line may be with an arrow, and the associated labels : relation's name, stereotypes, role(s) and multiplicity(ies) :



When a class inherits a template class the *actuals* are indicated as a label of the *realization* :

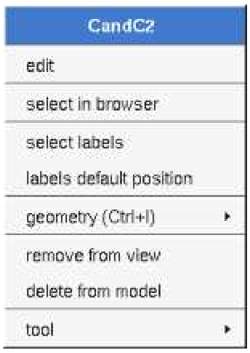


To add a new relation between classes, select the appropriate relation through the buttons on the top of the diagram sub window, click on the start class with the left mouse button, move the mouse, each time the mouse button is raised a new line break is introduced, at least click on the end class. To abort a relation construction press the right mouse button or do a double click with the left mouse button.

A line may be broken, during its construction of after clicking on the line with the left mouse button and moving the mouse with the mouse button still pushed. To remove a line break, a double click on the point with the left mouse button is enough, or use the line break menu of the point using the right mouse button.

By default the lines go to the center of their extremities, to decenter a line click near the desired extremity and move the mouse click down. To come back to a center line, use the menu geometry

A right mouse click on a relation in a diagram or a double click with left mouse button calls the following menu (supposing the relation editable) :



Menu : edit

To edit the relation

Menu : select labels

To select the labels (relation's name, stereotypes, role(s) and multiplicity(ies)) associated to the relation. Useful when you are lost after many label movings.

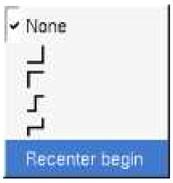
Menu : labels default position

To place the labels (relation's name, stereotypes, role(s) and multiplicity(ies)) associated to the relation in the default position. Useful when you are lost after many label movings.

By default when you move a class or a relation point break or edit the relation, the associated labels are moved to their default position, this may be irritating. To ask BOUML to not move the associated labels on the relations in a diagram, use the *drawing settings* of the diagrams.

Menu : geometry

Allows to choose one of the line geometry or to recenter a decentered line :



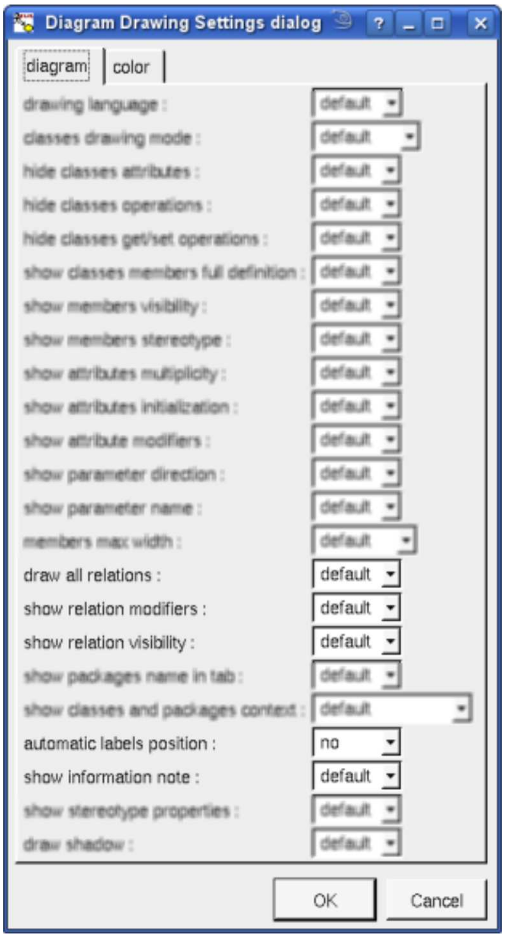
Note : if you manually move the central line of the last two geometries this one stop to be automatically updated when you move one of the two extremities of the relation.

Menu : tools

Appears only when at least one *plug-out* is associated to the relation. To apply a *plug-out* on the relation.

Drawing settings

The drawing settings associated to the relations in a diagram may be set through the the diagram itself or one of its parent, for instance :



drawing language : default
classes drawing mode : default
hide classes attributes : default
hide classes operations : default
hide classes get/set operations : default
show classes members full definition : default
show members visibility : default
show members stereotype : default
show attributes multiplicity : default
show attributes initialization : default
show attribute modifiers : default
show parameter direction : default
show parameter name : default
members max width : default
draw all relations : default
show relation modifiers : default
show relation visibility : default
show packages name in tab : default
show classes and packages context : default
automatic labels position : no
show information note : default
show stereotype properties : default
draw shadow : default

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level.

draw all relations :

To automatically draw or not the new relations, obviously a relation will be added in a diagram only when the start and end classes (may be the same) are drawn.

show relation modifier :

To automatically write or not the modifiers (*read-only, ordered, unique, union*)

show relation visibility :

To automatically write or not the visibility

automatic labels position :

To ask BOUML to move or to not move the associated labels on the relations in a diagram when the relation is edited or the associated class pictures moved etc ...

show information note :

To ask Bouml to write the relation's constraint in the note attached to the class (except if this setting is set to false on the class, or when you ask for hide at least relation's constraint).

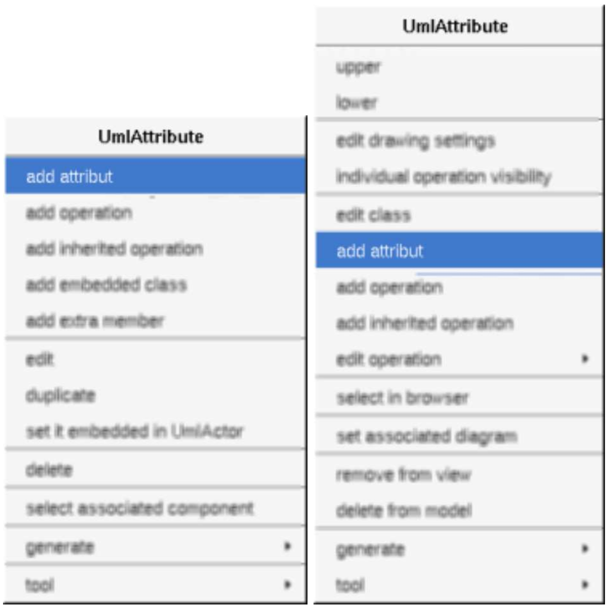
Previous : class

Next : attribute

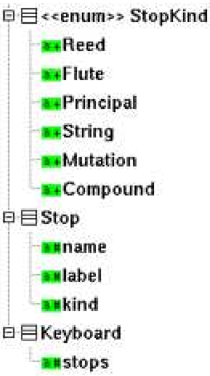
Attribute

Contrarily to the relations, there is no restriction concerning the types of the attributes, whose may be a class or an *int* for instance.

An attribute is created through the class menu called from the browser or a class picture in a class diagram :



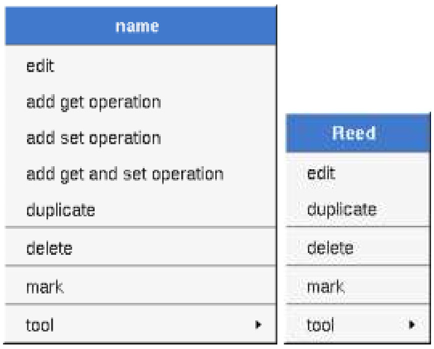
The icon in the browser indicates if an attribute is public (+), protected (#), private (-) or package (~). The *protected* and *package* visibilities are translated in *private* in Idl. The *package* visibility is translated in *private* in C++. A class attribute is underlined. It is possible to move an attribute from a class into an other using the *drag and drop* or the marked items capabilities, see browser items.



In a class having the stereotype *enum*, the attributes are renames *item* in the menus.

Menus

The attribute menu appearing with a right mouse click on its representation in the browser is something like these, supposing it is not *read-only* nor deleted (the second one is associated to an enumeration's item) :



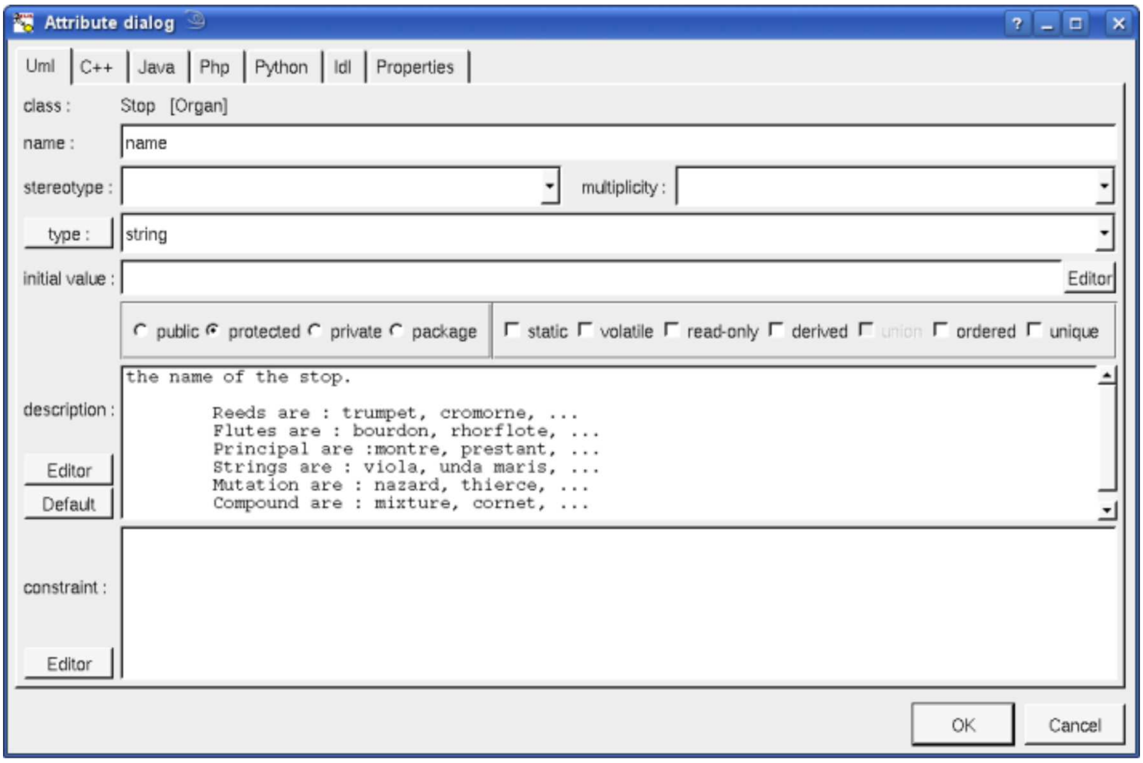
Menu : edit

edit allows to show/modify the properties of the attribute. In case the attribute is read-only, the fields of the dialog are also read-only.

Attribute dialog, tab Uml

The tab *Uml* is a global tab, independent of the language.

For a standard attribute :



class : Stop [Organ]

name : name

stereotype :

multiplicity :

type : string

initial value :

○ public ● protected ○ private ○ package

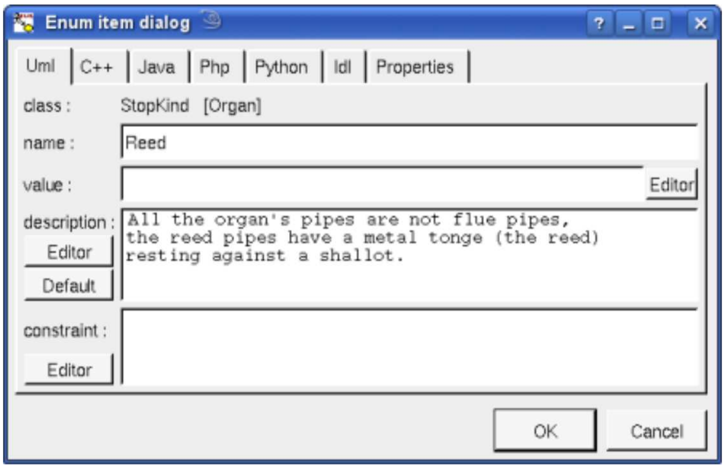
□ static □ volatile □ read-only □ derived □ union □ ordered □ unique

description :

```
the name of the stop.

        Reeds are : trumpet, cromorne, ...
        Flutes are : bourdon, rhorflote, ...
        Principal are :montre, prestant, ...
        Strings are : viola, unda maris, ...
        Mutation are : nazard, thierce, ...
        Compound are : mixture, cornet, ...
```

constraint :

For an enumeration's item :



class : StopKind [Organ]

name : Reed

value :

description :

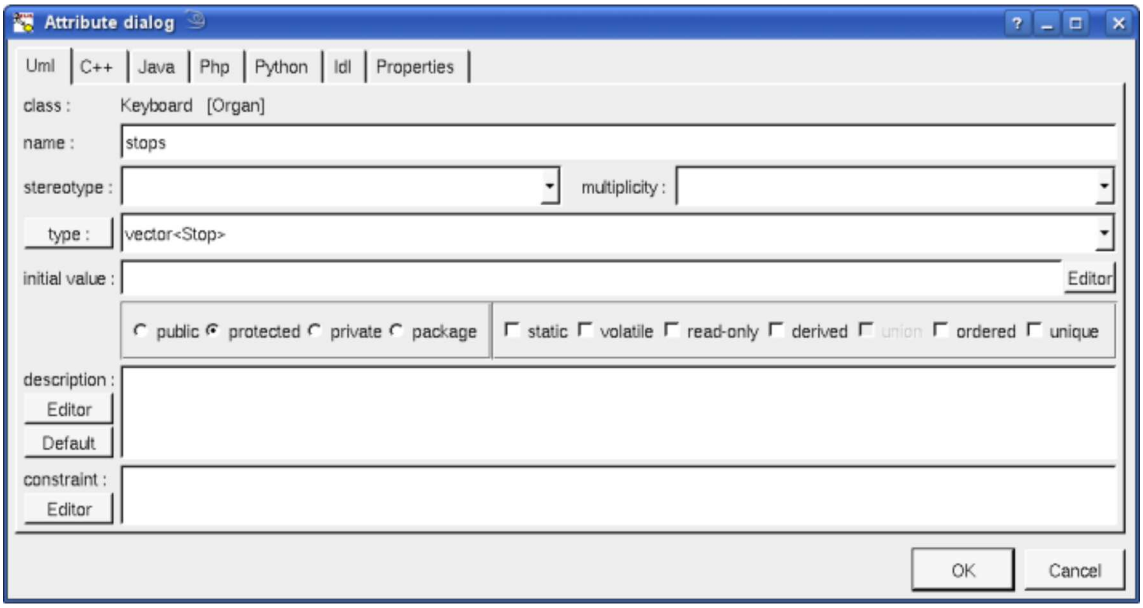
```
All the organ's pipes are not flue pipes,
the reed pipes have a metal tonge (the reed)
resting against a shallot.
```

constraint :

The proposed ***type***s for a standard attribute are the *non class* types defined in the first tab of the generation settings, more all the classes defined in the project (with their localization to distinguish synonymous classes). You are not limited to the proposed list, and any form (even invalid for the target language(s)) may be given. The button *type* shows a menu proposing :

- if the current type of the attribute is a class : to select this class in the browser
- if the attribute is not read-only and if a class is selected in the browser : to set the type to be this class
- if the view containing the class containing the attribute is not read-only : to create a new class and to set the attribute type to it

Nevertheless I **strongly** recommend you to not add type modifier (like *, & etc ...) with a class name in the UML tab because BOUML differentiate a reference to a class of the model and any other forms. Supposing you also have the class attribute *stops* defined (for C++) like this :



class : Keyboard [Organ]

name : stops

stereotype :

multiplicity :

type : vector<Stop>

initial value :

○ public ● protected ○ private ○ package

□ static □ volatile □ read-only □ derived □ union □ ordered □ unique

description :

constraint :

the C++ generated code will be the desired one, but if you rename the class *Stop*, the type of the attribute *stops* will **not** be updated. Furthermore the C++ code generator will not see the usage of the type *Stop* and will not automatically generate class declaration and *#include* form for it.

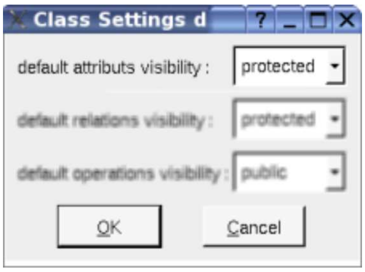
The good way may be :

- to say that *stops* is a *Stop* and modify the attribute definition in C++ to have a *vector*
- to set the stereotype to vector and the multiplicity to *
- but the right way here is to use a relation with the stereotype *vector* and the multiplicity * because *Stop* is a class

The proposed ***stereotypes*** are the default ones specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The stereotype of an attribute does not have special meaning for BOUML.

The ***initial value*** give the default value of the generated attribute(s), in C++ it is taken into account only when the attribute is a class attribute (static) or an enumeration item. By default the generated form is exactly the one you give, this means that you have to give the '=' when it must be generated, this allows to give the arguments of a constructor.

The ***visibility*** may be chosen with the *radio buttons*, the attributes have a default visibility set through the class settings :



default attributs visibility : protected

default relations visibility : protected

default operations visibility : public

By default the ***description*** is used to produce comments by the code generators.

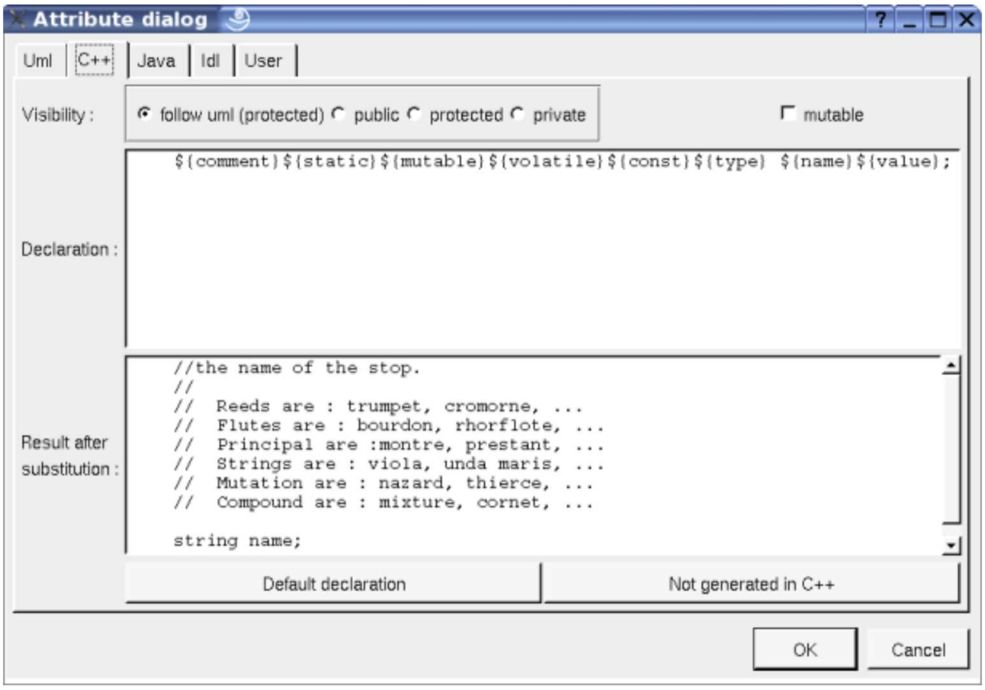
The ***editor*** button visible above and associated here to the description and initial value, allows to edit the description or initial value in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

The ***default*** button visible above associated to the description allows to set the description with a default contain specified through the *generation settings*. Useful to generate comments compatible Java Doc or Doxygen for instance.

Attribute dialog, tab C++

This tab allows to give the C++ definition of the attribute, it is visible only when C++ is set through the menu *Languages*

For a standard attribute :



Visibility : ● follow uml (protected) ○ public ○ protected ○ private

□ mutable

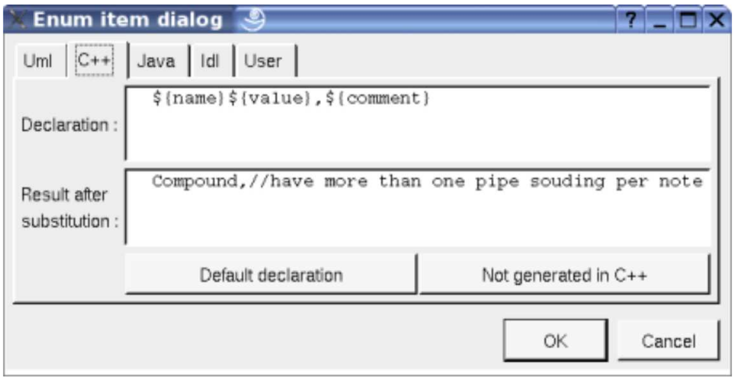
Declaration :

```
${comment}${static}${mutable}${volatile}${const}${type} ${name}${value};
```

Result after substitution :

```
//the name of the stop.
//
//  Reeds are : trumpet, cromorne, ...
//  Flutes are : bourdon, rhorflote, ...
//  Principal are :montre, prestant, ...
//  Strings are : viola, unda maris, ...
//  Mutation are : nazard, thierce, ...
//  Compound are : mixture, cornet, ...

string name;
```

For an enumeration's item :



Declaration :

```
${name}${value},${comment}
```

Result after substitution :

```
Compound,//have more than one pipe souding per note
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for C++ (supposing you do not modify the C++ code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this attribute defined in C++, empties the declaration manually or using the button ***not generated in C++***.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it.

${static} produce an empty string when the attribute is not a class attribute (see the UML tab), else produce *static*

${const} produce an empty string when the attribute is not read only (see the UML tab), else produce *const*

${type} is replaced by the type of the attribute (see the UML tab)

${stereotype} is replaced by the translation in C++ of the attribute's stereotype (see the UML tab)

${multiplicity} is replaced by the multiplicity of the attribute (see the UML tab), must be used in case the multiplicity is a vector or array dimensioning ([and] are added when they are not present).

${name} is replaced by the attribute's name (see the UML tab)

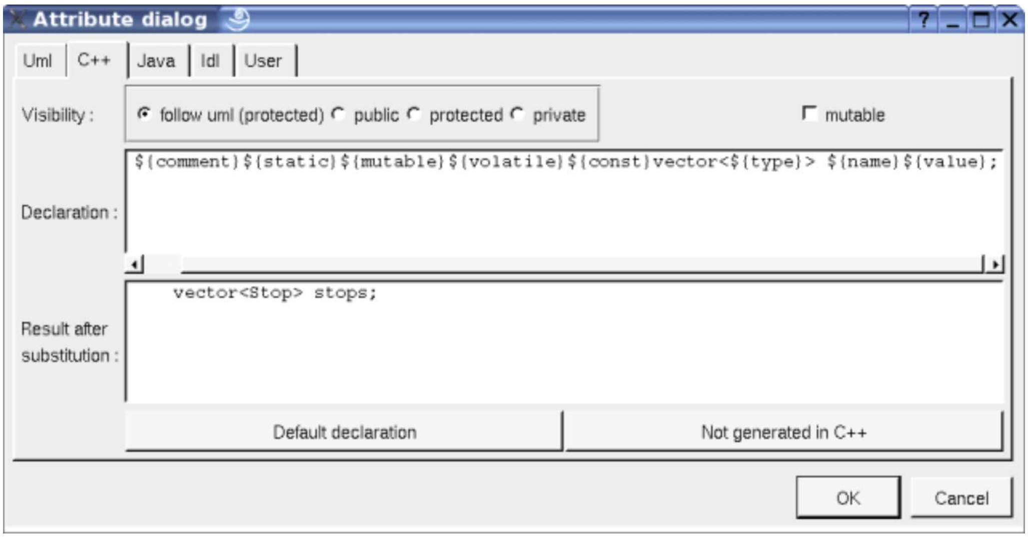
${value} is replaced in the source file by the initial value of the attribute (see the UML tab) when this one is not an enumeration item. For the enumeration items the value is of course generated in the header file.

${h_value}* is replaced in the header file by the initial value of the attribute (see the UML tab). *${h_value} must be used when you want to set the value of a *const* attribute.

${mutable} produce an empty string when the check box ***mutable*** is not checked, else produce *mutable*

${volatile} produce an empty string when the check box ***volatile*** is not checked, else produce *volatile*

The definition of the attribute *stops* may be :



Visibility : ● follow uml (protected) ○ public ○ protected ○ private ☐ mutable

Declaration :

```
${comment}${static}${mutable}${volatile}${const}vector<${type}> ${name}${value};
```

Result after substitution :

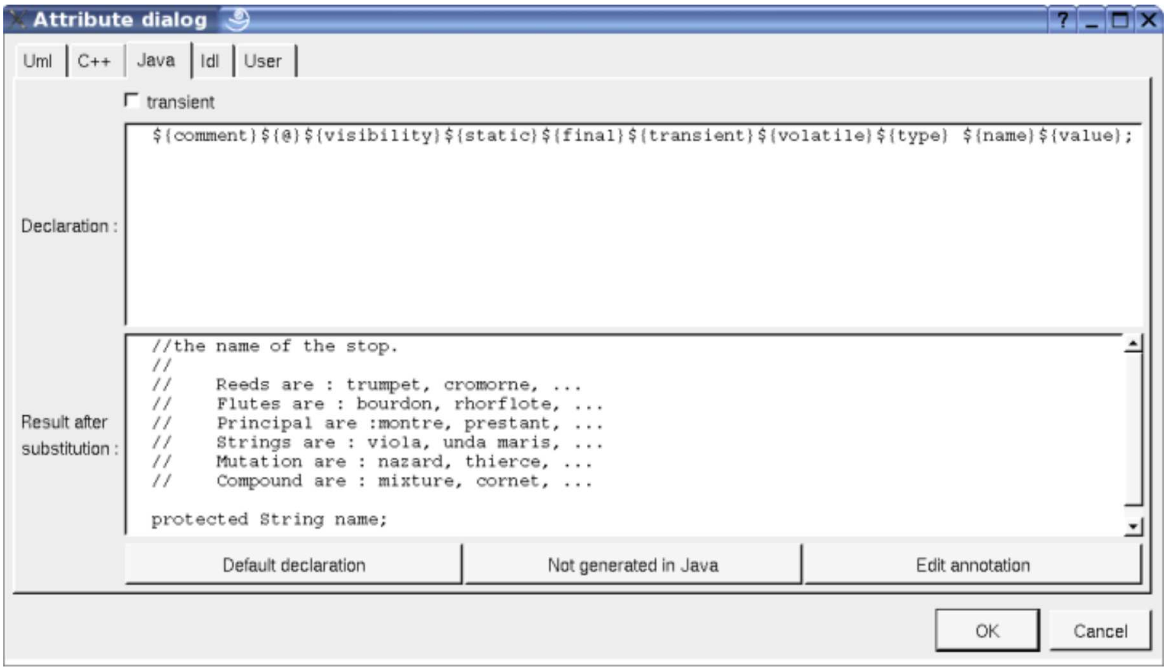
```
    vector<Stop> stops;
```

Refer to the *generation settings* and the C++ Generator for more details and explanation of the other keywords.

Attribute dialog, tab Java

This tab allows to give the Java definition of the attribute, it is visible only when Java is set through the menu *Languages*

For a standard attribute (as you can see *string* is automatically translated into *String* thanks to the generation settings):



☐ transient

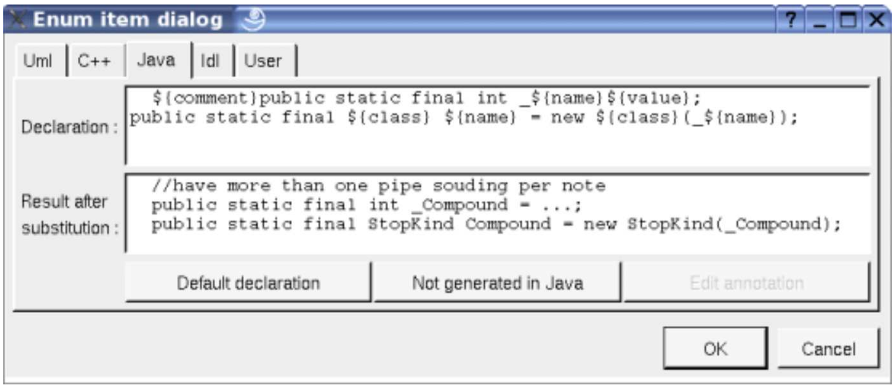
Declaration :

```
 ${comment}${@}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

Result after substitution :

```
 //the name of the stop.
 //
 //    Reeds are : trumpet, cromorne, ...
 //    Flutes are : bourdon, rhorflote, ...
 //    Principal are :montre, prestant, ...
 //    Strings are : viola, unda maris, ...
 //    Mutation are : nazard, thierce, ...
 //    Compound are : mixture, cornet, ...

 protected String name;
```

For an enumeration's item :



Declaration :

```
  ${comment}public static final int _${name}${value};
public static final ${class} ${name} = new ${class}(_${name});
```

Result after substitution :

```
  //have more than one pipe souding per note
  public static final int _Compound = ...;
  public static final StopKind Compound = new StopKind(_Compound);
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Java (supposing you do not modify the Java code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this attribute defined in Java, empties the declaration manually or using the button ***not generated in Java***.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it replacing *${visibility}* by the desired one.

${static} produce an empty string when the attribute is not an class attribute (see the UML tab), else produce *static*

${final} produce an empty string when the attribute is not read only (see the UML tab), else produce *final*

${transient} produce an empty string when check box ***transient*** is not checked, else produce *transient*

${volatile} produce an empty string when the check box ***volatile*** is not checked, else produce *volatile*

${type} is replaced by the type of the attribute (see the UML tab)

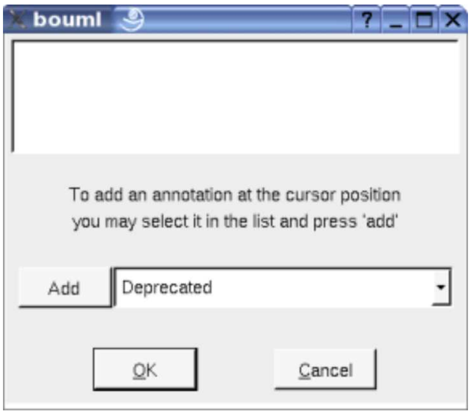
${stereotype} is replaced by the translation in Java of the attribute's stereotype (see the UML tab)

${multiplicity} is replaced by the multiplicity of the attribute (see the UML tab), must be used in case the multiplicity is a vector or array dimensioning ([and] are added when they are not present).

${name} is replaced by the attribute's name (see the UML tab)

${value} is replaced by the initial value of the attribute (see the UML tab), may be used to specify the value of an enumeration's item for instance

${@} produces the annotations, when it is present in the definition the button *Edit annotation* is active, a specific dialog allows you to enter the annotations proposing the default annotations (*Deprecated* ...) and the ones defined through the classes stereotyped *@interface* :



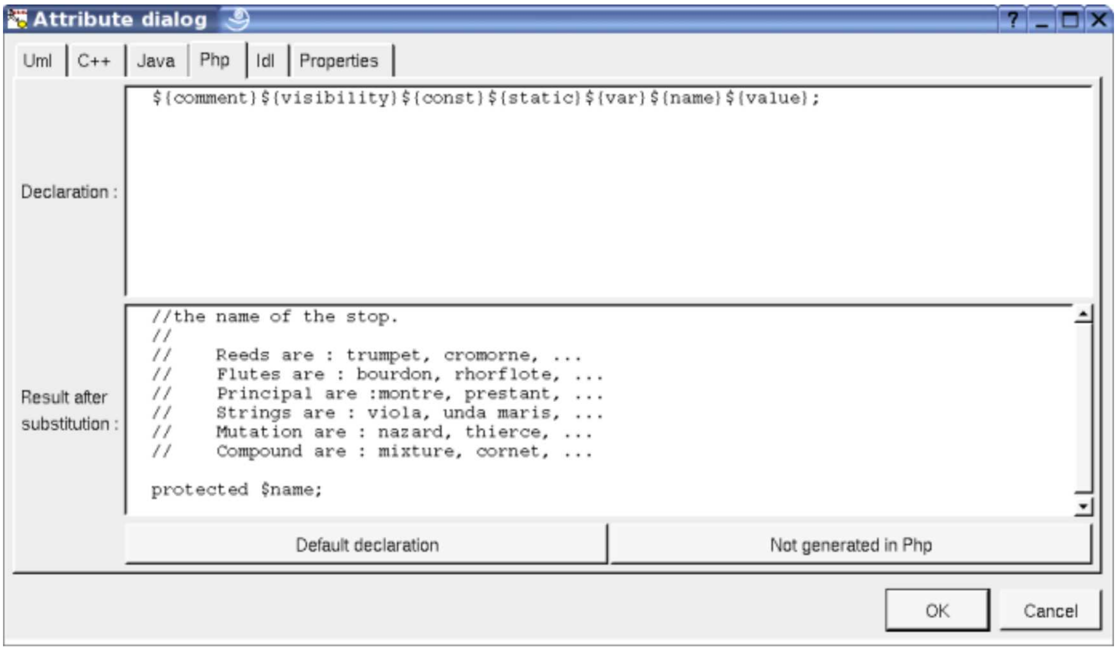
To add an annotation at the cursor position
you may select it in the list and press 'add'

Refer to the *generation settings* and Java generator for more details and explanation of the other keywords.

Attribute dialog, tab Php

This tab allows to give the Php definition of the attribute, it is visible only when Php is set through the menu *Languages*

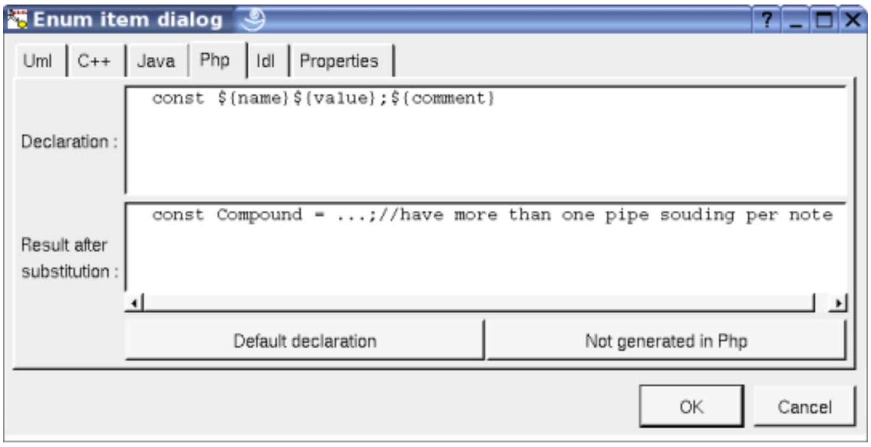
For a standard attribute :



```
${comment}${visibility}${const}${static}${var}${name}${value};
```

```
//the name of the stop.
//
//    Reeds are : trumpet, cromorne, ...
//    Flutes are : bourdon, rhorflote, ...
//    Principal are :montre, prestant, ...
//    Strings are : viola, unda maris, ...
//    Mutation are : nazard, thierce, ...
//    Compound are : mixture, cornet, ...

protected $name;
```

For an enumeration's item (of course in the generated code ... is replaced by the rank of the item in the enum) :



```
const ${name}${value};${comment}
```

```
const Compound = ...;//have more than one pipe souding per note
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Php (supposing you do not modify the Php code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype and multiplicity (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this attribute defined in Php, empties the declaration manually or using the button ***not generated in Php***.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it replacing *${visibility}* by the desired one, to not generate the visibility set it to *package*

${static} produce an empty string when the attribute is not an class attribute (see the UML tab), else produce *static*

${const} produce an empty string when the attribute is not read only (see the UML tab), else produce *const*

${var} produce *var* when the attribute is not read only nor static(see the UML tab) and the visibility is not *package*, else produce an empty string

${name} is replaced by the attribute's name (see the UML tab)

${value} is replaced by the initial value of the attribute (see the UML tab)

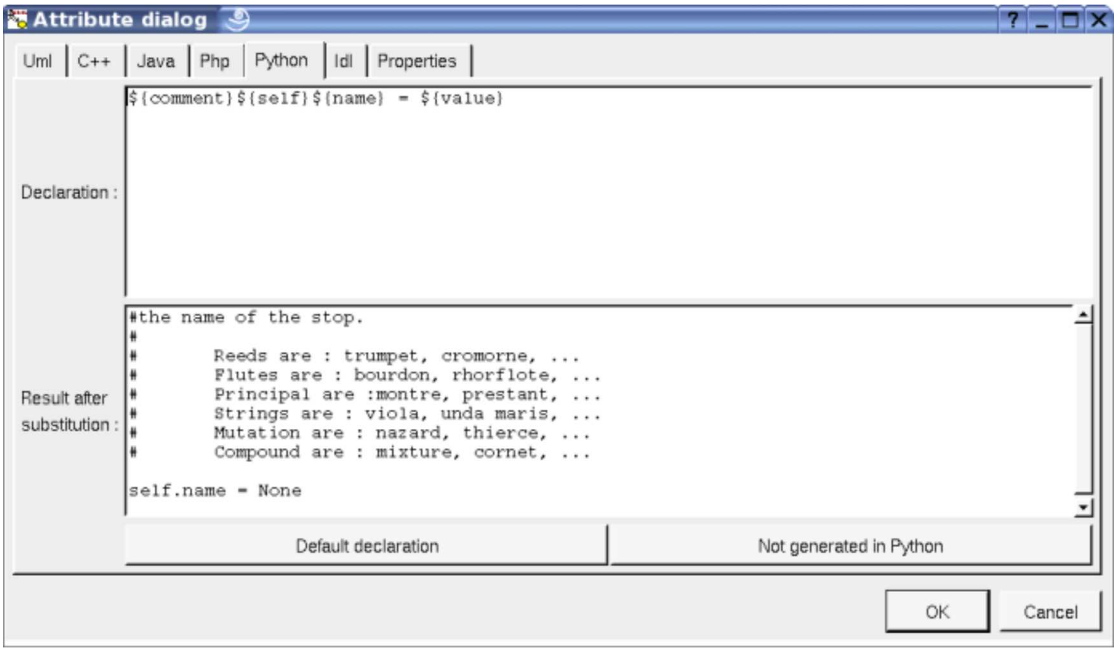
The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Refer to the *generation settings* and Php generator for more details and explanation of the other keywords.

Attribute dialog, tab Python

This tab allows to give the Python definition of the attribute, it is visible only when Python is set through the menu *Languages*

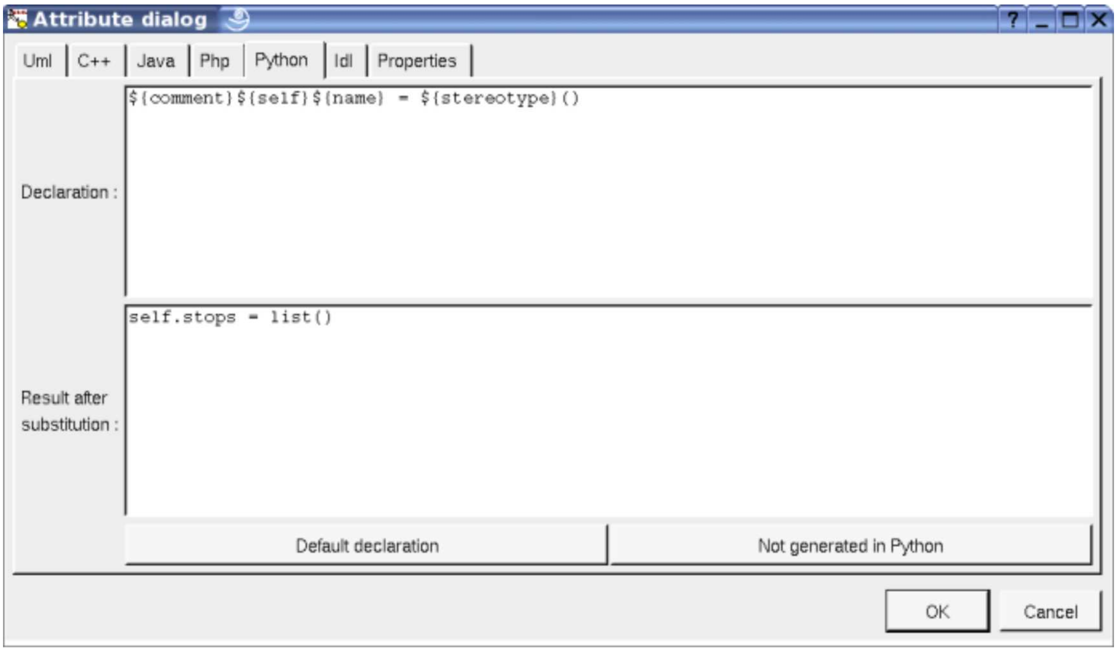
For a standard attribute without multiplicity or with the multiplicity 1 :



```
${comment}${self}${name} = ${value}
```

```
#the name of the stop.
#
#       Reeds are : trumpet, cromorne, ...
#       Flutes are : bourdon, rhorflote, ...
#       Principal are :montre, prestant, ...
#       Strings are : viola, unda maris, ...
#       Mutation are : nazard, thierce, ...
#       Compound are : mixture, cornet, ...

self.name = None
```

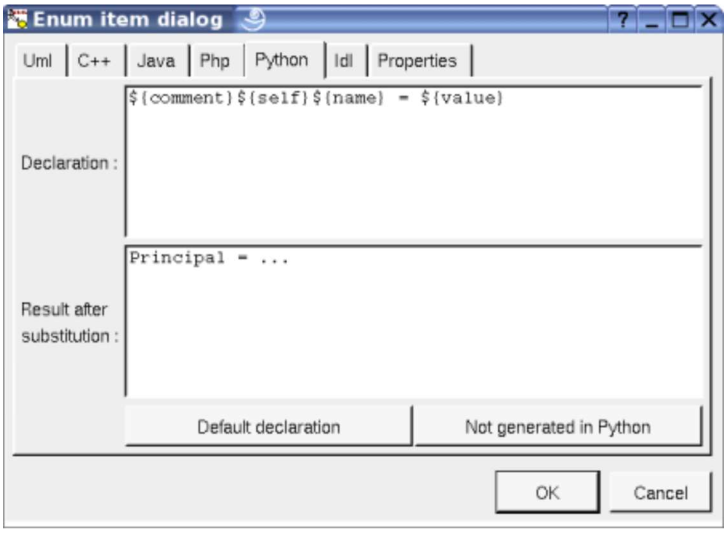
For a standard attribute with a multiplicity not equal to 1 :



```
${comment}${self}${name} = ${stereotype}()
```

```
self.stops = list()
```

For an enumeration's item (of course in the generated code ... is replaced by the rank of the item in the enum) :



```
${comment}${self}${name} = ${value}
```

```
Principal = ...
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Python (supposing you do not modify the Python code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* depending on the stereotype and multiplicity (and of course the language !) is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this attribute defined in Python, empties the declaration manually or using the button ***not generated in Python***.

The instance attributes are automatically produced at the beginning of the body of the operation __*init*__ (this operation is produced for each class even when you don't define it). The static attributes are produced inside the class definition.

${comment} produces a comment from the UML description, adding a # at the beginning or each line, following the current indent. A newline is produced if needed at the end to not have something else generated on the same line after the comment.

${description}* is like for *${comment} but without adding #.

${self} inside the operation __*init*__ this produces the name of the first parameter followed by a dot, else nothing.

${type} produces the type of the attribute, probably used inside a comment, may be for a form *@var*

${multiplicity} produces the multiplicity of the attribute, probably used inside a comment

${stereotype} is replaced by the translation in Python of the attribute's stereotype (see the UML tab)

${name} is replaced by the attribute's name (see the UML tab)

${value} is replaced by the initial value of the attribute (see the UML tab) if it is not empty, else *None*

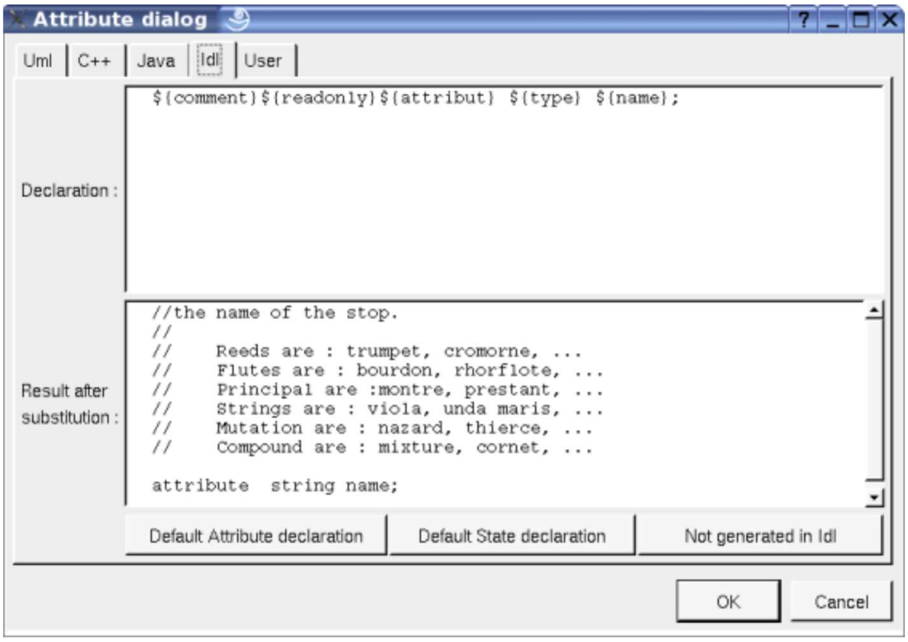
The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Refer to the *generation settings* and Python generator for more details and explanation of the other keywords.

Attribute dialog, tab Idl

This tab allows to give the Idl definition of the attribute, it is visible only when Idl is set through the menu *Languages*

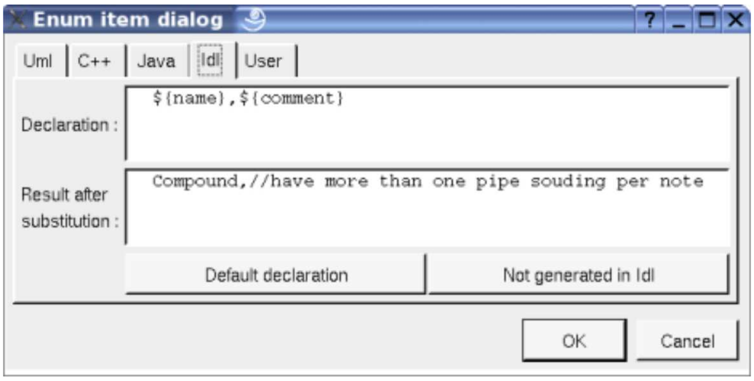
For a standard attribute (here of a *valuetype*) :


Attribute dialog
Uml
C++
Java
Idl
User
Declaration :
Result after substitution :
Default Attribute declaration
Default State declaration
Not generated in Idl
OK
Cancel

```
${comment}${readonly}${attribut} ${type} ${name};
```

```
//the name of the stop.
//
//     Reeds are : trumpet, cromorne, ...
//     Flutes are : bourdon, rhorflote, ...
//     Principal are :montre, prestant, ...
//     Strings are : viola, unda maris, ...
//     Mutation are : nazard, thierce, ...
//     Compound are : mixture, cornet, ...

attribute  string name;
```

For an enumeration's item :



```
${name},${comment}
```

```
Compound,//have more than one pipe souding per note
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** part is editable, the other one help you to see what will be generated for Idl (supposing you do not modify the Idl code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to have this attribute defined in Idl, empties the declaration manually or using the button ***not generated in Idl***

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it replacing *${visibility}* by the desired one.

${type} is replaced by the type of the attribute (see the UML tab)

${name} is replaced by the attribute's name (see the UML tab)

${stereotype} is replaced by the translation in Idl of the attribute's stereotype (see the UML tab)

${multiplicity} is replaced by the multiplicity of the attribute (see the UML tab)

Refer to the *generation settings* and Idl generator for more details and explanation of the other keywords.

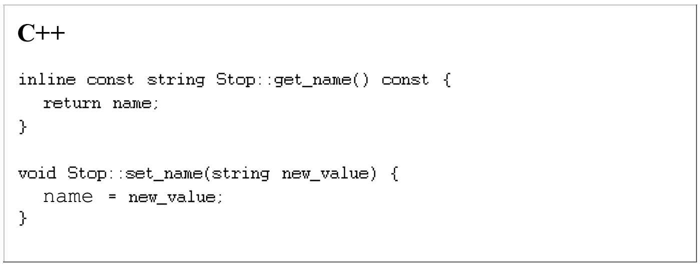
Menu : duplicate

The menu entry *duplicate* clone the attribute.

Menu : add ...

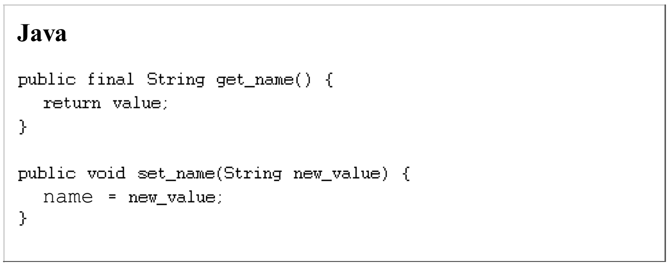
These entries allow to produce get and set operations on the attribute, contrarily to the similar operations made by hand, these two ones are linked to the associated attribute to be updated, or deleted when the attributes is deleted. The default name of the operations and their characteristics are set through the *generation settings*.

By default, the get and set operations generated for the *Stop*'s attribute *name* are :



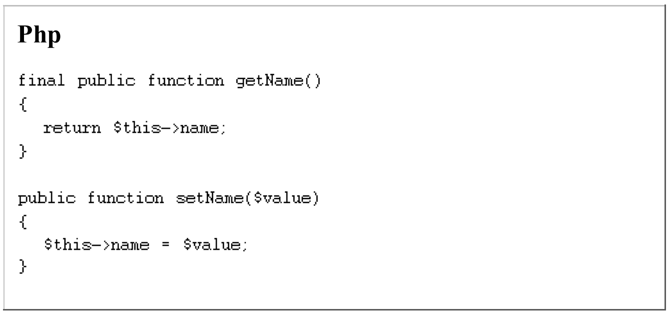
C++

```
inline const string Stop::get_name() const {
  return name;
}

void Stop::set_name(string new_value) {
  name = new_value;
}
```



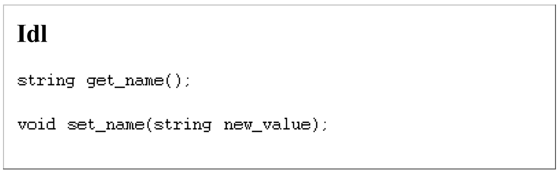
Java

```
public final String get_name() {
  return value;
}

public void set_name(String new_value) {
  name = new_value;
}
```



Php

```
final public function getName()
{
  return $this->name;
}

public function setName($value)
{
  $this->name = $value;
}
```



Idl

```
string get_name();

void set_name(string new_value);
```

Menu : delete

The menu entry *delete* is only present when the attribute is not *read-only*.

Delete the attribute, associated get and set operations when they exist, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

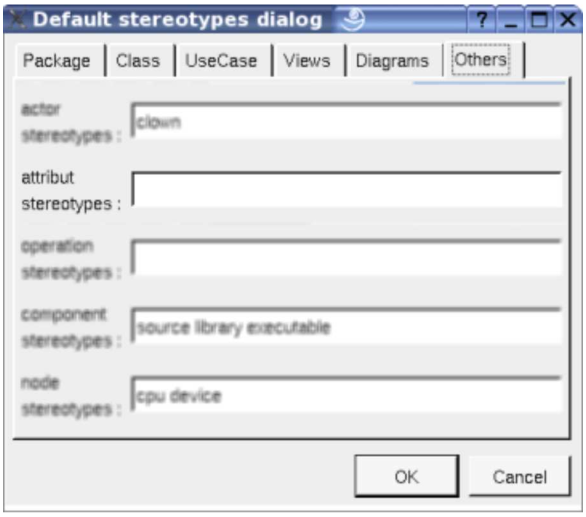
See mark

Menu : tool

Appears only when at least one *plug-out* is associated to the attributes. To apply a *plug-out* on the attribute.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab associated to the attributes :



actor stereotypes : clown

attribut stereotypes :

operation stereotypes :

component stereotypes : source library executable

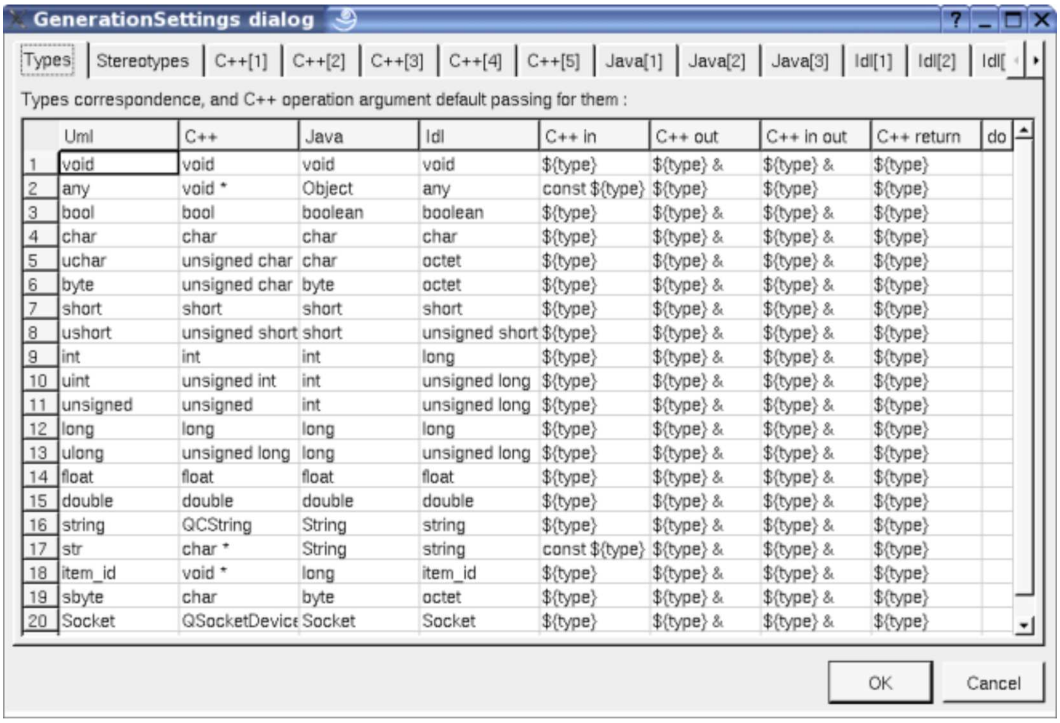
node stereotypes : cpu device

The stereotype of an attribute does not have a special meaning for BOUML.

Generation settings

This very important dialog allows to specify many default definitions concerning the attributes, more details will be given in C++ generator, Java generator and Idl generator.

The first tab allows to specify how the types not supported by an UML class are translated in each language (except Php and Python) :

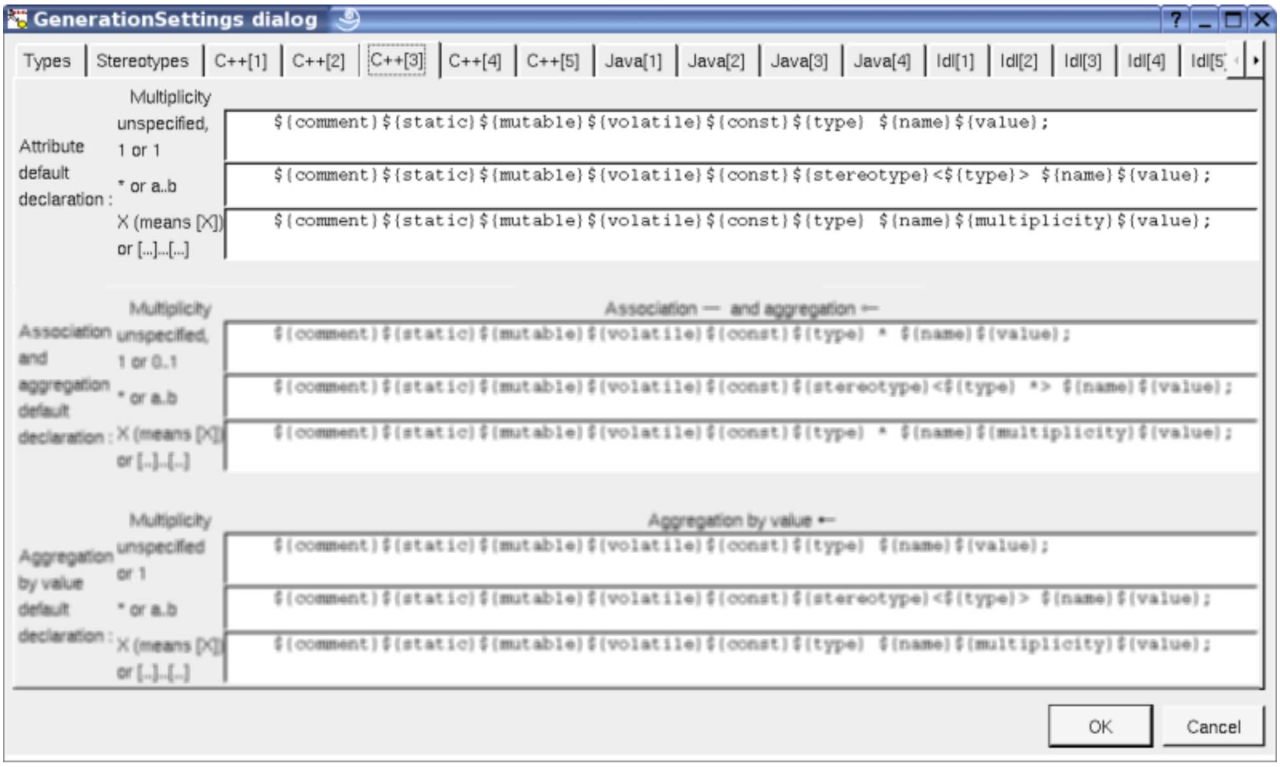


Types correspondence, and C++ operation argument default passing for them :

	Uml	C++	Java	Idl	C++ in	C++ out	C++ in out	C++ return	do
1	void	void	void	void	${type}	${type} &	${type} &	${type}	
2	any	void *	Object	any	const ${type}	${type}	${type}	${type}	
3	bool	bool	boolean	boolean	${type}	${type} &	${type} &	${type}	
4	char	char	char	char	${type}	${type} &	${type} &	${type}	
5	uchar	unsigned char	char	octet	${type}	${type} &	${type} &	${type}	
6	byte	unsigned char	byte	octet	${type}	${type} &	${type} &	${type}	
7	short	short	short	short	${type}	${type} &	${type} &	${type}	
8	ushort	unsigned short	short	unsigned short	${type}	${type} &	${type} &	${type}	
9	int	int	int	long	${type}	${type} &	${type} &	${type}	
10	uint	unsigned int	int	unsigned long	${type}	${type} &	${type} &	${type}	
11	unsigned	unsigned	int	unsigned long	${type}	${type} &	${type} &	${type}	
12	long	long	long	long	${type}	${type} &	${type} &	${type}	
13	ulong	unsigned long	long	unsigned long	${type}	${type} &	${type} &	${type}	
14	float	float	float	float	${type}	${type} &	${type} &	${type}	
15	double	double	double	double	${type}	${type} &	${type} &	${type}	
16	string	QCString	String	string	${type}	${type} &	${type} &	${type}	
17	str	char *	String	string	const ${type}	${type} &	${type} &	${type}	
18	item_id	void *	long	item_id	${type}	${type} &	${type} &	${type}	
19	sbyte	char	byte	octet	${type}	${type} &	${type} &	${type}	
20	Socket	QSocketDevic	Socket	Socket	${type}	${type} &	${type} &	${type}	

As usual the last column *do* allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

The third C++ tab allows to set the default definition of an attribute in C++, only visible when C++ is set through the menu *Languages* :



Attribute default declaration :

Multiplicity unspecified, 1 or 1 : `${comment}${static}${mutable}${volatile}${const}${type} ${name}${value};`

* or a..b : `${comment}${static}${mutable}${volatile}${const}${stereotype}<${type}> ${name}${value};`

X (means [X]) or [...]...[...] : `${comment}${static}${mutable}${volatile}${const}${type} ${name}${multiplicity}${value};`

Association and aggregation default declaration :

Association — and aggregation ◇—

Multiplicity unspecified, 1 or 0..1 : `${comment}${static}${mutable}${volatile}${const}${type} * ${name}${value};`

* or a..b : `${comment}${static}${mutable}${volatile}${const}${stereotype}<${type} *> ${name}${value};`

X (means [X]) or [..]..[..] : `${comment}${static}${mutable}${volatile}${const}${type} * ${name}${multiplicity}${value};`

Aggregation by value default declaration :

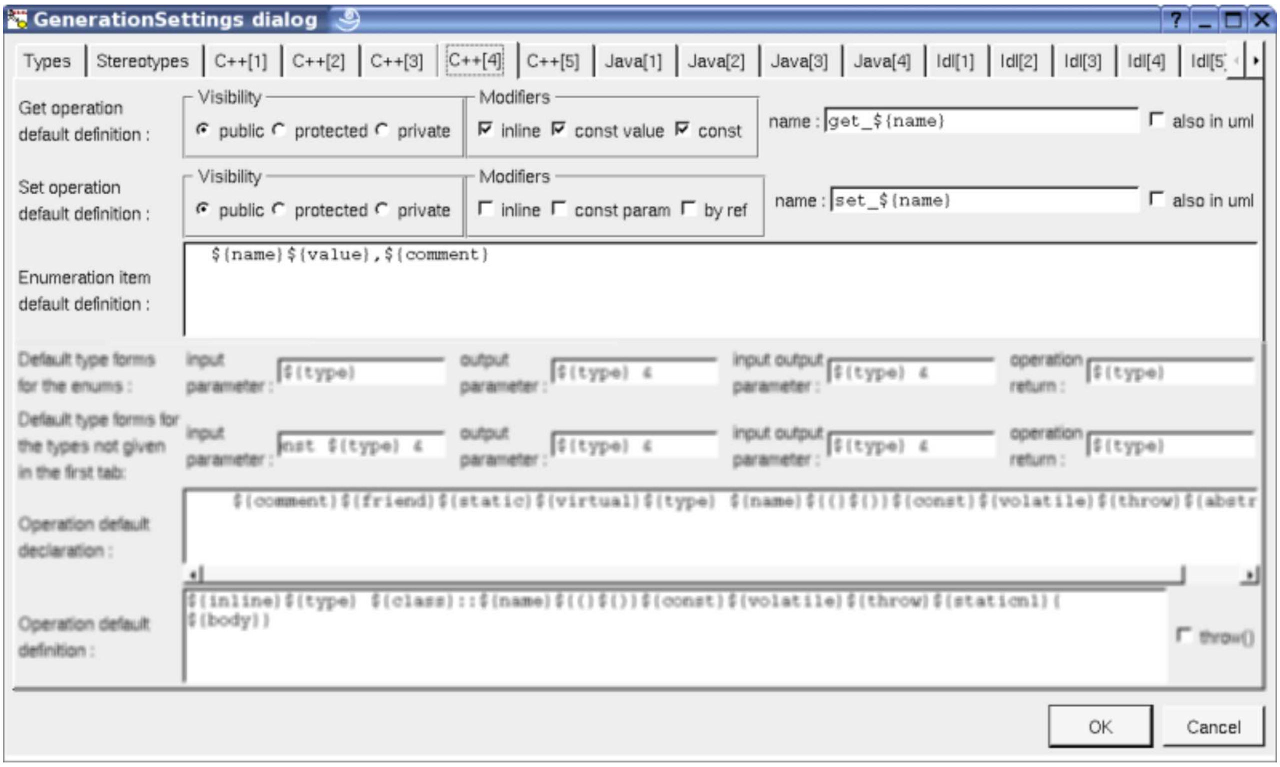
Aggregation by value ◆—

Multiplicity unspecified or 1 : `${comment}${static}${mutable}${volatile}${const}${type} ${name}${value};`

* or a..b : `${comment}${static}${mutable}${volatile}${const}${stereotype}<${type}> ${name}${value};`

X (means [X]) or [..]..[..] : `${comment}${static}${mutable}${volatile}${const}${type} ${name}${multiplicity}${value};`

The fourth C++ tab allows to set the default definition of an enumeration's item in C++ and to specify the get and set operations specificities in C++, only visible when C++ is set through the menu *Languages* :



Get operation default definition : Visibility ● public ○ protected ○ private Modifiers ☑ inline ☑ const value ☑ const name : get_${name} □ also in uml

Set operation default definition : Visibility ● public ○ protected ○ private Modifiers □ inline □ const param □ by ref name : set_${name} □ also in uml

Enumeration item default definition : `${name}${value},${comment}`

Default type forms for the enums : input parameter : `${type}` output parameter : `${type} &` input output parameter : `${type} &` operation return : `${type}`

Default type forms for the types not given in the first tab: input parameter : `nst ${type} &` output parameter : `${type} &` input output parameter : `${type} &` operation return : `${type}`

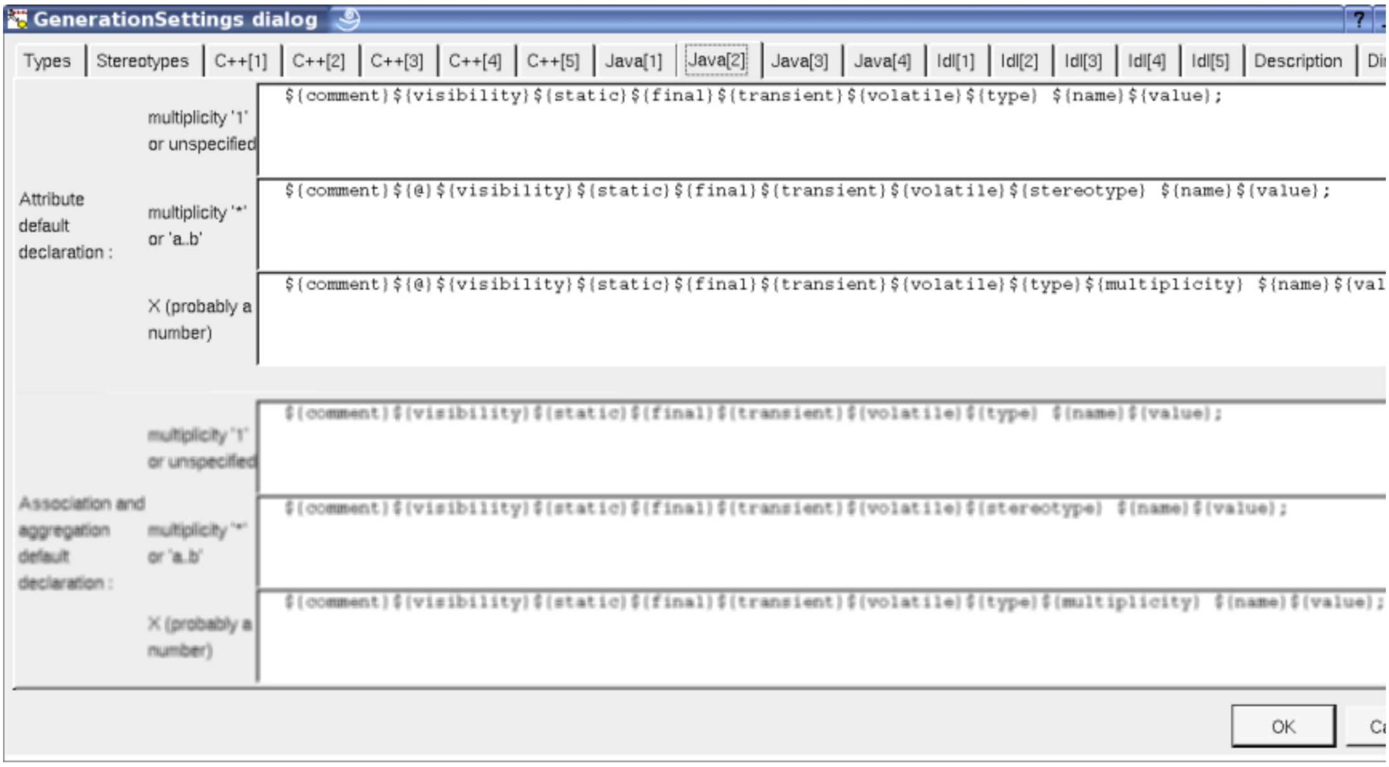
Operation default declaration : `${comment}${friend}${static}${virtual}${type} ${name}${(}${)}${const}${volatile}${throw}${abstr`

Operation default definition :

```
${inline}${type} ${class}::${name}${(}${)}${const}${volatile}${throw}${staticnl}{
${body}}
```

□ throw()

The second Java tab allows to set the default definition of an attribute in Java, only visible when Java is set through the menu *Languages* :



Attribute default declaration :

multiplicity '1' or unspecified

```
${comment}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

multiplicity '*' or 'a..b'

```
${comment}${@}${visibility}${static}${final}${transient}${volatile}${stereotype} ${name}${value};
```

X (probably a number)

```
${comment}${@}${visibility}${static}${final}${transient}${volatile}${type}${multiplicity} ${name}${val
```

Association and aggregation default declaration :

multiplicity '1' or unspecified

```
${comment}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

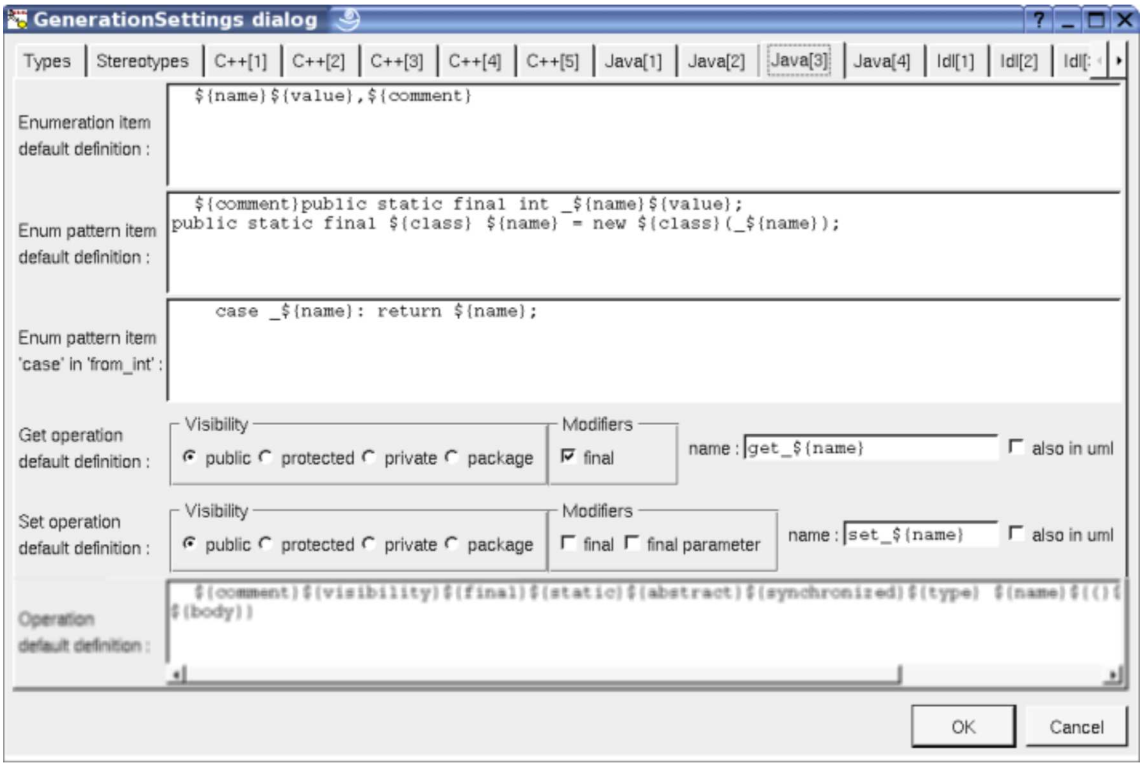
multiplicity '*' or 'a..b'

```
${comment}${visibility}${static}${final}${transient}${volatile}${stereotype} ${name}${value};
```

X (probably a number)

```
${comment}${visibility}${static}${final}${transient}${volatile}${type}${multiplicity} ${name}${value};
```

The third Java tab allows to set the default definition of an enumeration's item in Java, to set the get and set operations specificities in Java, only visible when Java is set through the menu *Languages* :



Enumeration item default definition :

```
 ${name}${value},${comment}
```

Enum pattern item default definition :

```
 ${comment}public static final int _${name}${value};
public static final ${class} ${name} = new ${class}(_${name});
```

Enum pattern item 'case' in 'from_int' :

```
   case _${name}: return ${name};
```

Get operation default definition :

Visibility: ● public ○ protected ○ private ○ package

Modifiers: ☑ final

name : get_${name}   ☐ also in uml

Set operation default definition :

Visibility: ● public ○ protected ○ private ○ package

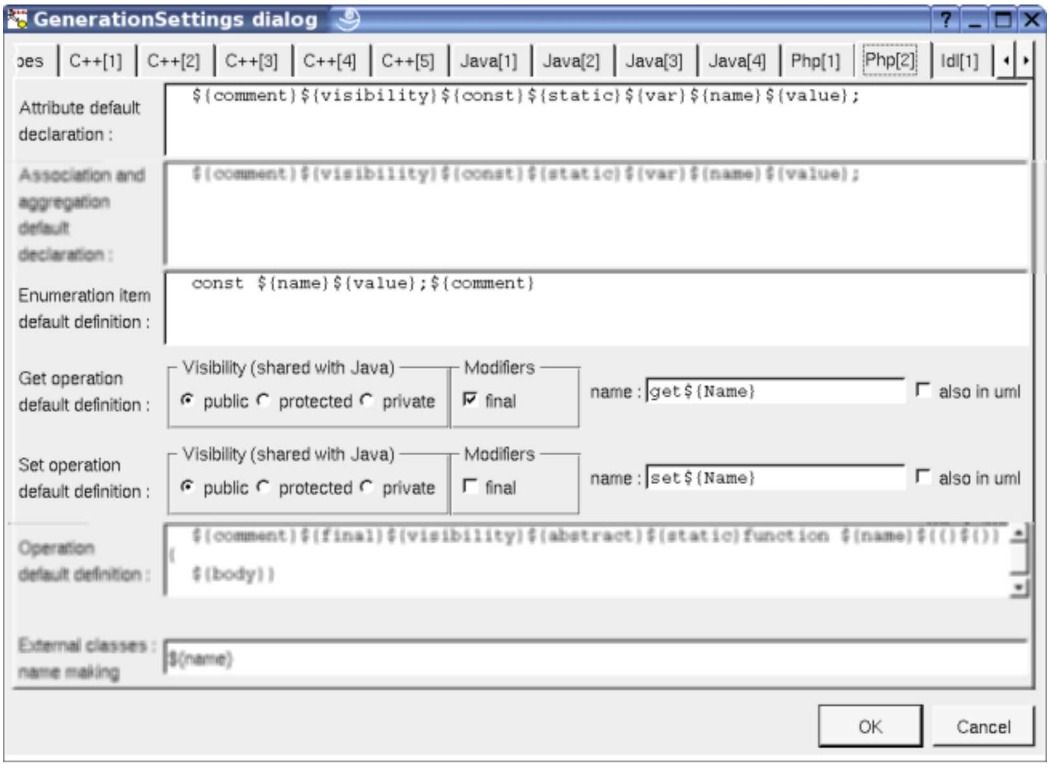
Modifiers: ☐ final ☐ final parameter

name : set_${name}   ☐ also in uml

Operation default definition :

```
 ${comment}${visibility}${final}${static}${abstract}${synchronized}${type} ${name}${(}${
${body}}
```

The second Php tab allows to set the default definition of an attribute, to set the default definition of an enumeration's item, and to set the get and set operations specificities in Php, only visible when Php is set through the menu *Languages* :


GenerationSettings dialog
? _ □ X
oes | C++[1] | C++[2] | C++[3] | C++[4] | C++[5] | Java[1] | Java[2] | Java[3] | Java[4] | Php[1] | Php[2] | Idl[1]
OK
Cancel

Attribute default declaration :

```
${comment}${visibility}${const}${static}${var}${name}${value};
```

Association and aggregation default declaration :

```
${comment}${visibility}${const}${static}${var}${name}${value};
```

Enumeration item default definition :

```
const ${name}${value};${comment}
```

Get operation default definition : Visibility (shared with Java) ● public ○ protected ○ private Modifiers ☑ final name : get${Name} □ also in uml

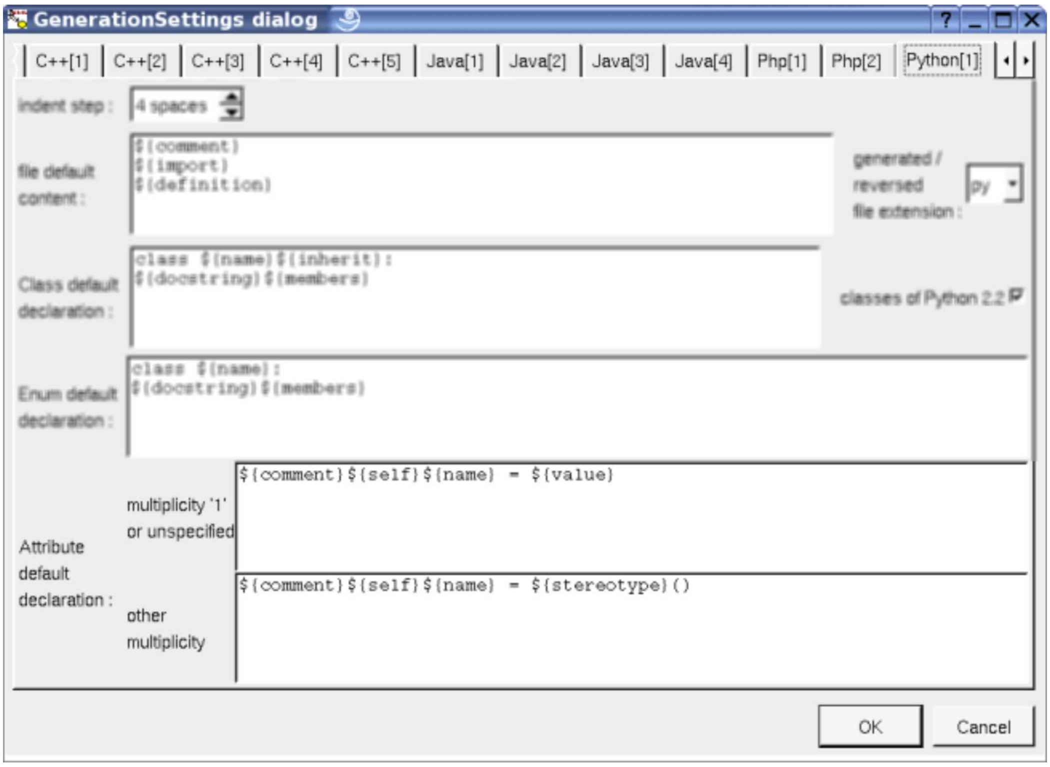
Set operation default definition : Visibility (shared with Java) ● public ○ protected ○ private Modifiers □ final name : set${Name} □ also in uml

Operation default definition :

```
${comment}${final}${visibility}${abstract}${static}function ${name}${(}${)}
{
  ${body}}
```

External classes : name making : ${name}

The first Python tab allows to set the default attribute definition for Python depending on the multiplicity, only visible when Python is set through the menu *Languages* :


GenerationSettings dialog
? _ □ X
| C++[1] | C++[2] | C++[3] | C++[4] | C++[5] | Java[1] | Java[2] | Java[3] | Java[4] | Php[1] | Php[2] | Python[1]
OK
Cancel

indent step : 4 spaces

file default content :

```
${comment}
${import}
${definition}
```

generated / reversed file extension : py

Class default declaration :

```
class ${name}${inherit}:
${docstring}${members}
```

classes of Python 2.2 ☑

Enum default declaration :

```
class ${name}:
${docstring}${members}
```

Attribute default declaration :

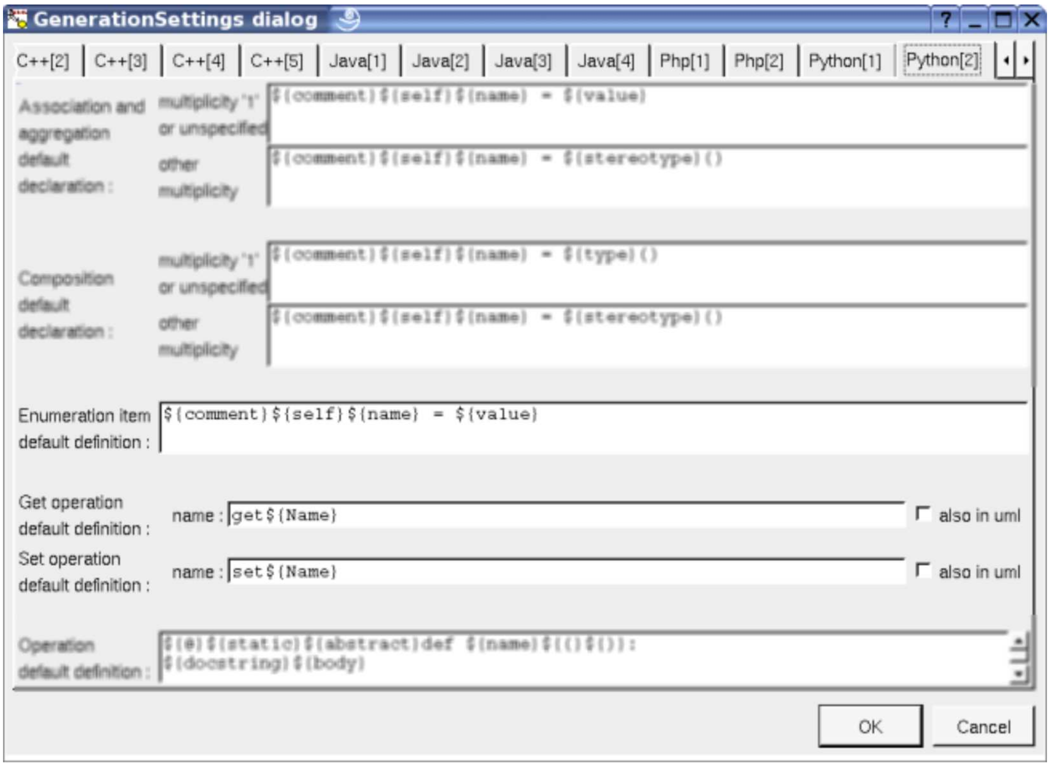
multiplicity '1' or unspecified

```
${comment}${self}${name} = ${value}
```

other multiplicity

```
${comment}${self}${name} = ${stereotype}()
```

The second Python tab allows to set the default enum item definition for Python and the get and set specificities for Idl, only visible when Python is set through the menu *Languages* :



Association and aggregation default declaration :

multiplicity '1' or unspecified: `${comment}${self}${name} = ${value}`

other multiplicity: `${comment}${self}${name} = ${stereotype}()`

Composition default declaration :

multiplicity '1' or unspecified: `${comment}${self}${name} = ${type}()`

other multiplicity: `${comment}${self}${name} = ${stereotype}()`

Enumeration item default definition : `${comment}${self}${name} = ${value}`

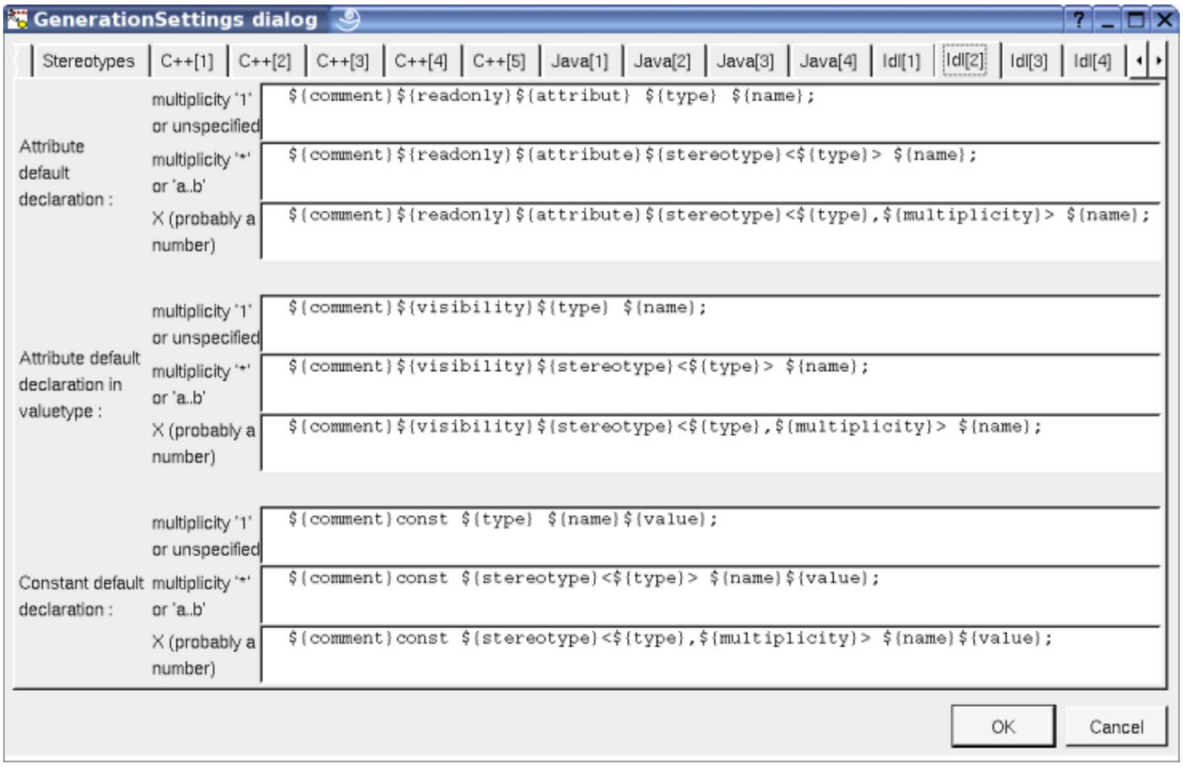
Get operation default definition : name : `get${Name}` ☐ also in uml

Set operation default definition : name : `set${Name}` ☐ also in uml

Operation default definition :

```
${@}${static}${abstract}def ${name}${(}${)}:
${docstring}${body}
```

The second Idl tab allows to set the default attribute definition for Idl, only visible when Idl is set through the menu *Languages* :



Attribute default declaration :

multiplicity '1' or unspecified: `${comment}${readonly}${attribut} ${type} ${name};`

multiplicity '*' or 'a..b': `${comment}${readonly}${attribute}${stereotype}<${type}> ${name};`

X (probably a number): `${comment}${readonly}${attribute}${stereotype}<${type},${multiplicity}> ${name};`

Attribute default declaration in valuetype :

multiplicity '1' or unspecified: `${comment}${visibility}${type} ${name};`

multiplicity '*' or 'a..b': `${comment}${visibility}${stereotype}<${type}> ${name};`

X (probably a number): `${comment}${visibility}${stereotype}<${type},${multiplicity}> ${name};`

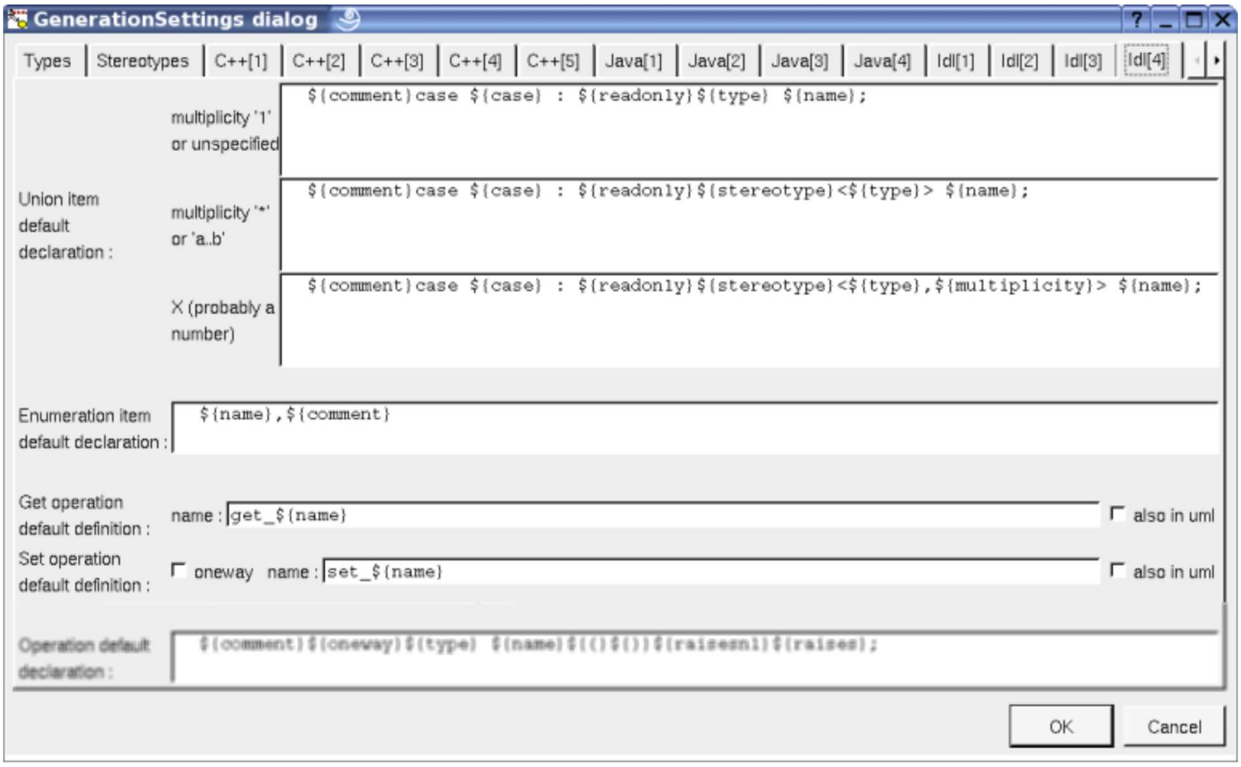
Constant default declaration :

multiplicity '1' or unspecified: `${comment}const ${type} ${name}${value};`

multiplicity '*' or 'a..b': `${comment}const ${stereotype}<${type}> ${name}${value};`

X (probably a number): `${comment}const ${stereotype}<${type},${multiplicity}> ${name}${value};`

The third Idl tab allows to set the default definition of an attribute in a union, the enumeration item default definition and the get and set specificities for Idl, only visible when Idl is set through the menu *Languages* :



Union item default declaration :

multiplicity '1' or unspecified : `${comment}case ${case} : ${readonly}${type} ${name};`

multiplicity '*' or 'a..b' : `${comment}case ${case} : ${readonly}${stereotype}<${type}> ${name};`

X (probably a number) : `${comment}case ${case} : ${readonly}${stereotype}<${type},${multiplicity}> ${name};`

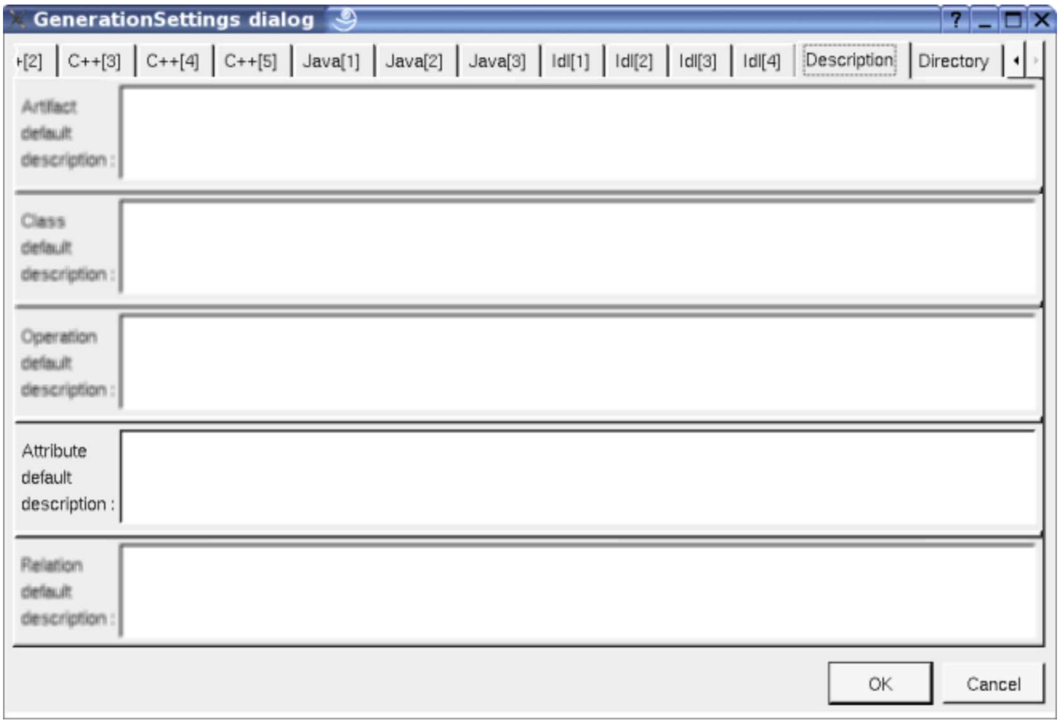
Enumeration item default declaration : `${name},${comment}`

Get operation default definition : name : `get_${name}` □ also in uml

Set operation default definition : □ oneway name : `set_${name}` □ also in uml

Operation default declaration : `${comment}${oneway}${type} ${name}${(}${)}${raisesnl}${raises};`

The tab *Description* allows to set a default description :



Artifact default description :

Class default description :

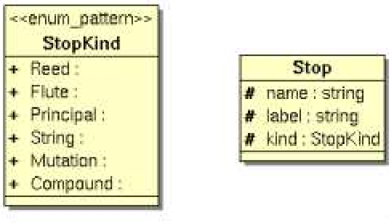
Operation default description :

Attribute default description :

Relation default description :

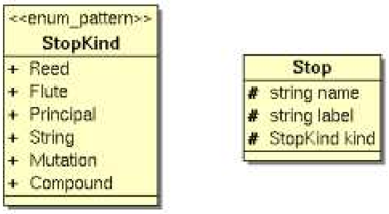
Drawing

The attributes are only drawn with their class in a class diagram (here the drawing language is UML, the full member definitions and the visibility are shown) :

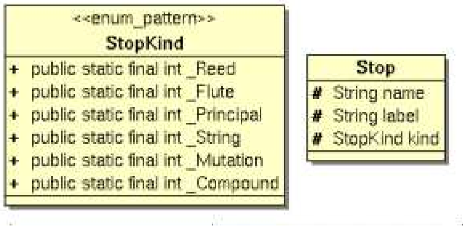


The way an attribute is written or not in its class picture depend on the class drawing settings, drawing language, hide attributes, show member visibility, show attribute multiplicity, show attribute initialization, member max width and show full members definition, and also on the class menu entry individual attribute visibility.

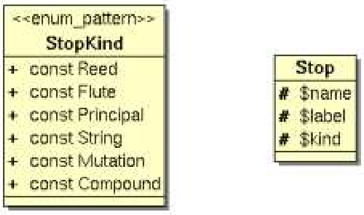
Changing the drawing language from UML (the default) to C++ or IDL :



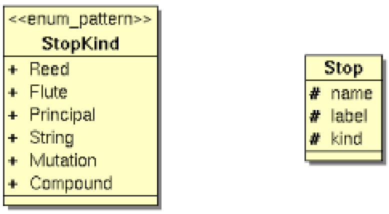
Changing the drawing language to Java:


<<enum_pattern>>
StopKind
+ public static final int _Reed
+ public static final int _Flute
+ public static final int _Principal
+ public static final int _String
+ public static final int _Mutation
+ public static final int _Compound
Stop
# String name
# String label
# StopKind kind

Changing the drawing language to Php :



Changing the drawing language to Python :



Previous : relation

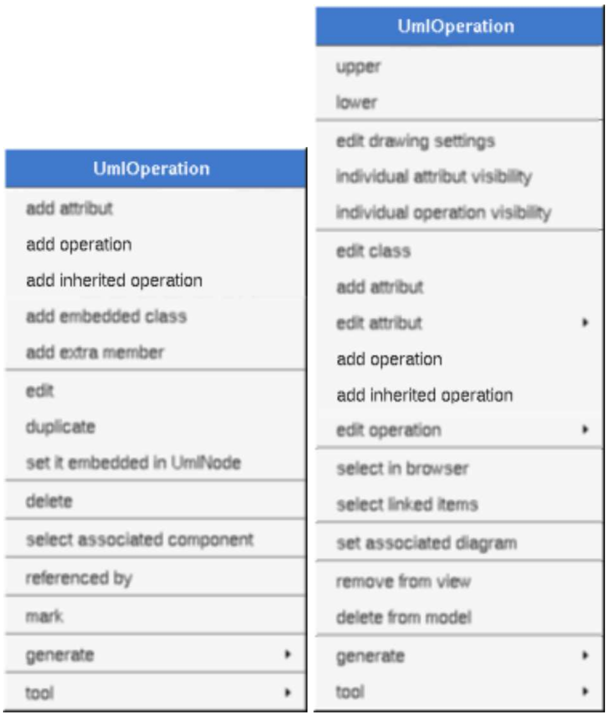
Next : operation

Operation

BOUML only manage class's operations and *friend* operations, not standard C or Php and Python functions (even it is possible to define a C, Php and Python function through an extra member or in an artifact definition etc ...). An operation may have a stereotype, but it does not have a special meaning for BOUML.

Contrarily to several UML toolbox, the body of the operations is fully managed by BOUML and saved among the project data (see project files). However you can also enter the bodies out of BOUML thanks to the option *Preserve operations's bodies* of the *Language* (see top level menu).

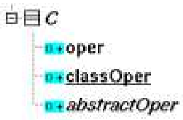
An operation is created through the class menu called from the browser or a class picture in a class diagram :



The icon in the browser indicate if the operation is public (+), protected (#) , private (-) or package (~). The *protected* and *package* visibilities are translated in *private* in Idl. The *package* visibility is translated in *private* in C++, and produce nothing in Php allowing you to generate Php 4 code. Note that BOUML doesn't check the validity of the (re)refinition of an inherited operation (for instance the visibility is not checked, the operation may be *final* in Java etc ...), but some operations are not part of the proposed operations list : the constructors, destructors, and the operations already defined in the current class for the UML point of view (the 'UML' definition of an operation is the one written under the browser window when the operation is selected in the browser).

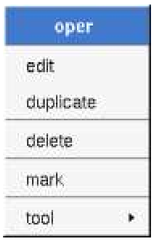
The operation named __*init*__ has a special management in Python, it is used to place the initializations or the instance attributes and relations. The python generator add the definition of this operation when it doesn't exist.

A class operation is underlined, an abstract one is written in *italic*. It is possible to move an operation from a class into an other, except for the *get* and *set* operations associated to a relation or an attribute.



Menus

The operation menu appearing with a right mouse click on its representation in the browser is something like these, supposing it is not *read-only* nor deleted :

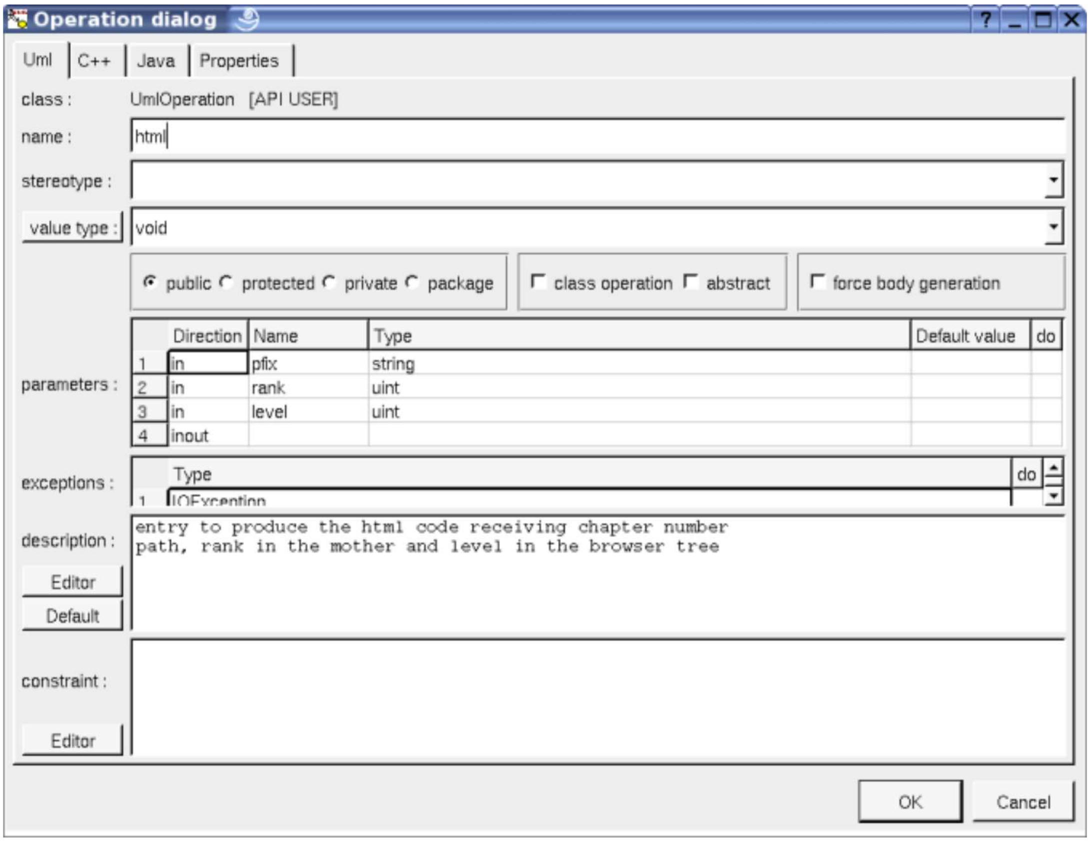


Menu : edit

edit allows to show/modify the operation properties including the body. In case the operation is read-only, the fields of the dialog are also read-only.

Operation dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



class : UmlOperation [API USER]

name : html

stereotype :

value type : void

● public ○ protected ○ private ○ package

□ class operation □ abstract

□ force body generation

parameters :

	Direction	Name	Type	Default value	do
1	in	pfix	string		
2	in	rank	uint		
3	in	level	uint		
4	inout				

exceptions :

	Type	do
1	IOException	

description :

```
entry to produce the html code receiving chapter number
path, rank in the mother and level in the browser tree
```

constraint :

The ***name*** may contains spaces to define C++ operator for instance, and a class may have several operations having the same name. A class constructor have the name of its class.

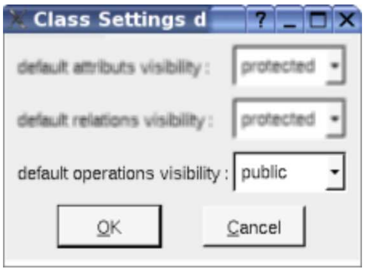
The proposed type for the ***value type*** etc ... are the *non class* types defined in the first tab of the generation settings, more all the classes defined in the project (with their localization to distinguish synonymous classes). You are not limited to the proposed list, and any form (even invalid for the target language(s)) may be given. The button *value type:* shows a menu proposing :

- if the current value type is a class : to select this class in the browser
- if the operation is not read-only and if a class is selected in the browser : to set the value type to be this class
- if the view containing the class containing the operation is not read-only : to create a new class and to set the return type to it

Nevertheless I **strongly** recommend you to not add type modifier (like *, & etc ...) with a class name in the UML tab because BOUML differentiate a reference to a class of the model and any other forms, see type considerations.

The proposed ***stereotypes*** are the default ones specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The stereotype of an operation does not have special meaning for BOUML.

The ***visibility*** may be chosen with the *radio buttons*, the operations have a default visibility set through the class settings :



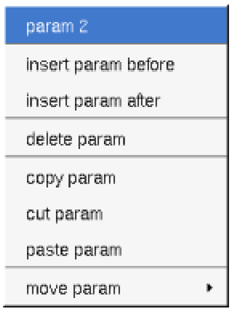
default attributs visibility : protected

default relations visibility : protected

default operations visibility : public

Force body generation allows to generate the body of the operation even if *preserve operations's body* is set in the menu *Languages*. This option is used by the state machine generator to produce the body of the generated operations in all the cases.

The ***parameters*** have obviously a *direction* (but I known a commercial UML tool which does not manage it !), a *name*, a *type* (following the considerations about the return value type) and a *default value* (unfortunately this one is not yet managed by the code generators !). The last column (*do*) of the parameters table allows to insert/delete/move a parameter :



When you add/remove/modify a parameter:

- if only one language is set through the global menu Language, the definition of the operation for this language is updated to take into account the change. However the changes are based on the defaults set through the generation settings, the default definition of the parameters can't be the expected one in all the cases and I encourage you to check them
- else nothing is done, this allows you to have different parameters list depending on the target language in case of a multi languages generation

The ***exceptions*** produced by the operation may be specified (even for C++), these types follow the considerations about the return value type. The last column (do) of the exception table allows to insert/delete/move an exception.

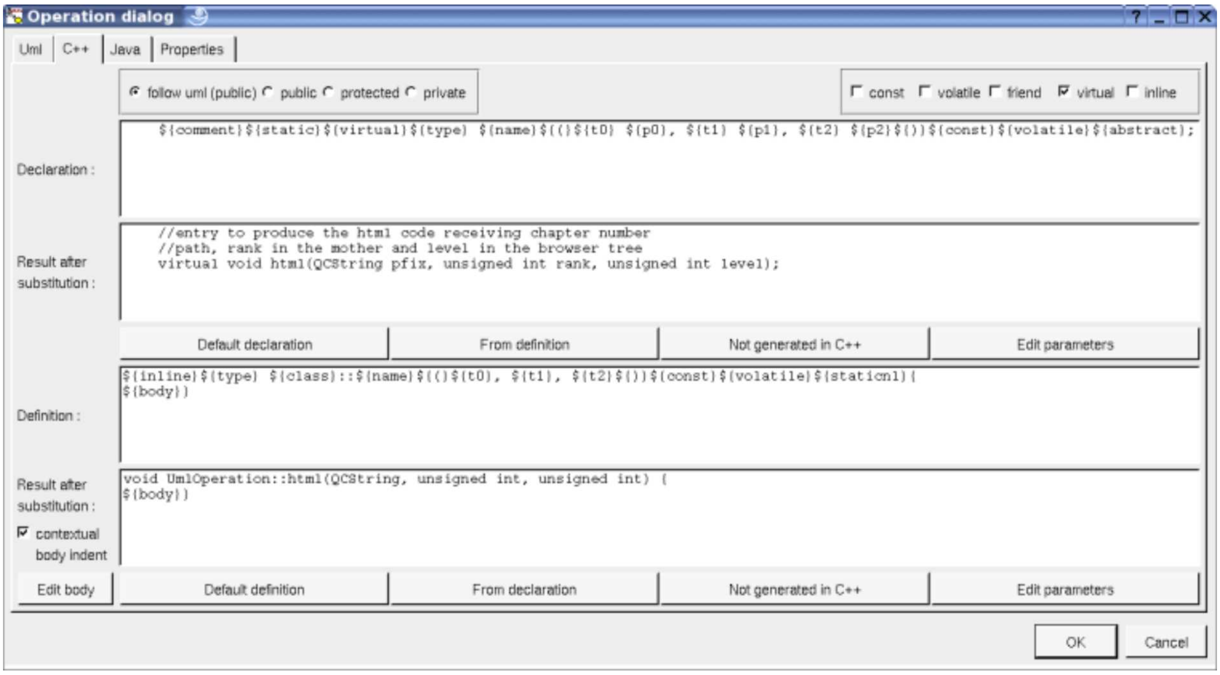
By default the ***description*** is used to produce comments by the code generators.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

The ***default*** button visible above associated to the description allows to set the description with a default contain specified through the *generation settings*. Useful to generate comments compatible Java Doc or Doxygen for instance.

Operation dialog, tab C++

This tab allows to give the C++ declaration and definition of the operation, it is visible only if C++ is set through the *Language* menu



● follow uml (public) ○ public ○ protected ○ private

□ const □ volatile □ friend ☑ virtual □ inline

Declaration :

```
    ${comment}${static}${virtual}${type} ${name}${(}${t0} ${p0}, ${t1} ${p1}, ${t2} ${p2}${)}${const}${volatile}${abstract};
```

Result after substitution :

```
    //entry to produce the html code receiving chapter number
    //path, rank in the mother and level in the browser tree
    virtual void html(QCString pfix, unsigned int rank, unsigned int level);
```

Definition :

```
${inline}${type} ${class}::${name}${(}${t0}, ${t1}, ${t2}${)}${const}${volatile}${staticnl}{
${body}}
```

Result after substitution :

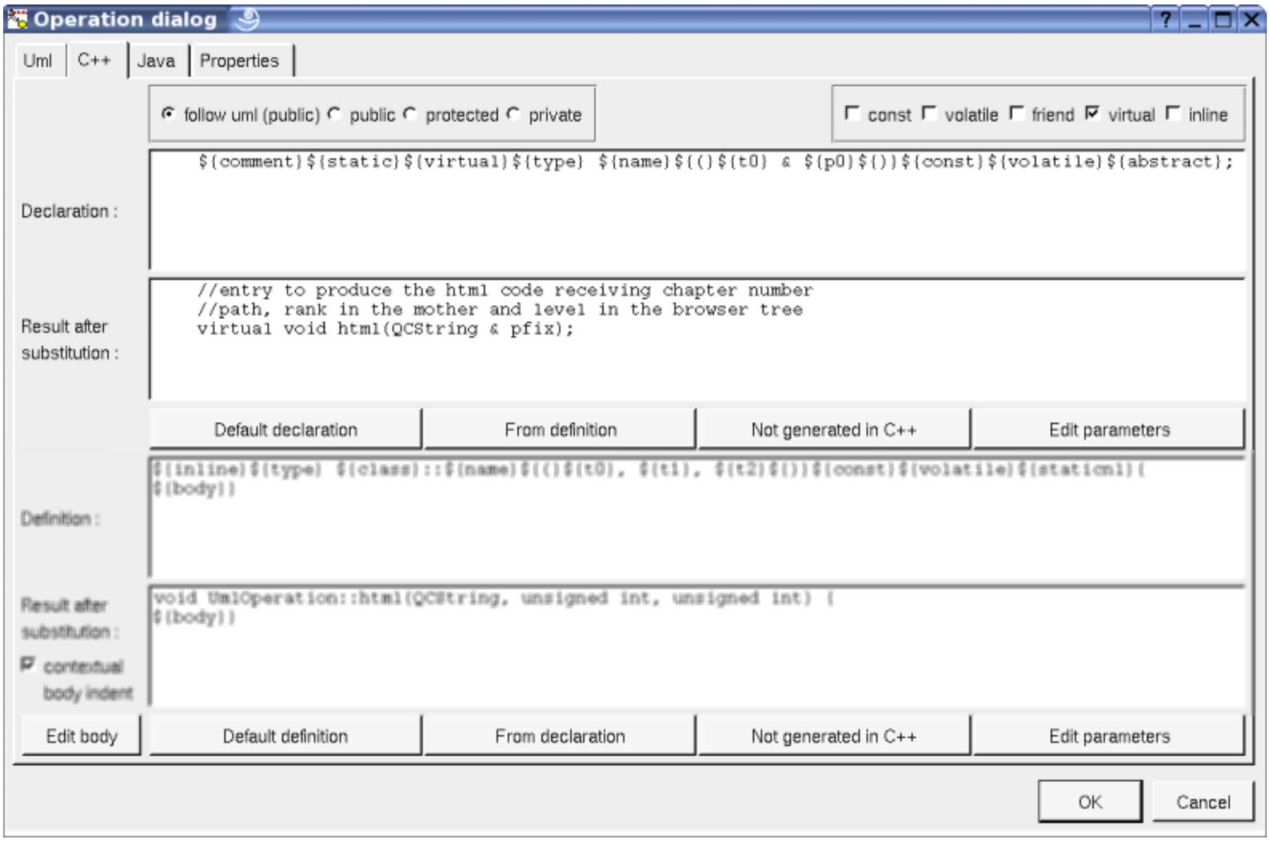
```
void UmlOperation::html(QCString, unsigned int, unsigned int) {
${body}}
```

☑ contextual body indent

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Declaration*** and ***Definition*** part are editable, the other one help you to see what will be generated for C++ (supposing you do not modify the C++ code generator !). You can see above that the definition doesn't contains the name of the parameters whose aren't used to avoid C++ compiler warnings.

When you push the button ***Default declaration*** or ***Default definition***, the form specified through the *generation settings* is proposed adding all the operation parameters given in the UML tab without any modifier. These forms may be modified as you want, even to produce illegal source code, but more probably to add type modifiers etc ...

The buttons ***From definition*** and ***From declaration*** allow to produce the declaration/definition from the definition/declaration getting the specified list of parameters and return type definition. For instance if I modify the operation's declaration like this (the first parameter is modified and the second and third ones removed) :



● follow uml (public) ○ public ○ protected ○ private

□ const □ volatile □ friend ☑ virtual □ inline

Declaration :

```
    ${comment}${static}${virtual}${type} ${name}${(}${t0} & ${p0}${)}${const}${volatile}${abstract};
```

Result after substitution :

```
    //entry to produce the html code receiving chapter number
    //path, rank in the mother and level in the browser tree
    virtual void html(QCString & pfix);
```

Definition :

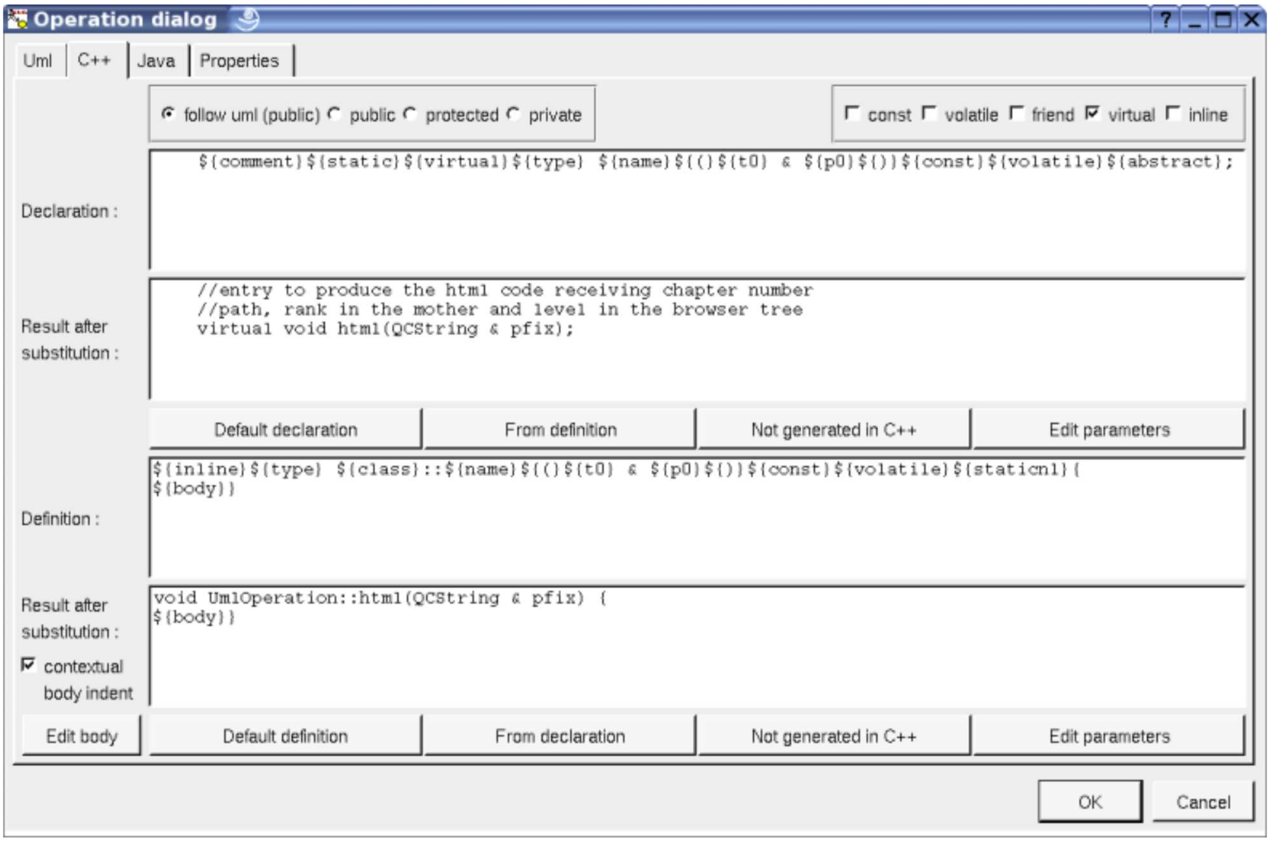
```
${inline}${type} ${class}::${name}${(}${t0}, ${t1}, ${t2}${)}${const}${volatile}${staticnl}{
${body}}
```

Result after substitution :

```
void UmlOperation::html(QCString, unsigned int, unsigned int) {
${body}}
```

☑ contextual body indent

and I press the ***From declaration*** button, the modifications are reported in the operation's definition :



● follow uml (public) ○ public ○ protected ○ private

□ const □ volatile □ friend ☑ virtual □ inline

Declaration :

```
    ${comment}${static}${virtual}${type} ${name}${(}${t0} & ${p0}${)}${const}${volatile}${abstract};
```

Result after substitution :

```
    //entry to produce the html code receiving chapter number
    //path, rank in the mother and level in the browser tree
    virtual void html(QCString & pfix);
```

Definition :

```
${inline}${type} ${class}::${name}${(}${t0} & ${p0}${)}${const}${volatile}${staticnl}{
${body}}
```

Result after substitution :

```
void UmlOperation::html(QCString & pfix) {
${body}}
```

☑ contextual body indent

When you do not want to have this operation defined in C++, empties the declaration/definition manually or using the button ***not generated in C++***.

It is possible to follow the ***visibility*** as it is set in the UML Tab or to change it.

${static} produce an empty string when the operation is not an class operation (see the UML tab), else produce *static*

${const} produce an empty string when the check box ***const*** is not checked, else produce *const*

${volatile} produce an empty string when the check box ***volatile*** is not checked, else produce *volatile*

${friend} produce an empty string when the check box ***friend*** is not checked, else produce *friend*

${*virtual*} produce an empty string when the check box ***virtual*** is not checked, else produce *virtual*

${inline} produce an empty string when the check box ***inline*** is not checked, else produce *inline*

${type} is replaced by the value type (see the UML tab)

${abstract} produce the string = 0 when the operation is abstract (see the UML tab), else an empty string.

${class} is replaced by the name of the class containing the operation.

${staticnl} produce a line break when the operation is static, else an empty string. In case you do not like this notation, change the generation settings to remove this macro.

${(}* and *${)} produce (and), but there are also a mark for BOUML to find the parameters list

${t<n>}, ${p<n>} and ${v*<n>}* produce the type, name and default value of each parameter (count from 0), this allows you to remove a parameter, add type modifiers etc ...

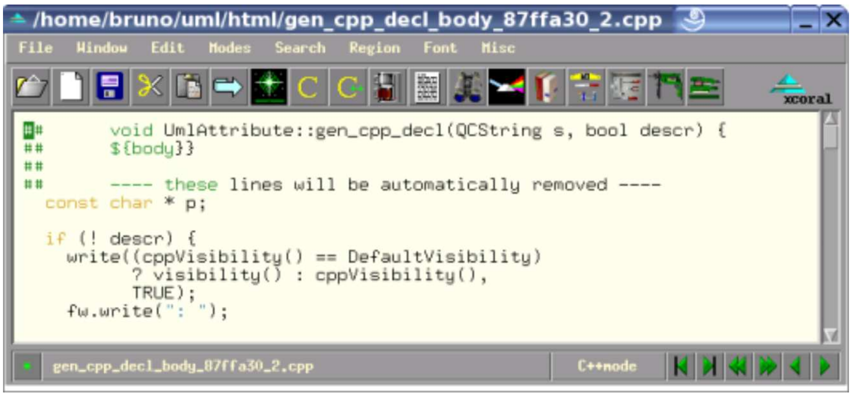
${throw} is replaced by the form *throw (...)* when at least an exception is defined in the UML tab. It is also possible to produce *throw()* when there is no exception depending on the generation settings.

${body}* is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body} has a great advantage : when you hit ***Default definition*** or ***From declaration*** the body is not cleared ! At least BOUML share the declaration and definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! When *contextual body indent* is toggled the indentation of the keyword *${body}* is added to the indentation of the operation at the beginning of each line except the ones starting by a '#' or when the previous one ends by '\'. Since release 3.4 *contextual body indent* is not set when an operation is produced by a reverse to not alter the original indent.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

A *template operation* is defined with an empty declaration (allowing Bouml to detect this case) and placing the actuals between *${class}* and *::* in the definition part.

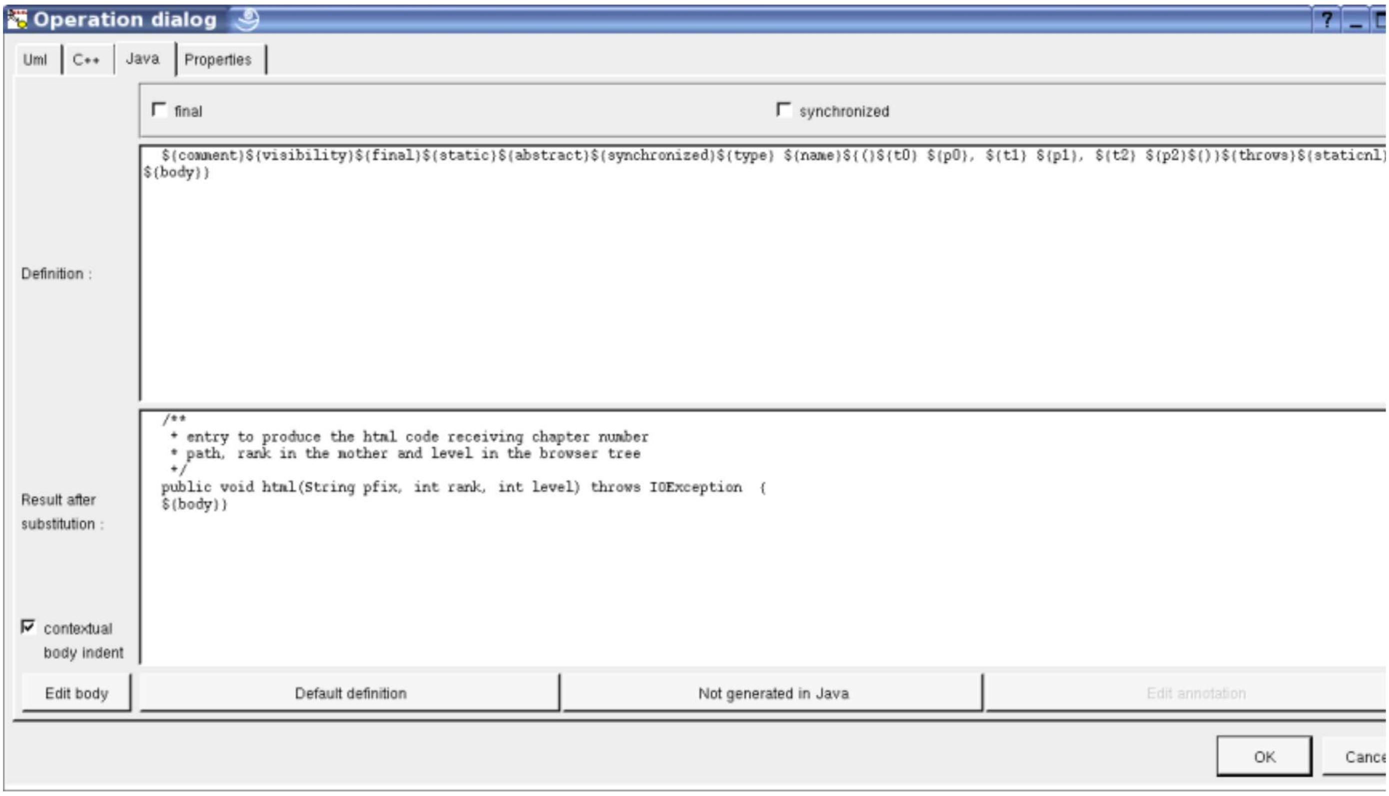
The **edit body** button is active when the definition contains *${body}*, to edit it through the editor you want use the environment dialog, furthermore, when you set *add operation profile on body edition* through the *miscellaneous* menu the form defining the operation in the editor is added at the beginning of the edited file.


/home/bruno/uml/html/gen_cpp_decl_body_87ffa30_2.cpp
File Window Edit Modes Search Region Font Misc
xcoral
gen_cpp_decl_body_87ffa30_2.cpp
C++mode

```
##      void UmlAttribute::gen_cpp_decl(QCString s, bool descr) {
##      ${body}}
##
##      ---- these lines will be automatically removed ----
  const char * p;

  if (! descr) {
    write((cppVisibility() == DefaultVisibility)
          ? visibility() : cppVisibility(),
          TRUE);
    fw.write(": ");
```

Operation dialog, tab Java

This tab allows to give the Java definition of the operation, it is visible only if Java is set through the *Language* menu



□ final □ synchronized

Definition :

```
  ${comment}${visibility}${final}${static}${abstract}${synchronized}${type} ${name}${(}${t0} ${p0}, ${t1} ${p1}, ${t2} ${p2}${)}${throws}${staticnl}
${body}}
```

Result after substitution :

```
  /**
   * entry to produce the html code receiving chapter number
   * path, rank in the mother and level in the browser tree
   */
  public void html(String pfix, int rank, int level) throws IOException  {
  ${body}}
```

☑ contextual body indent

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Definition*** part is editable, the other one help you to see what will be generated for Java (supposing you do not modify the Java code generator !).

When you push the button ***Default definition***, the form specified through the *generation settings* is proposed adding all the operation parameters given in the UML tab. These forms may be modified as you want, even to produce illegal source code !

When you do not want to have this operation defined in Java, empties the definition manually or using the button ***not generated in Java***.

${visibility} produce the visibility (see the UML tab)

${final} produce an empty string when the check box ***final*** is not checked, else produce *final*

${static} produce an empty string when the operation is not a class operation (see the UML tab), else produce *static*

${abstract} produce *abstract* when the operation is abstract (see the UML tab), else an empty string.

${synchronized} produce an empty string when the check box ***synchronized*** is not checked, else produce *synchronized*

${type} is replaced by the value type (see the UML tab)

${name} is replaced by the name of the operation.

${(}* and *${)} produce (and), but there are also a mark for BOUML to find the parameters list

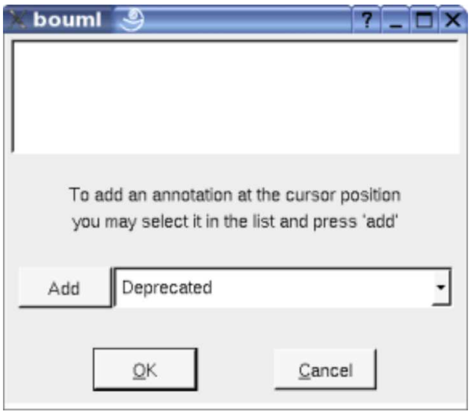
${t<n>}* and *${p<n>} produce the type and the name of each parameter (count from 0), this allows you to remove a parameter, add type modifiers etc ...

${throws} is replaced by the form *throw (...)* when at least an exception is defined in the UML tab. It is also possible to produce *throw()* when there is no exception depending on the generation settings.

${staticnl} produce a line break when the operation is static, else an empty string. In case you do not like this notation, change the generation settings to remove this macro.

${body}* is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body} has a great advantage : when you hit ***Default definition*** the body is not cleared ! At least BOUML share the definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! When *contextual body indent* is toggled the indentation of the keyword *${body}* is added to the indent of the operation at the beginning of each line. Since release 3.4 *contextual body indent* is not set when an operation is produced by a reverse to not alter the original indent.

${@} produces the annotations, when it is present in the definition the button *Edit annotation* is active, a specific dialog allows you to enter the annotations proposing the default annotations (*Deprecated* ...) and the ones defined through the classes stereotyped *@interface* :

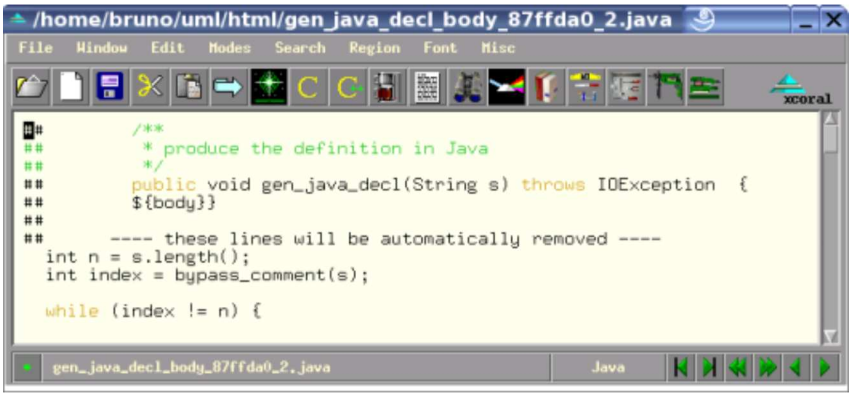


To add an annotation at the cursor position
you may select it in the list and press 'add'

Deprecated

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

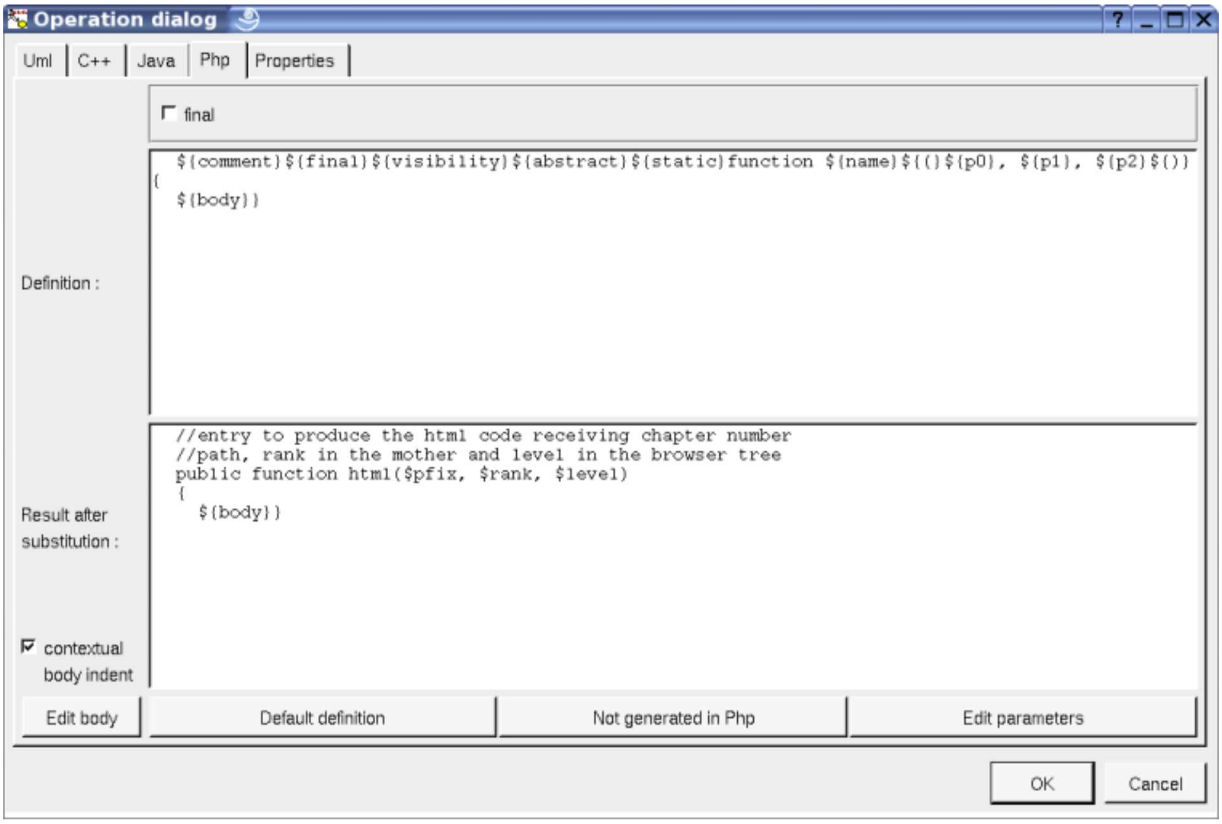
The **edit body** button is active when the definition contains *${body}*, to edit it through the editor you want use the environment dialog, furthermore, when you set *add operation profile on body edition* through the *miscellaneous* menu the form defining the operation in the editor is added at the beginning of the edited file.


/home/bruno/uml/html/gen_java_decl_body_87ffda0_2.java
File
Window
Edit
Modes
Search
Region
Font
Misc
xcoral
gen_java_decl_body_87ffda0_2.java
Java

```
##          /**
##           * produce the definition in Java
##           */
##          public void gen_java_decl(String s) throws IOException  {
##          ${body}}
##
##        ---- these lines will be automatically removed ----
  int n = s.length();
  int index = bypass_comment(s);

  while (index != n) {
```

Operation dialog, tab Php

This tab allows to give the Php definition of the operation, it is visible only if Php is set through the *Language* menu



□ final

Definition :

```
  ${comment}${final}${visibility}${abstract}${static}function ${name}${(}${p0}, ${p1}, ${p2}${)}
{
  ${body}}
```

Result after substitution :

```
  //entry to produce the html code receiving chapter number
  //path, rank in the mother and level in the browser tree
  public function html($pfix, $rank, $level)
  {
    ${body}}
```

☑ contextual body indent

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Definition*** part is editable, the other one help you to see what will be generated for Php (supposing you do not modify the Php code generator !).

When you push the button ***Default definition***, the form specified through the *generation settings* is proposed adding all the operation parameters given in the UML tab. These forms may be modified as you want, even to produce illegal source code !

When you do not want to have this operation defined in Php, empties the definition manually or using the button ***not generated in Php***.

${visibility} produce the visibility (see the UML tab), except if the visibility is *package*, use this case to generate Php 4 code

${final} produce an empty string when the check box ***final*** is not checked, else produce *final*

${static} produce an empty string when the operation is not a class operation (see the UML tab), else produce *static*

${abstract} produce *abstract* when the operation is abstract (see the UML tab), else an empty string.

${name} is replaced by the name of the operation.

${type} is replaced by the value type (see the UML tab)

${(}* and *${)} produce (and), but there are also a mark for BOUML to find the parameters list

${t<n>}, ${p<n>} and ${v*<n>}* produce the type, name and default value of each parameter (count from 0), this allows you to remove a parameter, add modifiers etc ...

${staticnl} produce a line break when the operation is static, else an empty string. Not used bu default, to add it change the generation settings to use this macro.

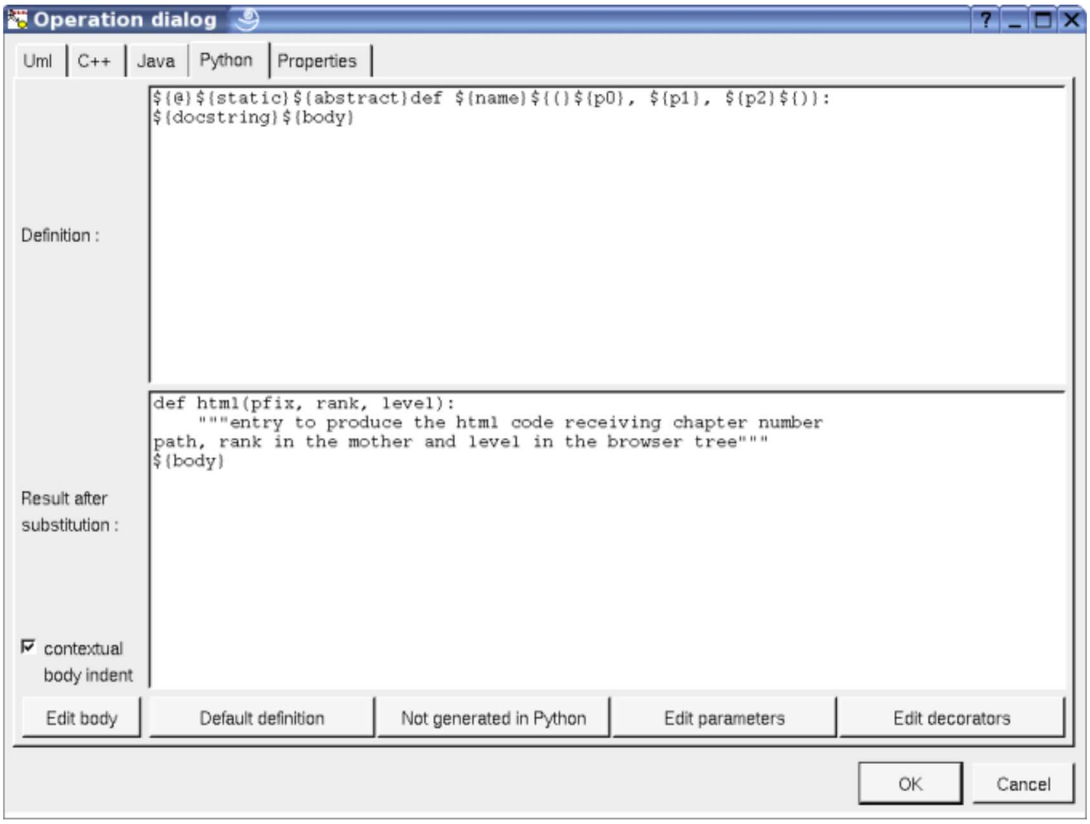
${body}* is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body} has a great advantage : when you hit ***Default definition*** the body is not cleared ! At least BOUML share the definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! When *contextual body indent* is toggled the indentation of the keyword *${body}* is added to the indent of the operation at the beginning of each line. Since release 3.4 *contextual body indent* is not set when an operation is produced by a reverse to not alter the original indent.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

The **edit body** button is active when the definition contains *${body}*, to edit it through the editor you want use the environment dialog, furthermore, when you set *add operation profile on body edition* through the *miscellaneous* menu the form defining the operation in the editor is added at the beginning of the edited file.

Operation dialog, tab Python

This tab allows to give the Python definition of the operation, it is visible only if Python is set through the *Language* menu



Definition :

```
${@}${static}${abstract}def ${name}${(}${p0}, ${p1}, ${p2}${)}:
${docstring}${body}
```

Result after substitution :

```
def html(pfix, rank, level):
    """entry to produce the html code receiving chapter number
path, rank in the mother and level in the browser tree"""
${body}
```

☑ contextual body indent

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Definition*** part is editable, the other one help you to see what will be generated for Python (supposing you do not modify the Python code generator !).

When you push the button ***Default definition***, the form specified through the generation settings is proposed adding all the operation parameters given in the UML tab. These forms may be modified as you want, even to produce illegal source code !

When you do not want to have this operation defined in Python, empties the definition manually or using the button ***not generated in Python***.

${@}* produce the decorators, don't use decorator to produce *@staticmethod* and *@abstractmethod*, see *${static} and *${abstract}* bellow

${static} produce *@staticmethod* followed by a newline if the method is declared *static* in the UML tab, else an empty string

${abstract} produce *@abstractmethod* followed by a newline if the method is declared *abstract* in the UML tab, else an empty string

${name} is replaced by the name of the operation.

${(}* and *${)} produce (and), but there are also a mark for BOUML to find the parameters list

${t<n>}, ${p<n>} and ${v<*n*>} produce the type, name and default value of each parameter (count from 0), this allows you to remove a parameter, add modifiers etc ...

${type} produces the operation return type, if it is not empty the type generation is preceded by -> (ref. pep3107)

${class} is replaced by the name of the class containing the operation.

${docstring}* produce the description of the operation placed between """ and followed by a new line if the description is not empty, else nothing is produced. If you prefer you can use *${comment} or *${description}*

${body}* is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body} has a great advantage : when you hit ***Default definition*** the body is not cleared ! At least BOUML share the definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! When *contextual body indent* is toggled the needed indentation is added to the body (this mean at least the first line is not indented. Since release 3.4 *contextual body indent* is not set when an operation is produced by a reverse to not alter the original indent. In the special case of the *__init__* operation the initialization of the instance attributes and relations is added before the body, they are not produced if *${body}* is not part of the operation definition.

${association} in case the operation is a getter/setter on a relation produce the association (may be the class forming a class-association with the relation) set on the relation

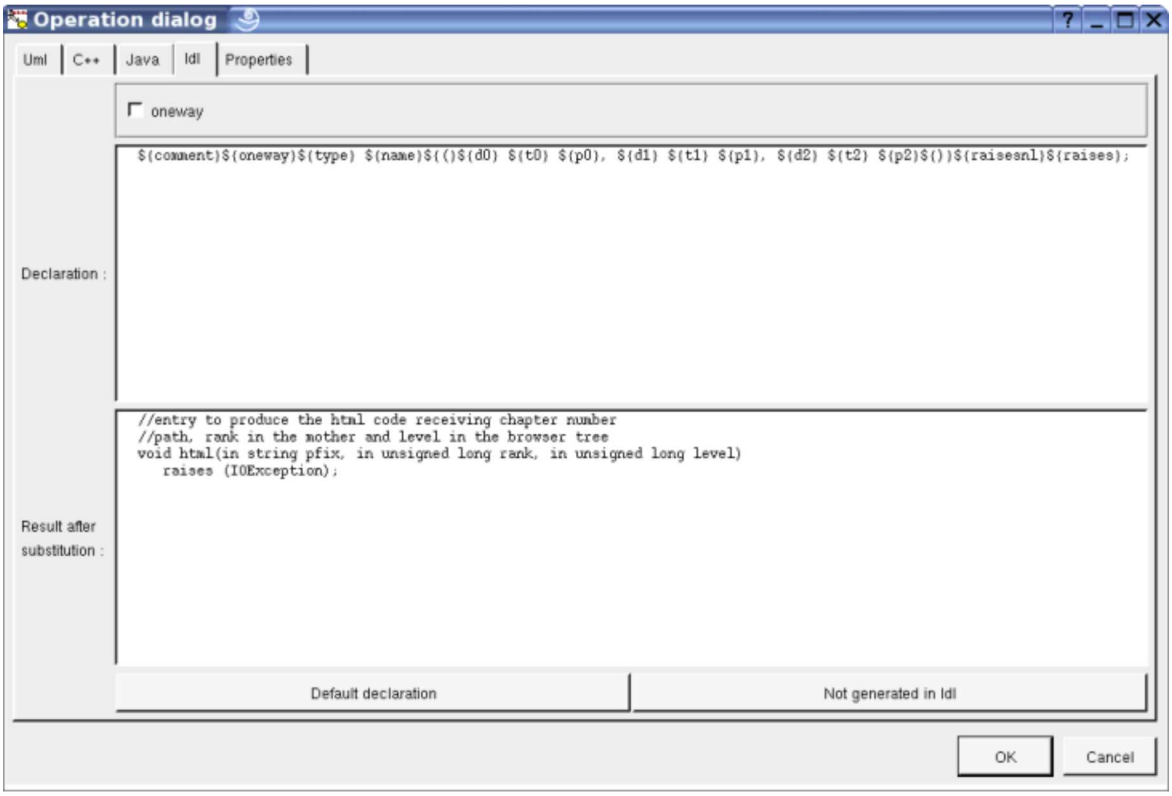
${type} is replaced by the return type, a priori used in a comment, may be for a form *@return*

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

The **edit body** button is active when the definition contains *${body}*, to edit it through the editor you want use the environment dialog, furthermore, when you set *add operation profile on body edition* through the *miscellaneous* menu the form defining the operation in the editor is added at the beginning of the edited file.

Operation dialog, tab Idl

This tab allows to give the Idl declaration of the operation, it is visible only if Idl is set through the *Language* menu



```
${comment}${oneway}${type} ${name}${(}${d0} ${t0} ${p0}, ${d1} ${t1} ${p1}, ${d2} ${t2} ${p2}${)}${raisesnl}${raises};
```

```
//entry to produce the html code receiving chapter number
//path, rank in the mother and level in the browser tree
void html(in string pfix, in unsigned long rank, in unsigned long level)
   raises (IOException);
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Definition*** part is editable, the other one help you to see what will be generated for Java (supposing you do not modify the Java code generator !).

When you push the button ***Default definition***, the form specified through the *generation settings* is proposed adding all the operation parameters given in the UML tab. These forms may be modified as you want, even to produce illegal source code !

When you do not want to have this operation defined in Java+, empties the definition manually or using the button ***not generated in Idl***.

${oneway} produce an empty string when the check box ***oneway*** is not checked, else produce *oneway*

${type} is replaced by the value type (see the UML tab)

${name} is replaced by the name of the operation.

${(}* and *${)} produce (and), but there are also a mark for BOUML to find the parameters list

${t<n>}* and *${p<n>} produce the type and the name of each parameter (count from 0), this allows you to remove a parameter, add type modifiers etc ...

${raise} is replaced by the form *raise (...)* when at least an exception is defined in the UML tab.

${raisenl} produce a line break when the operation have exception, else an empty string. In case you do not like this notation, change the generation settings to remove this macro.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Menu : duplicate

The menu entry *duplicate* clone the operation.

Menu : delete

The menu entry *delete* is only present when the operation is not *read-only*.

Delete the operation, and all its representation in the diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

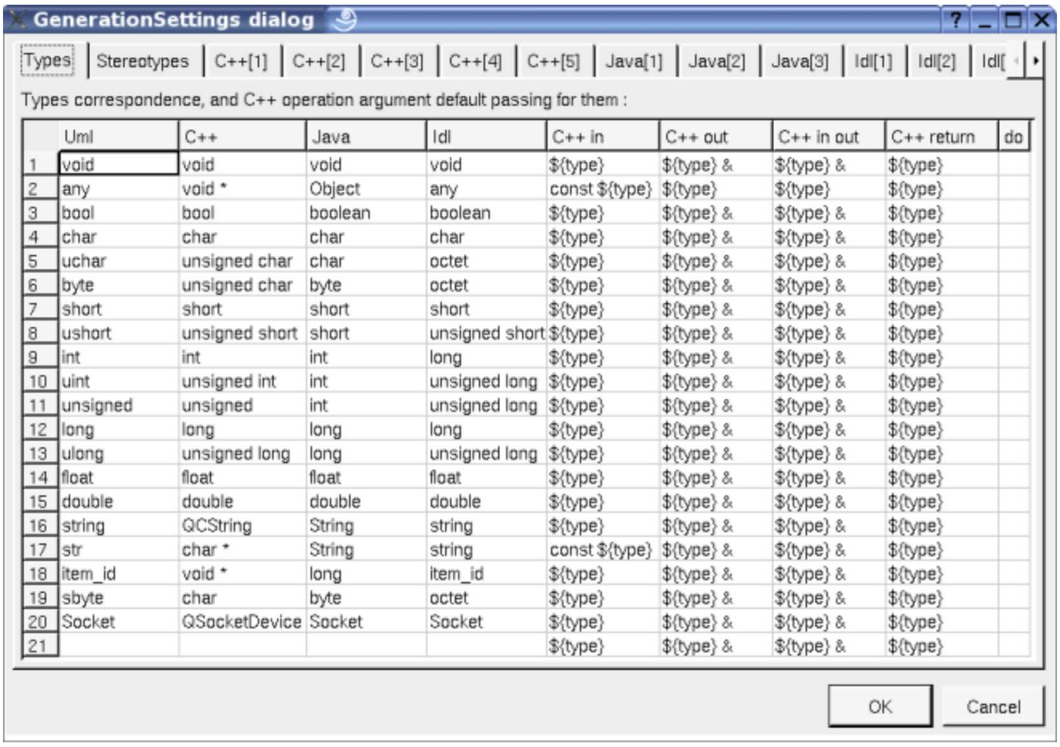
Menu : tools

Appears only when at least one *plug-out* is associated to the operations. To apply a *plug-out* on the operation.

Generation settings

This very important dialog allows to specify many default definitions concerning the operations, more details will be given in C++ generator, Java generator, Php generator and Idl generator.

The first tab allows to specify how the types not supported by an UML class are translated in each language except Php, and the default C++ argument passing for these types depending on the direction more the default type form to return value :

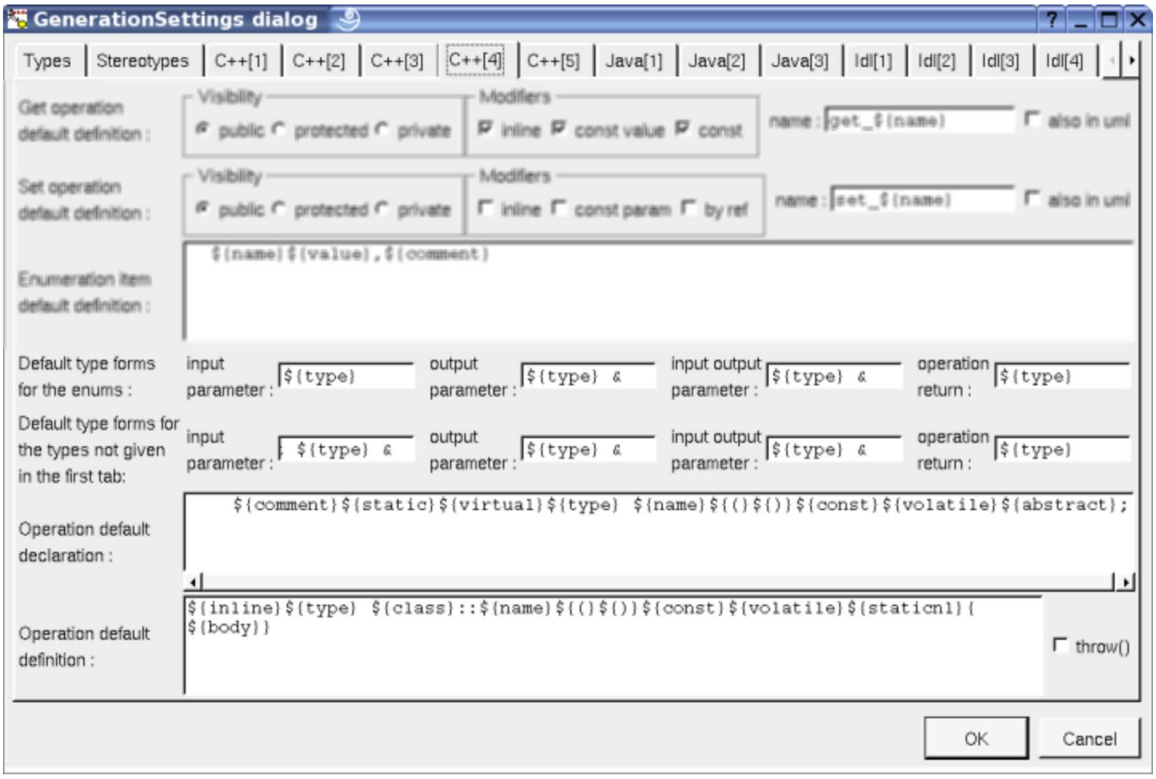


Types correspondence, and C++ operation argument default passing for them :

	Uml	C++	Java	Idl	C++ in	C++ out	C++ in out	C++ return	do
1	void	void	void	void	${type}	${type} &	${type} &	${type}	
2	any	void *	Object	any	const ${type}	${type}	${type}	${type}	
3	bool	bool	boolean	boolean	${type}	${type} &	${type} &	${type}	
4	char	char	char	char	${type}	${type} &	${type} &	${type}	
5	uchar	unsigned char	char	octet	${type}	${type} &	${type} &	${type}	
6	byte	unsigned char	byte	octet	${type}	${type} &	${type} &	${type}	
7	short	short	short	short	${type}	${type} &	${type} &	${type}	
8	ushort	unsigned short	short	unsigned short	${type}	${type} &	${type} &	${type}	
9	int	int	int	long	${type}	${type} &	${type} &	${type}	
10	uint	unsigned int	int	unsigned long	${type}	${type} &	${type} &	${type}	
11	unsigned	unsigned	int	unsigned long	${type}	${type} &	${type} &	${type}	
12	long	long	long	long	${type}	${type} &	${type} &	${type}	
13	ulong	unsigned long	long	unsigned long	${type}	${type} &	${type} &	${type}	
14	float	float	float	float	${type}	${type} &	${type} &	${type}	
15	double	double	double	double	${type}	${type} &	${type} &	${type}	
16	string	QCString	String	string	${type}	${type} &	${type} &	${type}	
17	str	char *	String	string	const ${type}	${type} &	${type} &	${type}	
18	item_id	void *	long	item_id	${type}	${type} &	${type} &	${type}	
19	sbyte	char	byte	octet	${type}	${type} &	${type} &	${type}	
20	Socket	QSocketDevice	Socket	Socket	${type}	${type} &	${type} &	${type}	
21					${type}	${type} &	${type} &	${type}	

As usual the last column *do* allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

The fourth C++ tab *Stereotypes* allows to specify the default declaration and definition of an operation (without the parameters), the default argument passing for an enumeration's item and an argument whose type is not one of the types defined in the first tab, and if a *throw()* must be generated when the operation does not have exception. They are visible only if C++ is set through the menu *Languages*



Get operation default definition : Visibility ● public ○ protected ○ private Modifiers ☑ inline ☑ const value ☑ const name : get_${name} □ also in uml

Set operation default definition : Visibility ● public ○ protected ○ private Modifiers □ inline □ const param □ by ref name : set_${name} □ also in uml

Enumeration item default definition :

```
  ${name}${value},${comment}
```

Default type forms for the enums : input parameter : ${type} output parameter : ${type} & input output parameter : ${type} & operation return : ${type}

Default type forms for the types not given in the first tab: input parameter : ${type} & output parameter : ${type} & input output parameter : ${type} & operation return : ${type}

Operation default declaration :

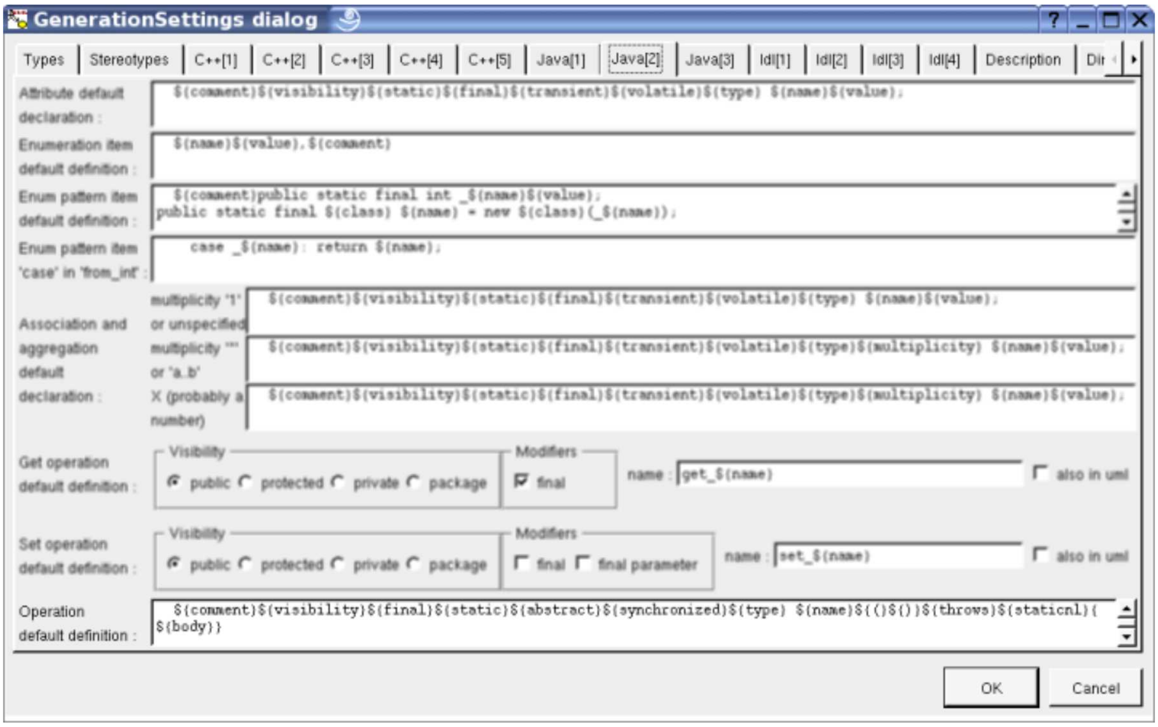
```
    ${comment}${static}${virtual}${type} ${name}${(}${)}${const}${volatile}${abstract};
```

Operation default definition :

```
${inline}${type} ${class}::${name}${(}${)}${const}${volatile}${staticnl}{
${body}}
```

□ throw()

The second Java tab allows to set the default operation definition (without the parameters) in Java, it is visible only if Java is set through the menu *Languages*



Attribute default declaration :

```
  ${comment}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

Enumeration item default definition :

```
  ${name}${value},${comment}
```

Enum pattern item default definition :

```
  ${comment}public static final int _${name}${value};
public static final ${class} ${name} = new ${class}(_${name});
```

Enum pattern item 'case' in 'from_int' :

```
    case _${name}: return ${name};
```

Association and aggregation default declaration :

multiplicity '1' or unspecified

```
  ${comment}${visibility}${static}${final}${transient}${volatile}${type} ${name}${value};
```

multiplicity '*' or 'a..b'

```
  ${comment}${visibility}${static}${final}${transient}${volatile}${type}${multiplicity} ${name}${value};
```

X (probably a number)

```
  ${comment}${visibility}${static}${final}${transient}${volatile}${type}${multiplicity} ${name}${value};
```

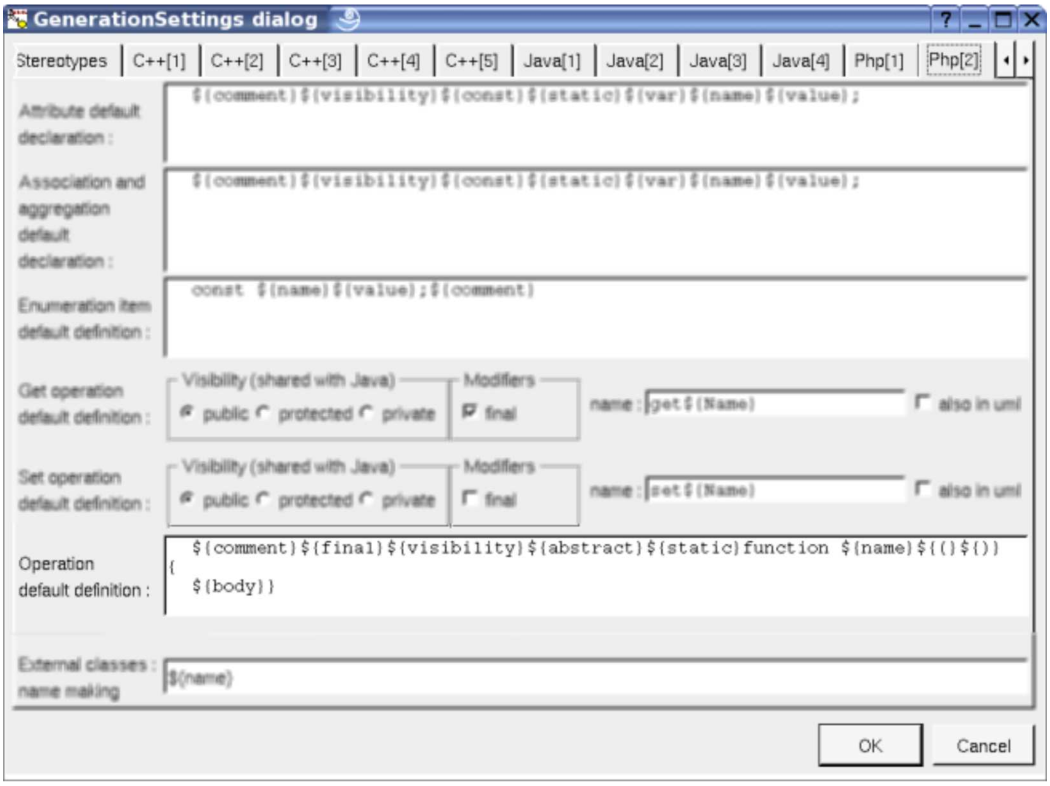
Get operation default definition : Visibility ● public ○ protected ○ private ○ package Modifiers ☑ final name : get_${name} □ also in uml

Set operation default definition : Visibility ● public ○ protected ○ private ○ package Modifiers □ final □ final parameter name : set_${name} □ also in uml

Operation default definition :

```
  ${comment}${visibility}${final}${static}${abstract}${synchronized}${type} ${name}${(}${)}${throws}${staticnl}{
${body}}
```

The second Php tab allows to set the default operation definition (without the parameters) in Php, it is visible only if Php is set through the menu *Languages*



Attribute default declaration :

```
${comment}${visibility}${const}${static}${var}${name}${value};
```

Association and aggregation default declaration :

```
${comment}${visibility}${const}${static}${var}${name}${value};
```

Enumeration item default definition :

```
const ${name}${value};${comment}
```

Get operation default definition : Visibility (shared with Java) ● public ○ protected ○ private Modifiers ☑ final name : get${Name} □ also in uml

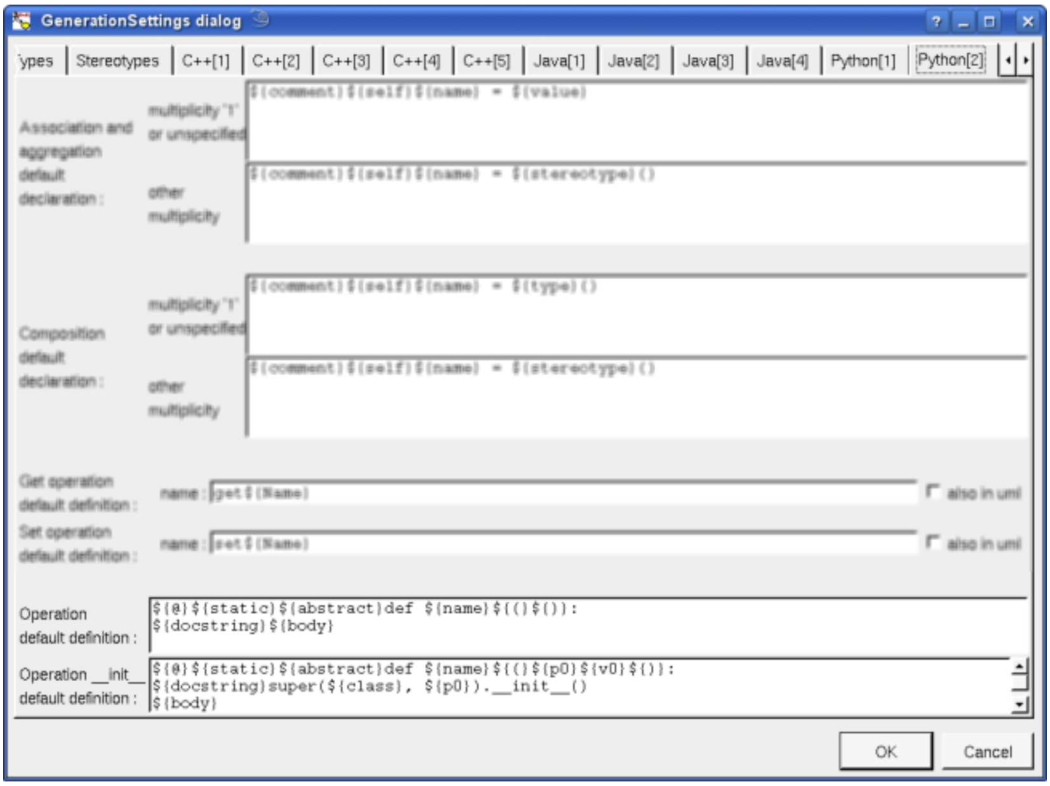
Set operation default definition : Visibility (shared with Java) ● public ○ protected ○ private Modifiers □ final name : set${Name} □ also in uml

Operation default definition :

```
  ${comment}${final}${visibility}${abstract}${static}function ${name}${(}${)}
{
  ${body}}
```

External classes : name making ${name}

The second Python tab allows to set the default operation definition (without the parameters) in Python for standard operation and for the special case of the __*init*__ operation, it is visible only if Python is set through the menu *Languages*



Association and aggregation default declaration :

multiplicity '1' or unspecified

```
${comment}${self}${name} = ${value}
```

other multiplicity

```
${comment}${self}${name} = ${stereotype}()
```

Composition default declaration :

multiplicity '1' or unspecified

```
${comment}${self}${name} = ${type}()
```

other multiplicity

```
${comment}${self}${name} = ${stereotype}()
```

Get operation default definition : name : get${Name} □ also in uml

Set operation default definition : name : set${Name} □ also in uml

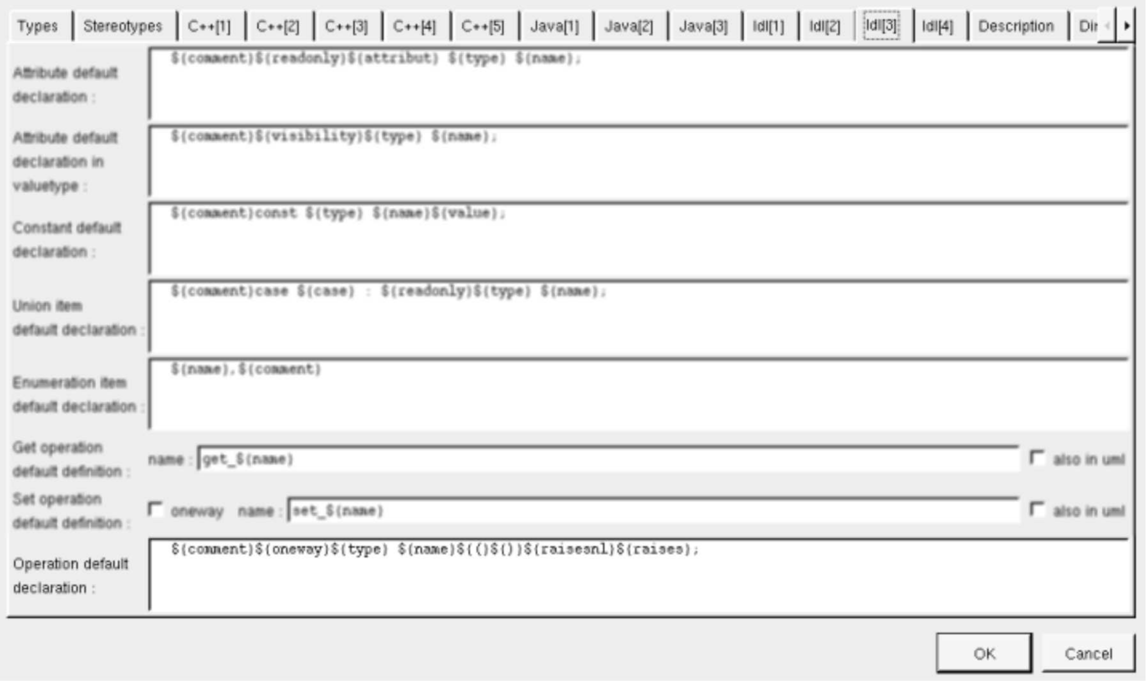
Operation default definition :

```
${@}${static}${abstract}def ${name}${(}${)}:
${docstring}${body}
```

Operation __init__ default definition :

```
${@}${static}${abstract}def ${name}${(}${p0}${v0}${)}:
${docstring}super(${class}, ${p0}).__init__()
${body}
```

The third Idl tab allows to set the default operation declaration in Idl, it is visible only if Idl is set through the menu *Languages*



Attribute default declaration : `${comment}${readonly}${attribut} ${type} ${name};`

Attribute default declaration in valuetype : `${comment}${visibility}${type} ${name};`

Constant default declaration : `${comment}const ${type} ${name}${value};`

Union item default declaration : `${comment}case ${case} : ${readonly}${type} ${name};`

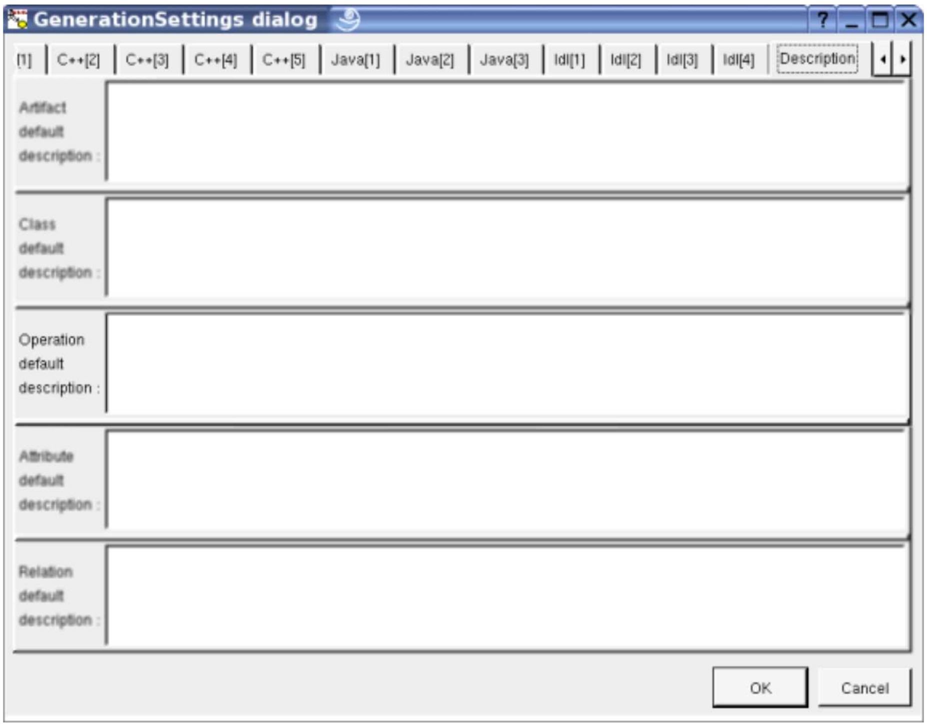
Enumeration item default declaration : `${name},${comment}`

Get operation default definition : name : `get_${name}` □ also in uml

Set operation default definition : □ oneway name : `set_${name}` □ also in uml

Operation default declaration : `${comment}${oneway}${type} ${name}${(}${)}${raisesnl}${raises};`

The tab *Description* allows to set a default description :



Artifact default description :

Class default description :

Operation default description :

Attribute default description :

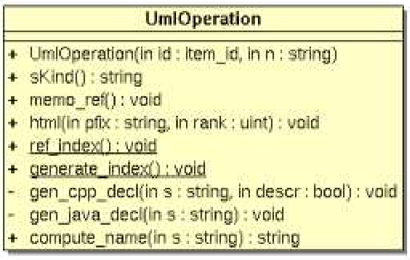
Relation default description :

Drawing

The operations are drawn with their class in a class diagram, and alone in a sequence diagram or a collaboration diagram.

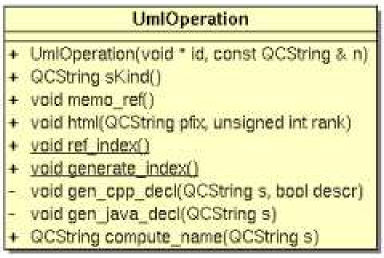
The way an operation is written or not in its class picture in a class diagram depend on the class drawing settings options drawing language, hide operation, show full members definition, member max width and show member visibility, and also on the class menu entry individual operation visibility.

For instance in a class diagram, the drawing language is UML, the full member definitions and visibility are shown, and the attributes are hidden :



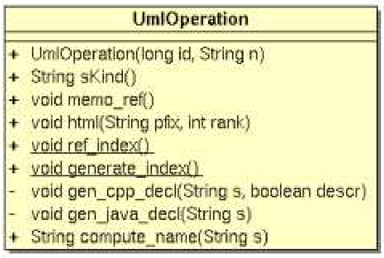
```
UmlOperation
+ UmlOperation(in id : item_id, in n : string)
+ sKind() : string
+ memo_ref() : void
+ html(in pfix : string, in rank : uint) : void
+ ref_index() : void
+ generate_index() : void
- gen_cpp_decl(in s : string, in descr : bool) : void
- gen_java_decl(in s : string) : void
+ compute_name(in s : string) : string
```

changing the drawing language from UML (the default) to C++ :



```
UmlOperation
+ UmlOperation(void * id, const QCString & n)
+ QCString sKind()
+ void memo_ref()
+ void html(QCString pfix, unsigned int rank)
+ void ref_index()
+ void generate_index()
- void gen_cpp_decl(QCString s, bool descr)
- void gen_java_decl(QCString s)
+ QCString compute_name(QCString s)
```

changing the drawing language to Java :



```
UmlOperation
+ UmlOperation(long id, String n)
+ String sKind()
+ void memo_ref()
+ void html(String pfix, int rank)
+ void ref_index()
+ void generate_index()
- void gen_cpp_decl(String s, boolean descr)
- void gen_java_decl(String s)
+ String compute_name(String s)
```

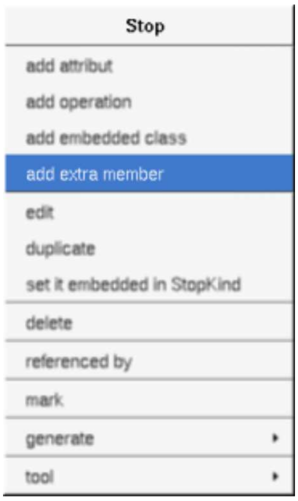
Previous : attribute

Next : extra member

Extra member

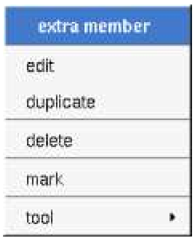
An extra member is an alien allowing you to specify directly the generated code for each language. This allows to manage non UML items, for instance C++ pre-processor directives, Java attribute initializations etc ...

An extra member is created through the class menu called from the browser :



Menus

The extra member menu appearing with a right mouse click on its representation in the browser is something like these, supposing it is not *read-only* nor deleted :

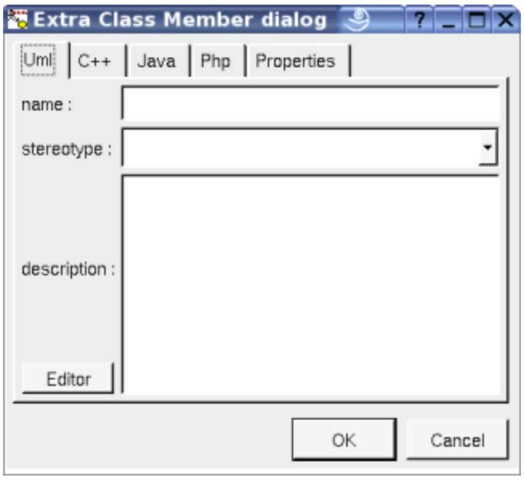


Menu : edit

edit allows to show/modify the extra member properties. In case the extra member is read-only, the fields of the dialog are also read-only.

Extra member dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



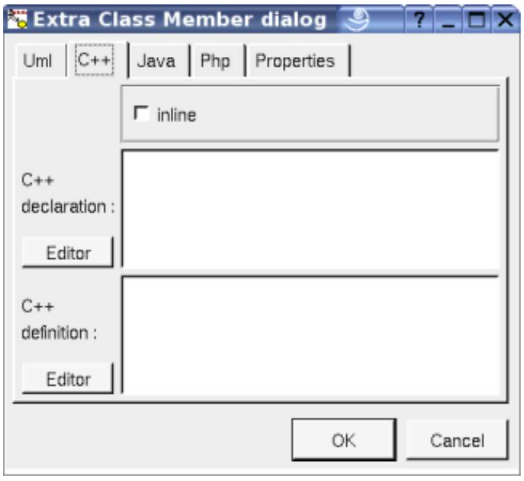
The ***name*** and the ***stereotype*** do not have meaning for BOUML.

The ***description*** is not used by the code generators.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Extra member dialog, tab C++

The tab C++ allows to specify the code generated in the header and/or the source file(s), it is visible only if C++ is set through the menu *Languages*



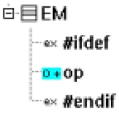
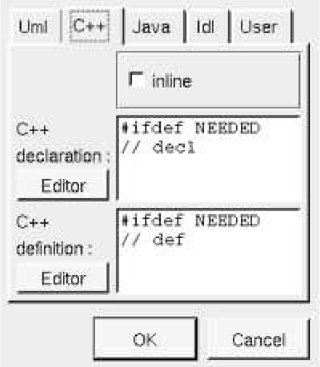
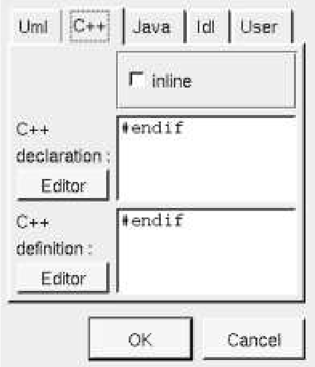
□ inline

The *declaration* part is generated in the definition of the class containing the extra member, except if the *inline* toggle is set, in this case the generation is made after the class definition as for an inline operation.

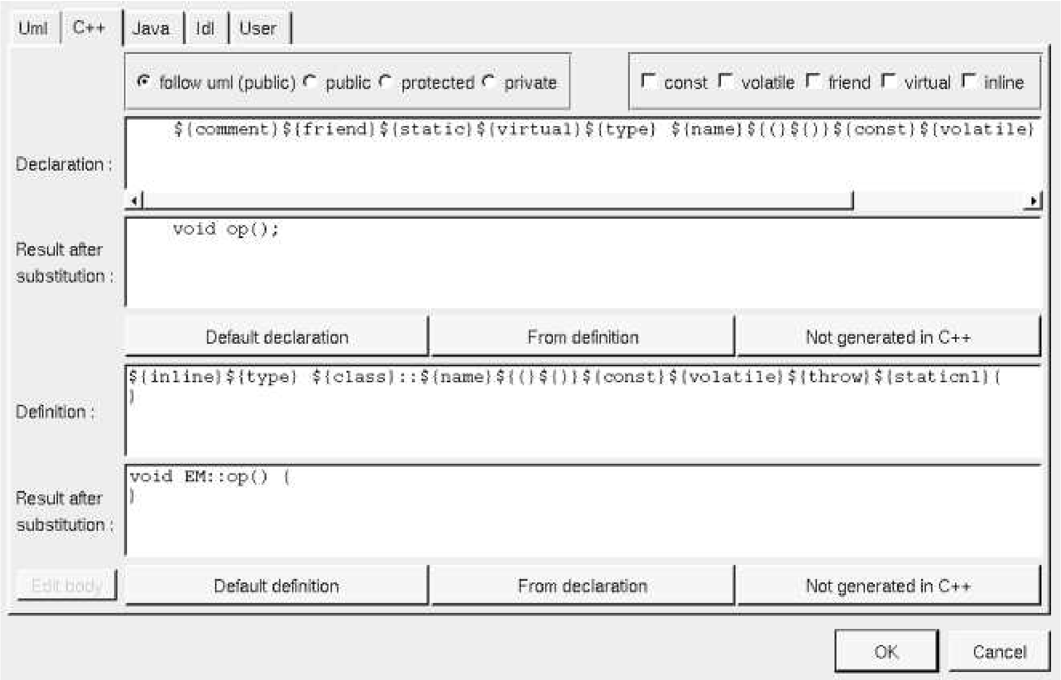
The *definition* part is produced in the source file rather than in the header one.

For instance with :

EM	#ifdef	#endif

	
	□ inline
	C++ declaration :
	#ifdef NEEDED
	// decl
	C++ definition :
	#ifdef NEEDED
	// def
		
		□ inline
		C++ declaration :
		#endif
		C++ definition :
		#endif

and :



● follow uml (public) ○ public ○ protected ○ private

□ const □ volatile □ friend □ virtual □ inline

Declaration :

```
    ${comment}${friend}${static}${virtual}${type} ${name}${(}${)}${const}${volatile}
```

Result after substitution :

```
    void op();
```

Definition :

```
${inline}${type} ${class}::${name}${(}${)}${const}${volatile}${throw}${staticnl}{
}
```

Result after substitution :

```
void EM::op() {
}
```

The generated code for the class is :

C++ header	C++ source

class EM {
#ifdef NEEDED
// decl
 	
  public:
    void op();
 	
#endif
};
	#ifdef NEEDED
	// def
	void EM::op() {
	}
	
	#endif

In case the extra members and *op* are *inline*, all is generated in the header file :

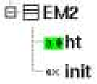
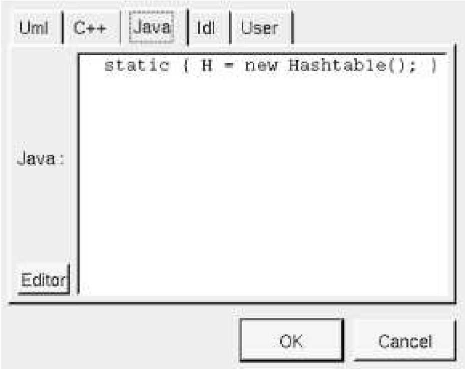
C++ header

class EM {
#ifdef NEEDED
// decl
 	
  public:
    void op();
 	
#endif
};
 	
#ifdef NEEDED
// def
inline void EM::op() {
}
 	
#endif

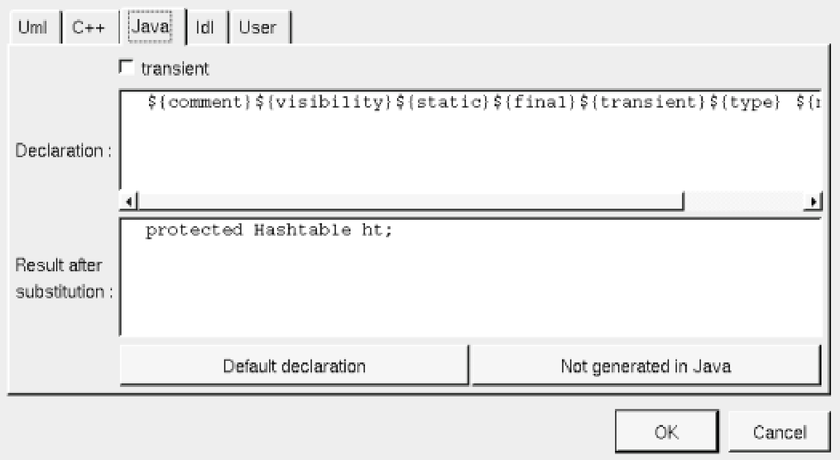
Extra member dialog, tab Java

The tab Java allows to specify the code generated in Java, it is visible only if Java is set through the menu *Languages*, for instance with :

EM2	init

EM2	init
 	 Uml C++ Java Idl User Java : Editor OK Cancel static { H = new Hashtable(); }

and :



□ transient

Declaration : ${comment}${visibility}${static}${final}${transient}${type} ${r

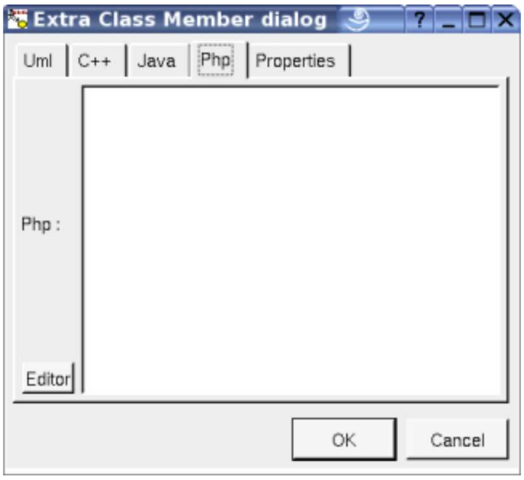
Result after substitution : protected Hashtable ht;

The generated code for *EM2* is :

```
class EM2 {
  protected Hashtable ht;

  static { H = new Hashtable(); }
}
```

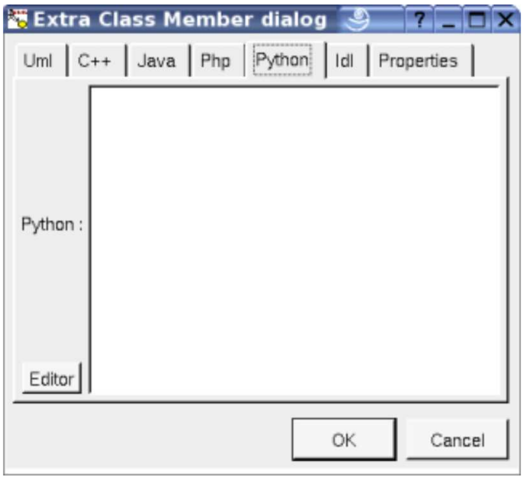
Extra member dialog, tab Php

The tab Php allows to specify the code generated in Php, it is visible only if Php is set through the menu *Languages* :



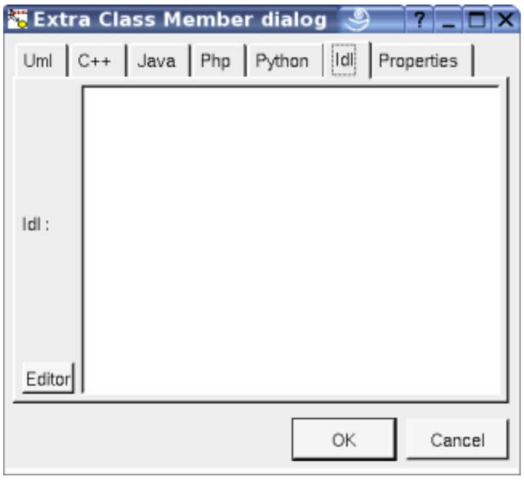
Extra member dialog, tab Python

The tab Python allows to specify the code generated in Python, it is visible only if Python is set through the menu *Languages* :



Extra member dialog, tab Idl

The tab Idl allows to specify the code generated in Idl, it is visible only if Idl is set through the menu *Languages* :



Menu : duplicate

The menu entry *duplicate* clone the extra member.

Menu : delete

The menu entry *delete* is only present when the extra member is not *read-only.*

Delete the extra member. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

See mark

Menu : tools

Appears only when at least one *plug-out* is associated to the extra member. To apply a *plug-out* on the extra member.

Previous : operation

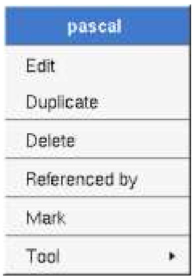
Next : class instance

Class instance

A class instance may be placed under a class view, a use case view or a use case.

Menus

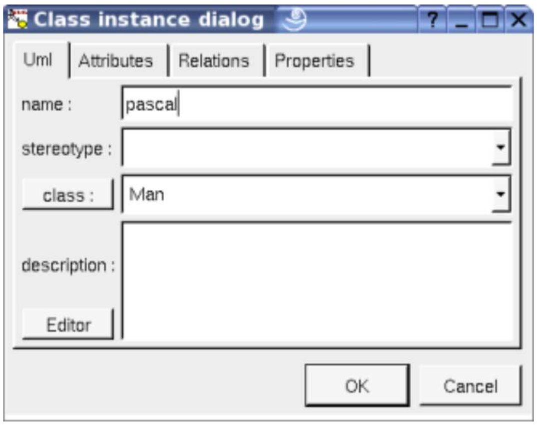
The class menu appearing with a right mouse click on its representation is something like this, supposing the instance not *read-only* nor deleted (see also menu in a diagram) :



Menu : edit

edit allows to show/modify the instance properties. In case the class is read-only, the fields of the dialog are also read-only.

Class dialog, tab Uml



name : pascal

stereotype :

class : Man

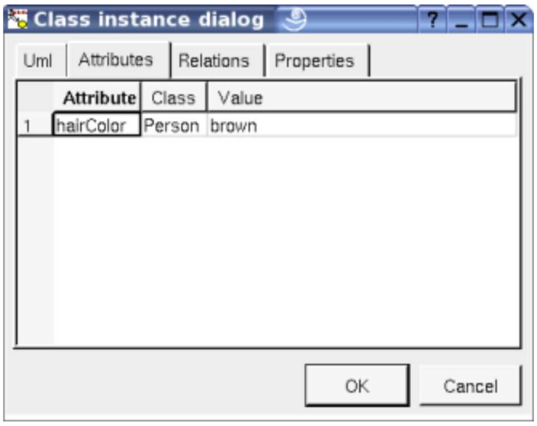
The button ***class*** shows a menu proposing :

- to select in the browser the class of the instance
- if the instance is not read-only and if a class is selected in the browser : to set the class of the instance to be this class
- if the view containing the class containing the instance is not read-only : to create a new class and to set the attribute type to it

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Class dialog, tab Attributes

This tab allows to specify the value of the attributes of the instance, including the inherited ones :

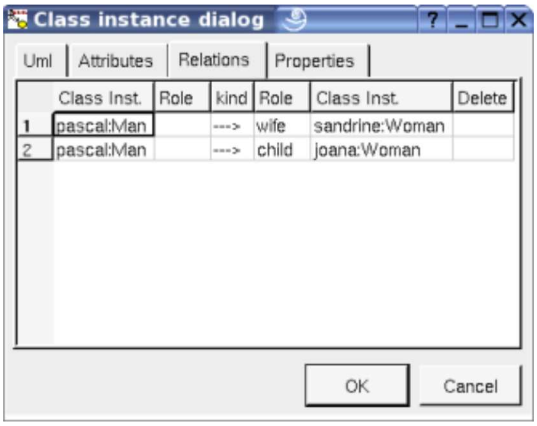


	Attribute	Class	Value
1	hairColor	Person	brown

Unfortunately an attribute can't be set several times, this is a problem when an attribute has a multiplicity greater than 1.

Class dialog, tab Relations

This tab allows to specify the value of the relations of the instance, including the inherited ones:



	Class Inst.	Role	kind	Role	Class Inst.	Delete
1	pascal:Man		--->	wife	sandrine:Woman	
2	pascal:Man		--->	child	joana:Woman	

Unfortunately a relation can't be set several times, this is a problem when a relation has a multiplicity greater than 1.

Menu : duplicate

The menu entry *duplicate* clone the class instance, except the value of the relations.

Menu : referenced by

To know who reference the current class instance

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the class instance is not *read-only*.

Delete the instance and all the representation of it in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

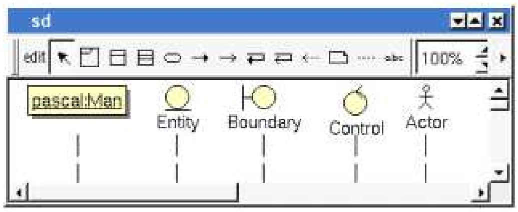
Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a class instance. The selected tool is called and applied on the current class instance.

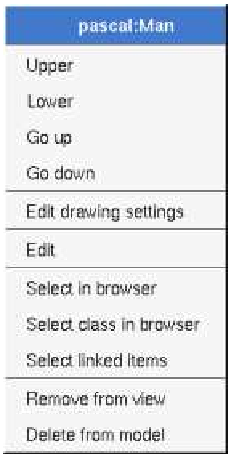
Drawing

Sequence diagrams

A class instance is drawn in a sequence diagram as a rectangle or an icon depending on the class's stereotype and the drawing settings, the value of the attributes and relations don't appears :



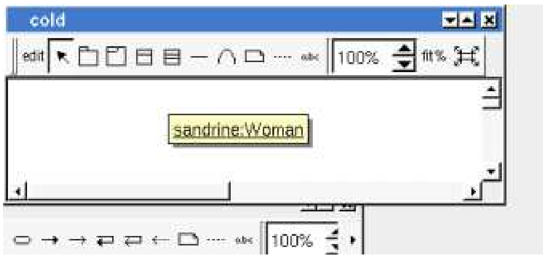
A right mouse click on a class instance in a sequence diagram calls the following menu (supposing the instance editable) :



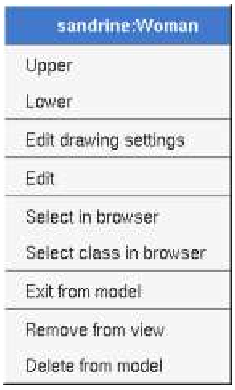
Please refer to the chapter sequence diagram for more details.

Collaboration diagrams

A class instance is drawn in a collaboration diagram as a rectangle, the value of the attributes and relations don't appears :



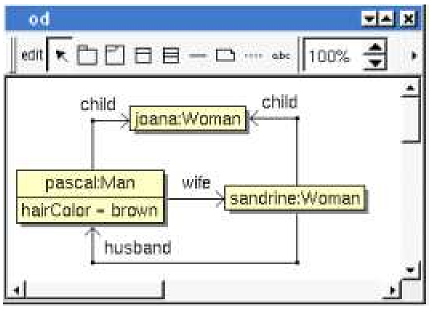
A right mouse click on a class instance in a collaboration diagram calls the following menu (supposing the instance editable) :



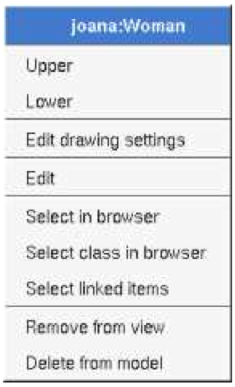
Please refer to the chapter collaboration diagram for more details.

Object diagrams

A class instance is drawn in a collaboration diagram as a rectangle, the value of the attributes and relations appears :



A right mouse click on a class instance in an object diagram calls the following menu (supposing the instance editable) :



Please refer to the chapter object diagram for more details.

Previous : extra member

Next : state

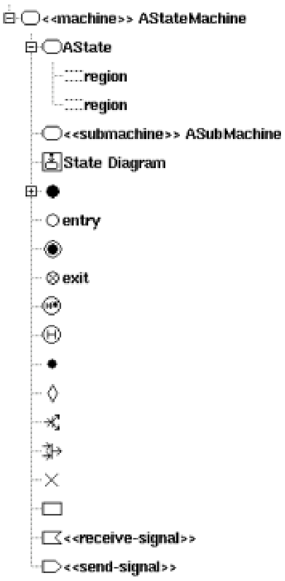
State

Currently BOUML manages only the *behavioral states.*

A *state* represents a *state machine*, a *sub machine*, a *composite state* or a simple *state*. By definition each *state* placed in a class view, a use case view or a use case is a *state machine,* and a *state machine* may contains *sub machines* and *states.* By default at the creation time a *state machine* is stereotyped *machine*, and a *sub machine* is stereotypes *submachine*.

Note : for reasons of simplification the *final state* is considered to be a pseudo state.

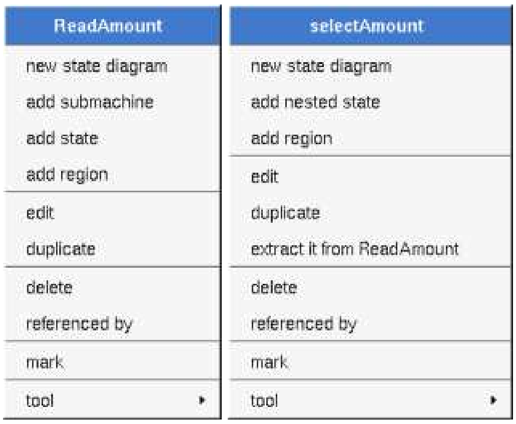
In the *browser* a *state* may contain sub *states, regions*, pseudo states, transitions, actions and state diagrams :



The *state*'s properties will be exposed below.

Menus

The *state* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *state* not *read-only* nor deleted (see also menu in a diagram) :



Menu : add ...

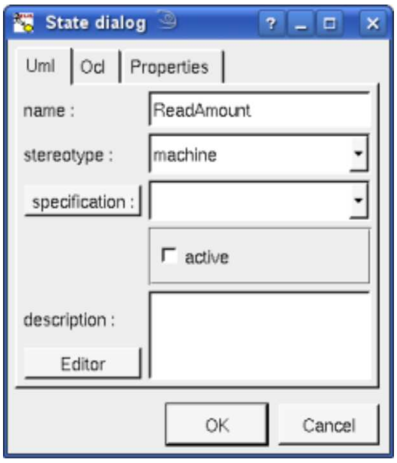
These entries of the menu allow to add a state diagram, a sub state or a *region*, the *sub machine* will have the stereotype *submachine*. The state diagrams nested in a *state* are the ones for the *state*, this means that in case you use this state diagram to create a new *state* or *pseudo state* these ones will be a child of the *state* in the *browser*.

Menu : edit

edit allows to show/modify the *state* properties. In case the *state* is read-only, the fields of the dialog are also read-only.

State dialog, tab Uml

The tab *Uml* is a global tab :



name : ReadAmount

stereotype : machine

☐ active

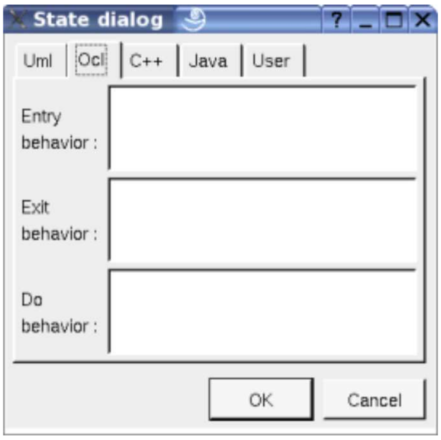
The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The **specification** allows to set the operation the state implements, this button can show a menu proposing depending on the cases to select the current specification operation in the browser or to choose the operation may be selected in the browser

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

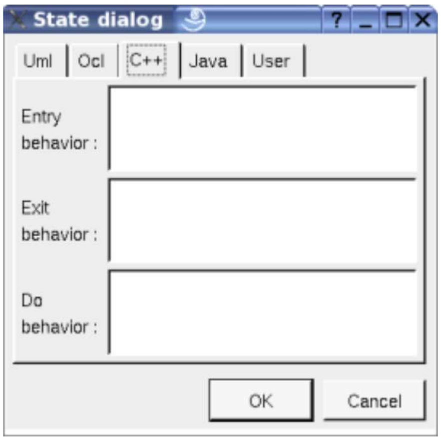
State dialog, tab Ocl

The *Ocl* tab allows to specify the *state* behavior using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



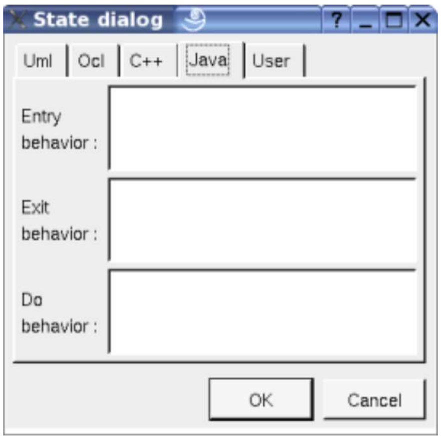
State dialog, tab C++

This tab allows to specify the *state* behavior in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



State dialog, tab Java

This tab allows to specify the *state* behavior in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *state* without its children

Menu : extract it from X

The menu entry *extract it from X* is present when the *stste* is nested in *X* (perhaps *X* is itself nested in another one, but it is not visible here). Choosing this entry the current *stste* became a children of the parent of *X*.

Menu : referenced by

To know who reference the current *stste* through a transition.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *state* is not *read-only*.

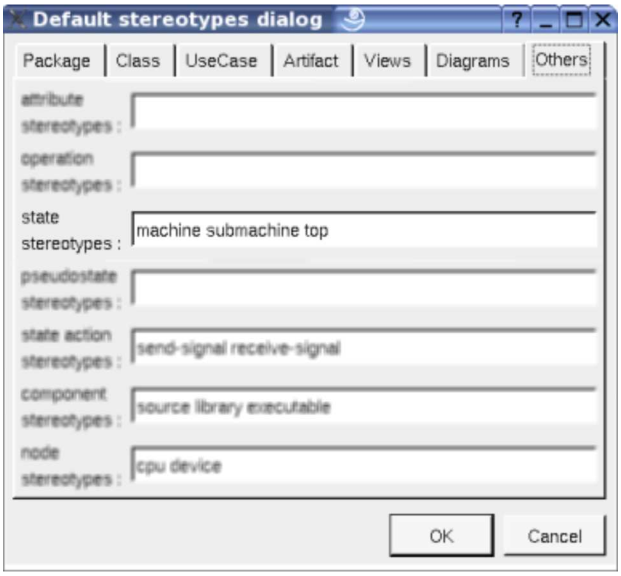
Delete the *state* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *state*. The selected tool is called and applied on the current *state*.

Default stereotypes

The dialog allowing to set the default stereotypes :



attribute stereotypes :

operation stereotypes :

state stereotypes : machine submachine top

pseudostate stereotypes :

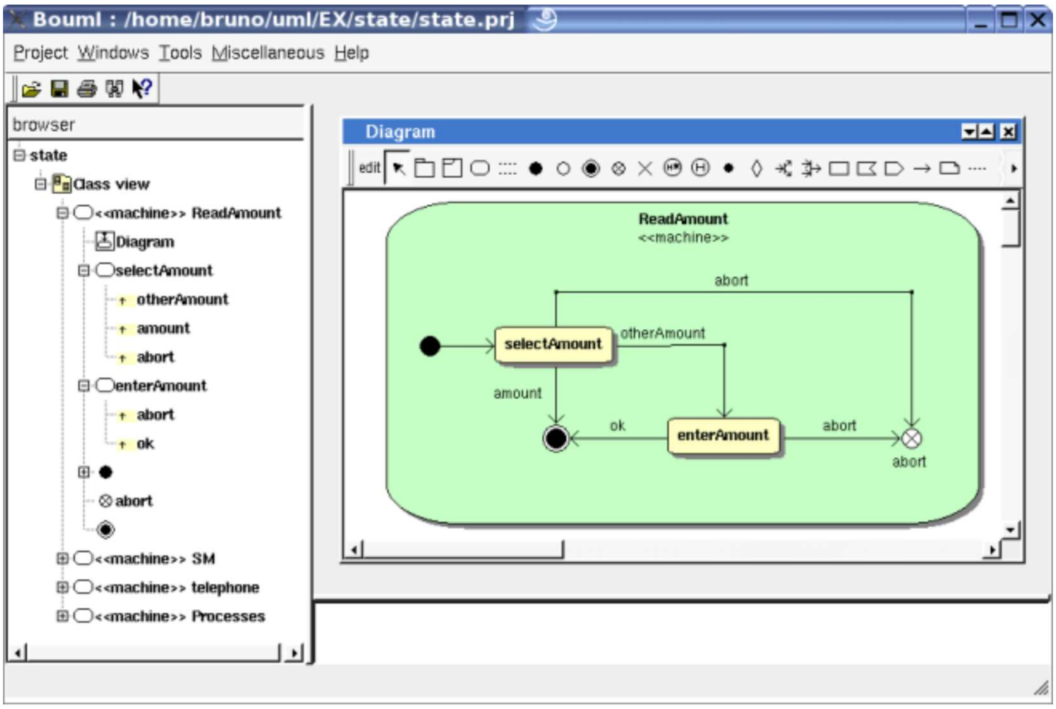
state action stereotypes : send-signal receive-signal

component stereotypes : source library executable

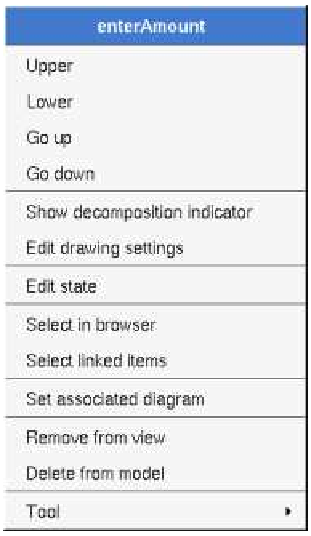
node stereotypes : cpu device

Drawing

A *state* is drawn in a diagram as a rectangle with rounded corners :

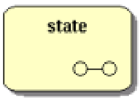


A right mouse click on a *state* in a diagram calls the following menu (supposing the *state* editable) :



Menu : show/hide decomposition indicator

To draw or not the icon indicating the state contains or not sub states (in theory in case they are not drawn). Note Bouml follow your choice without checking if this has sense.



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *state* in a diagram, all the settings are set to *default*.

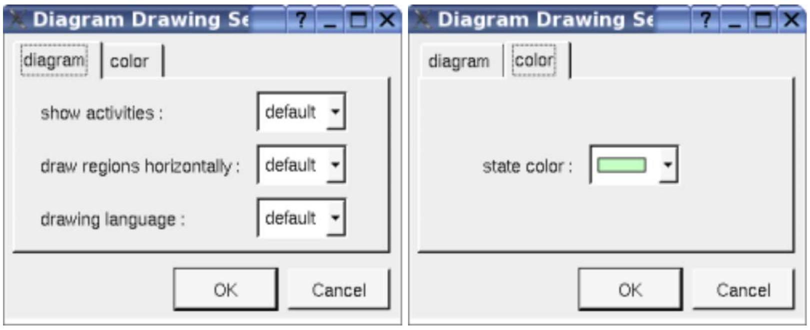


Diagram Drawing Se

diagram | color

show activities : default

draw regions horizontally : default

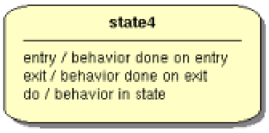
drawing language : default

state color : 🟩

OK Cancel

show activities :

Allows to show or not the *state*'s activities in a compartment depending on the drawing language.

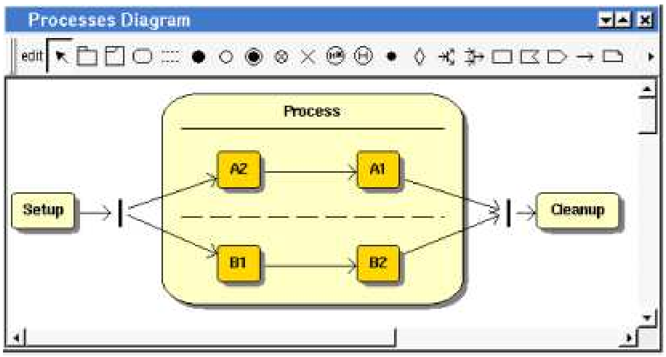


drawing language :

Allows to specify the used language in case the *state*'s activities are shown.

drawing regions horizontally :

Allows to indicate if the *regions* are drawn horizontally or vertically, for instance :



Note : the regions are not visible while the state picture is too small.

State color :

To specify the fill color.

Menu : set associated diagram

set associated diagram allows to automatically open the current diagram when a double mouse click is made on the *state* representation in a diagram or the browser. After that the only way to edit the *state* is to choose the *edit* entry in the menu.

Menu tools :

Appears only when at least one *plug-out* is associated to the *states*. To apply a *plug-out* on the *state*.

Previous : class instance

Next : state action

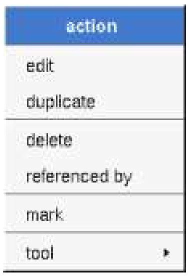
State Actions

In the *browser* a *state action* may contain transitions

The *state action*'s properties will be exposed below.

Menus

The *state action* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *action* not *read-only* nor deleted (see also menu in a diagram) :

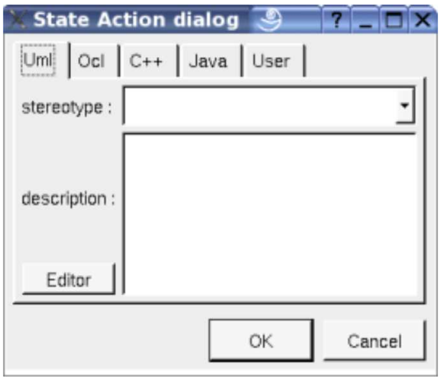


Menu : edit

edit allows to show/modify the *action* properties. In case the *action* is read-only, the fields of the dialog are also read-only.

State action dialog, tab Uml

The tab *Uml* is a global tab :

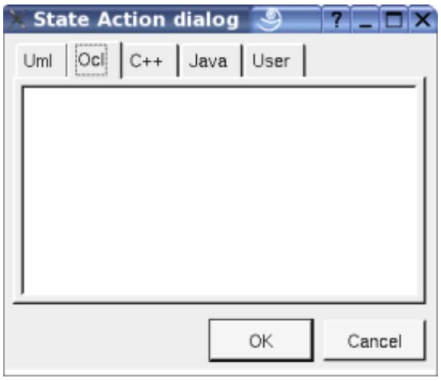


The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

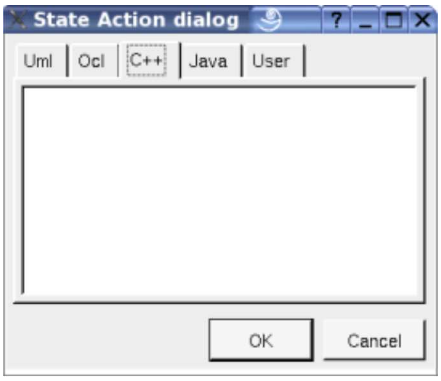
State action dialog, tab Ocl

The *Ocl* tab allows to specify the *state action* expression using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



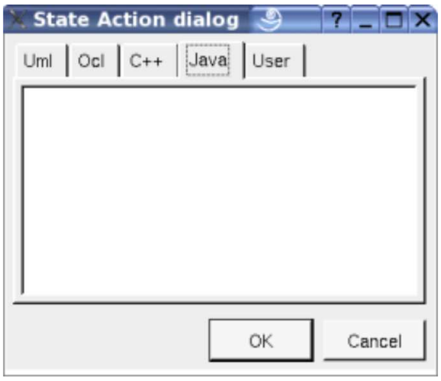
State action dialog, tab C++

This tab allows to specify the *state action* expression in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



State action dialog, tab Java

This tab allows to specify the *state action* expression in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *state action* without its children

Menu : referenced by

To know who reference the current *state* action through a transition.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *state action* is not *read-only*.

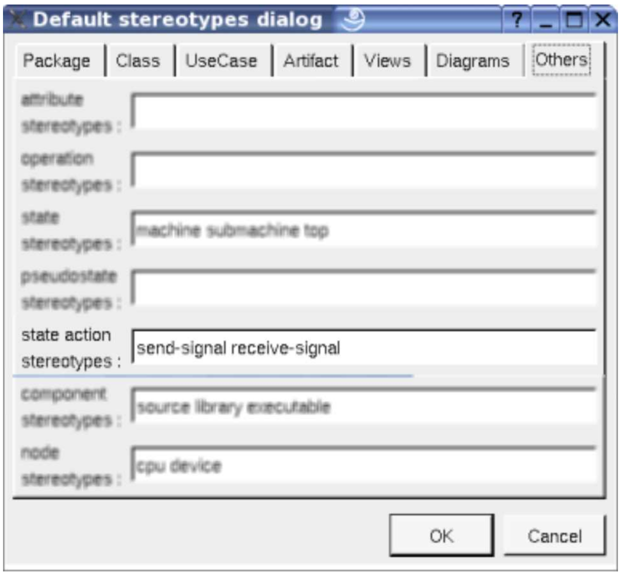
Delete the *state action* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *state action*. The selected tool is called and applied on the current *state action*.

Default stereotypes

The dialog allowing to set the default stereotypes :



Default stereotypes dialog

Package | Class | UseCase | Artifact | Views | Diagrams | Others

attribute stereotypes :

operation stereotypes :

state stereotypes : machine submachine top

pseudostate stereotypes :

state action stereotypes : send-signal receive-signal

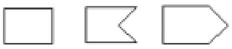
component stereotypes : source library executable

node stereotypes : cpu device

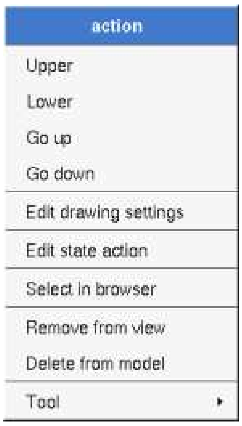
OK | Cancel

Drawing

Depending on its stereotype a *state action* is drawn in a diagram as a rectangle, a convex pentagon or a concave pentagon :



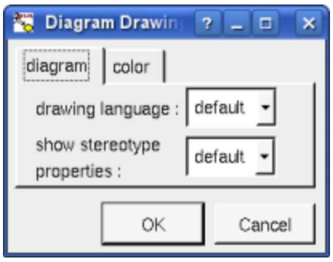
A right mouse click on a *state action* in a diagram calls the following menu (supposing the *state action* editable) :



Menu : edit drawing settings

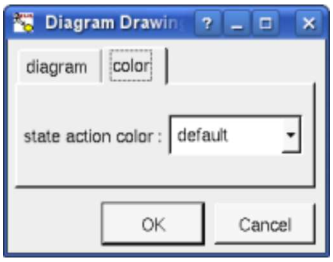
These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *state action* in a diagram, all the settings are set to *default*.



drawing language : default

show stereotype properties : default



state action color : default

drawing language :

Allows to specify the used language showing the expression

show stereotype properties :

to indicate through a note the (non empty) value of the stereotype properties in case the action is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

State action color :

To specify the fill color.

Menu tools :

Appears only when at least one *plug-out* is associated to the *state actions*. To apply a *plug-out* on the *state action*.

Previous : state

Next : pseudo state

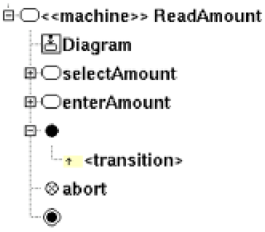
Pseudo State

Currently BOUML manages only the *behavioral states.*

The *pseudo states* are :

- final state (for reasons of simplification)
- initial
- deep history
- shallow history
- join
- fork
- junction
- choice
- entry point
- exit point
- terminate

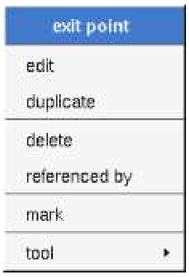
In the *browser* a *pseudo state* may contain transitions (when this is legal) :



The *pseudo state*'s properties will be exposed below.

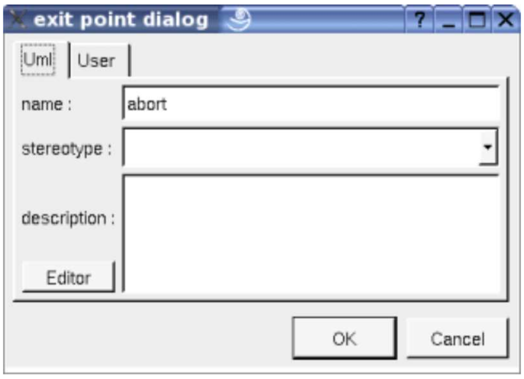
Menus

The *pseudo state* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *pseudo state* not *read-only* nor deleted (see also menu in a diagram) :



Menu : edit

edit allows to show/modify the *pseudo state* properties. In case the *pseudo state* is read-only, the fields of the dialog are also read-only.



The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : duplicate

The menu entry *duplicate* clone the *pseudo state* without its children

Menu : referenced by

To know who reference the current *pseudo state* through a transition.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *pseudo state* is not *read-only*.

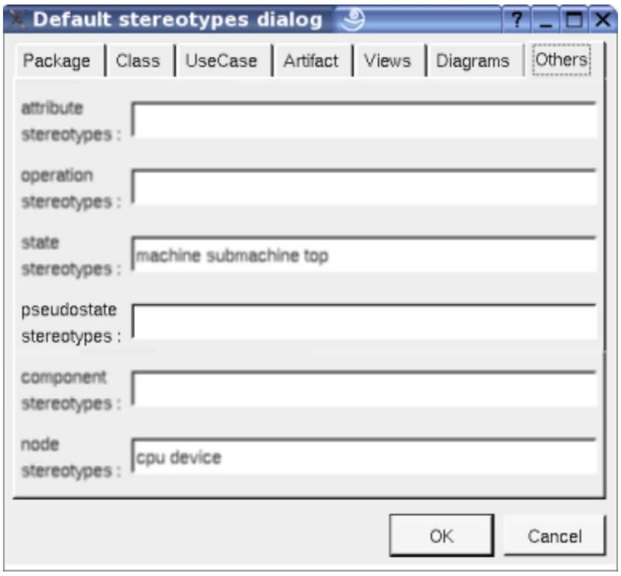
Delete the *pseudo state* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *pseudo state* of this kind. The selected tool is called and applied on the current *pseudo state*.

Default stereotypes

The dialog allowing to set the default stereotypes :



Default stereotypes dialog

Package | Class | UseCase | Artifact | Views | Diagrams | Others

attribute stereotypes :

operation stereotypes :

state stereotypes : machine submachine top

pseudostate stereotypes :

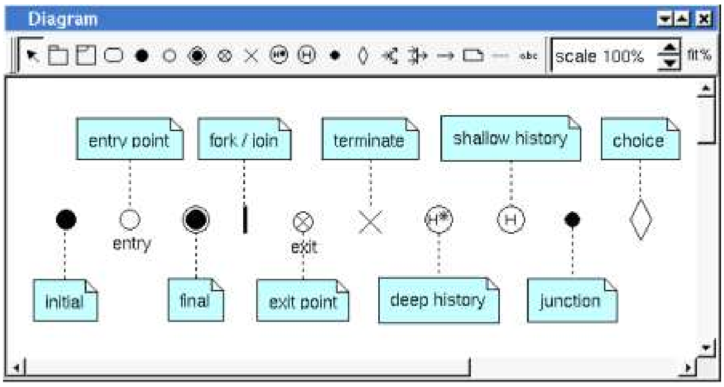
component stereotypes :

node stereotypes : cpu device

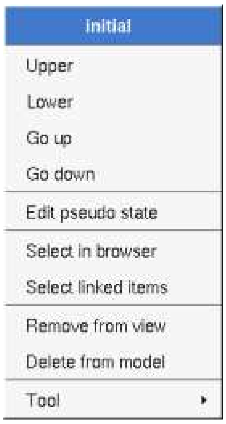
OK | Cancel

Drawing

A *pseudo state* is drawn in a diagram depending on its kind :



A right mouse click on a *pseudo state* in a diagram calls the following menu (supposing the *pseudo state* editable) :



Menu tools :

Appears only when at least one *plug-out* is associated to the *pseudo state* kind. To apply a *plug-out* on the *pseudo state*.

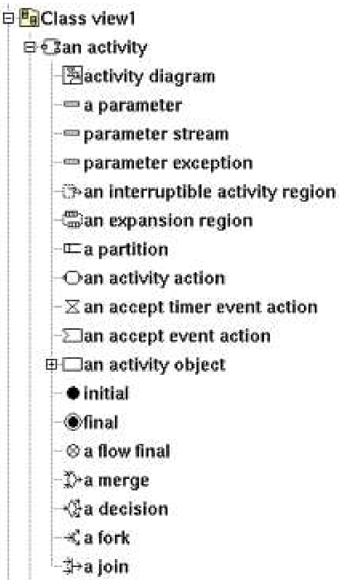
Previous : state action

Next : activity

Activity

Activity

In the *browser* an *activity* is placed in a *class view*, a use case view or a use case, and may contain parameters, expansion and interruptible activity regions, activity partitions, activity nodes (activity action, object node or control node) and activity diagrams :



The *activity*'s properties are exposed below.

Activity parameter

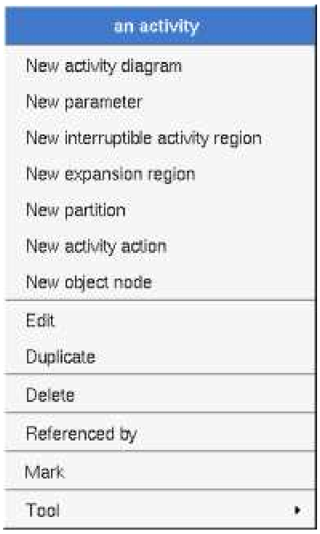
To simplify in Bouml a parameter is both a UML parameter and a UML parameter node, this means that the properties of a parameter also contains the properties of a parameter node.

In the browser a *parameter* is placed under its *activity* and may contains flows. A flow can't directly connect two parameters, a parameter is connected through a flow to an *expansion node* or an *activity node* (activity action, object node or control node) whose must be in the *activity* owing the parameter.

Note : *parameter sets* are defined on actions, see actions.

Activity Menus

The *activity* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *activity* not *read-only* nor deleted (see also menu in a diagram) :



Menu : add ...

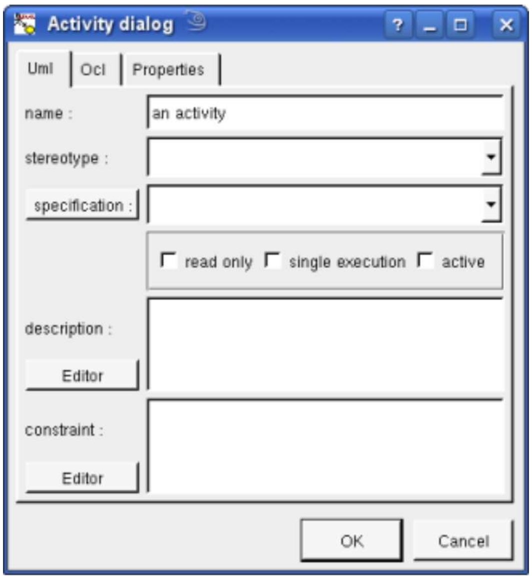
These entries of the menu allow to add as activity diagram, a *parameter*, a region or an activity node (activity action, object node or control node). The activity diagrams nested in a *activity* are the ones for the *activity*, this means that in case you use this activity diagram to create a new region or an activity node these ones will be a child of the *activity* in the *browser*.

Menu : edit

edit allows to show/modify the *activity* properties. In case the *activity* is read-only, the fields of the dialog are also read-only.

activity dialog, tab Uml

The tab *Uml* is a global tab :



name : an activity
stereotype :
specification :
□ read only □ single execution □ active
description :
constraint :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

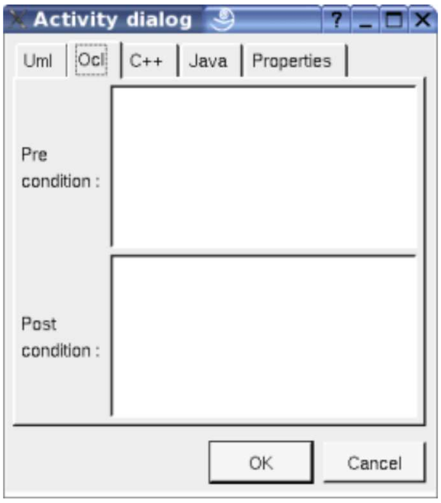
The **specification** allows to set the operation the activity implements, this button can show a menu proposing depending on the cases to select the current specification operation in the browser or to choose the operation may be selected in the browser

Read-only, **single execution** and **active** are the standard UML flags.

The ***editor*** button visible above and associated here to the description and constraint, allows to edit the description and constraint in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description or constraint, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

activity dialog, tab Ocl

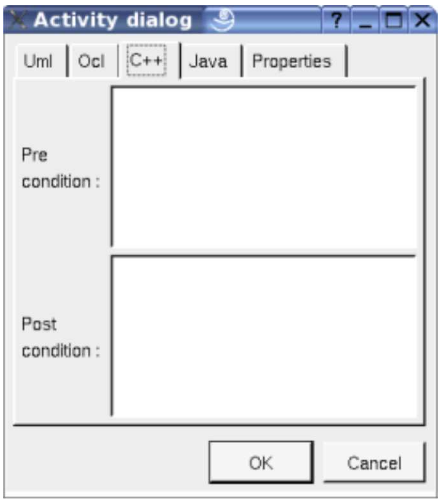
The *Ocl* tab allows to specify the *pre* and *post conditions* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



Pre condition :
Post condition :

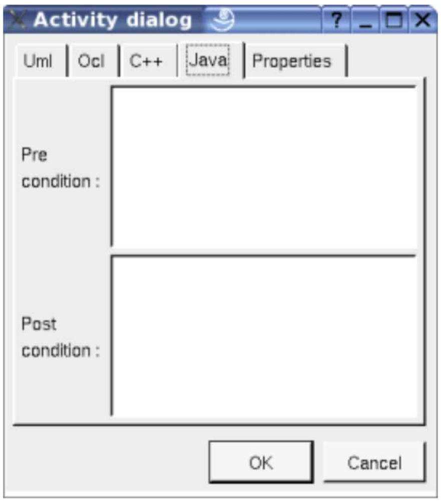
activity dialog, tab C++

This tab allows to specify the *pre* and *post conditions* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



activity dialog, tab Java

This tab allows to specify the *pre* and *post conditions* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *activity* without its children

Menu : referenced by

To know who reference the current *activity* through a *dependency* or a *call behavior action*.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *activity* is not *read-only* (I speak about the file permission, not about the *read-only* UML property)

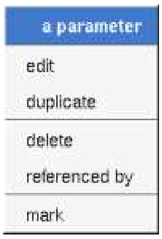
Delete the *activity* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on an *activity*. The selected tool is called and applied on the current *activity*.

Parameter Menus

The *parameter* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *parameter* not *read-only* nor deleted (see also menu in a diagram) :

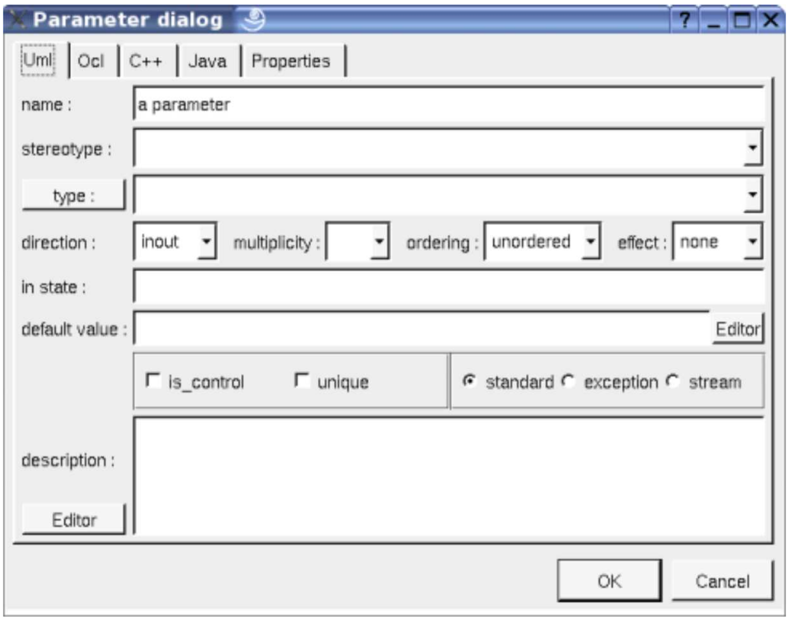


Menu : edit

edit allows to show/modify the *parameter* properties. In case the *parameter* is read-only, the fields of the dialog are also read-only.

parameter dialog, tab Uml

The tab *Uml* is a global tab :



name : a parameter

stereotype :

direction : inout

multiplicity :

ordering : unordered

effect : none

in state :

default value :

□ is_control □ unique ● standard ○ exception ○ stream

description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The proposed ***type***s are the *non class* types defined in the first tab of the generation settings, more all the classes defined in the project (with their localization to distinguish synonymous classes). You are not limited to the proposed list, and any form (even invalid for the target language(s)) may be given. The button *type:* shows a menu proposing :

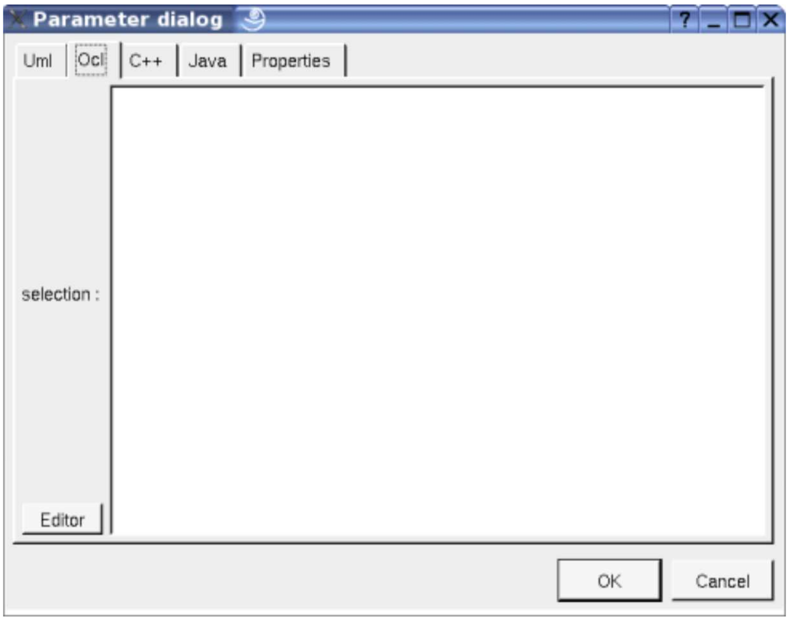
- if the current type of the parameter is a class : to select this class in the browser
- if the parameter is not read-only and if a class is selected in the browser : to set the type to be this class

The **direction**, **multiplicity**, **ordering**, **effect**, **in state, default value, is control, unique, exception** and **stream** are the standard UML properties. The flags **exception** and **stream** are exclusive, choose **standard** to be not *exception* nor *stream*.

The ***editor*** button visible above and associated here to the default value and description, allows to edit the default value or the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

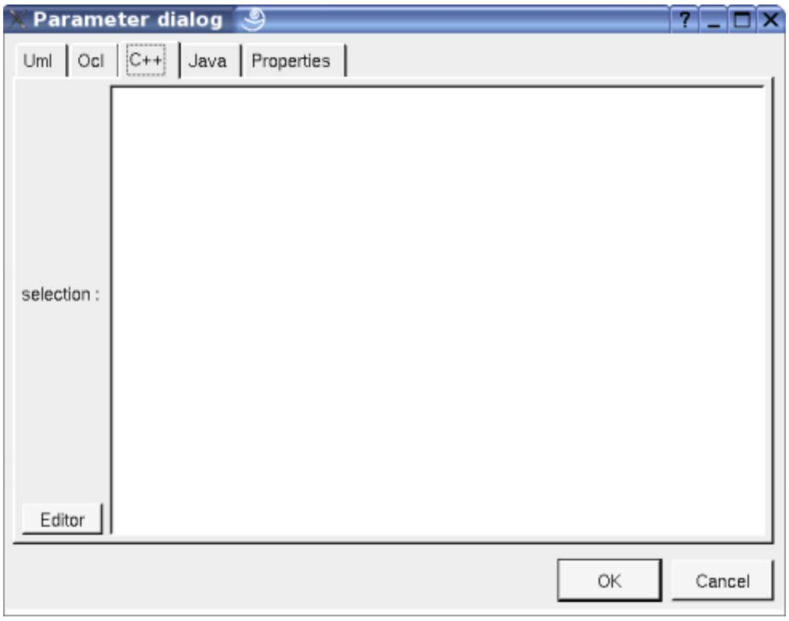
parameter dialog, tab Ocl

The *Ocl* tab allows to specify the *selection* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



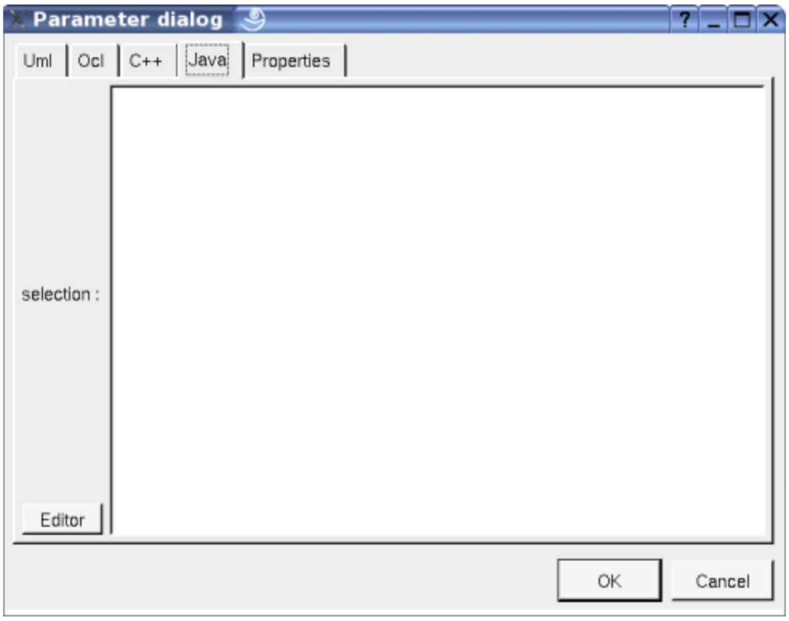
parameter dialog, tab C++

This tab allows to specify the *selection* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



parameter dialog, tab Java

This tab allows to specify the *selection* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *parameter* without its children

Menu : referenced by

To know who reference the current *parameter* through *flow*

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *parameter* is not *read-only*

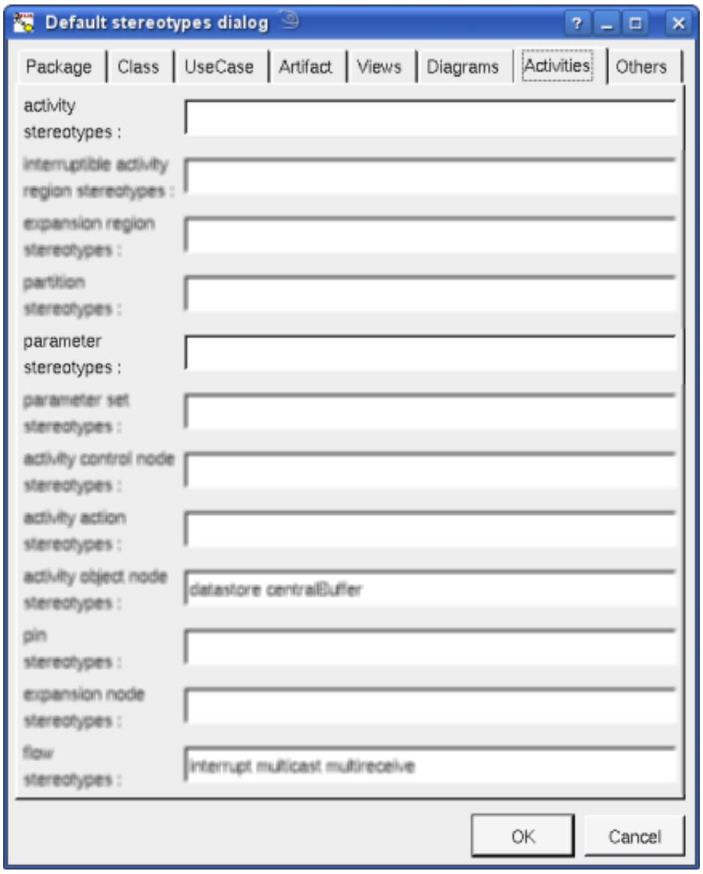
Delete the *parameter* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on an *parameter*. The selected tool is called and applied on the current *parameter*.

Default stereotypes

The dialog allowing to set the default activity and parameter stereotypes :



Default stereotypes dialog

Package | Class | UseCase | Artifact | Views | Diagrams | Activities | Others

activity stereotypes :

interruptible activity region stereotypes :

expansion region stereotypes :

partition stereotypes :

parameter stereotypes :

parameter set stereotypes :

activity control node stereotypes :

activity action stereotypes :

activity object node stereotypes : datastore centralBuffer

pin stereotypes :

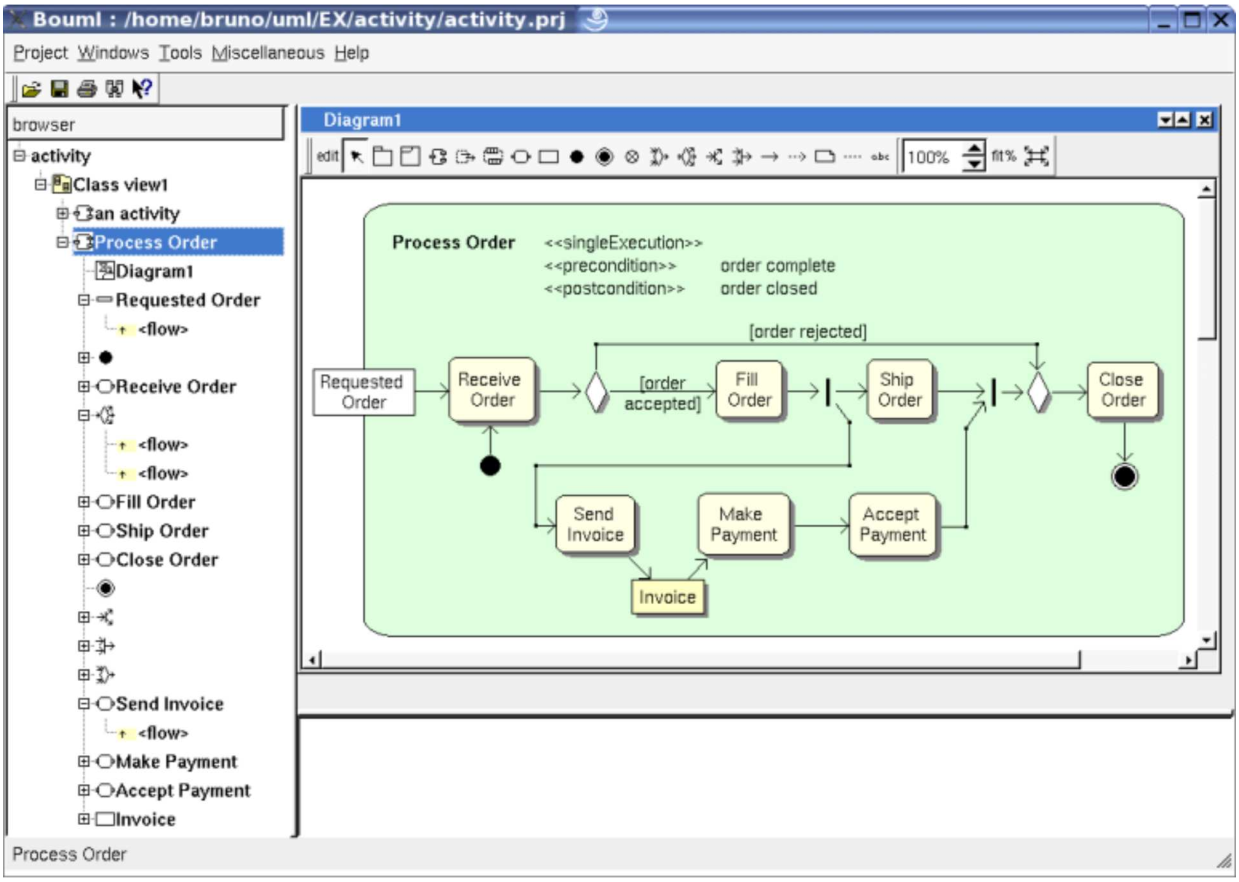
expansion node stereotypes :

flow stereotypes : interrupt multicast multireceive

OK | Cancel

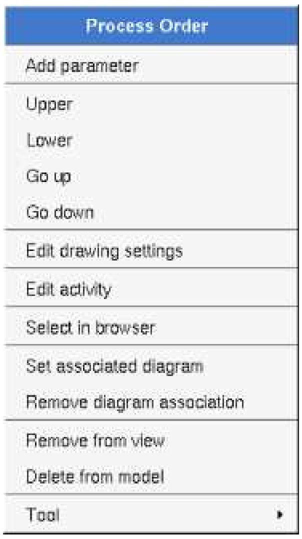
Activity Drawing

A *activity* is drawn in a diagram as a rectangle with rounded corners :



Note : the activity sub elements are forced to be inside their activity rectangle,. So, when you want to draw in a diagram both an activity and some of its elements I **strongly** recommend to add first the activity then the elements, else when you add the activity the elements may be moved to be inside the rectangle broking their pretty respective positions.

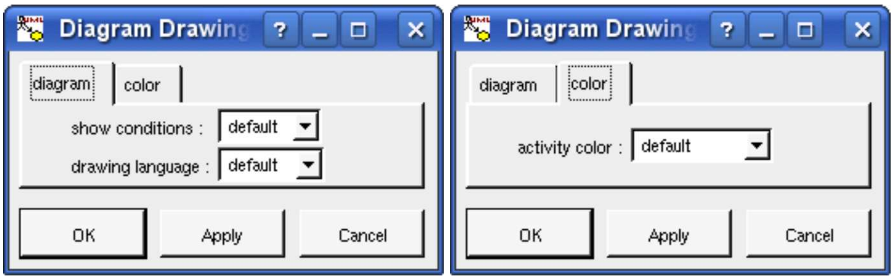
A right mouse click on a *activity* in a diagram calls the following menu (supposing the *activity* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *activity* in a diagram, all the settings are set to *default*.

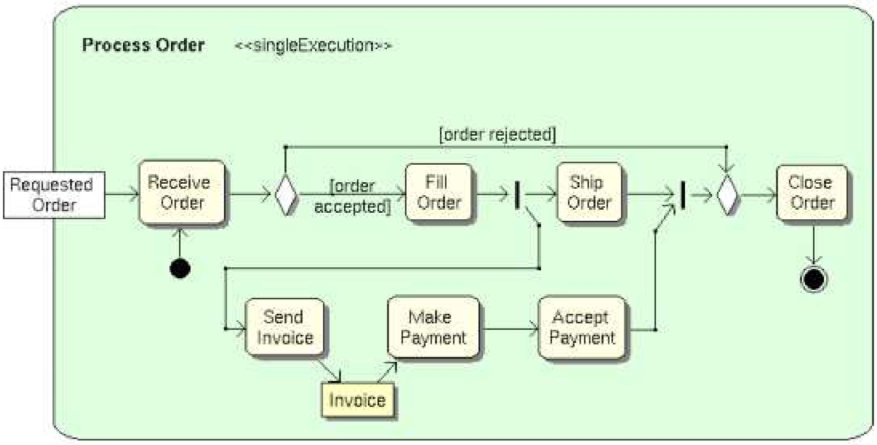


show conditions : default
drawing language : default

activity color : default

show conditions :

Allows to show or not the *activity*'s *pre* and *post conditions* depending on the drawing language. Note : on an upper level, for instance at the diagram level, this drawing follow the value of the drawing *show info notes*. In the diagram above *show conditions* is true, if false the drawing become :



drawing language :

Allows to specify the used language in case the *activity*'s *pre* and *post conditions* are shown.

show stereotype properties :

to indicate through a note the (non empty) value of the stereotype properties in case the activit is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

activity color :

To specify the fill color.

Menu : set associated diagram

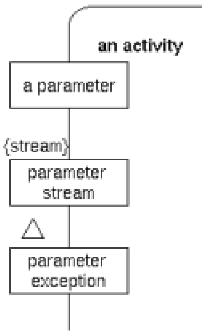
set associated diagram allows to automatically open the current diagram when a double mouse click is made on the *activity* representation in a diagram or the browser. After that the only way to edit the *activity* is to choose the *edit* entry in the menu.

Menu tools :

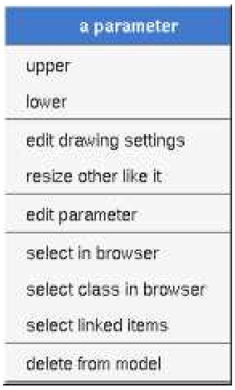
Appears only when at least one *plug-out* is associated to the *activitys*. To apply a *plug-out* on the *activity*.

Parameter Drawing

A *parameter node* is drawn in a diagram as a rectangle, with the indication indicating if the parameter is a *stream* or an *exception* :



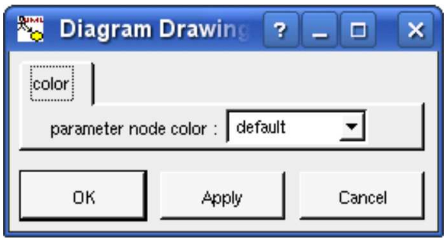
A right mouse click on a *parameter* in a diagram calls the following menu (supposing the *parameter* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *parameter* in a diagram, all the settings are set to *default*.



parameter node color : default

Menu : select class in browser

Appears when the type of the parameter is a class, to select it in the browser.

Previous : pseudo state

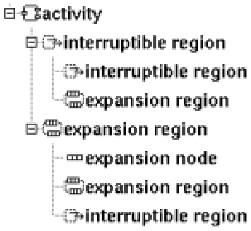
Next : activity region

Activity region

There are two kind of regions : *expansion region* and *interruptible region*, both may be placed under an activity or a region.

In the *browser* an *expansion region* may contain sub *activity regions*, *expansion nodes* and activity nodes (activity action, object node or control node)

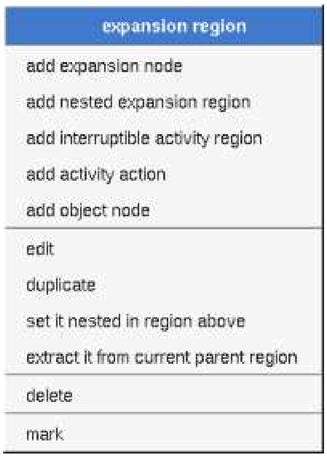
In the *browser* an *interruptible region* may contain sub *activity regions* and activity nodes (activity action, object node or control node)



The *region*'s properties are exposed below.

Expansion region menus

The *expansion region* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *region* not *read-only* nor deleted (see also menu in a diagram) :


expansion region
add expansion node
add nested expansion region
add interruptible activity region
add activity action
add object node
edit
duplicate
set it nested in region above
extract it from current parent region
delete
mark

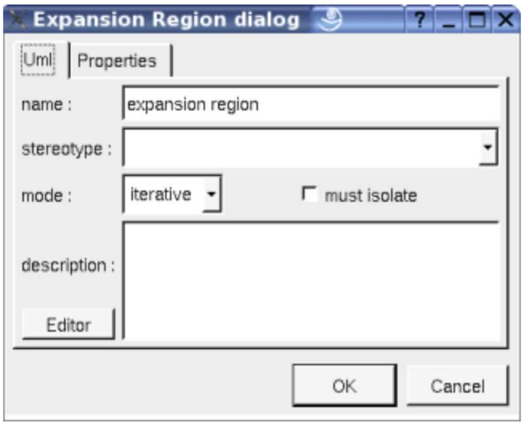
Menu : add ...

These entries of the menu allow to add an expansion node, a nested region or an activity node (activity action, object node or control node)

Menu : edit

edit allows to show/modify the *region* properties. In case the *region* is read-only, the fields of the dialog are also read-only.

Expansion region dialog, tab Uml



name : expansion region

mode : iterative

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The **mode** and the flag **must isolate** are the standard UML information.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : duplicate

The menu entry *duplicate* clone the *region* without its children

Menu : set it nested in the region above

The menu entry *set it nested in the region above* is present when the previous element in the browser is a *region*, allows to move the *region* inside

Menu : extract it from current parent region

The menu entry *extract it from current parent region* is present when the *region* is nested in an other one, allows to extract the region and place it in its grand parent..

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *region* is not *read-only*.

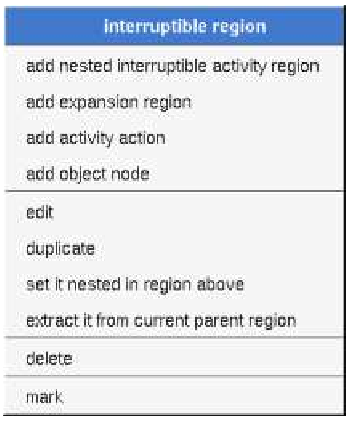
Delete the *region* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on an expansion region. The selected tool is called and applied on the current *region*.

Interruptible region menus

The interruptible *region* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *region* not *read-only* nor deleted (see also menu in a diagram) :


interruptible region
add nested interruptible activity region
add expansion region
add activity action
add object node
edit
duplicate
set it nested in region above
extract it from current parent region
delete
mark

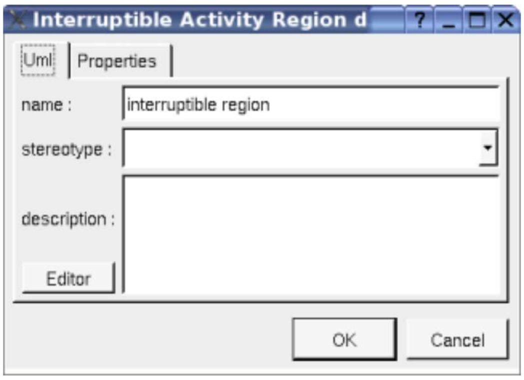
Menu : add ...

These entries of the menu allow to add a nested region or an activity node (activity action, object node or control node)

Menu : edit

edit allows to show/modify the *region* properties. In case the *region* is read-only, the fields of the dialog are also read-only.

Interruptible region dialog, tab Uml



name : interruptible region

stereotype :

description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : duplicate

The menu entry *duplicate* clone the *region* without its children

Menu : set it nested in the region above

The menu entry *set it nested in the region above* is present when the previous element in the browser is a *region*, allows to move the *region* inside

Menu : extract it from current parent region

The menu entry *extract it from current parent region* is present when the *region* is nested in an other one, allows to extract the region and place it in its grand parent..

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *region* is not *read-only*.

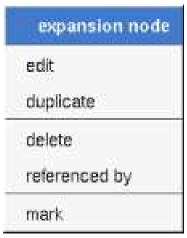
Delete the *region* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on an interruptible region. The selected tool is called and applied on the current *region*.

Expansion node menus

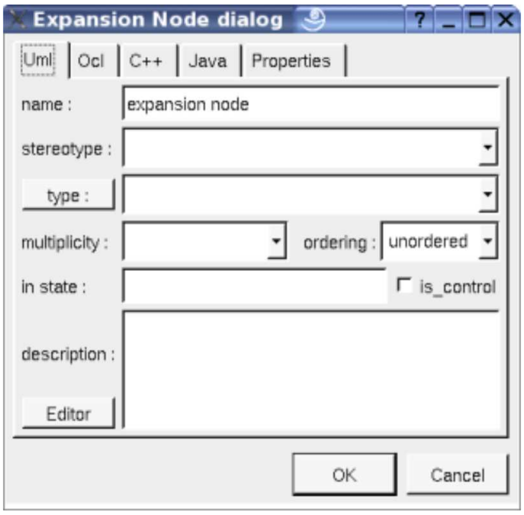
The *expansion node* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *node* not *read-only* nor deleted (see also menu in a diagram) :



Menu : edit

edit allows to show/modify the *expansion node* properties. In case the *node* is read-only, the fields of the dialog are also read-only.

Expansion node dialog, tab Uml



name : expansion node
stereotype :
type :
multiplicity :
ordering : unordered
in state :
□ is_control
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The proposed ***type***s are the *non class* types defined in the first tab of the generation settings, more all the classes defined in the project (with their localization to distinguish synonymous classes). You are not limited to the proposed list, and any form (even invalid for the target language(s)) may be given. The button *type:* shows a menu proposing :

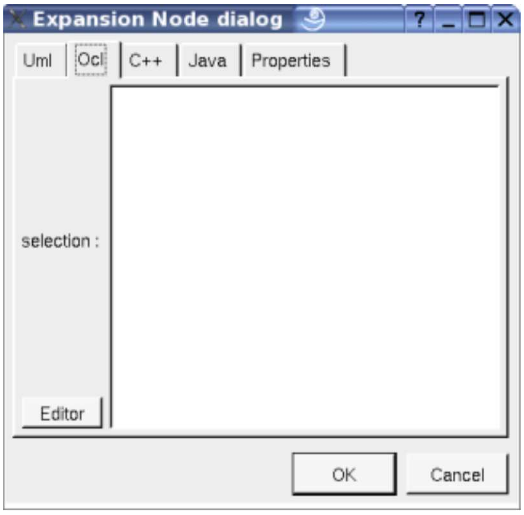
- if the current type of the *expansion node* is a class : to select this class in the browser
- if the *expansion node* is not read-only and if a class is selected in the browser : to set the type to be this class

The **multiplicity**, **ordering**, **in state,** and **is control** are the standard UML properties.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

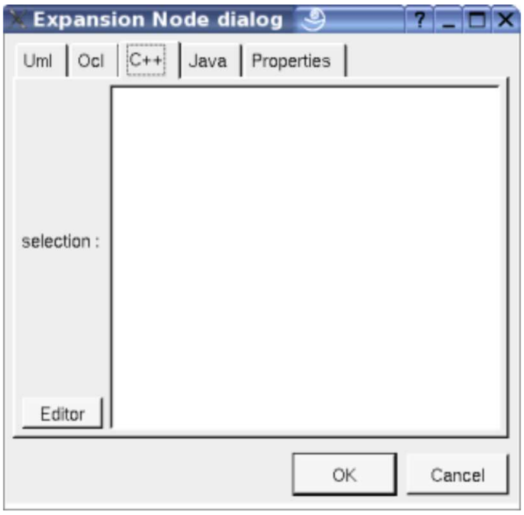
Expansion node dialog, tab Ocl

The *Ocl* tab allows to specify the *selection* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



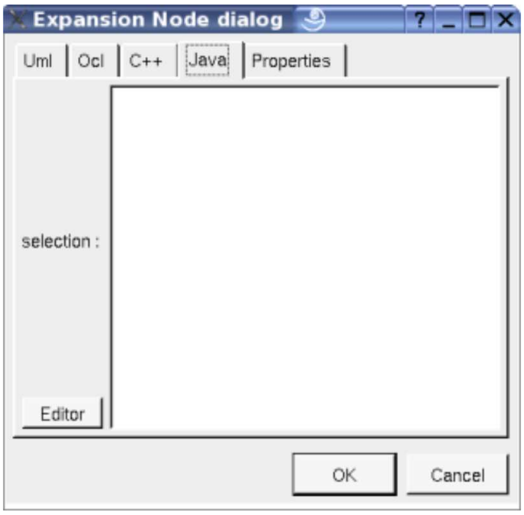
Expansion node dialog, tab C++

This tab allows to specify the *selection* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



Expansion node dialog, tab Java

This tab allows to specify the *selection* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *expansion node* without its children

Menu : delete

The menu entry *delete* is only present when the *region* is not *read-only*.

Delete the *region* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : referenced by

To know who reference the current *parameter* through *flow*

Menu : mark

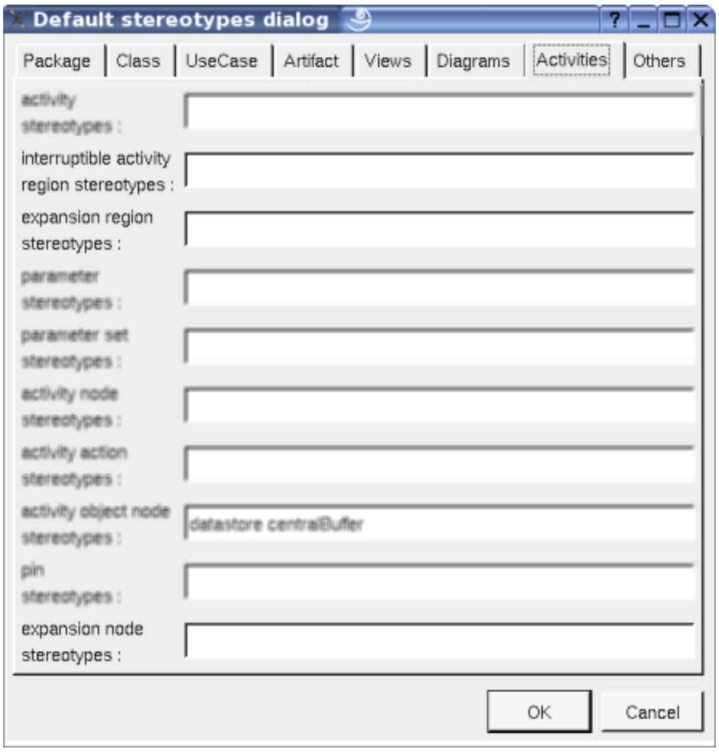
See mark

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on an interruptible region. The selected tool is called and applied on the current *region*.

Default stereotypes

The dialog allowing to set the default stereotypes :



activity stereotypes :

interruptible activity region stereotypes :

expansion region stereotypes :

parameter stereotypes :

parameter set stereotypes :

activity node stereotypes :

activity action stereotypes :

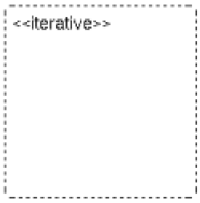
activity object node stereotypes : datastore centralBuffer

pin stereotypes :

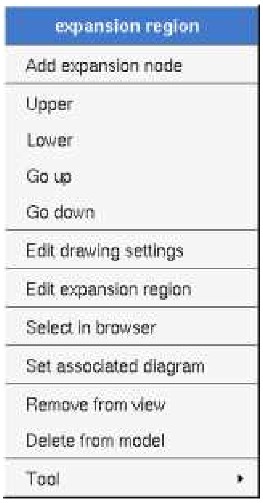
expansion node stereotypes :

Expansion region drawing

An *expansion region* is drawn in a diagram as a dashed rectangle with rounded corners, with the indication of the *mode* :



A right mouse click on a the region in a diagram calls the following menu (supposing the *region* editable) :



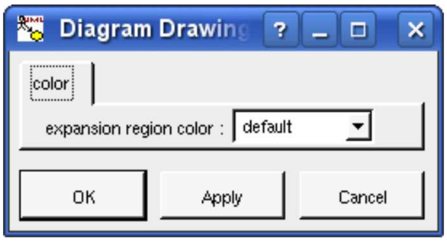
Menu : add expansion node

These entries of the menu allow to add an expansion node.

Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *region* in a diagram, all the settings are set to *default*.



expansion region color : default

To specify the fill color.

Menu : set associated diagram

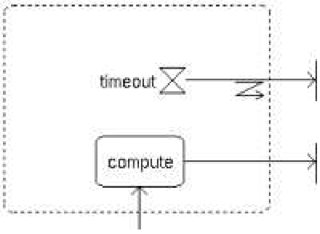
set associated diagram allows to automatically open the current diagram when a double mouse click is made on the *region* representation in a diagram or the browser. After that the only way to edit the *region* is to choose the *edit* entry in the menu.

Menu tools :

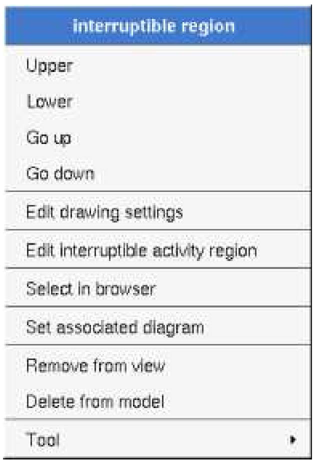
Appears only when at least one *plug-out* is associated to the *regions*. To apply a *plug-out* on the *region*.

Interruptible region drawing

An *interruptible activity region* is drawn in a diagram as a dashed rectangle with rounded corners :



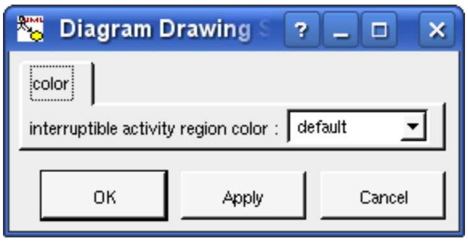
A right mouse click on a *region* in a diagram calls the following menu (supposing the *region* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *region* in a diagram, all the settings are set to *default*.



interruptible activity region color : default

To specify the fill color.

Menu : set associated diagram

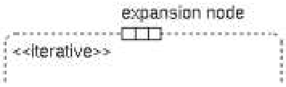
set associated diagram allows to automatically open the current diagram when a double mouse click is made on the *region* representation in a diagram or the browser. After that the only way to edit the *region* is to choose the *edit* entry in the menu.

Menu tools :

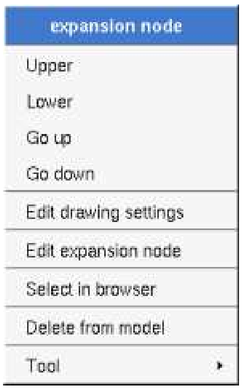
Appears only when at least one *plug-out* is associated to the *regions*. To apply a *plug-out* on the *region*.

Expansion node drawing

A *expansion node* is drawn in a diagram as pins :



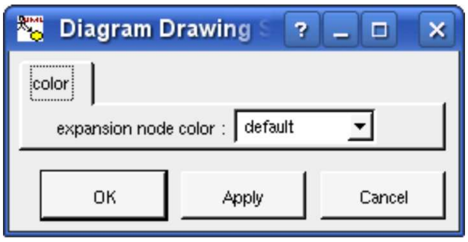
A right mouse click on as *expansion node* in a diagram calls the following menu (supposing the *node* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *node* in a diagram, all the settings are set to *default*.



expansion node color : default

To specify the fill color.

Menu tools :

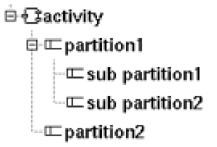
Appears only when at least one *plug-out* is associated to the *expansion nodes*. To apply a *plug-out* on the *node*.

Previous : activity

Next : activity partition

Activity partition

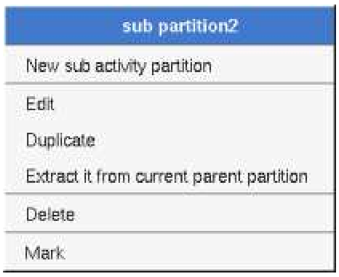
In the *browser* a partition can be placed in an activity or an other partition, they can contain sub-partitions



The *partitions*'s properties are exposed below.

Partition menus

The *partition* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *partition* not *read-only* nor deleted (see also menu in a diagram) :


sub partition2
New sub activity partition
Edit
Duplicate
Extract it from current parent partition
Delete
Mark

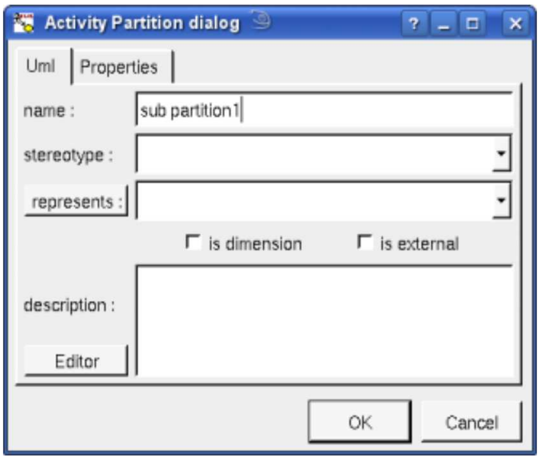
Menu : new sub activity partition

These entries of the menu allow to add a nested partition

Menu : edit

edit allows to show/modify the *partition* properties. In case the *partition* is read-only, the fields of the dialog are also read-only.

Partition dialog, tab Uml



name : sub partition1

stereotype :

description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The **is dimension** and **is external** flags and **represents** are the standard UML information. To unset *represents* just choose the empty line in the proposed list, to set it to a given element after calling the editor select the desired element in the *browser* or mark it (alone) then use the button *represents:*

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : duplicate

The menu entry *duplicate* clone the *region* without its children

Menu : extract it from current parent partition

The menu entry *extract it from current parent partition* is present when the *partition* is nested in an other one, allows to extract the *partition* and place it in its grand parent..

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *partition* is not *read-only*.

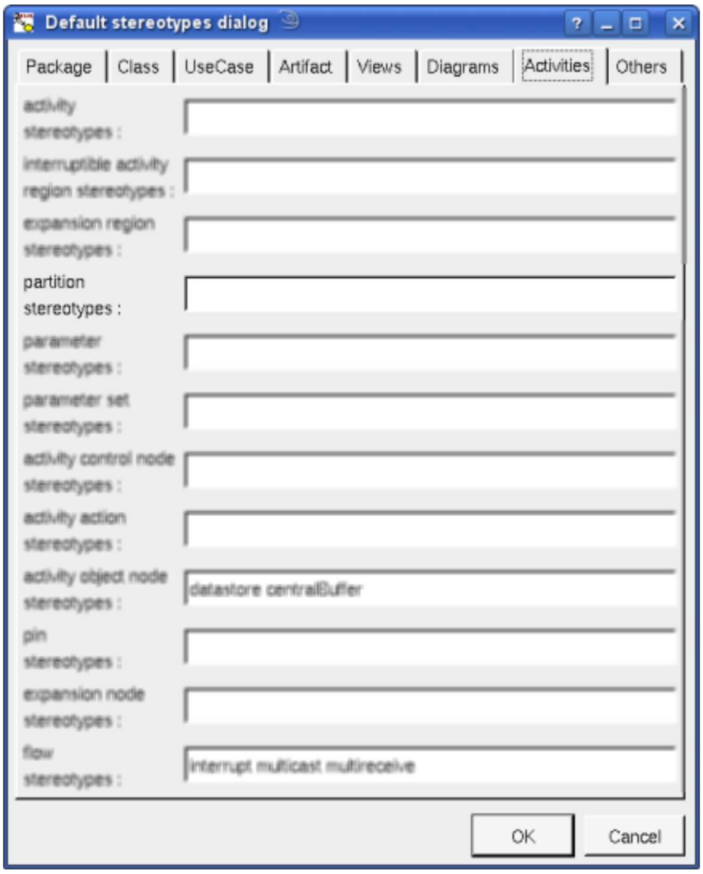
Delete the *partition* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *partition*. The selected tool is called and applied on the current *partition*.

Default stereotypes

The dialog allowing to set the default stereotypes :



activity stereotypes :

interruptible activity region stereotypes :

expansion region stereotypes :

partition stereotypes :

parameter stereotypes :

parameter set stereotypes :

activity control node stereotypes :

activity action stereotypes :

activity object node stereotypes : datastore centralBuffer

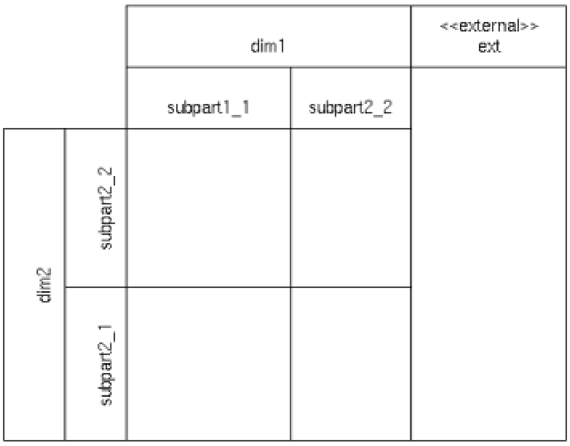
pin stereotypes :

expansion node stereotypes :

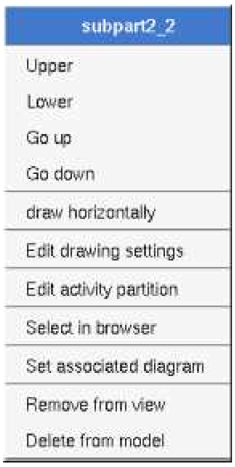
flow stereotypes : interrupt multicast multireceive

Partition drawing

A *partition* is drawn in a diagram as a rectangle with a header indicating the name or the partition and its stereotype. When the partition is unnamed but represents an element the name of this element is show. The stereotype *external* is written when the partition is external and doesn't have a stereotype. A partition can be drawn vertically or horizontally :



A right mouse click on a the *partition* in a diagram calls the following menu (supposing the *partition* editable) :



Menu : draw horizontally / vertically

To turn the drawing of the partition, the sub partitions will also turn

Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *partition* in a diagram, all the settings are set to *default*.

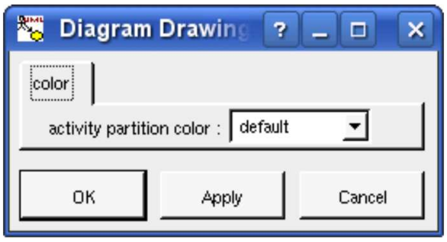


Diagram Drawin

color

activity partition color : default

To specify the fill color.

Menu : set associated diagram

set associated diagram allows to automatically open the current diagram when a double mouse click is made on the *partition* representation in a diagram or the browser. After that the only way to edit the *partition* is to choose the *edit* entry in the menu.

Menu tools :

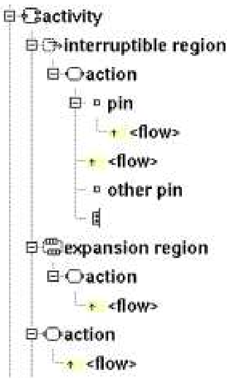
Appears only when at least one *plug-out* is associated to the *partitions*. To apply a *plug-out* on the *partition*.

Previous : activity region

Next : activity action

Activity Actions

An *activity action* is an *activity node*. In the *browser* an *activity action* is placed in an activity or an activity region, and may contain pins, parameter sets, and flows :



There are several kinds of *action*, Bouml doesn't propose all the kinds defined in UML but the main ones : *opaque, accept event, read variable value, clear variable value, write variable value, add variable value, remove variable value, call behavior, call operation, send object, send signal, broadcast signal, unmarshall* and *value specification*.

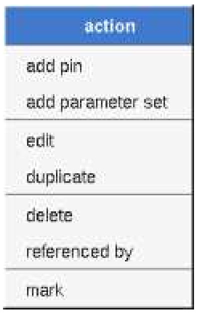
The *pins* are added automatically by Bouml depending on the kind of the action, for the *call behavior* and *call operation* and actions on a variable the pins are set when the *behavior/operation/variable* is set or changed. When something is changed all the current *pins* are removed then new ones may be added. Note that you may change or delete the default *pins* or add new ones, and the *pins* are not changed when the corresponding *behavior/operation/variable* is modified.

The *parameter sets* are defined on the actions and have sense only for *call behavior action* when the *behavior* is an *activity* (but this is not checked by Bouml), so a *parameter set* contains *pins* corresponding to *parameters*. To define *parameter sets* on *action* rather than *activity* allows you to use them as you want.

The *activity action*'s and *pin*'s properties are exposed below.

Activity action menus

The *activity action* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *action* not *read-only* nor deleted (see also menu in a diagram) :



Menu : add ...

To add a *pin* or a *parameter set*.

Menu : edit

edit allows to show/modify the *action* properties. In case the *action* is read-only, the fields of the dialog are also read-only.

The aspect of the dialog depend on the kind of action :

Activity opaque action dialog, tab Uml

The tab *Uml* is a global tab :

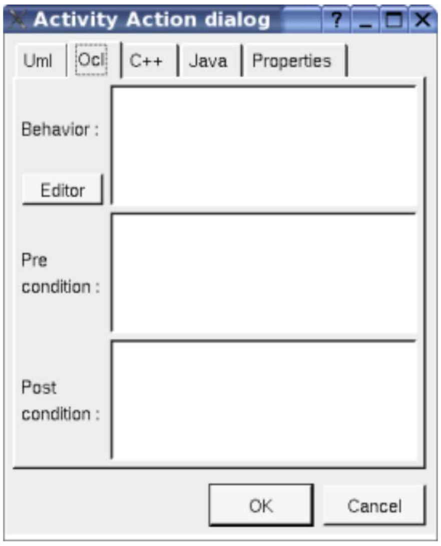
The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

It is possible to change the ***kind*** of the action, this modify the other editor *tabs*.

The ***editor*** button visible above and associated here to the description/constraint, allows to edit the description/constraint in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description/constraint, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

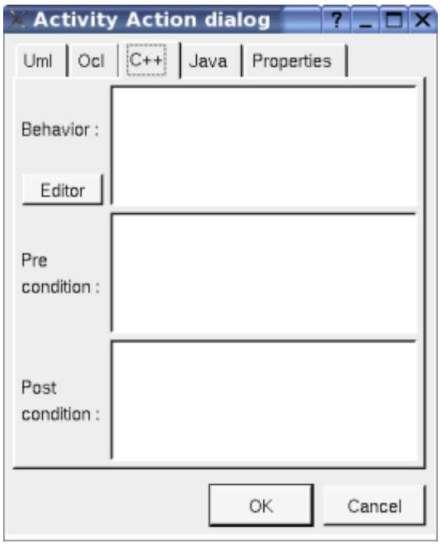
Activity opaque action dialog, tab Ocl

The *Ocl* tab allows to specify the *activity action behavior* and the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



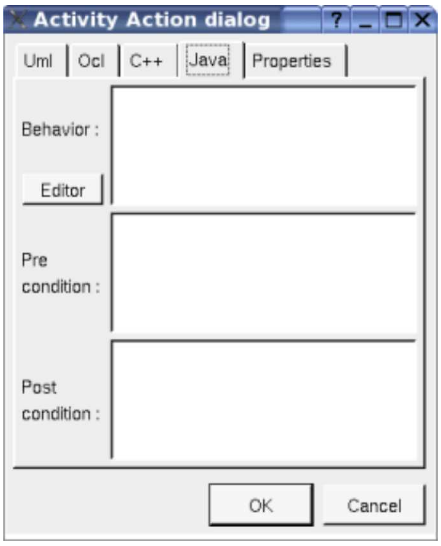
Activity opaque action dialog, tab C++

This tab allows to specify the *activity action behavior* and the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

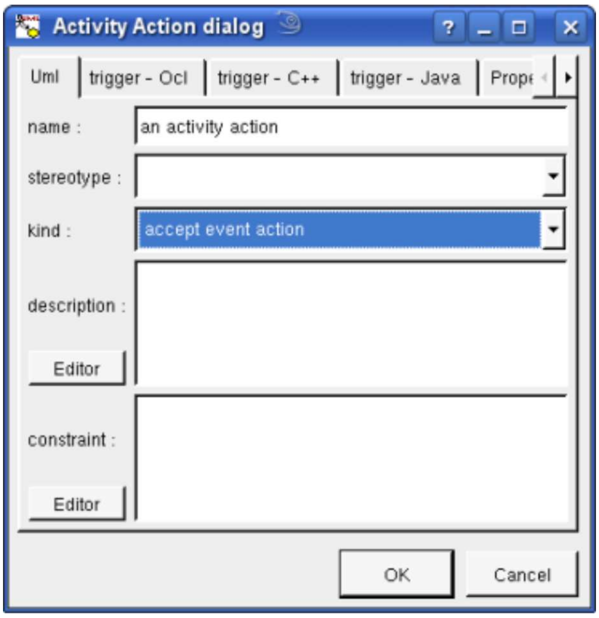


Activity opaque action dialog, tab Java

This tab allows to specify the *activity action behavior* and the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity accept event action dialog, tab Uml



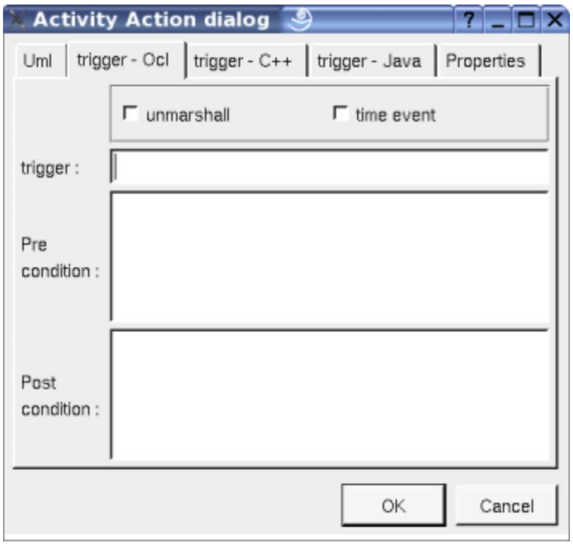
name : an activity action

stereotype :

kind : accept event action

Activity accept event action dialog, tab Ocl

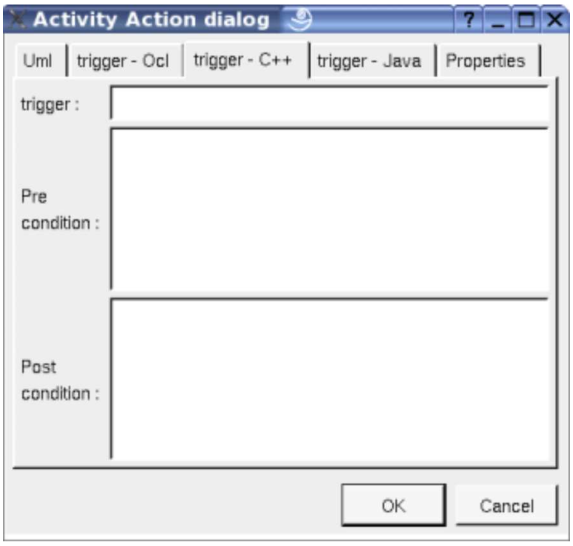
The *Ocl* tab allows to specify the *trigger* and the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



Unmarshall is the standard UML property, **time event** allows to indicate is the event is a timer to choose between the two representations.

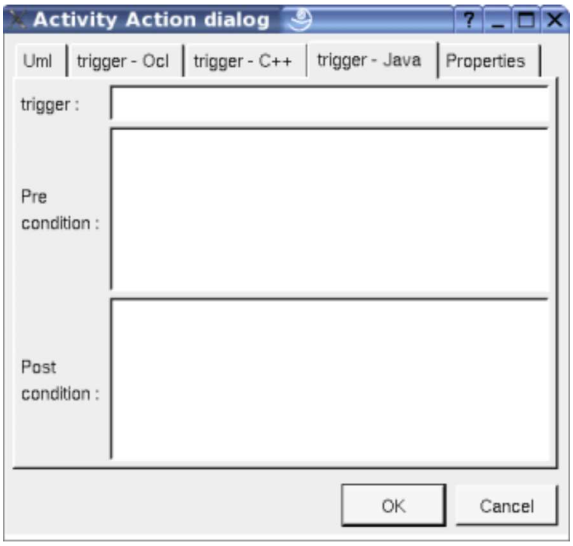
Activity accept event action dialog, tab C++

This tab allows to specify the *trigger* and the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

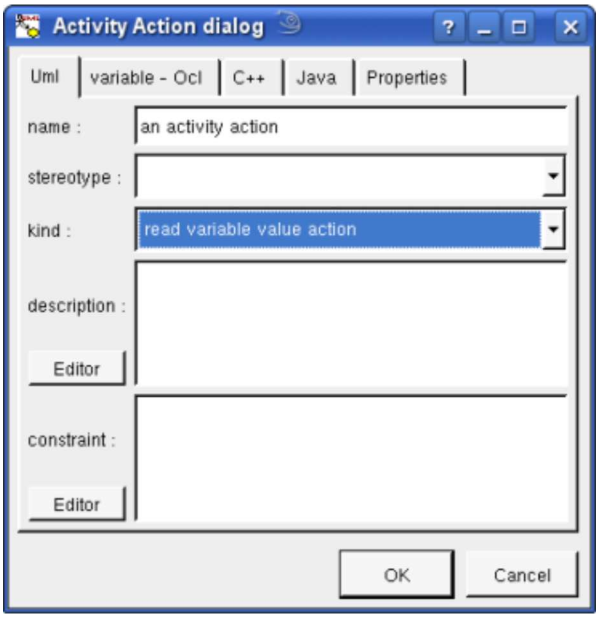


Activity accept event dialog, tab Java

This tab allows to specify the *trigger* and the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity read variable value action dialog, tab Uml



name : an activity action

stereotype :

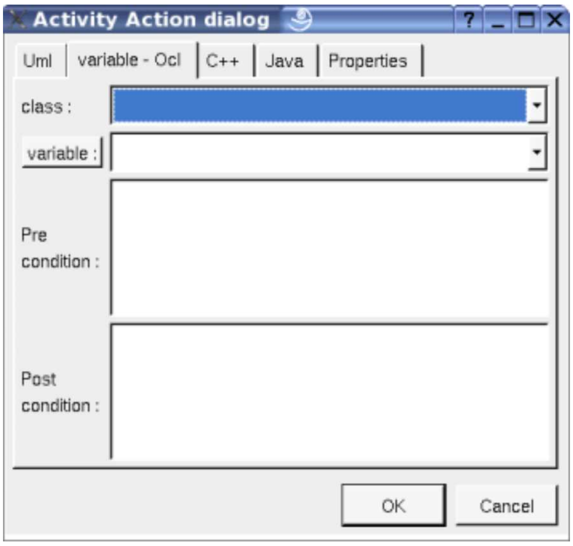
kind : read variable value action

description :

constraint :

Activity read variable value action dialog, tab Ocl

The *Ocl* tab allows to specify the *variable* (class attribute or relation) and the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



class :

Pre condition :

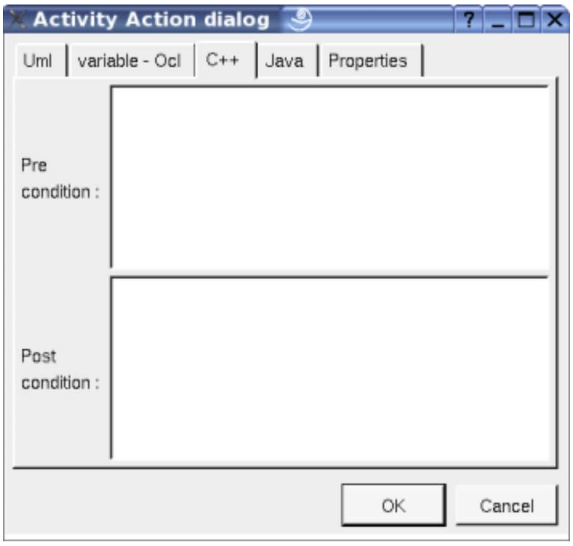
Post condition :

The button *variable* shows a menu proposing :

- if the current variable is set : to select this attribute or relation in the browser
- if the action is not read-only and if a class attribute or relation is selected in the browser : to set the variable to be the selected element
- if the class is not read-only : to create a new attribute and to choose it

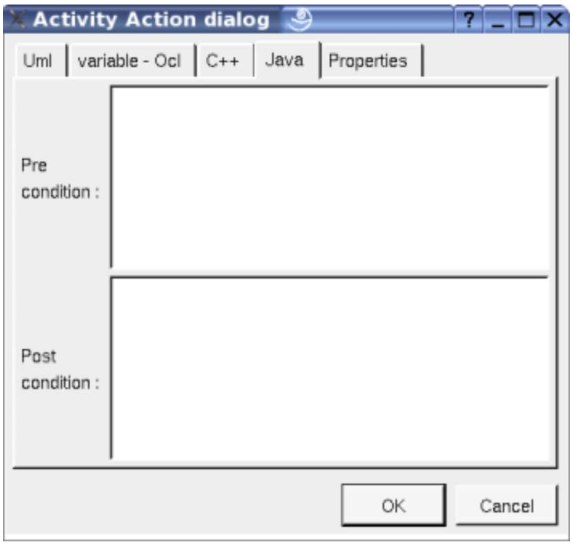
Activity read variable value action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity read variable value action dialog, tab Java

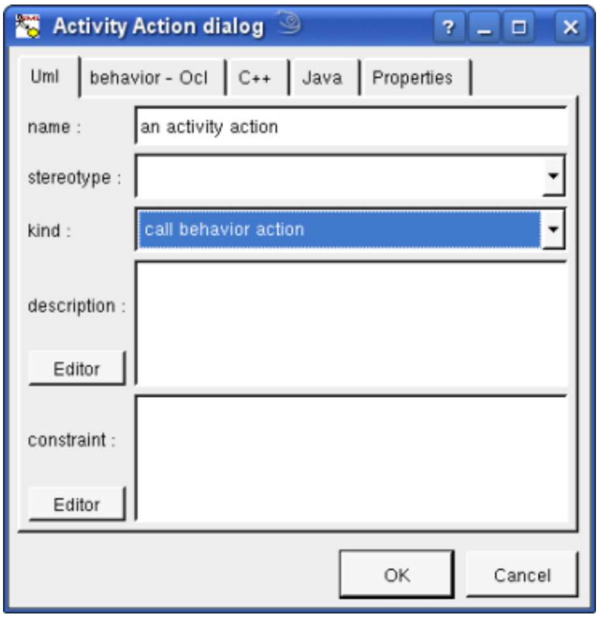
This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity clear variable value action
Activity write variable value action
Activity add variable value action
Activity remove variable value action

The dialog is equals to the *read variable value action* case

Activity call behavior action dialog, tab Uml



name : an activity action

stereotype :

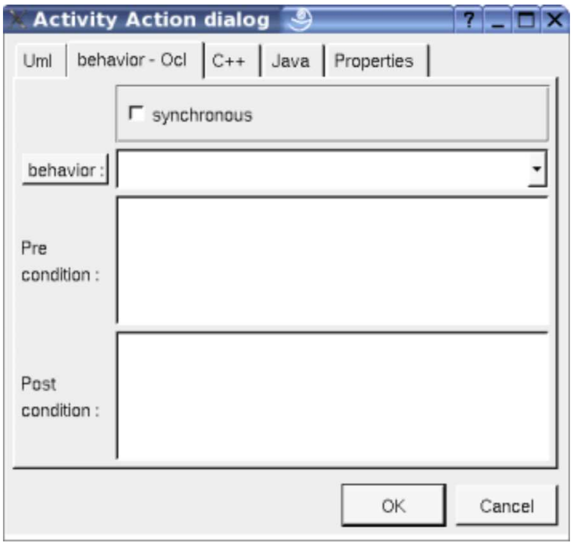
kind : call behavior action

description :

constraint :

Activity call behavior action dialog, tab Ocl

The *Ocl* tab allows to specify the *behavior* (a *state* or an activity) and the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



□ synchronous

Pre condition :

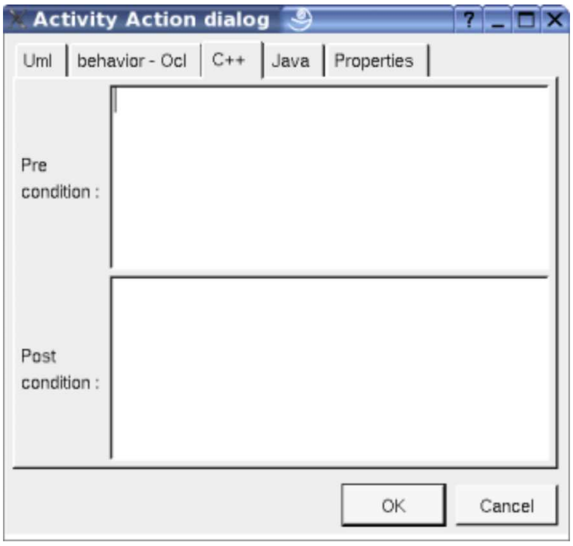
Post condition :

The button *behavior* shows a menu proposing :

- if the current behavior is set : to select this class in the browser
- if the action is not read-only and if a *state* or *activity* is selected in the browser : to set the behavior to be the selected element
- if the view containing the activity is not read-only : to create an activity or a state machine and to choose it

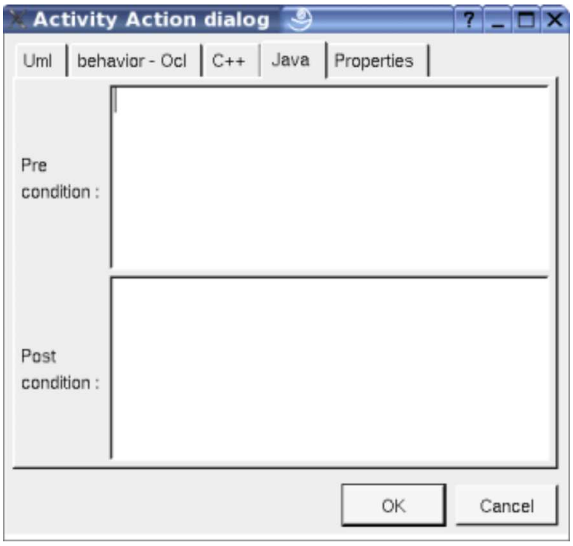
Activity call behavior action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

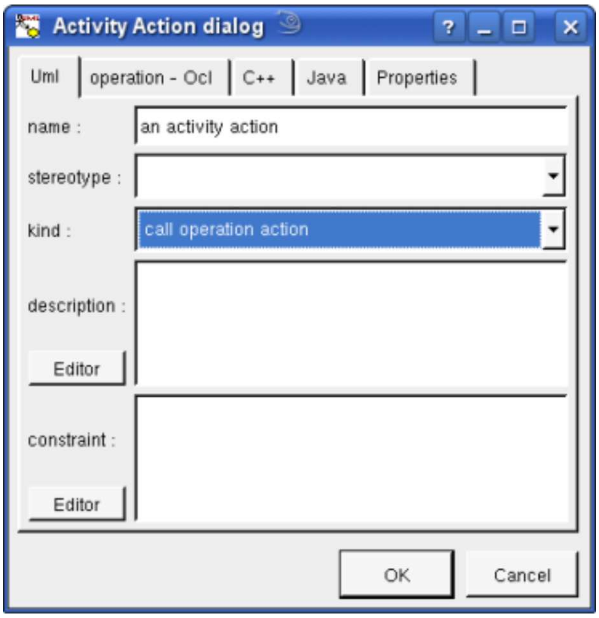


Activity call behavior action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity call operation action dialog, tab Uml



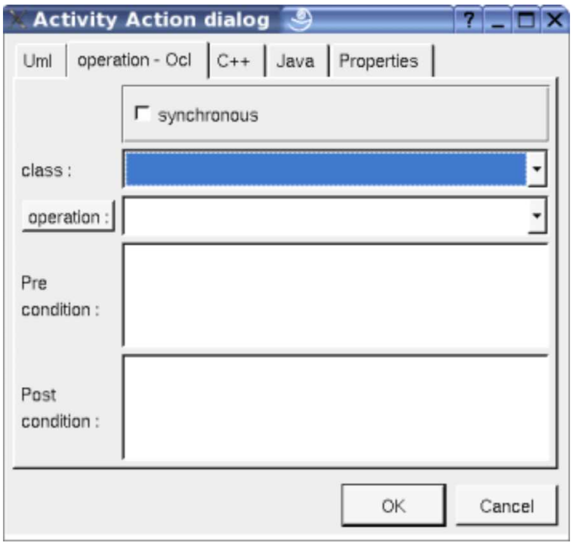
name : an activity action

stereotype :

kind : call operation action

Activity call operation action dialog, tab Ocl

The *Ocl* tab allows to specify the *operation* and the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.

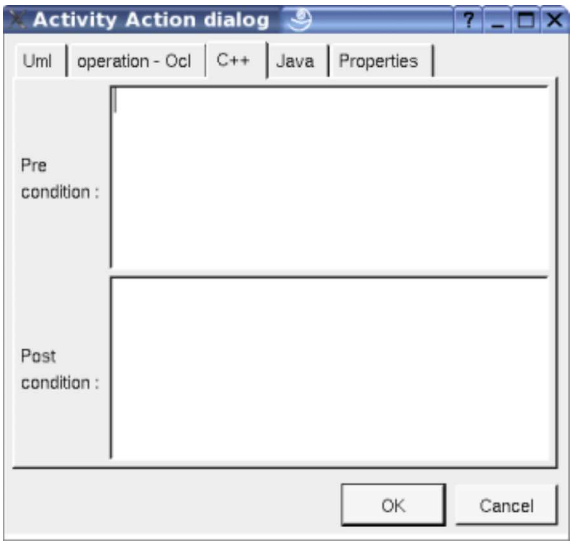


The button *operation* shows a menu proposing :

- if the current operation is set : to select this class in the browser
- if the action is not read-only and if an operation selected in the browser : to set the operation to be the selected one
- if the class is not read-only : to create an operation and to choose it

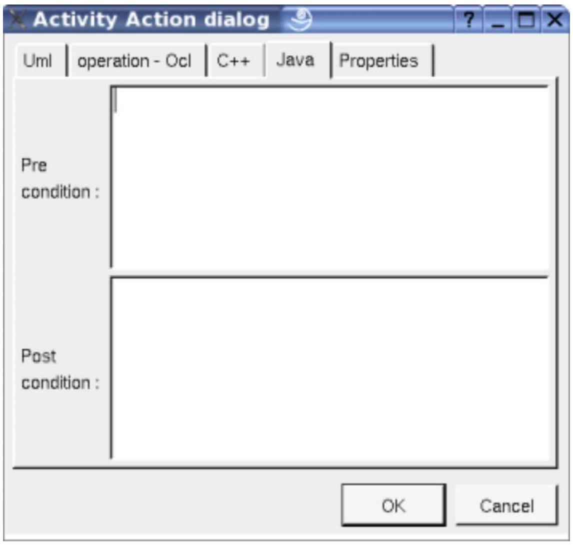
Activity call operation action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

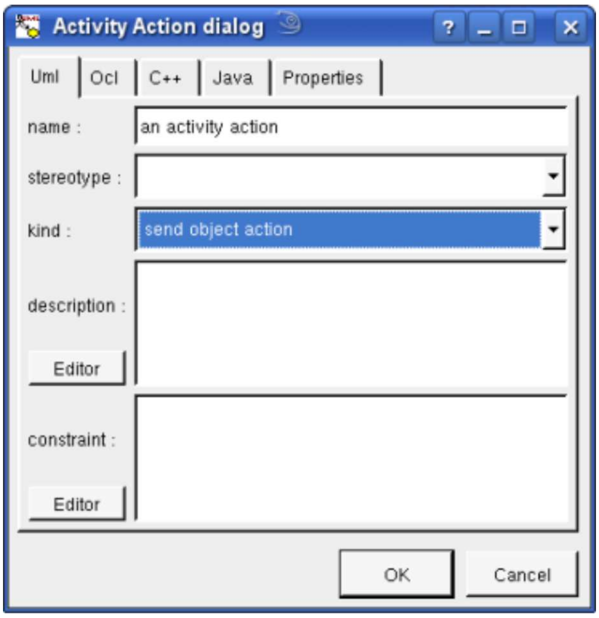


Activity call operation action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity send object action dialog, tab Uml



name : an activity action

stereotype :

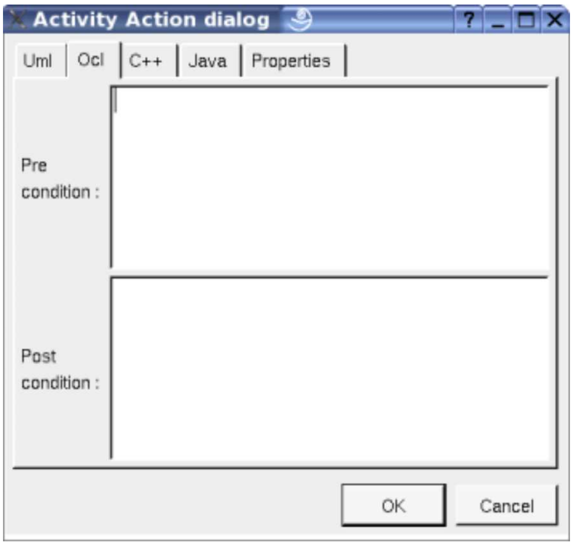
kind : send object action

description :

constraint :

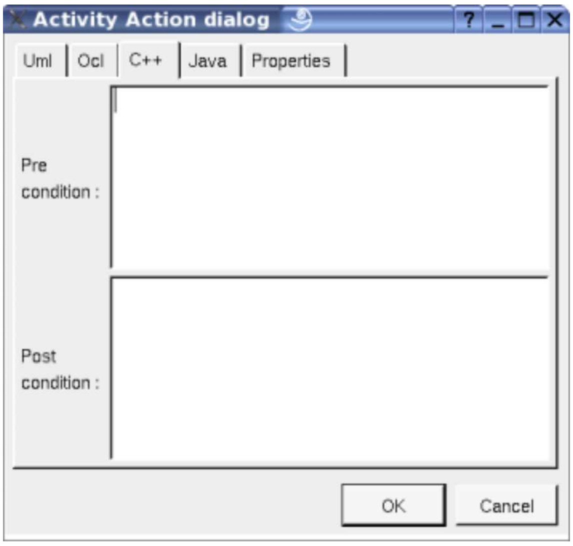
Activity send object action dialog, tab Ocl

The *Ocl* tab allows to specify the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



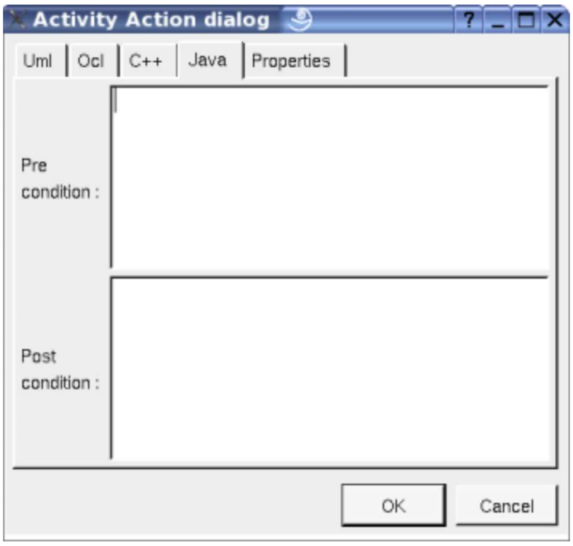
Activity send object action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity send object action dialog, tab Java

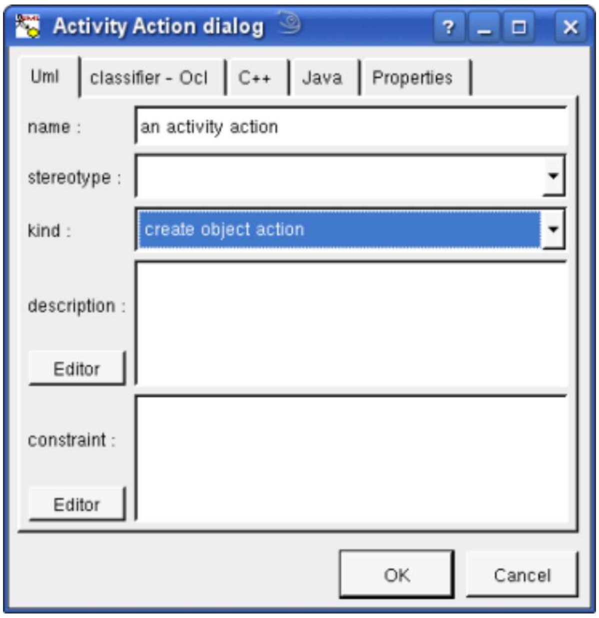
This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity accept call action dialog
Activity reply action dialog

The dialog is similar to the *accept event action* case

Activity create object action dialog, tab Uml



name : an activity action

stereotype :

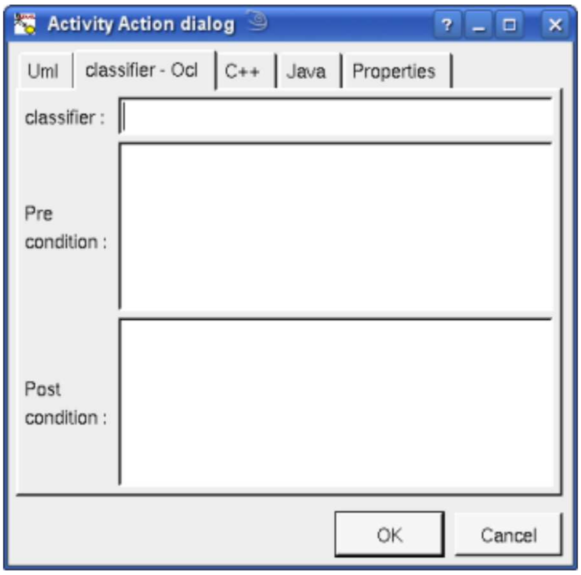
kind : create object action

description :

constraint :

Activity create object action dialog, tab Ocl

The *Ocl* tab allows to specify the created object classifier and *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



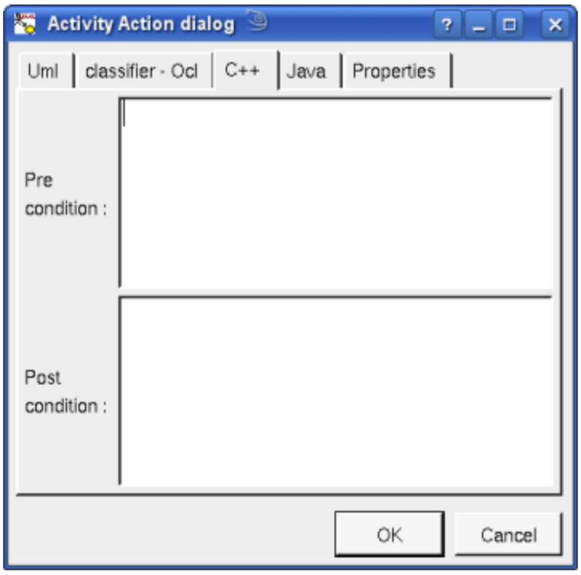
classifier :

Pre condition :

Post condition :

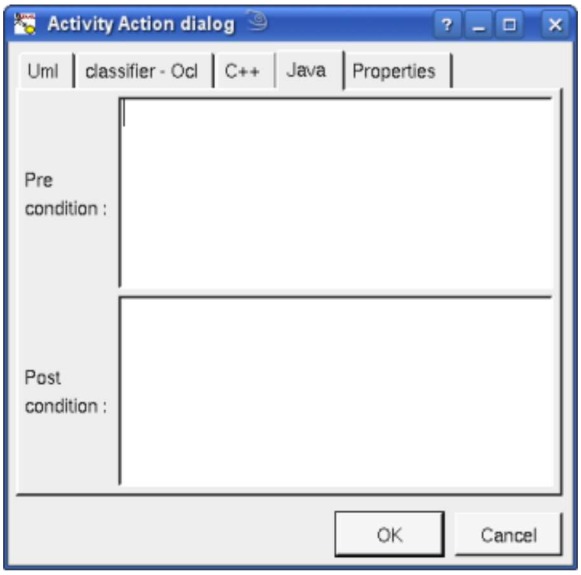
Activity create object action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

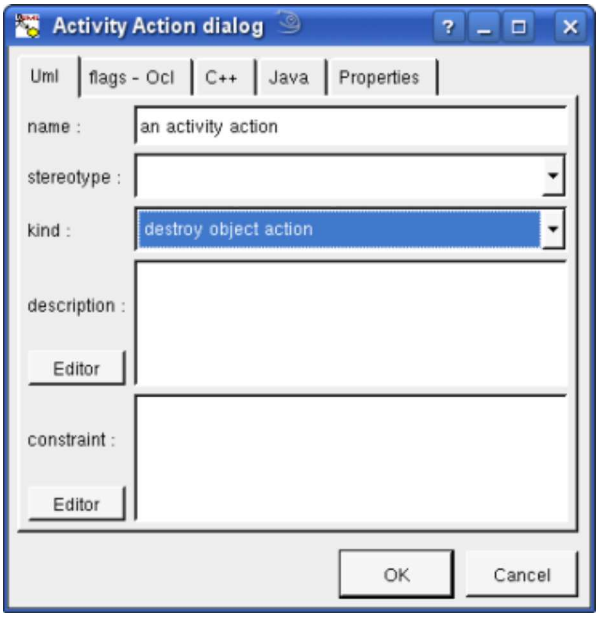


Activity create object action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity destroy object action dialog, tab Uml



name : an activity action

stereotype :

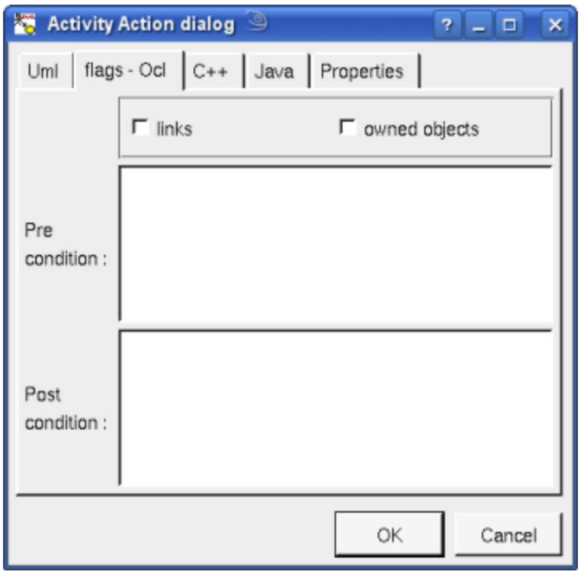
kind : destroy object action

description :

constraint :

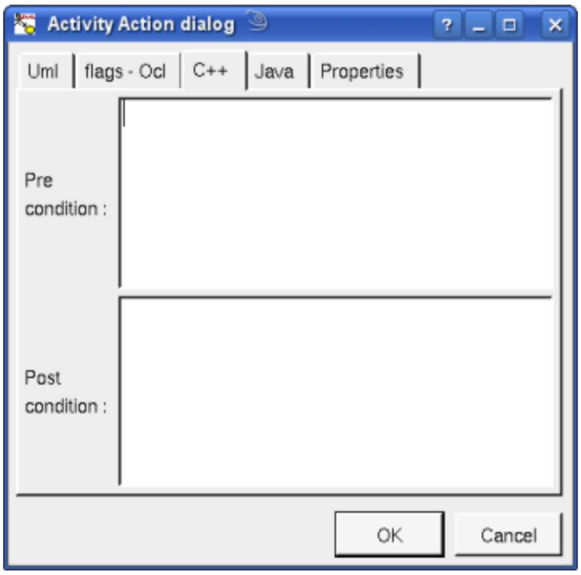
Activity destroy object action dialog, tab Ocl

The *Ocl* tab allows to specify flags and *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



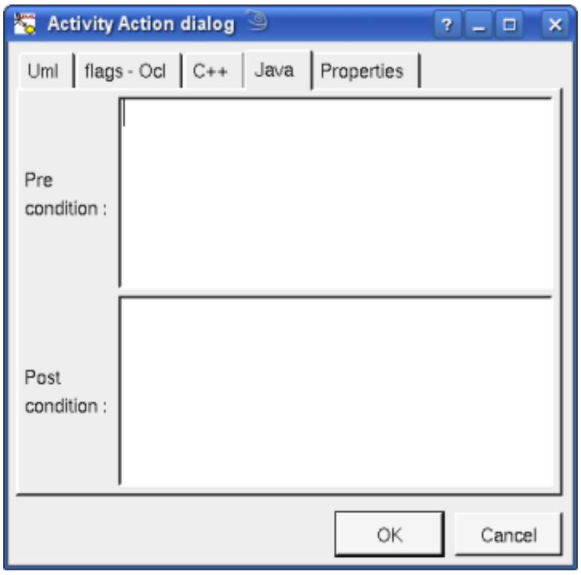
Activity destroy object action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

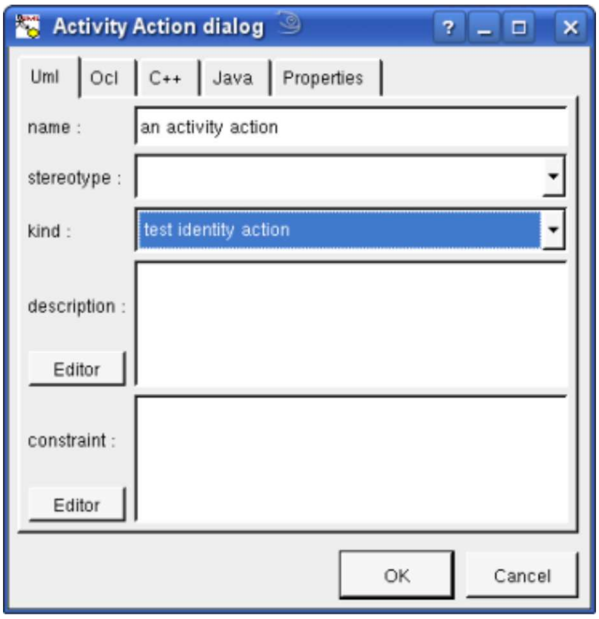


Activity destroy object action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity test identity action dialog, tab Uml



name : an activity action

stereotype :

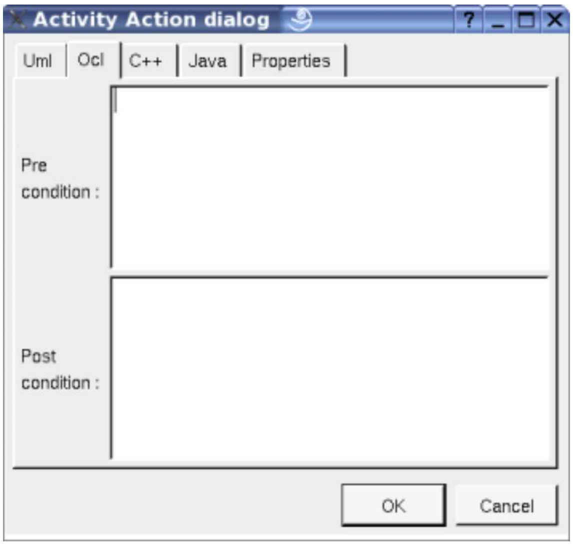
kind : test identity action

description :

constraint :

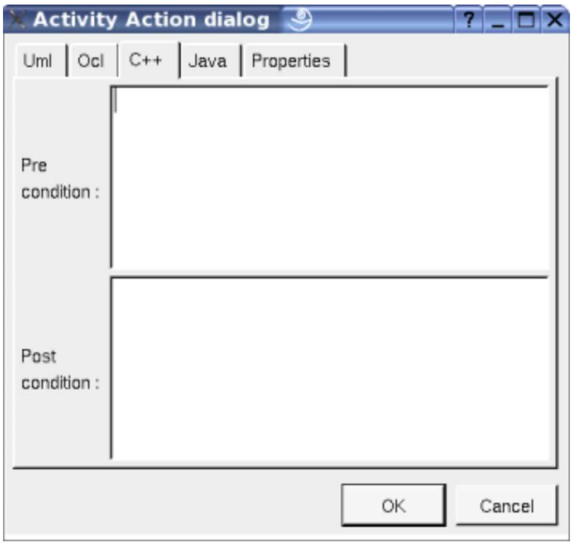
Activity test identity action dialog, tab Ocl

The *Ocl* tab allows to specify the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



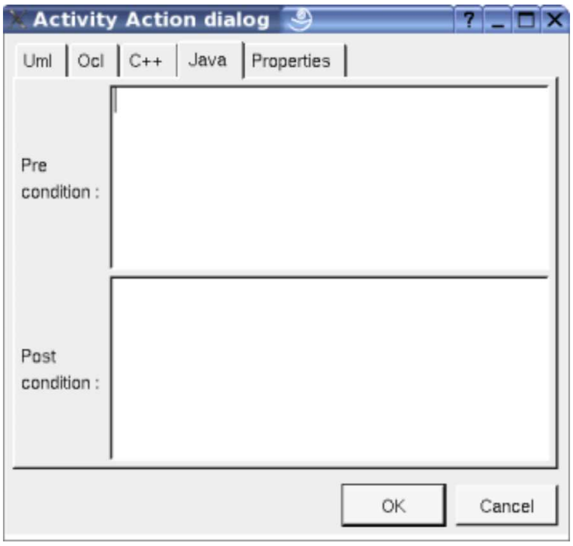
Activity test identity action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

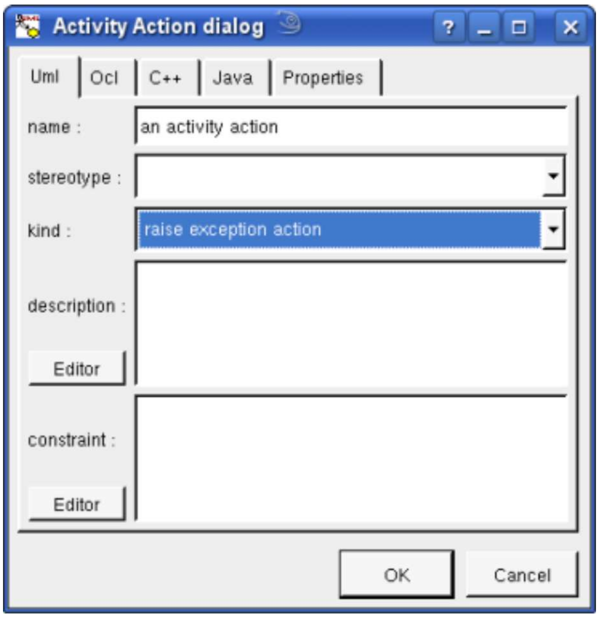


Activity test identity action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity raise exception action dialog, tab Uml



name : an activity action

stereotype :

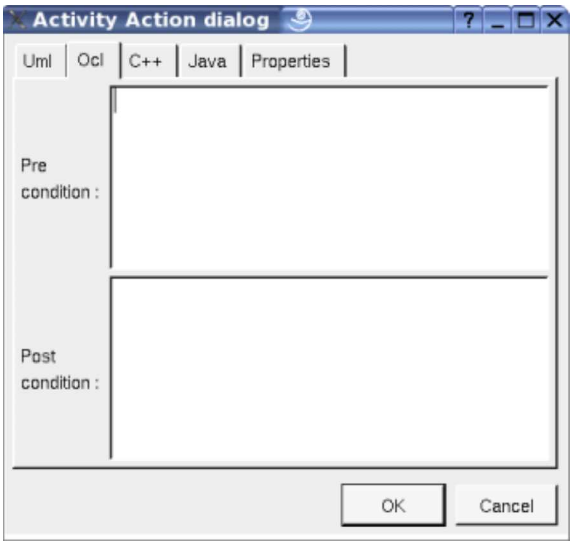
kind : raise exception action

description :

constraint :

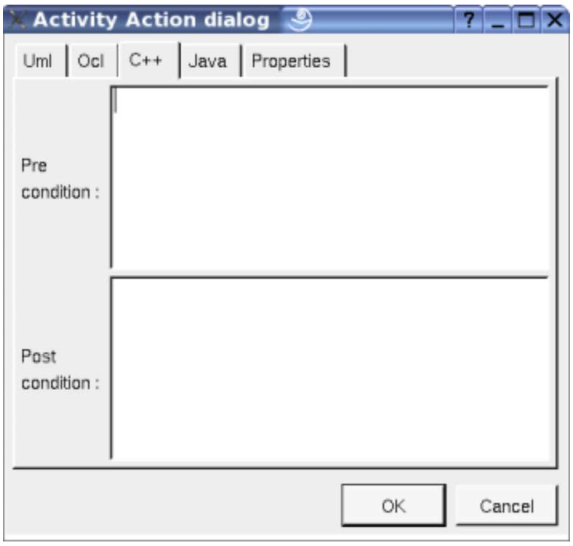
Activity raise exception action dialog, tab Ocl

The *Ocl* tab allows to specify the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



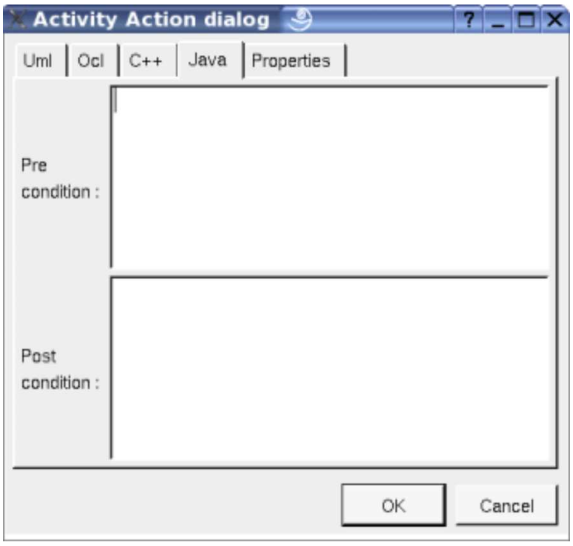
Activity raise exception action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.

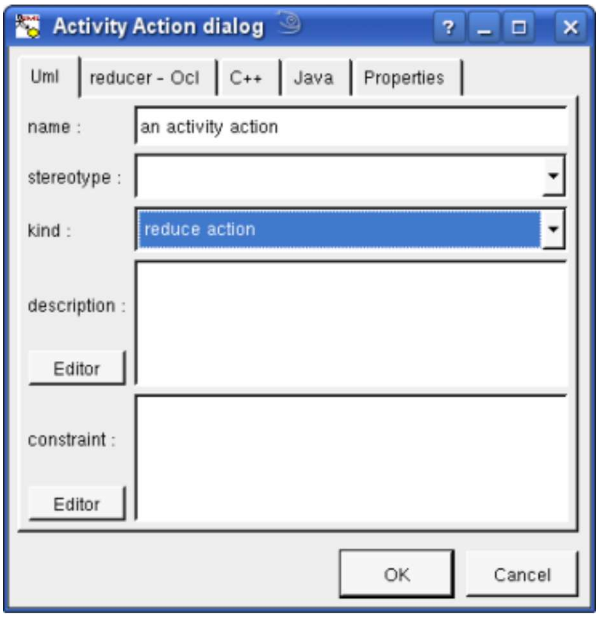


Activity raise exception action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity reduce action dialog, tab Uml



name : an activity action

stereotype :

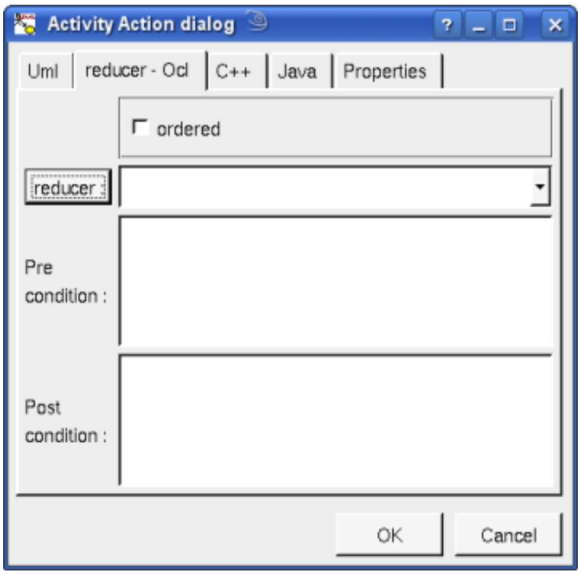
kind : reduce action

description :

constraint :

Activity reduce action dialog, tab Ocl

The *Ocl* tab allows to specify the *pre* and *post condition* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



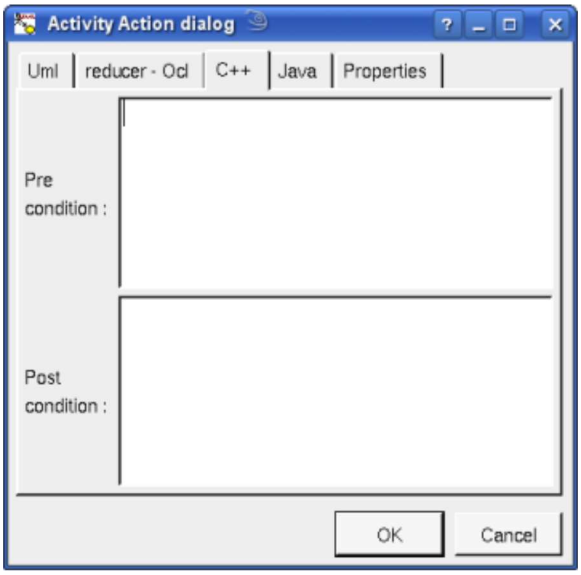
□ ordered

Pre condition :

Post condition :

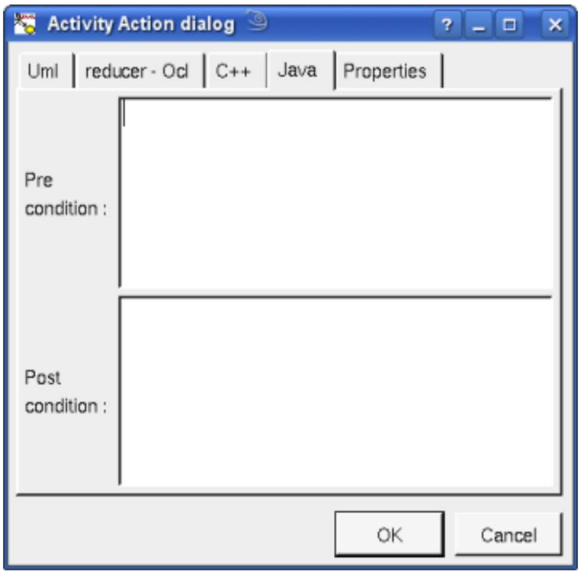
Activity reduce action dialog, tab C++

This tab allows to specify the *pre* and *post condition* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity reduce action dialog, tab Java

This tab allows to specify the *pre* and *post condition* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *activity action* without its children

Menu : referenced by

To know who reference the current *activity action* through a flow.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *activity action* is not *read-only*.

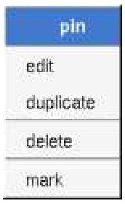
Delete the *activity action* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *activity action*. The selected tool is called and applied on the current *activity action*.

Pin menus

The *pin* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *pin* not *read-only* nor deleted (see also menu in a diagram) :

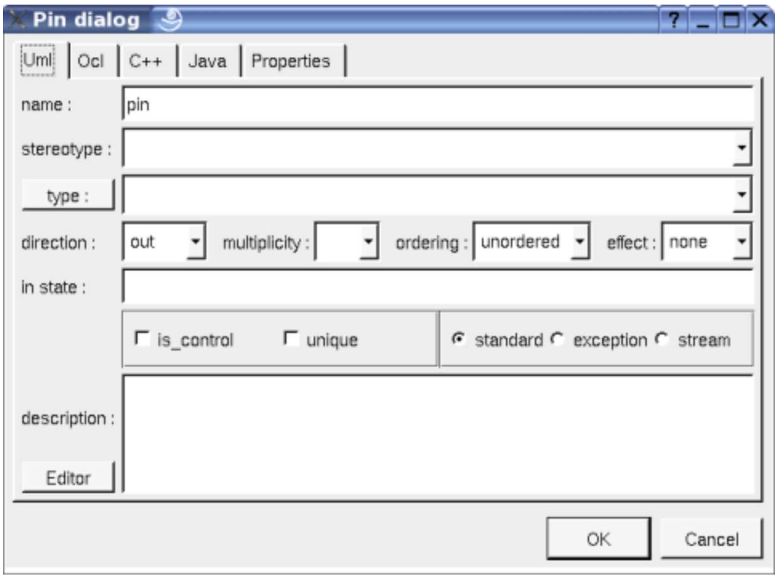


Menu : edit

edit allows to show/modify the *pin* properties. In case the *pin* is read-only, the fields of the dialog are also read-only.

Pin dialog, tab Uml

The tab *Uml* is a global tab :



The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The proposed ***type***s are the *non class* types defined in the first tab of the generation settings, more all the classes defined in the project (with their localization to distinguish synonymous classes). You are not limited to the proposed list, and any form (even invalid for the target language(s)) may be given. The button *type:* shows a menu proposing :

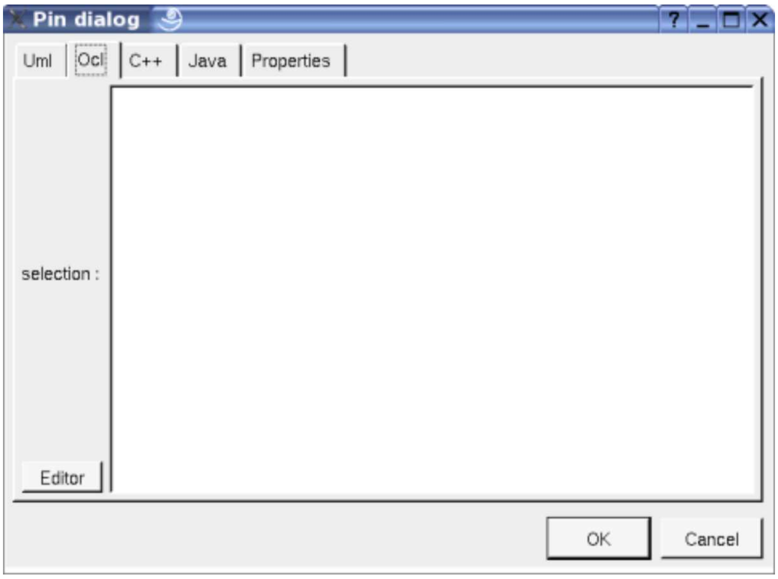
- if the current type of the pin is a class : to select this class in the browser
- if the pin is not read-only and if a class is selected in the browser : to set the type to be this class
- if the view containing the activity is not read-only : to create a class and to choose it

The **direction**, **multiplicity**, **ordering**, **effect**, **in state, default value, is control, unique, exception** and **stream** are the standard UML properties. The flags **exception** and **stream** are exclusive, choose **standard** to be not *exception* nor *stream*.

The ***editor*** button visible above and associated here to the default value and description, allows to edit the default value or the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Pin dialog, tab Ocl

The *Ocl* tab allows to specify the *selection* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *pin* without its children

Menu : referenced by

To know who reference the current *pin* through a flow.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *pin* is not *read-only*.

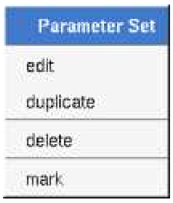
Delete the *pin* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *pin*. The selected tool is called and applied on the current *pin*.

Parameter set menus

The *parameter set* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *set* not *read-only* nor deleted (see also menu in a diagram) :



Menu : edit

edit allows to show/modify the *parameter set* properties. In case the *set* is read-only, the fields of the dialog are also read-only.

Parameter set dialog, tab Uml

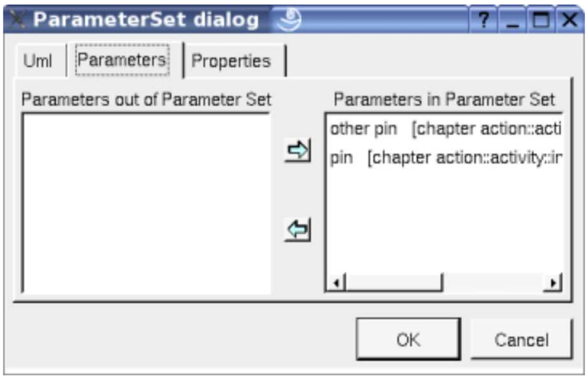
The tab *Uml* is a global tab :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the default value and description, allows to edit the default value or the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Pin dialog, tab parameters

Allows to specify the *pins* part of the *parameter set*



other pin [chapter action::acti
pin [chapter action::activity::ir

Menu : duplicate

The menu entry *duplicate* clone the *pin* without its children

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *pin* is not *read-only*.

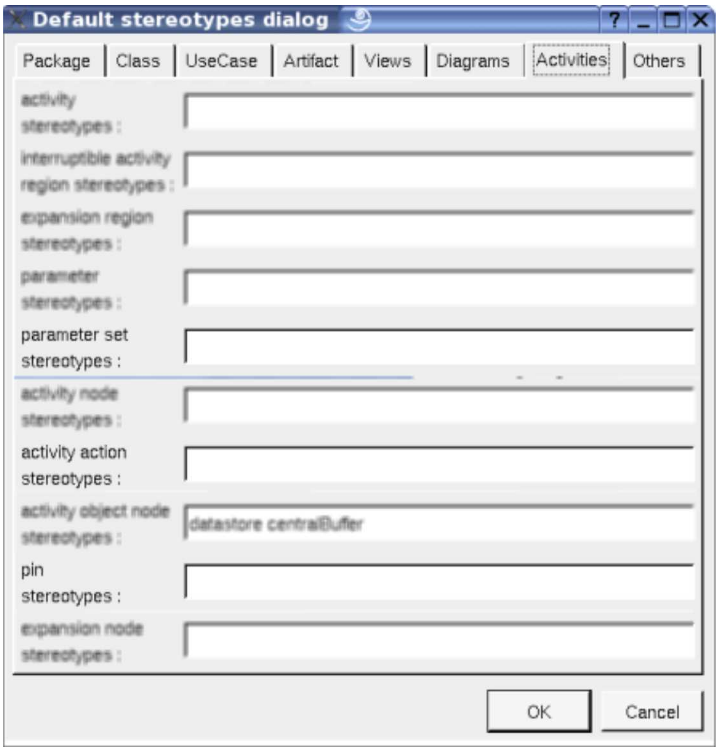
Delete the *pin* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *parameter set*. The selected tool is called and applied on the current *set*.

Default stereotypes

The dialog allowing to set the default stereotypes :



activity stereotypes :

interruptible activity region stereotypes :

expansion region stereotypes :

parameter stereotypes :

parameter set stereotypes :

activity node stereotypes :

activity action stereotypes :

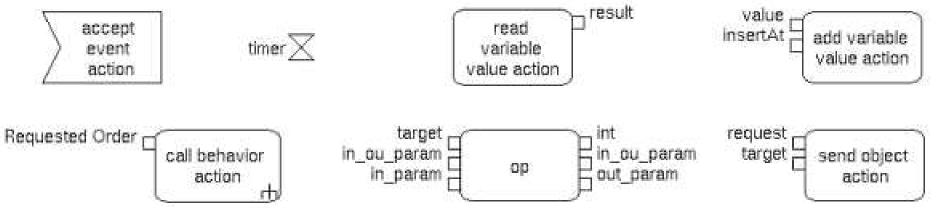
activity object node stereotypes : datastore centralBuffer

pin stereotypes :

expansion node stereotypes :

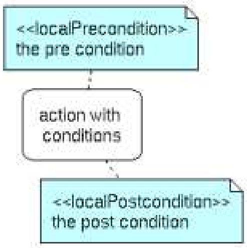
Activity action drawing

Depending on its stereotype a *activity action* is drawn in a diagram as a rectangle, a convex pentagon or a concave pentagon :



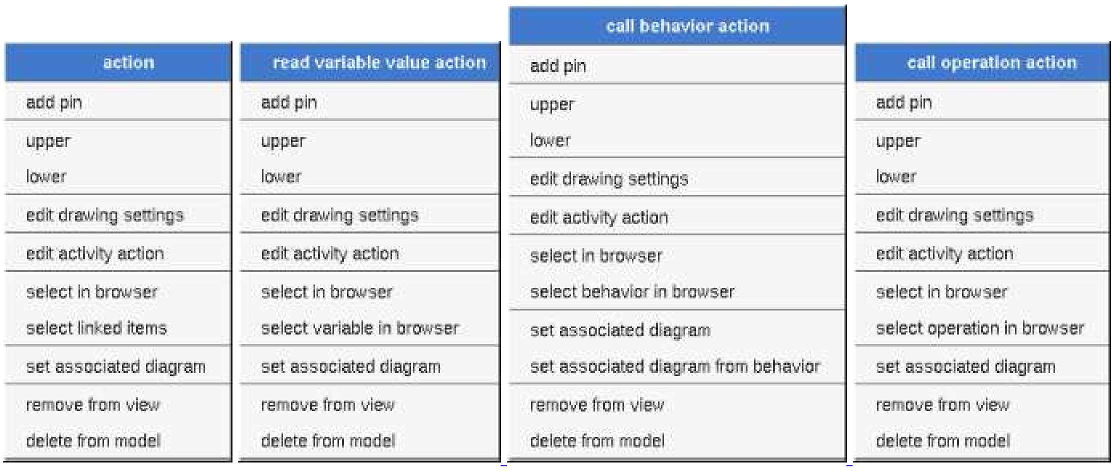
By default the name of an action is its kind, this one is written inside the action, except if the action is an *opaque* action and you ask to see the code.

If the action has *pre* and/or *post condition* these ones are show (except if you ask to not show the *conditions*) :



show stereotype properties : to indicate through a note the (non empty) value of the stereotype properties in case the package is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

A right mouse click on a *activity action* in a diagram calls the following menu (supposing the *activity action* editable) :



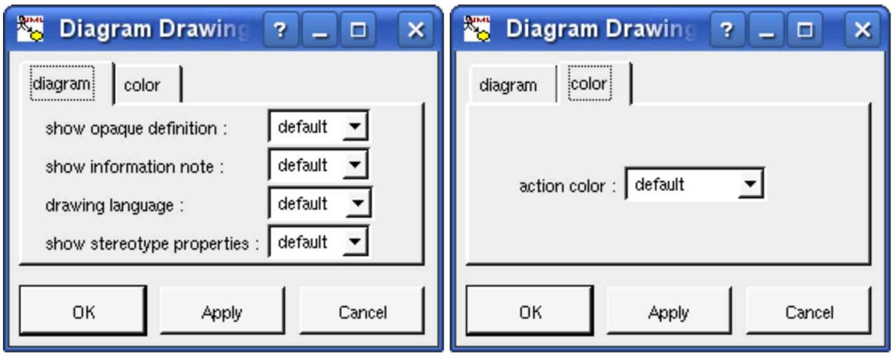
Menu :add pin

To add a *pin*

Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *activity action* in a diagram, all the settings are set to *default*.



show opaque definition : default
show information note : default
drawing language : default
show stereotype properties : default

action color : default

show opaque definition :

To write an opaque action's name or its behavior

show information note :

to show or not the conditions

drawing language :

Allows to specify the used language used to indicate opaque action behavior or the conditions

show stereotype properties :

to indicate through a note the (non empty) value of the stereotype properties in case the action is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

action color :

To specify the fill color.

Menu select X in browser :

Appears only when the action is associated to a *variable*, *behavior* or an *operation*, to select this one the the browser

Menu select associated diagram from behavior :

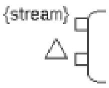
Appears only when the action is a *call behavior* and the behavior (an activity or a state) has an associated diagram, set this last to be the diagram associated to the action, this allows to goes to the diagram associated to the behavior on a double click on the action.

Menu tools :

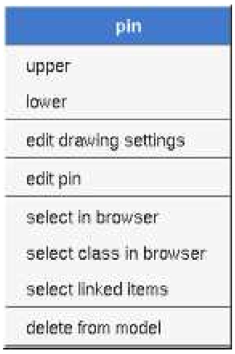
Appears only when at least one *plug-out* is associated to the *activity actions*. To apply a *plug-out* on the *activity action*.

Pin drawing

A Pin is drawn as a small square, with the stream or exception indication :



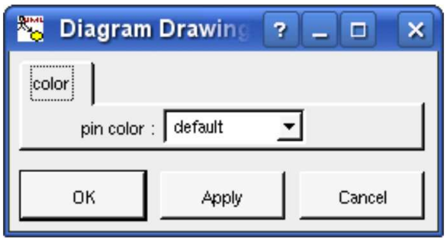
A right mouse click on a *pin* in a diagram calls the following menu (supposing the *pin* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *pin* in a diagram, all the settings are set to *default*.



pin color : default

To specify the fill color.

Menu : select class in browser

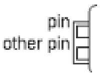
Appears when the type of the pin is a class, to select it in the browser.

Menu tools :

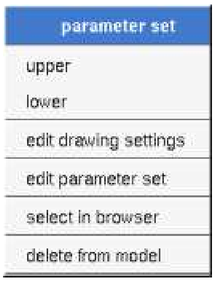
Appears only when at least one *plug-out* is associated to the *pins*. To apply a *plug-out* on the *pin*.

Parameter set drawing

A *parameter* set is a rectangle drawn around the corresponding *pins*, it is highly recommended to place the pins on the same are to have a pretty result:



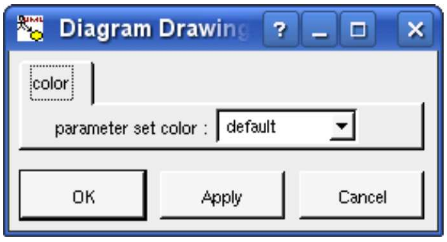
A right mouse click on a *pin* in a diagram calls the following menu (supposing the *pin* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *set* in a diagram, all the settings are set to *default*.



parameter set color : default

To specify the fill color.

Menu tools :

Appears only when at least one *plug-out* is associated to the *parameter sets*. To apply a *plug-out* on the *set*.

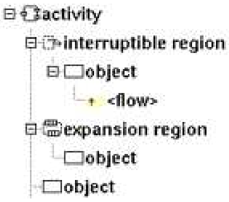
Previous : activity region

Next : activity object

Activity object

Note : *pins* are *activity object*, they are described with the activity actions.

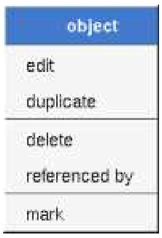
In the *browser* an *activity object* is placed in an activity or an activity region, and may contain flows :



The *activity object*'s properties are exposed below.

Menus

The *activity object* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *object* not *read-only* nor deleted (see also menu in a diagram) :

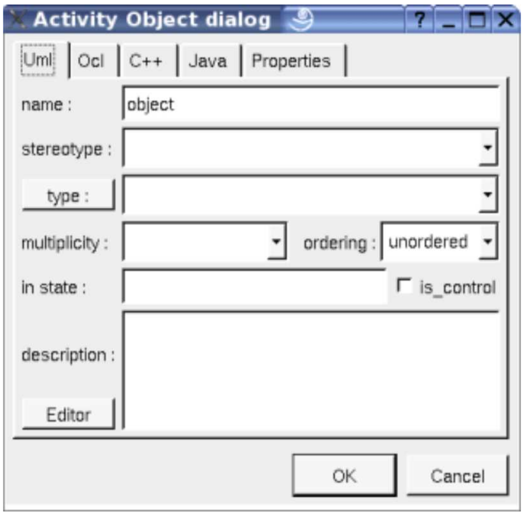


Menu : edit

edit allows to show/modify the *object* properties. In case the *object* is read-only, the fields of the dialog are also read-only.

Activity object dialog, tab Uml

The tab *Uml* is a global tab :



name : object

stereotype :

multiplicity :

ordering : unordered

in state :

□ is_control

description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The proposed ***type***s are the *non class* types defined in the first tab of the generation settings, more all the classes defined in the project (with their localization to distinguish synonymous classes). You are not limited to the proposed list, and any form (even invalid for the target language(s)) may be given. The button *type:* shows a menu proposing :

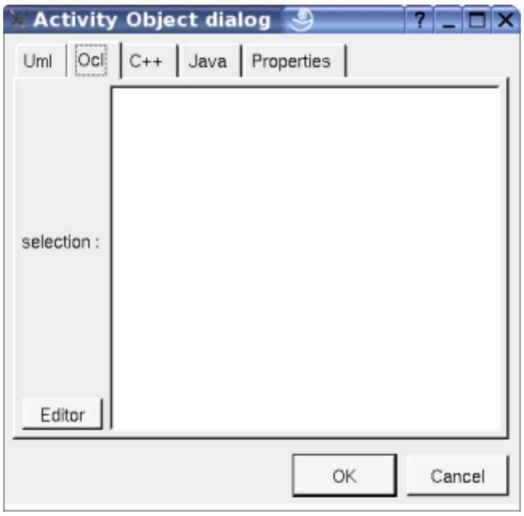
- if the current type of the object is a class : to select this class in the browser
- if the object is not read-only and if a class is selected in the browser : to set the type to be this class

The **multiplicity**, **ordering**, **in state** and **is control** are the standard UML properties.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

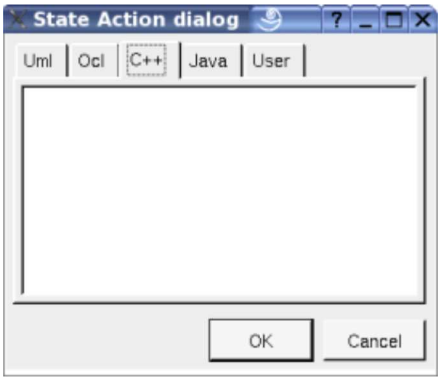
Activity object dialog, tab Ocl

The *Ocl* tab allows to specify the *selection* using the *Ocl* language, but in fact BOUML doesn't check the syntax, this is just a convention.



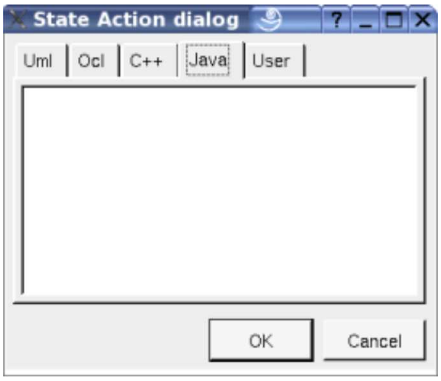
Activity object dialog, tab C++

This tab allows to specify the *selection* in *C++*, but in fact BOUML doesn't check the syntax, this is just a convention.



Activity object dialog, tab Java

This tab allows to specify the *selection* in *Java*, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : duplicate

The menu entry *duplicate* clone the *activity object* without its children

Menu : referenced by

To know who reference the current *activity object* through a transition.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *activity object* is not *read-only*.

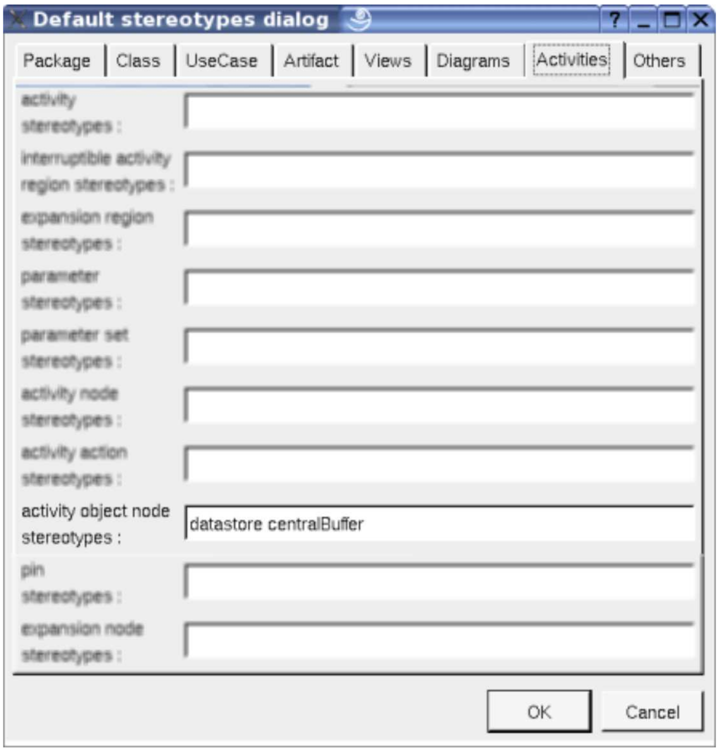
Delete the *activity object* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *activity object*. The selected tool is called and applied on the current *activity object*.

Default stereotypes

The dialog allowing to set the default stereotypes :



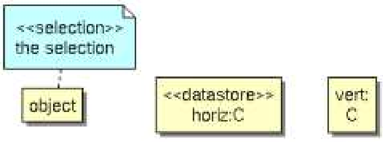
Default stereotypes dialog

activity object node stereotypes : datastore centralBuffer

Package
Class
UseCase
Artifact
Views
Diagrams
Activities
Others
activity stereotypes :
interruptible activity region stereotypes :
expansion region stereotypes :
parameter stereotypes :
parameter set stereotypes :
activity node stereotypes :
activity action stereotypes :
pin stereotypes :
expansion node stereotypes :
OK
Cancel

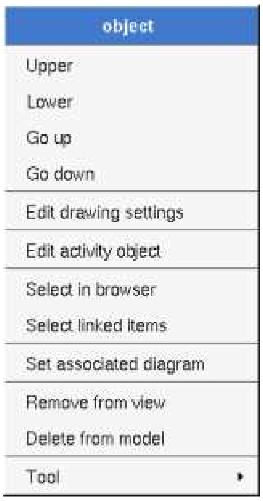
Drawing

An *activity object* is drawn in a diagram as a rectangle, with its stereotype, it type (if set) and its selection (except if you ask to not show it) :



If the *activity object* is stereotyped by a stereotype part of a profile and this stereotype has an associated icon, this icon will be used unchanged when the scale is 100% else it is resized.

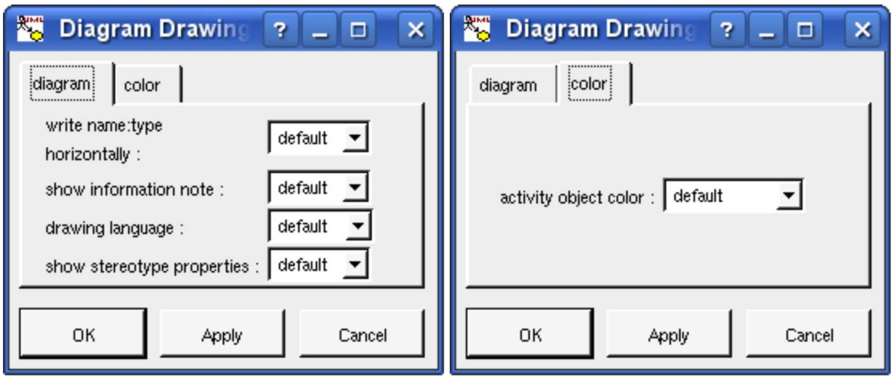
A right mouse click on a *activity object* in a diagram calls the following menu (supposing the *activity object* editable) :



Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a *activity object* in a diagram, all the settings are set to *default*.



write name:type horizontally : default

show information note : default

drawing language : default

show stereotype properties : default

activity object color : default

write name:type horizontally:

useful when the object has a name and a type, to write them on the same line of on two lines

show information note :

to show or not the selection

drawing language :

Allows to specify the used language showing the expression

show stereotype properties :

to indicate through a note the (non empty) value of the stereotype properties in case the object is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Class instance color :

To specify the fill color.

Menu tools :

Appears only when at least one *plug-out* is associated to the *activity objects*. To apply a *plug-out* on the *activity object*.

Previous : activity action

Next : activity control node

Activity control node

The *activity control nodes* are :

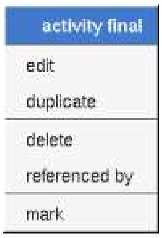
- ● initial
- ◉ final
- ⊗ flow final
- merge
- decision
- fork
- join

In the *browser* a *activity control node* is placed under its *activity* or *region* and may contain *flows* (when this is legal).

The *activity control node*'s properties will be exposed below.

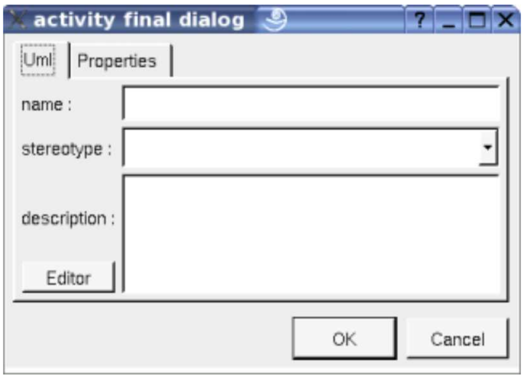
Menus

The *activity control node* menu appearing with a right mouse click on its representation in the browser is something like these, supposing the *activity control node* not *read-only* nor deleted (see also menu in a diagram) :



Menu : edit

edit allows to show/modify the *activity control node* properties. In case the *activity control node* is read-only, the fields of the dialog are also read-only.



The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : duplicate

The menu entry *duplicate* clone the *activity control node* without its children

Menu : referenced by

To know who reference the current *activity control node* through a transition.

Menu : mark

See mark

Menu : delete

The menu entry *delete* is only present when the *activity control node* is not *read-only*.

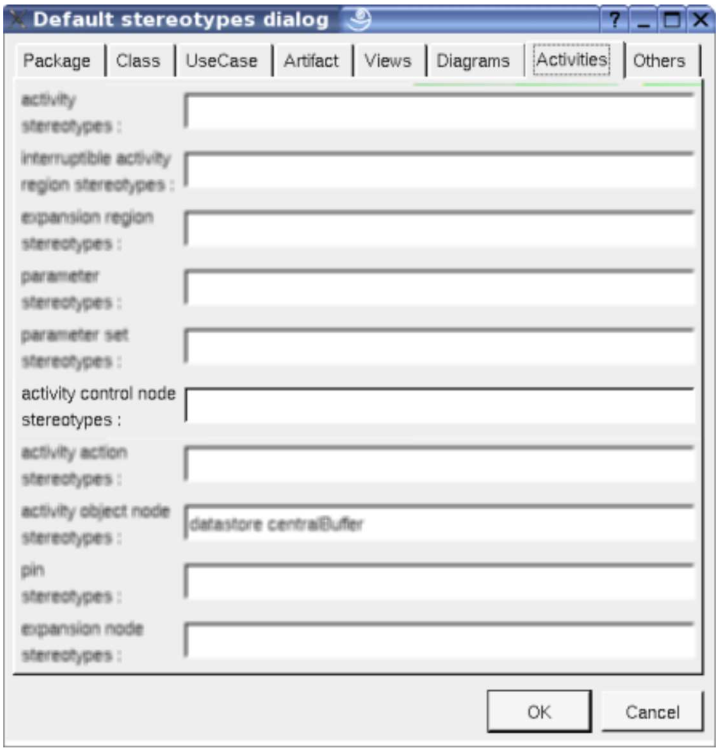
Delete the *activity control node* and all its children, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : tool

The menu entry *tool* is only present in case at least a *plug-out* may be applied on a *activity control node* of this kind. The selected tool is called and applied on the current *activity control node*.

Default stereotypes

The dialog allowing to set the default stereotypes :



activity stereotypes :

interruptible activity region stereotypes :

expansion region stereotypes :

parameter stereotypes :

parameter set stereotypes :

activity control node stereotypes :

activity action stereotypes :

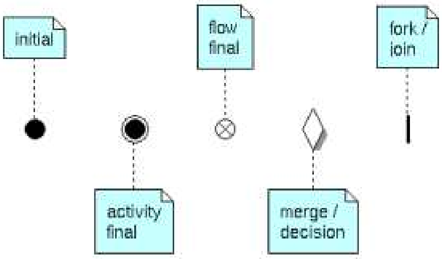
activity object node stereotypes : datastore centralBuffer

pin stereotypes :

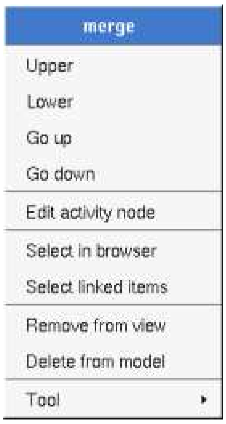
expansion node stereotypes :

Drawing

A *activity control node* is drawn in a diagram depending on its kind :



A right mouse click on a *activity control node* in a diagram calls the following menu (supposing the *activity control node* editable) :



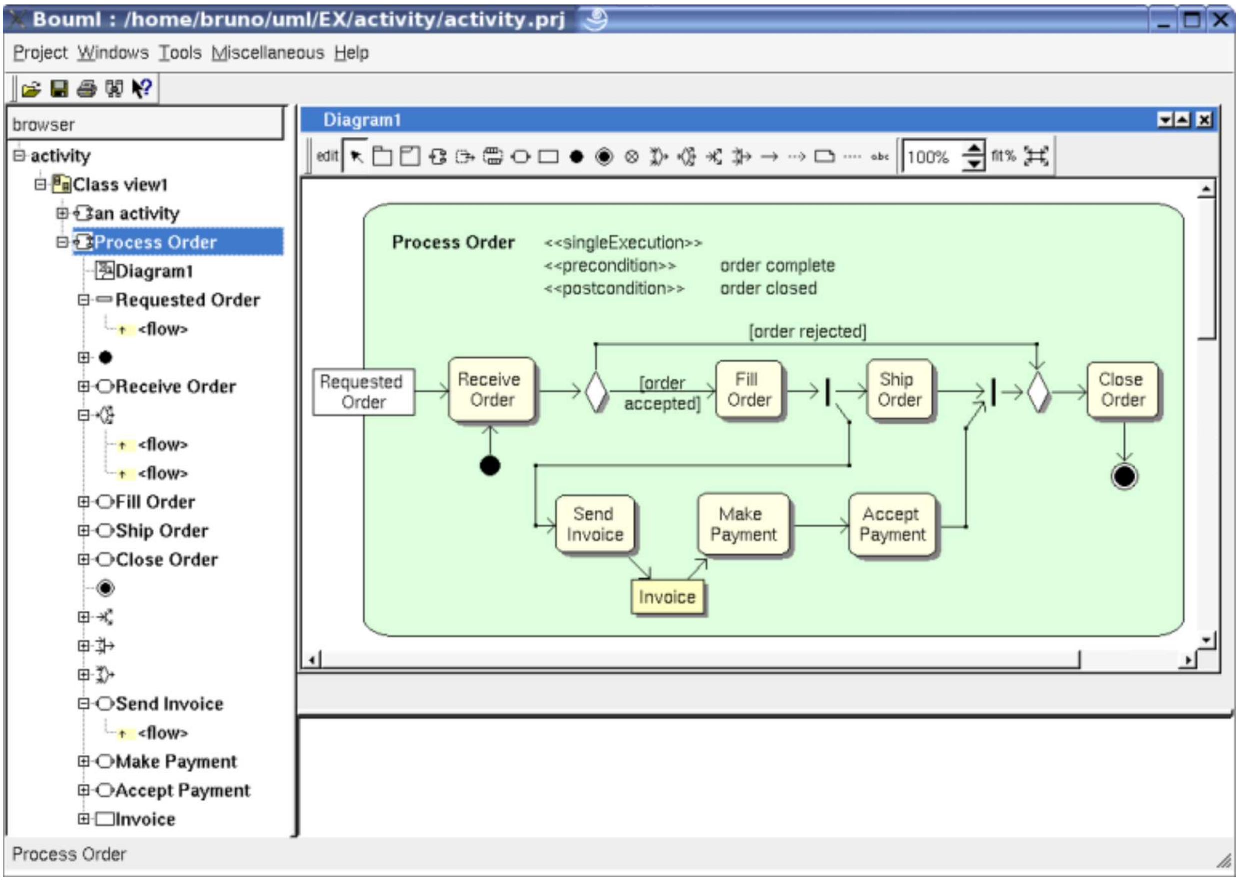
Previous : activity object

Next : flow

Flow

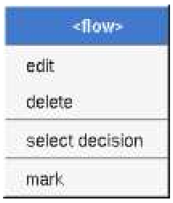
We consider in this chapter both the *control flows* and the *object flows*, there are not distinguished by a given flag but by their usage. When you try to create a *flow* through a diagram Bouml checks the validity of the flow, for instance you can't have a *flow* starting from an *output pin*, but you may after edit the extremities of the *flow*, producing an invalid case, you are responsible of that, perhaps the non consistent *flow* is temporary. To add a flow you have to use an activity diagram (obviously the diagram or the flow drawing may be deleted just after !), it is not possible to add a flow through the browser. It is also not possible to move a flow out of its start or end container in the browser.

In the browser are written the name of the flows (by default <<*flow*>>) , the stereotype may be may be showed/hidden through the Miscellaneous menu.



Menus

The flow menu appearing with a right mouse click on its representation in the browser is something like these, supposing it is not *read-only* nor deleted (see also menu in a diagram) :

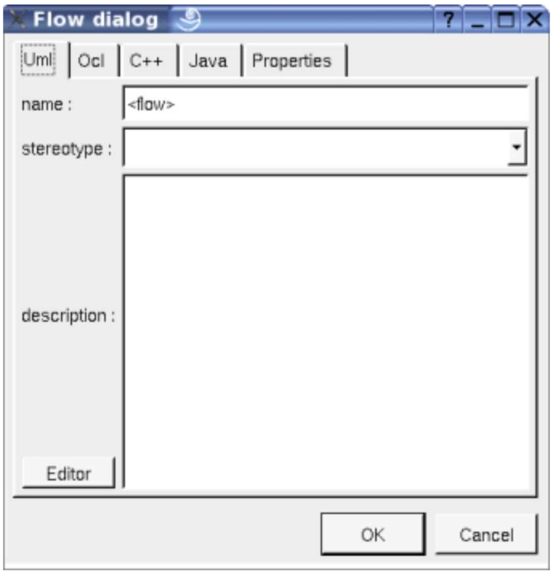


Menu : edit

edit allows to show/modify the flows properties. In case the flow is read-only, the fields of the dialog are also read-only.

Flow dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :

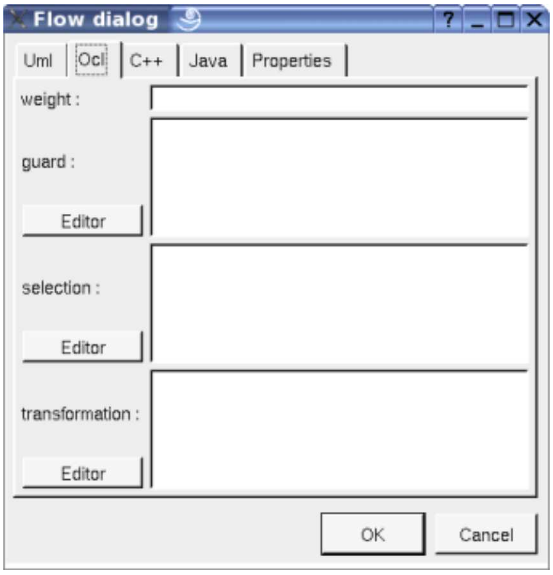


The proposed ***stereotypes*** are the default ones specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The stereotype and the multiplicity are used both (may be with the stereotype of the class(es) in Idl) to compute the default declaration.

The ***editor*** button visible above and associated here to the description and initial value, allows to edit the description or initial value in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Flow dialog, tab Ocl

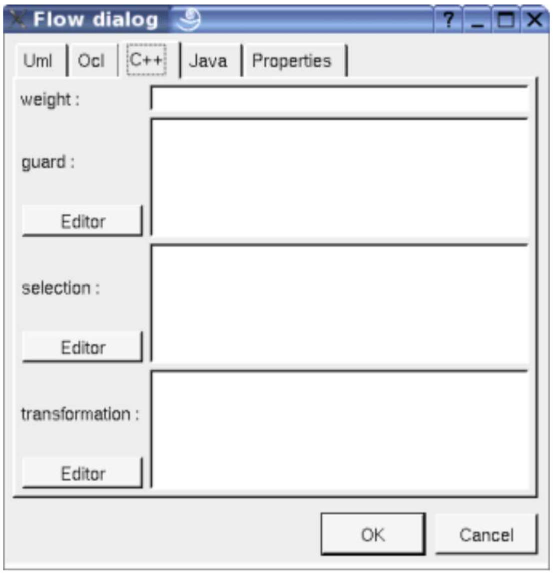
This tab allows to give the Ocl definition of the flow, but in fact BOUML doesn't check the syntax, this is just a convention.



The **weight, guard, selection** and **transformation** are the standard UML properties of a flow.

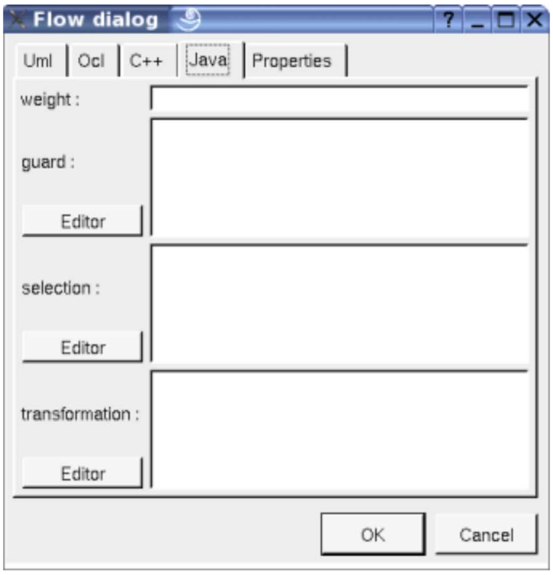
Flow dialog, tab C++

This tab allows to give the C++ definition of the flow, but in fact BOUML doesn't check the syntax, this is just a convention.



Flow dialog, tab Java

This tab allows to give the Java definition of the flow, but in fact BOUML doesn't check the syntax, this is just a convention.



Menu : delete

The menu entry *delete* is only present when the flow is not *read-only*.

Delete the flow, associated get and set operations when they exist, and all the representation of them in the opened diagrams. After that it is possible to undelete them (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : select X

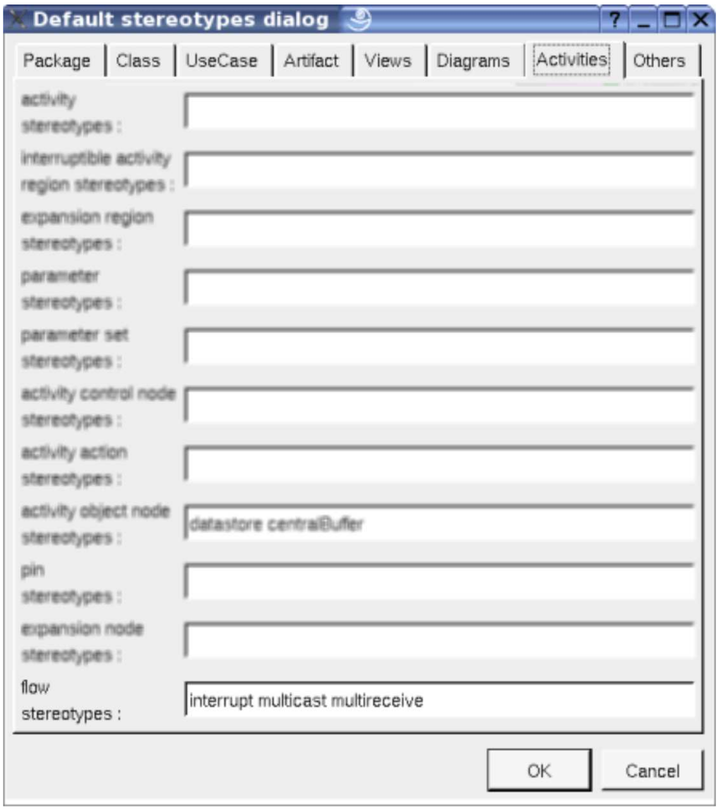
To select the target of the *flow*.

Menu : mark

See mark

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the flows :



activity stereotypes :

interruptible activity region stereotypes :

expansion region stereotypes :

parameter stereotypes :

parameter set stereotypes :

activity control node stereotypes :

activity action stereotypes :

activity object node stereotypes : datastore centralBuffer

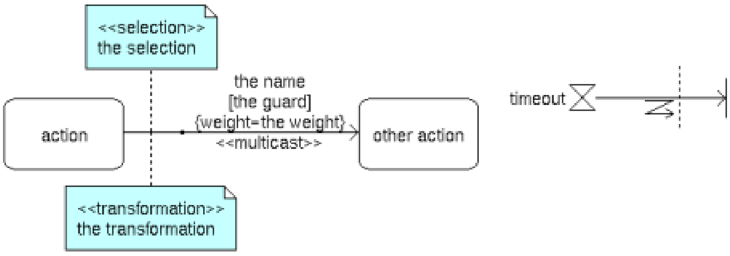
pin stereotypes :

expansion node stereotypes :

flow stereotypes : interrupt multicast multireceive

Drawing

A flow is drawn in a diagram with a line may be with the associated labels : flow's name, stereotypes (the stereotype *interrupt* is specially managed and allows to show a *zigzag*), the weight, the *guard*, the *selection* and *transformation*, depending on the *drawing ssettings* :

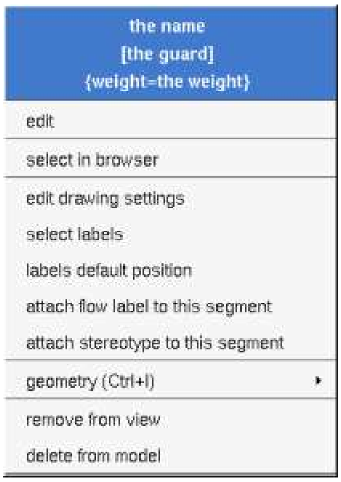


To add a new flow between elements, select the flow through the buttons on the top of the diagram sub window, click on the start element with the left mouse button, move the mouse, each time the mouse button is raised a new line break is introduced, at least click on the end element. To abort a flow construction press the right mouse button or do a double click with the left mouse button.

A line may be broken, during its construction of after clicking on the line with the left mouse button and moving the mouse with the mouse button still pushed. To remove a line break, a double click on the point with the left mouse button is enough, or use the line break menu of the point using the right mouse button.

By default the lines go to the center of their extremities, to decenter a line click near the desired extremity and move the mouse click down. To come back to a center line, use the menu geometry

A right mouse click on a flow in a diagram or a double click with left mouse button calls the following menu (supposing the flow editable) :



Menu : edit

To edit the flow

Menu : select labels

To select the labels (flow's name, stereotypes) associated to the flow. Useful when you are lost after many label movings.

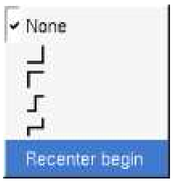
Menu : labels default position

To place the labels (flow's name, stereotypes, role(s) and multiplicity(ies)) associated to the flow in the default position. Useful when you are lost after many label movings.

By default when you move a class or a flow point break or edit the flow, the associated labels are moved to their default position, this may be irritating. To ask BOUML to not move the associated labels on the flows in a diagram, use the *drawing settings* of the diagrams.

Menu : geometry

Allows to choose one of the line geometry :



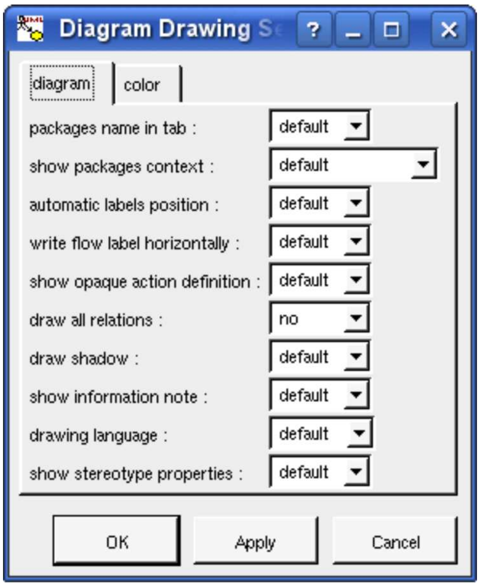
Note : if you manually move the central line of the last two geometries this one stop to be automatically updated when you move one of the two extremities of the flow.

Menu : tools

Appears only when at least one *plug-out* is associated to the flow. To apply a *plug-out* on the flow.

Drawing settings

The drawing settings associated to the flows in a diagram may be set through the the diagram itself or one of its parent, for instance :



packages name in tab : default
show packages context : default
automatic labels position : default
write flow label horizontally : default
show opaque action definition : default
draw all relations : no
draw shadow : default
show information note : default
drawing language : default
show stereotype properties : default

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level.

write horizontally :

To made the label indicating the name, *weight* and *guard* on one line or several.

show information note :

To show or not the *selection* and *transformation*.

Drawing language :

To choose the language used to write the *weight, guard, selection* and *transformation*.

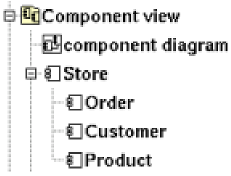
Previous : activity control node

Next : component

Component

A component is an autonomous unit with well defined interfaces that is replaceable within its environment. In the old release of BOUML (up to the 1.5.1), the behavior of the artifact was defined at the component level.

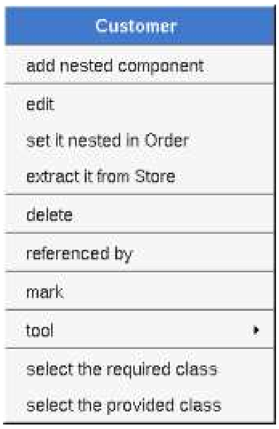
A component may be placed in a component view or is nested in another component



A component may be created through the *new component* entry of the component view menu or through the component button of a component diagram.

Browser Menu

The component menu appearing with a right mouse click on its representation in the browser is something like these, supposing the component not *read-only* nor deleted (see also menu in a diagram) :

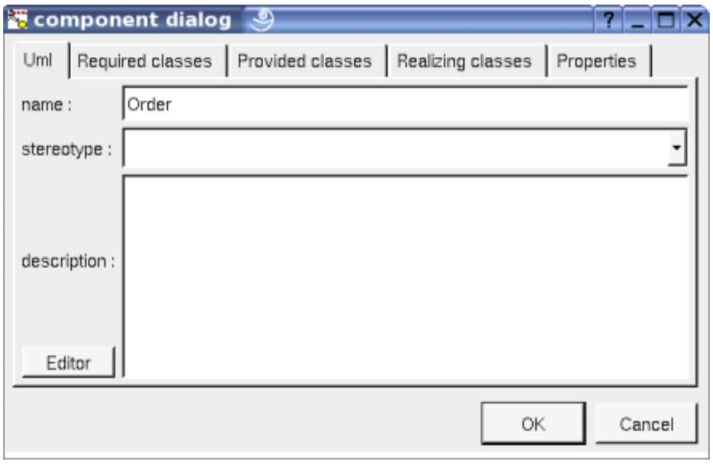


Menu : edit

edit allows to show/modify the component properties. In case the component is read-only, the fields of the dialog are also read-only.

Component dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



name : Order

stereotype :

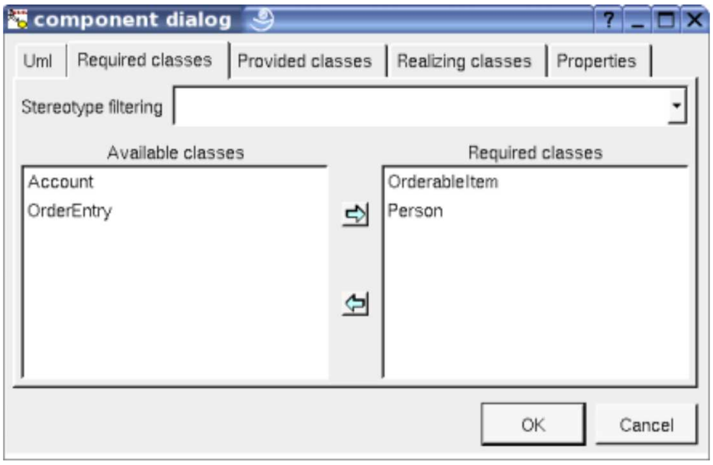
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Component dialog, tab Required classes

This tab allows to specify the list of interface the component requires.



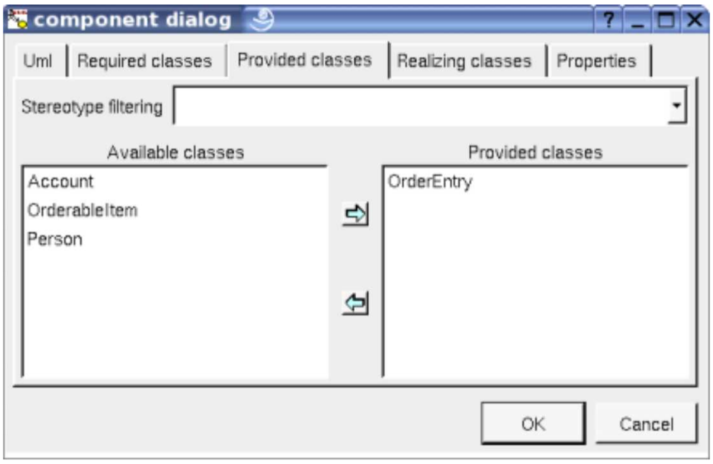
Available classes: Account, OrderEntry

Required classes: OrderableItem, Person

When a component C contains nested components, it is useless to repeat the list of required interfaces at the level of C already defined by the sub components, the right list will be provided when you will add −⊂ or −○.

Component dialog, tab Provided classes

This tab allows to specify the list of interface the component provides.



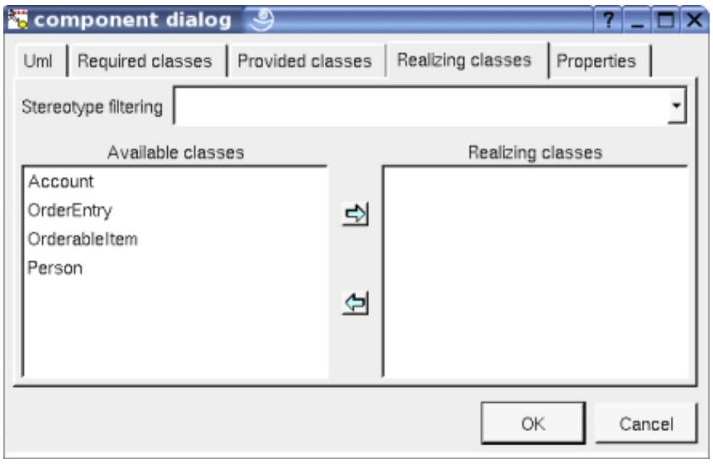
Available classes: Account, OrderableItem, Person

Provided classes: OrderEntry

When a component C contains nested components, it is impossible to repeat the list of provided/realized interfaces at the level of C already defined by the sub components, the right list will be provided when you will add −⊂ or −○.

Component dialog, tab Realizing classes

This tab allows to specify the list of classes realizing the behavior of the component.



Menu : set it nested in X

The menu entry *set it nested in X* is present when the component follow the component *X* in the browser. Choosing this entry the current component became a sub component of *X*.

Menu : extract it from X

The menu entry *extract it from X* is present when the component is nested in *X* (perhaps *X* is itself nested in another one, but it is not visible here). Choosing this entry the current component became a children of the parent of *X*.

Menu : delete

The menu entry *delete* is only present when the component/artifact is not *read-only*.

Delete the component and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : referenced by

To know who are the classes associated to the component, and the components referencing the current one through a relation.

Menu : mark

See mark

Menu : tool

Appears only when at least one *plug-out* is associated to the components. To apply a *plug-out* on the component.

Menu : select the required class

Menu : select a required class

Menu : select the realized class

Menu : select a realized class

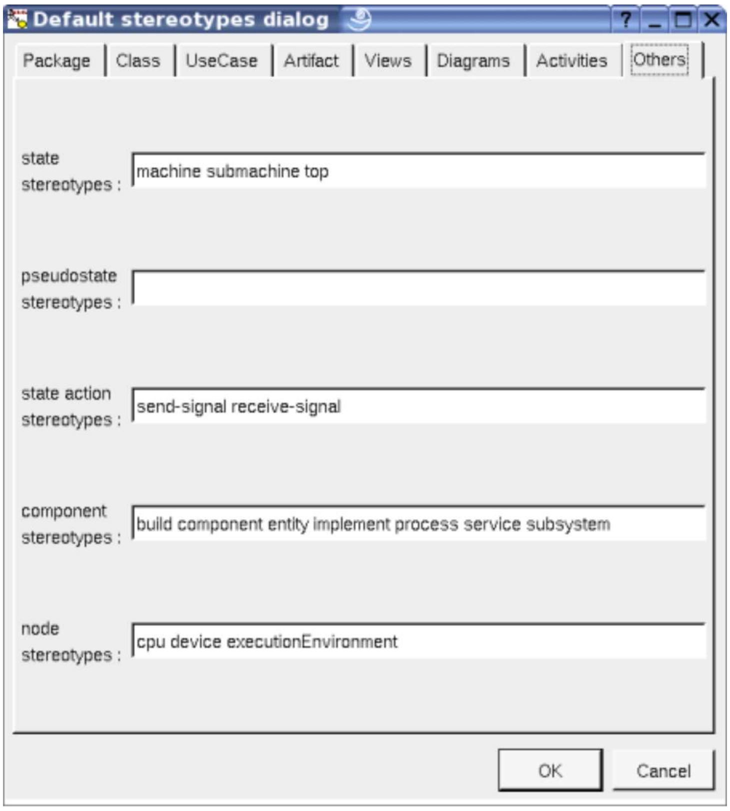
Menu : select the provided class

Menu : select a provided class

Appears only when at least one class is required/provided/realized by the components. To quickly select the appropriate class, the current component may also be quickly selected from its associated classes.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the components :



state stereotypes : machine submachine top

pseudostate stereotypes :

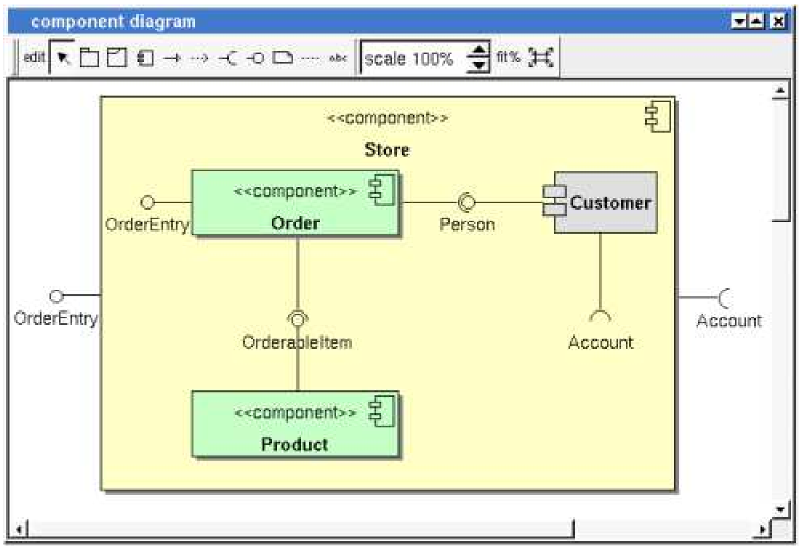
state action stereotypes : send-signal receive-signal

component stereotypes : build component entity implement process service subsystem

node stereotypes : cpu device executionEnvironment

Drawing

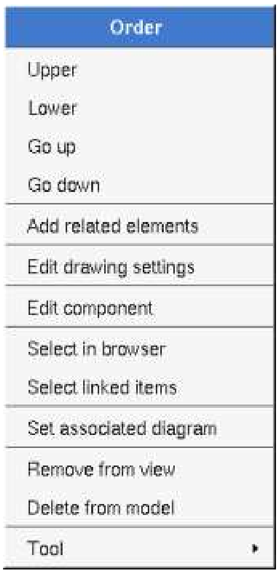
A component is drawn in a component diagram or a deployment diagram, following the drawing settings they may be drawn as a rectangle containing the component icon (UML **2.0** notation) or as a component icon being a rectangle with two lobes (UML **1.5** notation) :



If the component is stereotyped by a stereotype part of a profile and this stereotype has an associated icon, this icon will be used when you ask for draw the component as an icon, the image is unchanged when the scale is 100% else it is resized.

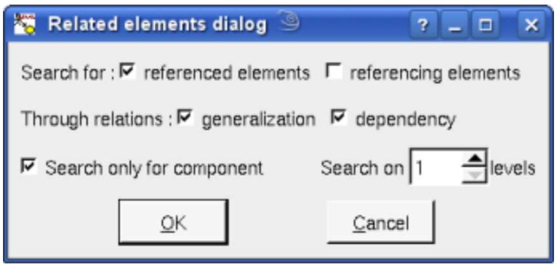
The default color of a component may be set through the drawing settings.

A right mouse click on a component in a diagram calls the following menu (supposing the component editable) :



Menu : add related elements

to add elements having a relation with the current element, the following dialog is shown :



Search for : ☑ referenced elements ☐ referencing elements

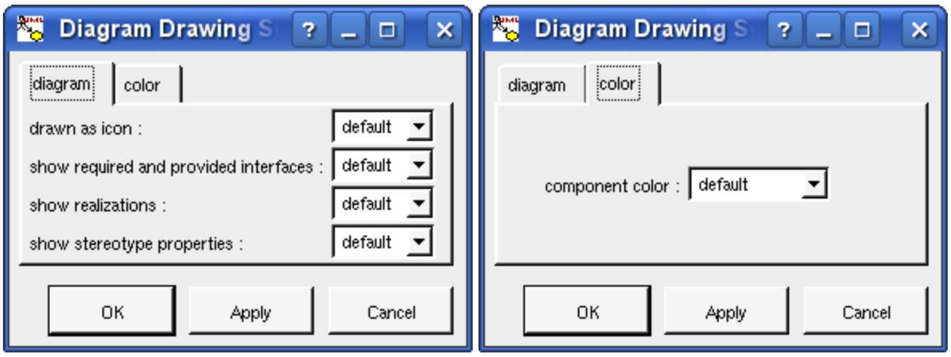
Through relations : ☑ generalization ☑ dependency

☑ Search only for component   Search on 1 levels

Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a component in a diagram, all the settings are set to *default*.



drawn as icon : default

show required and provided interfaces : default

show realizations : default

show stereotype properties : default

component color : default

show ... : allows to write or not the component's interfaces and realization into its drawing as a compartment.

Menu : set associated diagram

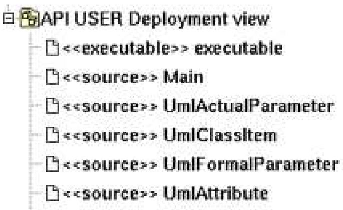
set associated diagram allows to automatically open the current diagram when a double mouse click is made on the component representation in a diagram or the browser. After that the only way to edit the component is to choose the *edit* entry in the menu.

Previous : flow

Next : artifact

Artifact

Artifacts are used to produce source file(s) when the stereotype is *source*, or to specified how libraries or an executable are composed.


API USER Deployment view
<<executable>> executable
<<source>> Main
<<source>> UmlActualParameter
<<source>> UmlClassItem
<<source>> UmlFormalParameter
<<source>> UmlAttribute

An artifact stereotyped *source* (potentially) associated to classes to produce their code, but you may directly give its source(s) contain for instance to define the C++ *main* function, as it is made in the *plug-outs*.

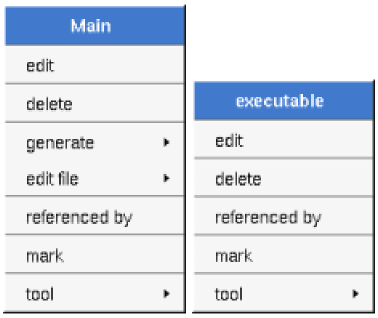
An artifact stereotyped *text* is not associated to classes and allows to produce its C++, Java, Php, python or Idl definition as it is set, without any changes. The generated file is named like the artifact, including the extension.

The non source nor text artifacts may be associated to other artifacts, this allows to define libraries and executable, to generate Makefiles etc ... see the *plug-out* *genpro* producing a *.pro* file from the artifact *executable* of the *plug-outs*.

An artifact may be created through the *new artifact* entry of the deployment view menu, through the artifact button of a deployment diagram, or through the *create source artifact* of the class menu (in case the class view containing the class has an associated deployment view).

Browser Menu

The artifact menu appearing with a right mouse click on its representation in the browser is something like these, supposing the artifact not *read-only* nor deleted (see also menu in a diagram) :

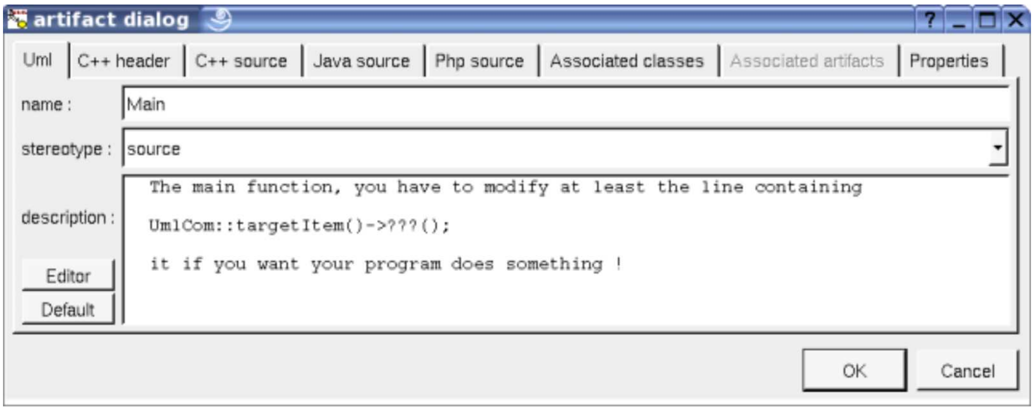


Menu : edit

edit allows to show/modify the artifact properties. In case the artifact is read-only, the fields of the dialog are also read-only.

Artifact dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



name : Main

stereotype : source

description :

```
The main function, you have to modify at least the line containing
UmlCom::targetItem()->???();
it if you want your program does something !
```

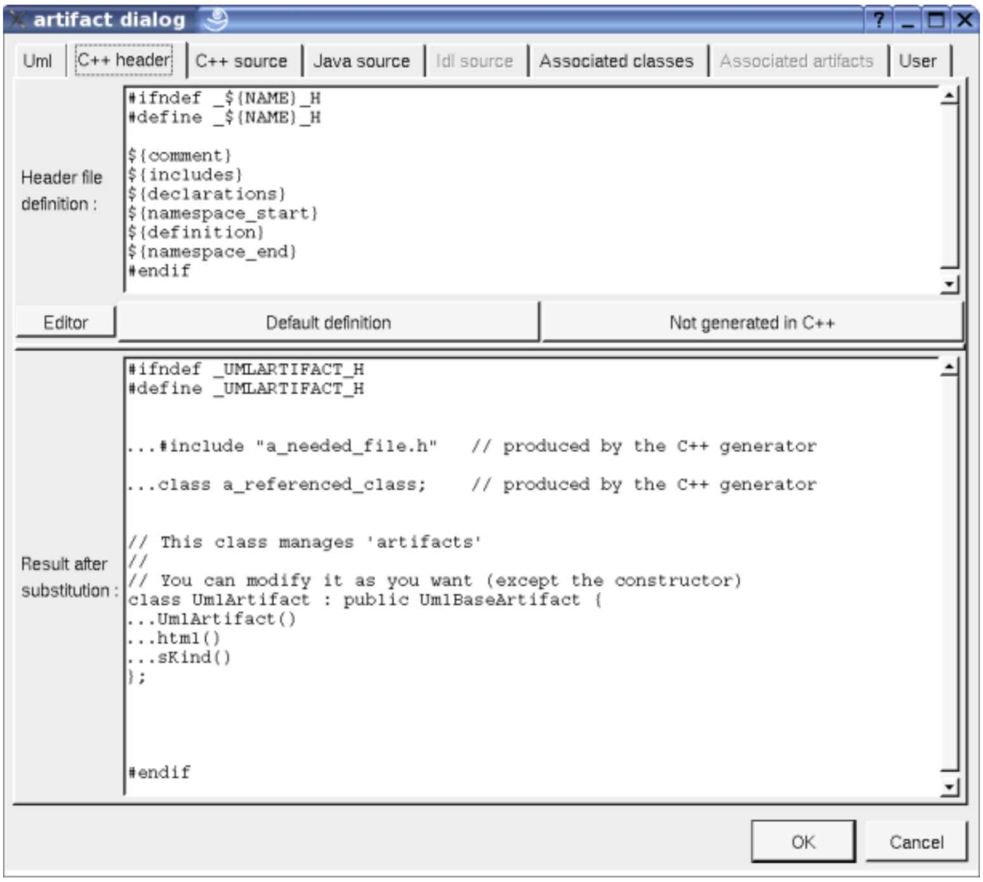
The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

The ***default*** button visible above associated to the description allows to set the description with a default contain specified through the *generation settings*. Useful to generate comments compatible Java Doc or Doxygen for instance.

Artifact dialog, tab C++ header

This tab is only available for the source artifacts and allows to give the definition of the C++ header file generated for the artifact, it is visible only if C++ is set through the menu *Languages*



Header file definition :

```
#ifndef _${NAME}_H
#define _${NAME}_H

${comment}
${includes}
${declarations}
${namespace_start}
${definition}
${namespace_end}
#endif
```

Result after substitution :

```
#ifndef _UMLARTIFACT_H
#define _UMLARTIFACT_H


...#include "a_needed_file.h"   // produced by the C++ generator

...class a_referenced_class;    // produced by the C++ generator


// This class manages 'artifacts'
//
// You can modify it as you want (except the constructor)
class UmlArtifact : public UmlBaseArtifact {
...UmlArtifact()
...html()
...sKind()
};




#endif
```

In BOUML the generated code is obtained by the substitution of macros in a text, only the ***Definition*** part is editable, the other one help you to see what will be generated for C++ (supposing you do not modify the C++ code generator !).

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to generate the C++ header file (for instance for the *main*), empties the declaration manually or using the button ***not generated in C++***.

${NAME}* produce the artifact's name capitalized, *${Name} produce the artifact's name with the first letter capitalized, *${nAME}* produce the artifact's name converted to lower case, at least *${name}* produce the artifact name without modification.

${comment} is replaced by the artifact description adding //

${description} is replaced by the artifact description without adding //

${includes}* is replaced by the automatically generated *#include* and *using* forms (done by the C++ code generator, not made by the dialog which produce a fixed form). It is also a good place to add your *#include* and *using* forms, when the ones produced by the code generator are not sufficient. The C++ code generator does not look at in the operations body, only the operation's profiles, relations and attributes, classes inheritances etc ... are used to compute the needed *#include* list. You can also use dependencies to ask for to add *#includes* specifying is these ones must be placed in header or source file. *${includes} and *${all_includes}* are exclusive.

${all_includes}* is replaced by all the automatically generated *#include* and *using* forms, it is also a good place to add your *#include* and *using* forms, when the ones produced by the code generator are not sufficient. In this case the code generator doesn't produce declarations in the header file nor *#include* in the source file, except the ones added by you. *${all_includes} and *${includes}* are exclusive.

${declarations} is replaced by the class declarations generated automatically (done by the C++ code generator, not made by the dialog which produce a fixed form). It is also a good place to add your declarations, when the ones produced by the code generator are not sufficient.

${namespace_start} is replaced by the *namespace xx {* forms, dependent on the *namespace* specifications associated to the package containing the *deployment view* where the artifact is defined.

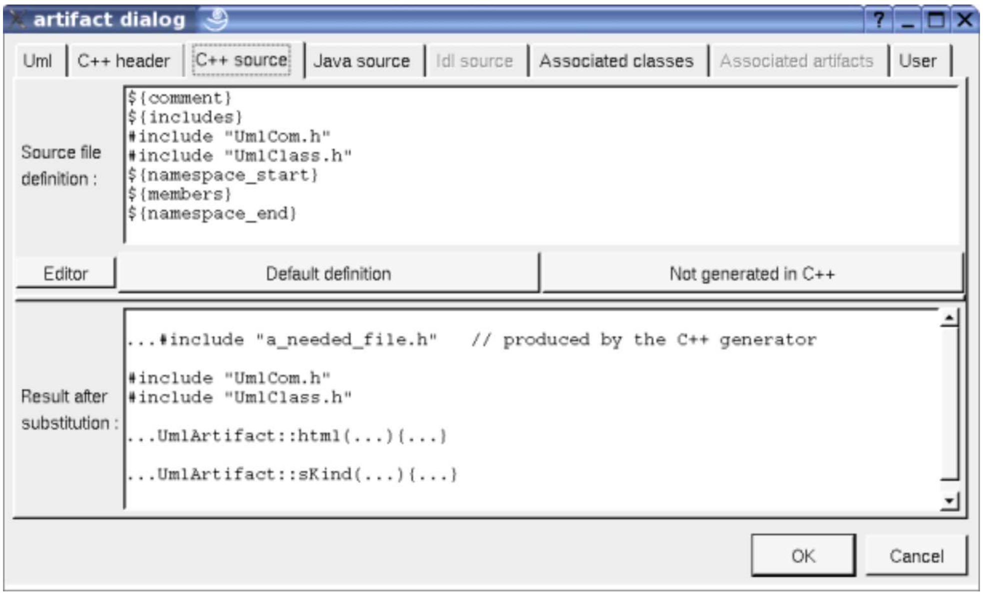
${definition} is replaced by the definition of the classes associated to the artifact.

${namespace_end} is replaced by the *}* forms, dependent on the *namespace* specifications associated to the package containing the deployment view where the artifact is defined.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Artifact dialog, tab C++ source

This tab is only available for the source artifacts and allows to give the definition of the C++ source file generated for the artifact, it is visible only if C++ is set through the menu *Languages*



Source file definition :

```
${comment}
${includes}
#include "UmlCom.h"
#include "UmlClass.h"
${namespace_start}
${members}
${namespace_end}
```

Result after substitution :

```
...#include "a_needed_file.h"   // produced by the C++ generator

#include "UmlCom.h"
#include "UmlClass.h"

...UmlArtifact::html(...){...}

...UmlArtifact::sKind(...){...}
```

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to generate the C++ source file (for instance the artifact is only associated to an *enum*), empties the declaration manually or using the button ***not generated in C++***.

${comment} is replaced by the artifact description

${description} is replaced by the artifact description without adding //

${includes}* if *${all_includes} is not used in the header definition, it is replaced by the automatically generated *#include* and *using* forms (done by the C++ code generator, not made by the dialog which produce a fixed form). If *${all_includes}* is used in the header definition, it is replaced by the *#include* of the header. It is also a good place to add your *#include* and *using* forms, the code generator does not look inside the bodies to compute the needed ones.

${namespace_start} is replaced by the *namespace xx {* forms, dependent on the *namespace* specifications associated to the package containing the deployment view where the artifact is defined.

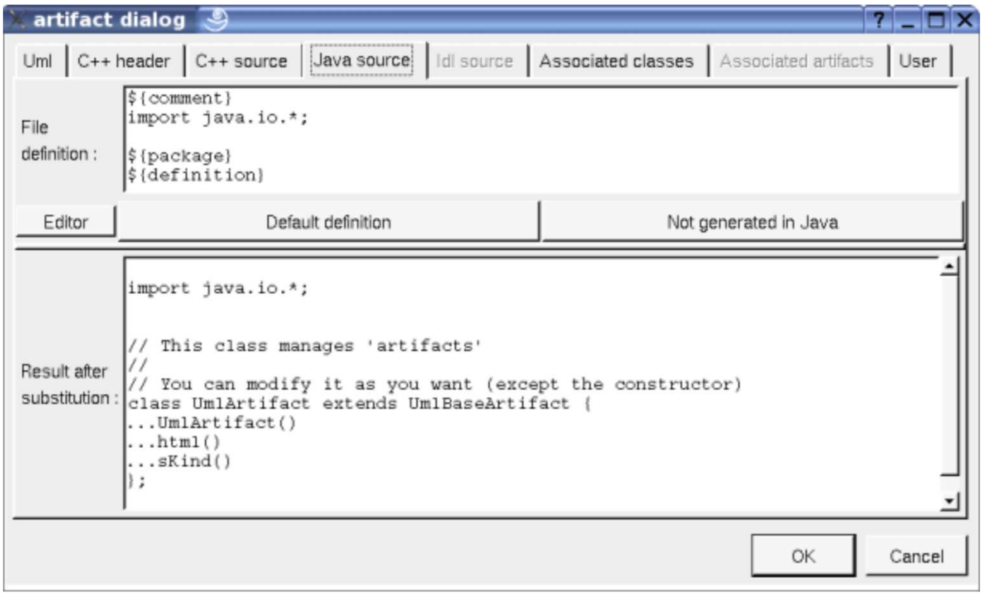
${members} is replaced by the non *inline* members of the classes associated to the artifact.

${namespace_end} is replaced by the *}* forms, dependent on the *namespace* specifications associated to the package containing the deployment view where the artifact is defined.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Artifact dialog, tab Java source

This tab is only available for the source artifacts and allows to give the definition of the Java source file generated for the artifact, it is visible only if Java is set through the menu *Languages*



```
${comment}
import java.io.*;

${package}
${definition}
```

```

import java.io.*;


// This class manages 'artifacts'
//
// You can modify it as you want (except the constructor)
class UmlArtifact extends UmlBaseArtifact {
...UmlArtifact()
...html()
...sKind()
};
```

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to generate the Java source file, empties the declaration manually or using the button ***not generated in Java***.

${comment} is replaced by the artifact description adding /* */

${description} is replaced by the artifact description without adding /* */

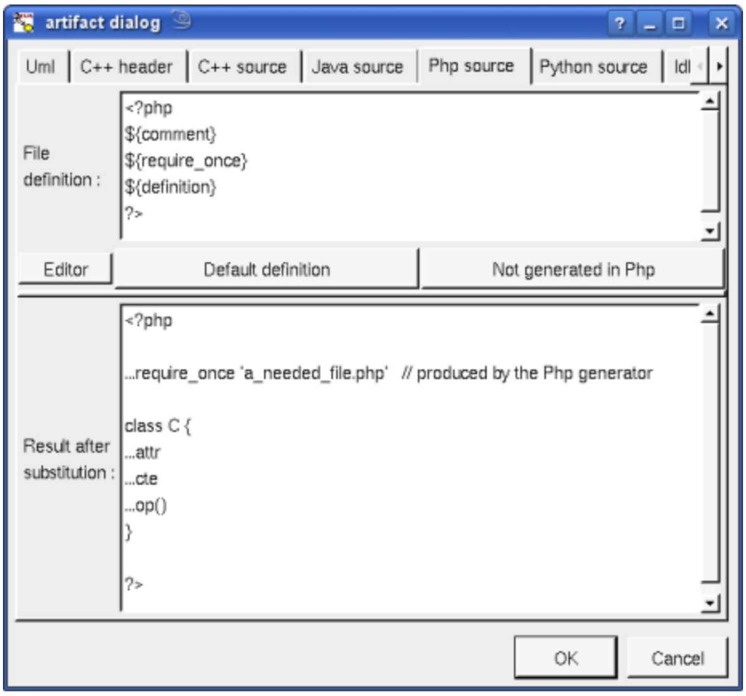
${package} is replaced by the *package xx* forms, dependent on the *package* specifications associated to the BOUML package containing the deployment view where the artifact is defined.

${definition} is replaced by the definition of the classes associated to the artifact.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Artifact dialog, tab Php source

This tab is only available for the source artifacts and allows to give the definition of the Php source file generated for the artifact, it is visible only if Php is set through the menu *Languages*



```
<?php
${comment}
${require_once}
${definition}
?>
```

```
<?php

...require_once 'a_needed_file.php'   // produced by the Php generator

class C {
...attr
...cte
...op()
}

?>
```

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to generate the Php source file, empties the declaration manually or using the button ***not generated in Php***.

${comment} is replaced by the artifact description adding /* */

${description} is replaced by the artifact description without adding /* */

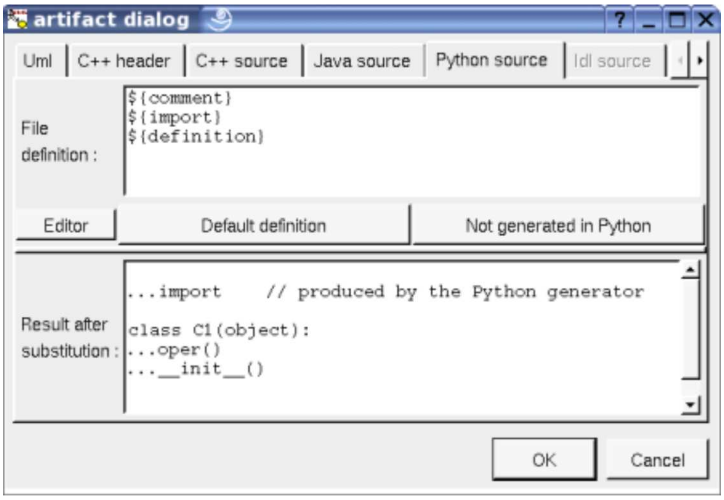
${require_once} is replaced by the *require_once* forms for the files associated to the classes referenced by the ones produced by the artifact. It is also a good place to add your *required_once* forms, when the ones produced by the code generator are not sufficient. The Php code generator does not look at in the operations body, only the operation's profiles, relations and attributes, classes inheritances etc ... are used to compute the needed *require_once* list.

${definition} is replaced by the definition of the classes associated to the artifact.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Artifact dialog, tab Python source

This tab is only available for the source artifacts and allows to give the definition of the Python source file generated for the artifact, it is visible only if Python is set through the menu *Languages*



```
${comment}
${import}
${definition}
```

```
...import    // produced by the Python generator

class C1(object):
...oper()
...__init__()
```

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to generate the Python source file, empties the declaration manually or using the button ***not generated in***

Python.

${comment} is replaced by the artifact description adding # at the beginning of each line

${description} is replaced by the artifact description without adding #

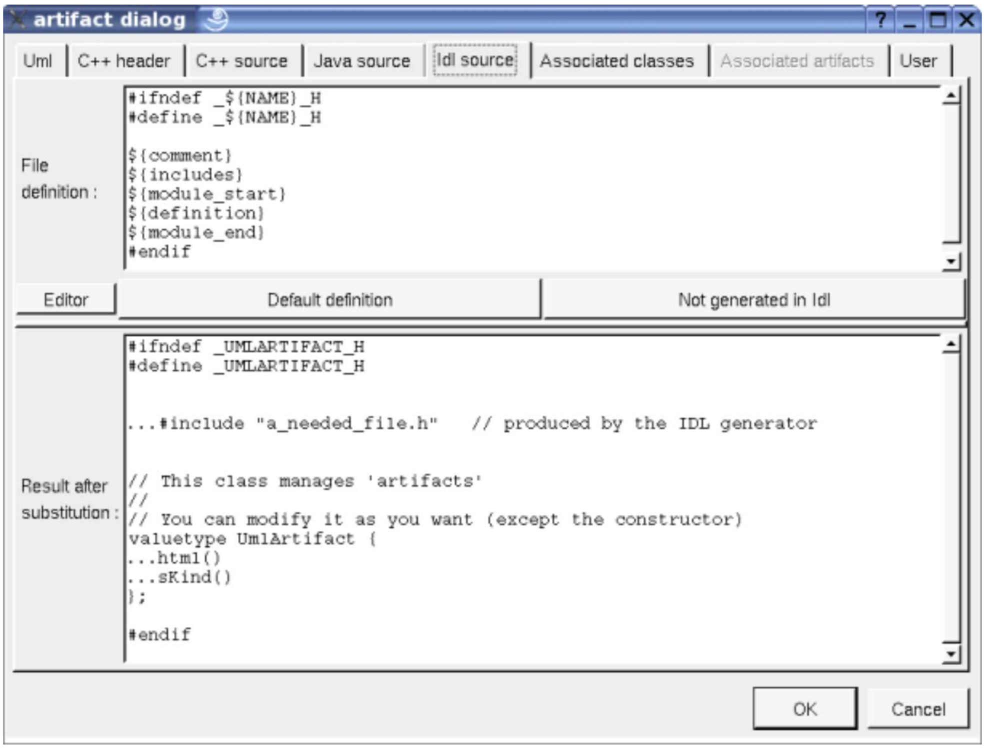
${imports} is replaced by the automatically generated *import* and *from .. import* forms (done by the Python code generator, not made by the dialog which produce a fixed form) from the dependencies between classes and between *artifacts* stereotyped *import* or *from*. A dependency stereotyped *import* between artifact produces an *import*, stereotyped *from* this produces a from ... *import **. A dependency stereotyped *import* between classes produces an *import*, stereotyped *from* this produces a form *from ... import*.

${definition} is replaced by the definition of the classes associated to the artifact.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Artifact dialog, tab Idl source

This tab is only available for the source artifacts and allows to give the definition of the Idl source file generated for the artifact, it is visible only if Idl is set through the menu *Languages*. In the picture given for the UML tab, the Idl tab is not enabled because the artifact is not associated to at least one class defined in Idl, else :



```
#ifndef _${NAME}_H
#define _${NAME}_H

${comment}
${includes}
${module_start}
${definition}
${module_end}
#endif
```

```
#ifndef _UMLARTIFACT_H
#define _UMLARTIFACT_H


...#include "a_needed_file.h"   // produced by the IDL generator


// This class manages 'artifacts'
//
// You can modify it as you want (except the constructor)
valuetype UmlArtifact {
...html()
...sKind()
};

#endif
```

When you push the button ***default declaration***, the form specified through the *generation settings* is proposed, this last may be modified as you want, even to produce illegal source code.

When you do not want to generate the Idl source file, empties the declaration manually or using the button ***not generated in Idl***.

${NAME}* produce the artifact name capitalized, *${Name} produce the artifact name with the first letter capitalized, at least *${name}* produce the artifact name without modification.

${comment} is replaced by the artifact description adding //

${description} is replaced by the artifact description without adding //

${includes} will be replaced by the automatically generated *#include* forms (not made by the dialog which produce a fixed form) ... in a future version of the Idl generator, it is a good place to add your *#include* forms.

${module_start} is replaced by the *module xx {* forms, dependent on the *module* specifications associated to the BOUML package containing the deployment view where the artifact is defined.

${definition} is replaced by the definition of the classes associated to the artifact.

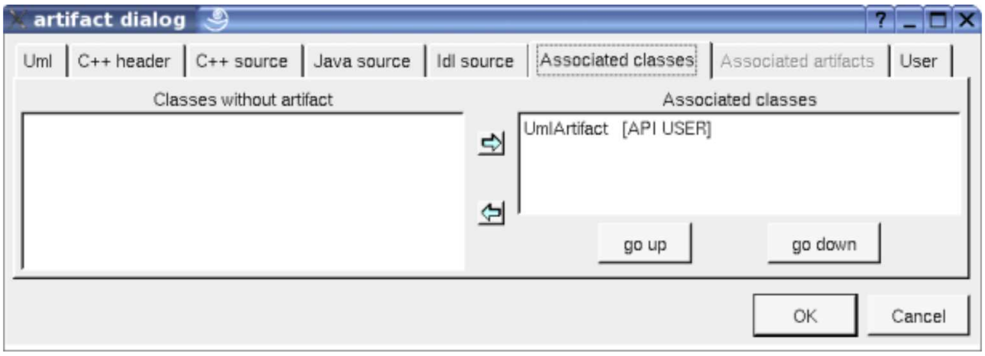
${module_end} is replaced by the *}* forms, dependent on the *module* specifications associated to the BOUML package containing the deployment view where the artifact is defined.

Refer to the generation settings for more details.

The forms *@{property}* are replaced by the value of the corresponding user property if it is defined for the class or at an upper level, else it is not substituted.

Artifact dialog, tab associated classes

This tab is only available for the source artifacts and allows to set the list of classes associated with the artifact. The order of the associated classes is important because it is followed by the code generators to produce the class definitions.

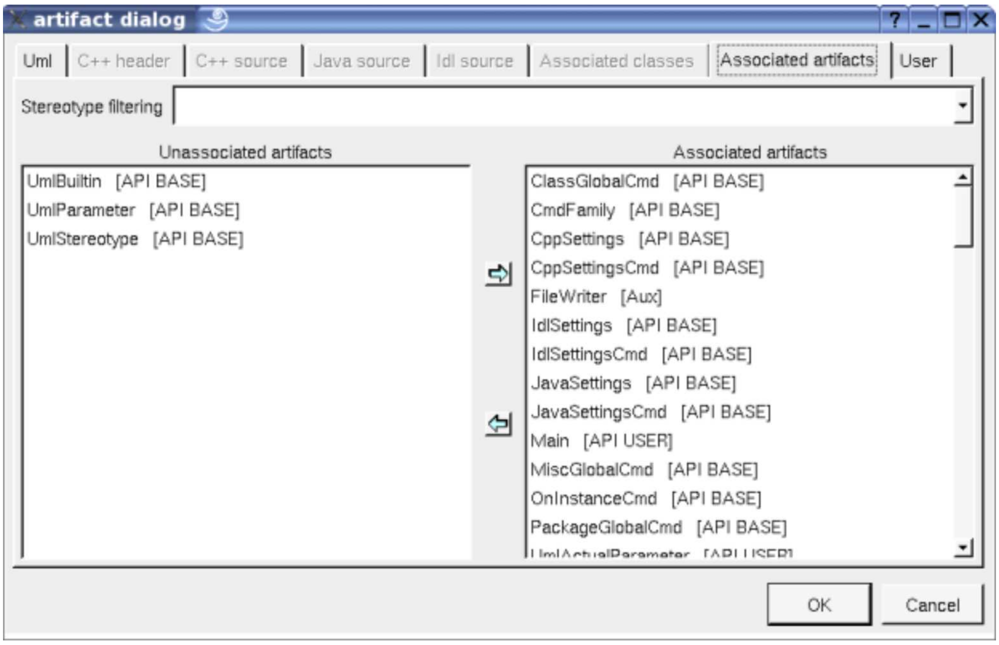


All the classes without associated artifact are given in the left table (above all the classes are associated with an artifact), the classes associated with the current artifact and given in the table on the right. To move classes from a table to the other one, select them and click on the appropriate arrow.

go up and *go down* allows to change the order of the associated classes. Select the wrong ordered classes and use the appropriate button.

Artifact dialog, tab associated artifacts

This tab is not enabled for a source artifact, to set the unordered list of artifacts associated to the current one. For instance for the artifact *executable* of the *plug-out html* :



Menu : delete

The menu entry *delete* is only present when the artifact is not *read-only*.

Delete the artifact and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : generate

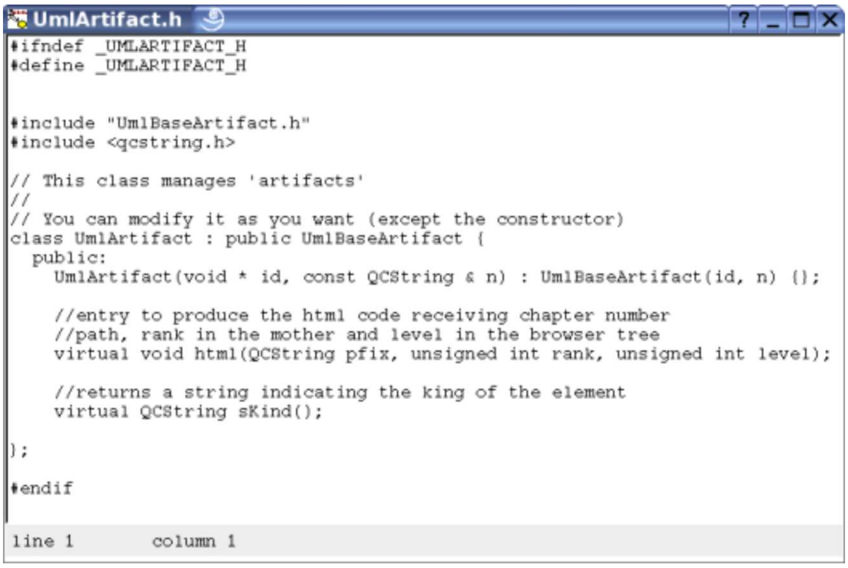
The menu entry *generate* is only present when the artifact is *a source artifact*.

Allows to call the C++ generator, Java generator, Php Generator and Idl generator.

Menu : edit

The menu entry *edit* is only present when the artifact is not *read only* and is *a source artifact*.

Allows to edit one of the generated files, for instance the header file :



```
#ifndef _UMLARTIFACT_H
#define _UMLARTIFACT_H


#include "UmlBaseArtifact.h"
#include <qcstring.h>

// This class manages 'artifacts'
//
// You can modify it as you want (except the constructor)
class UmlArtifact : public UmlBaseArtifact {
  public:
    UmlArtifact(void * id, const QCString & n) : UmlBaseArtifact(id, n) {};

    //entry to produce the html code receiving chapter number
    //path, rank in the mother and level in the browser tree
    virtual void html(QCString pfix, unsigned int rank, unsigned int level);

    //returns a string indicating the king of the element
    virtual QCString sKind();

};

#endif
```

Menu : referenced by

To know who are the classes associated to the artifact, and the artifact referencing the current one through a relation.

Menu : mark

See mark

Menu : tool

Appears only when at least one *plug-out* is associated to the artifacts. To apply a *plug-out* on the artifact.

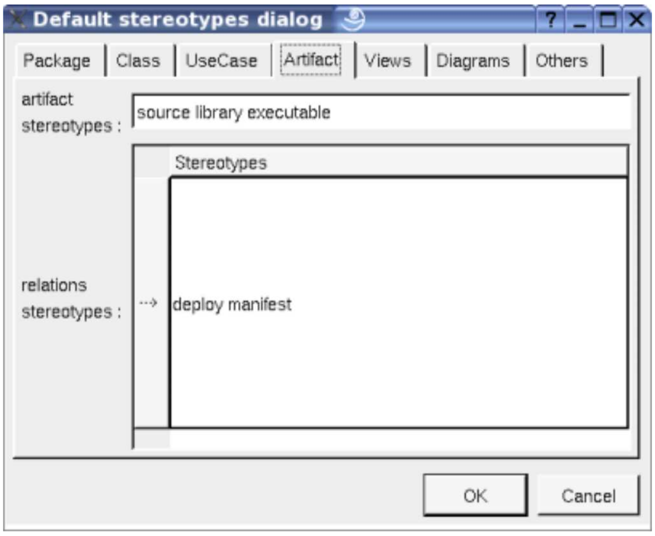
Menu : select associated class

Menu : select an associated class

Only for the artifact source, appears only when at least one class is associated to the artifacts. To quickly select the appropriate class, the current artifact may also be quickly selected from its associated classes.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the artifacts :



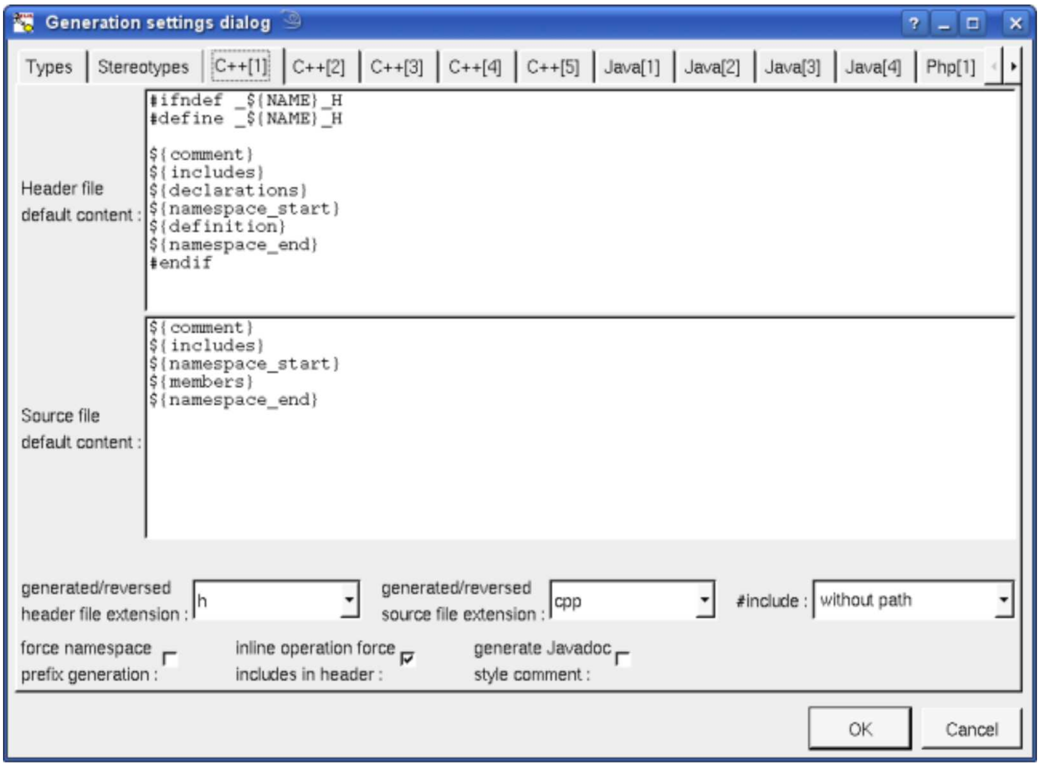
artifact stereotypes : source library executable

relations stereotypes : --> deploy manifest

Generation settings

This very important dialog allows to specify many default definitions concerning the classes, more details will be given in C++ generator, Java generator and Idl generator.

The first C++ tab allows to specify the default header and source file definitions, it is visible only if C++ is set through the menu *Languages* :



Header file default content :

```
#ifndef _${NAME}_H
#define _${NAME}_H

${comment}
${includes}
${declarations}
${namespace_start}
${definition}
${namespace_end}
#endif
```

Source file default content :

```
${comment}
${includes}
${namespace_start}
${members}
${namespace_end}
```

generated/reversed header file extension : h

generated/reversed source file extension : cpp

#include : without path

force namespace prefix generation : □

inline operation force includes in header : ☑

generate Javadoc style comment : □

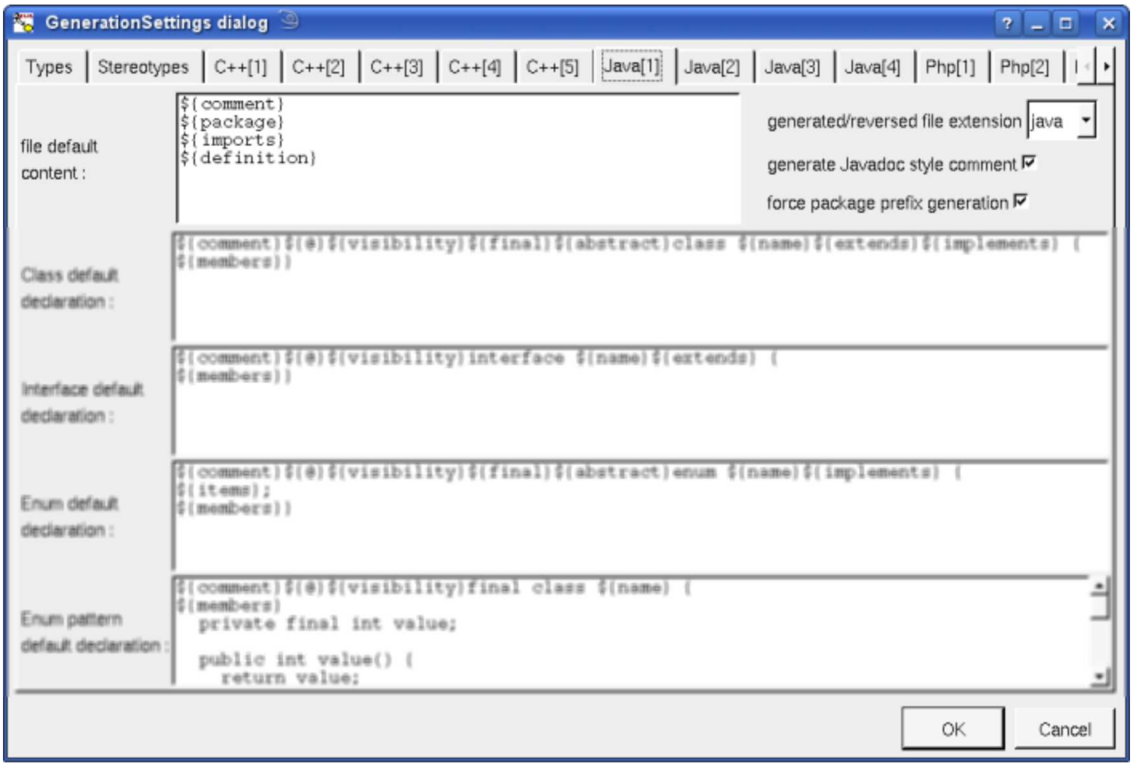
As you can see it is possible to choose the extension of the header and source files, to force the production of the namespace header and to ask for the Javadoc style comment. When *inline force include in header* is set the types referenced in the profile of the *inline* operations produce includes in the header, else the code generator doesn't take care if there are *inline* operations to compute dependencies

There are four ways to produce #include :

- *without path* : ask for the C++ code generator to generate the #include without relative or absolute path
- *with absolute path :* ask for the C++ code generator to generate the absolute path of the automatically included files.
- *with relative path :* ask for the C++ code generator to generate the relative path of the automatically included files, relative to the file containing the #include

- *with root relative path :* ask for the C++ code generator to generate the relative path of the automatically included files, relative to the directory specified by the *generation settings*

The first Java tab allows to set the default Java file content associated to an artifact, it is visible only if Java is set through the menu *Languages* :



file default content :

```
${comment}
${package}
${imports}
${definition}
```

generated/reversed file extension java

generate Javadoc style comment ☑

force package prefix generation ☑

Class default declaration :

```
${comment}${@}${visibility}${final}${abstract}class ${name}${extends}${implements} {
${members}}
```

Interface default declaration :

```
${comment}${@}${visibility}interface ${name}${extends} {
${members}}
```

Enum default declaration :

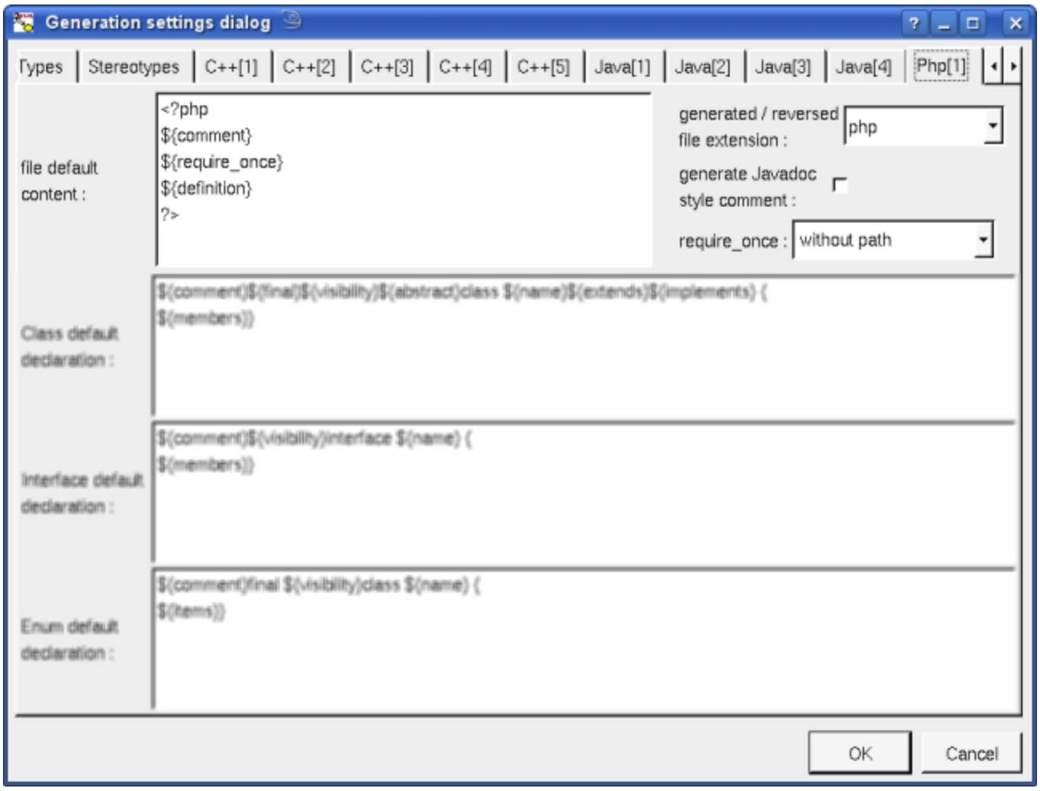
```
${comment}${@}${visibility}${final}${abstract}enum ${name}${implements} {
${items};
${members}}
```

Enum pattern default declaration :

```
${comment}${@}${visibility}final class ${name} {
${members}
  private final int value;

  public int value() {
    return value;
```

As you can see it is possible to choose the extension of the files (even this is generally java), to force the production of the package prefix before class names (this prefix is not produced in case the class or its package are imported) and to ask for the Javadoc style comment.

The first Php tab allows to set the default Php file content associated to an artifact, it is visible only if Php is set through the menu *Languages* :



file default content :

```
<?php
${comment}
${require_once}
${definition}
?>
```

generated / reversed file extension : php

generate Javadoc style comment : □

require_once : without path

Class default declaration :

```
${comment}${final}${visibility}${abstract}class ${name}${extends}${implements} {
${members}}
```

Interface default declaration :

```
${comment}${visibility}interface ${name} {
${members}}
```

Enum default declaration :

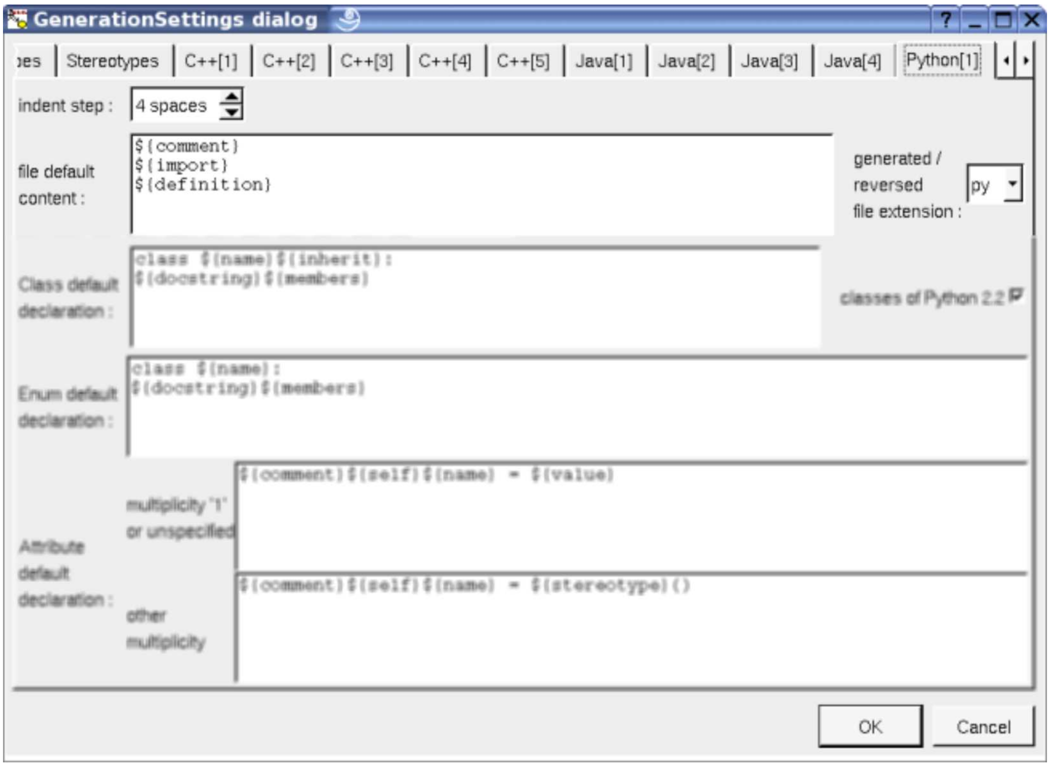
```
${comment}final ${visibility}class ${name} {
${items}}
```

There are four ways to produce the *require_once* forms

- *without path* : ask for the Php code generator to generate them without relative or absolute path

- *with absolute path :* ask for the Php code generator to generate the absolute path of the automatically required files.
- *with relative path :* ask for the Php code generator to generate the relative path of the automatically required files, warning : relatively to the file containing the require_once
- *with root relative path :* ask for the Php code generator to generate the relative path of the automatically required files, relative to the directory specified by the *generation settings* (it is probably indicated in Php *include_path*)

The first Python tab allows to set the default Python file content associated to an artifact, it is visible only if Python is set through the menu *Languages* :



indent step : 4 spaces

file default content :

```
${comment}
${import}
${definition}
```

generated / reversed file extension : py

Class default declaration :

```
class ${name}${inherit}:
${docstring}${members}
```

classes of Python 2.2 ☑

Enum default declaration :

```
class ${name}:
${docstring}${members}
```

Attribute default declaration :

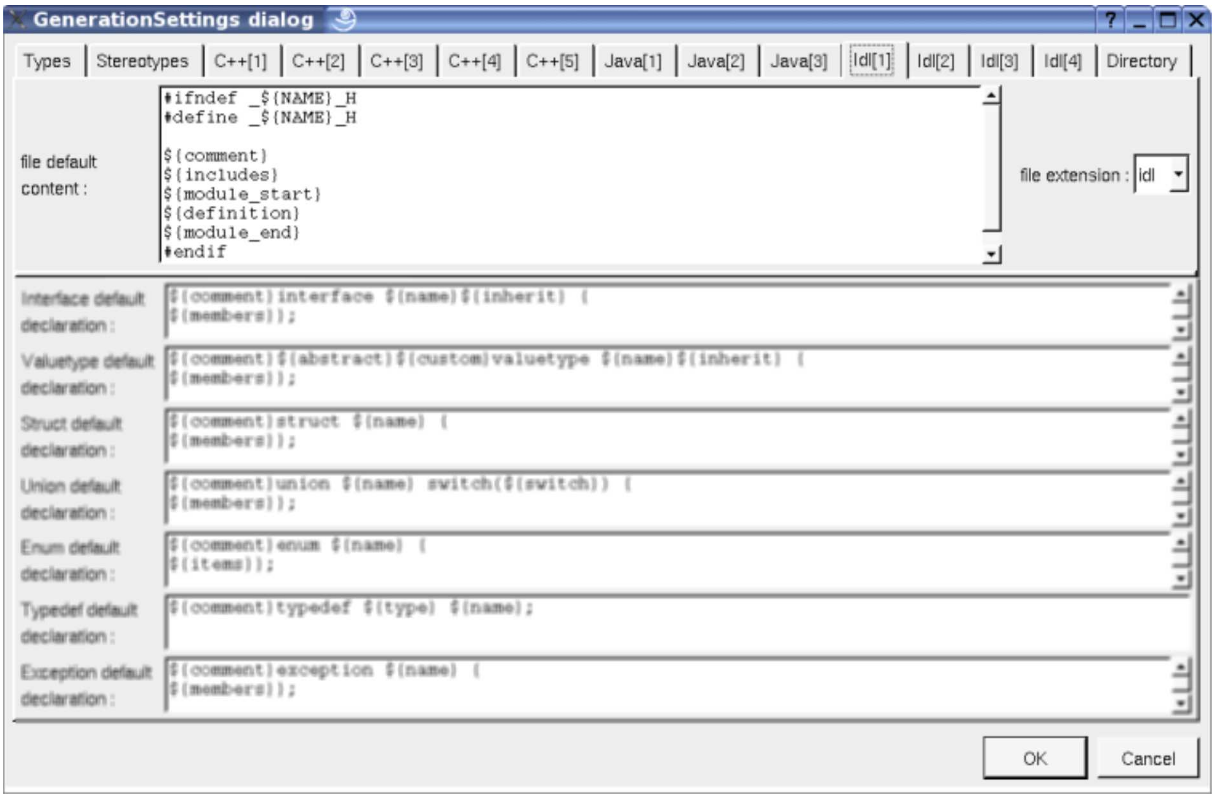
multiplicity '1' or unspecified

```
${comment}${self}${name} = ${value}
```

other multiplicity

```
${comment}${self}${name} = ${stereotype}()
```

The first Idl tab allows to set the default Idl file content associated to an artifact, it is visible only if Idl is set through the menu *Languages* :



file default content :

```
#ifndef _${NAME}_H
#define _${NAME}_H

${comment}
${includes}
${module_start}
${definition}
${module_end}
#endif
```

file extension : idl

Interface default declaration :

```
${comment}interface ${name}${inherit} {
${members}};
```

Valuetype default declaration :

```
${comment}${abstract}${custom}valuetype ${name}${inherit} {
${members}};
```

Struct default declaration :

```
${comment}struct ${name} {
${members}};
```

Union default declaration :

```
${comment}union ${name} switch(${switch}) {
${members}};
```

Enum default declaration :

```
${comment}enum ${name} {
${items}};
```

Typedef default declaration :

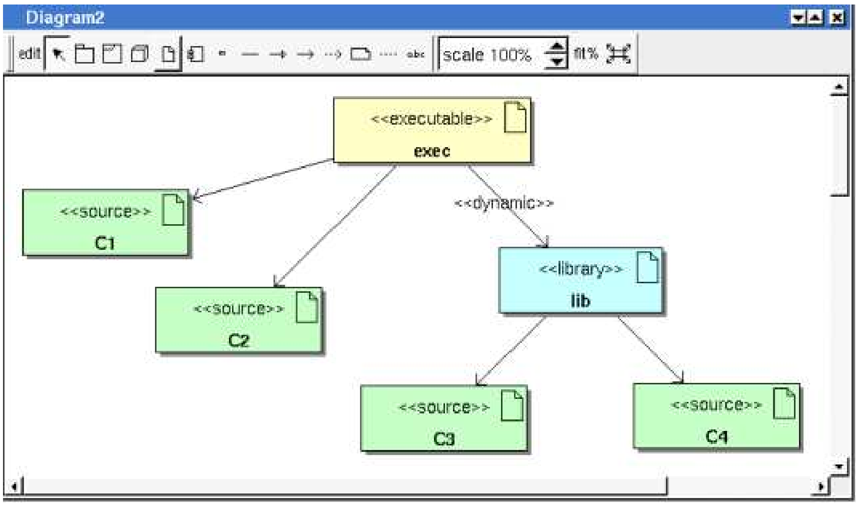
```
${comment}typedef ${type} ${name};
```

Exception default declaration :

```
${comment}exception ${name} {
${members}};
```

Drawing

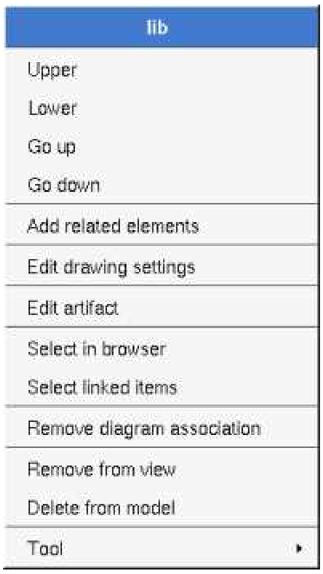
An artifact is drawn in a deployment diagram as a rectangle containing the artifact icon :



If the artifact is stereotyped by a stereotype part of a profile and this stereotype has an associated icon, this icon will be used unchanged when the scale is 100% else it is resized.

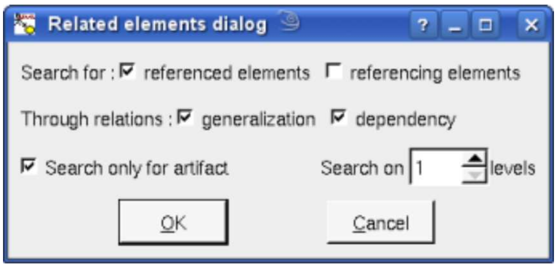
The default color of an artifact may be set through the drawing settings.

A right mouse click on an artifact in a diagram calls the following menu (supposing the artifact editable) :



Menu : add related elements

to add elements having a relation with the current element, the following dialog is shown :



Search for : ☑ referenced elements ☐ referencing elements

Through relations : ☑ generalization ☑ dependency

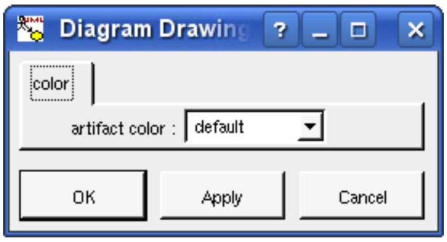
☑ Search only for artifact

Search on 1 levels

Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add an artifact in a diagram, all the settings are set to *default*.



artifact color : default

Menu : set associated diagram

set associated diagram allows to automatically open the current diagram when a double mouse click is made on the artifact representation in a diagram or the browser. After that the only way to edit the artifact is to choose the *edit* entry in the menu.

Menu : remove diagram association

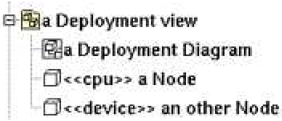
To stop to associate a diagram to the artifact.

Previous : component

Next : deployment node

Node

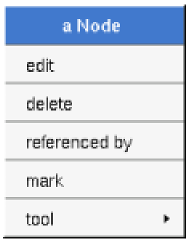
Nodes are used to specify how the deployment is made, a node may represent a CPU, a device etc ...



A node may be created through the *new node* entry of a deployment view or through the component button of a deployment diagram.

Menus

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the node not *read-only* nor deleted (see also menu in a diagram) :

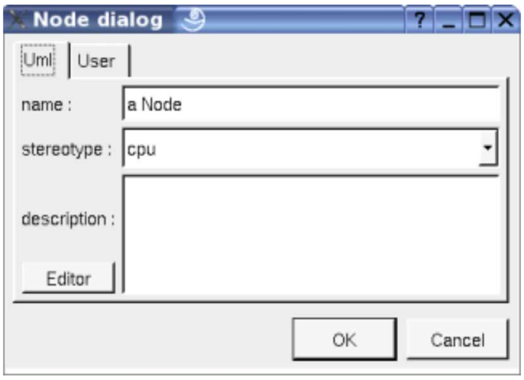


Menu : edit

edit allows to show/modify the node properties. In case the node is read-only, the fields of the dialog are also read-only.

Node dialog, tab Uml

The tab *Uml* is a global tab, independent of the language :



name : a Node
stereotype : cpu
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Menu : delete

The menu entry *delete* is only present when the node is not *read-only*.

Delete the node and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

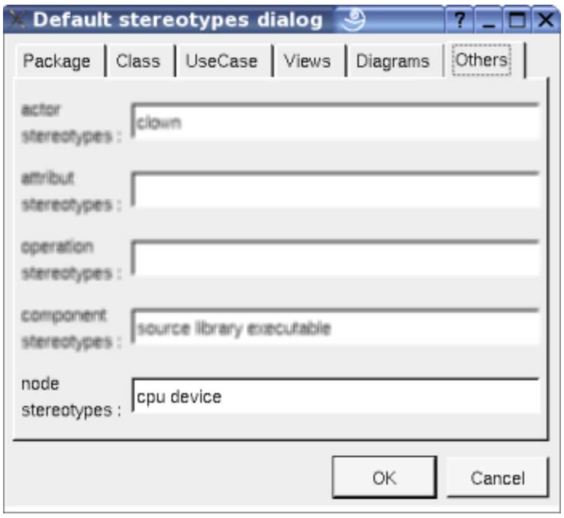
See mark

Menu : tool

Appears only when at least one *plug-out* is associated to the nodes. To apply a *plug-out* on the node.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the components :



actor stereotypes : clown

attribut stereotypes :

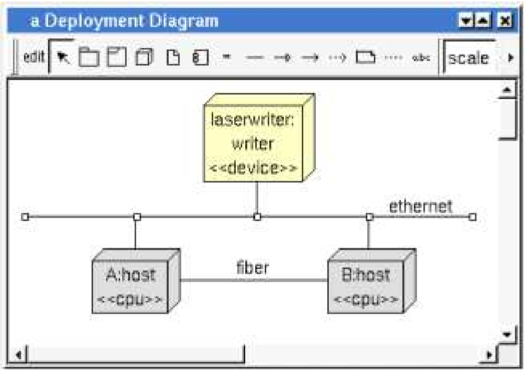
operation stereotypes :

component stereotypes : source library executable

node stereotypes : cpu device

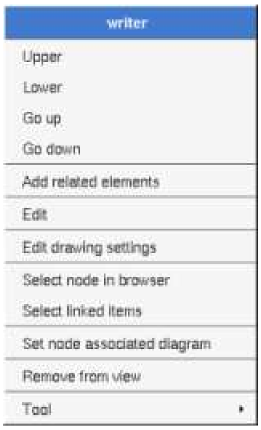
Drawing

A node is drawn in a deployment diagram as a parallelepiped depending on the drawing settings.



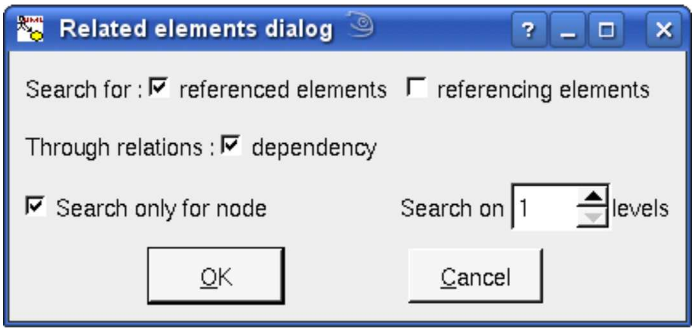
If the node is stereotyped by a stereotype part of a profile and this stereotype has an associated icon, this icon will be used unchanged when the scale is 100% else it is resized.

A right mouse click on a node in a diagram calls the following menu (supposing the node editable) :



Menu : add related elements

to add elements having a relation with the current element, the following dialog is shown :



Related elements dialog

Search for : ☑ referenced elements □ referencing elements

Through relations : ☑ dependency

☑ Search only for node

Search on 1 levels

Menu : edit drawing settings

These *drawing settings* concerns only the picture for which the menu is called.

A settings valuing *default* indicates that the setting specified in the upper level (here the diagram) must be followed, obviously this one may also be *default* ... up to the project level. When you add a node in a diagram, all the settings are set to *default*.

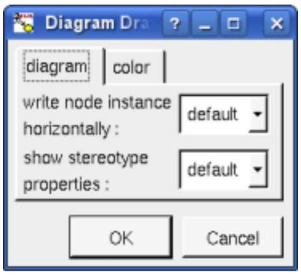


Diagram Dra

diagram | color

write node instance horizontally : default

show stereotype properties : default

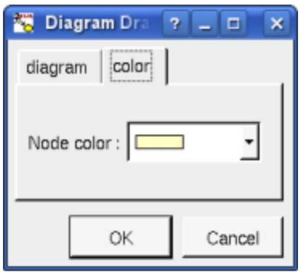


Diagram Dra

diagram | color

Node color :

write node instance horizontally

Allows to write the the node type and the instance name on the same line (see host above) or on two lines (see laserwriter above).

show stereotype properties :

to indicate through a note the (non empty) value of the stereotype properties in case the node is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Menu : select linked items

To select all the items connected by one or several lines (whatever the line represent : relation, anchor ...), help to quickly select them for a moving etc ...

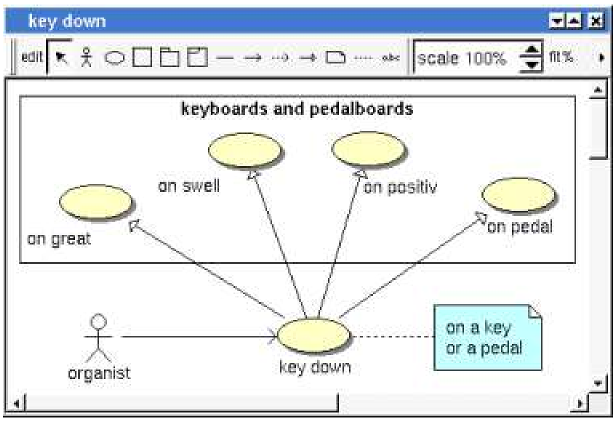
Menu : set associated diagram

set associated diagram allows to automatically open the current diagram when a double mouse click is made on the node representation in a diagram or the browser. After that the only way to edit the node is to choose the *edit* entry in the menu.

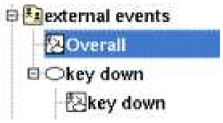
Previous : artifact

Next : use case diagram

Use case diagram



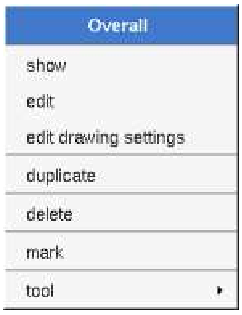
The use case diagrams may be placed in a use case view or a use case



A use case diagram is created through the *new use case diagram* entry of the use case view and use case browser menus.

Browser Menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



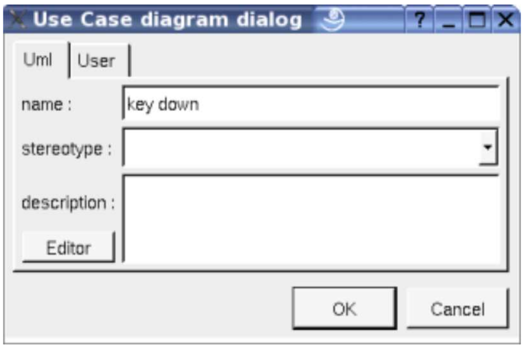
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

Use case diagram dialog, tab Uml



name : key down

stereotype :

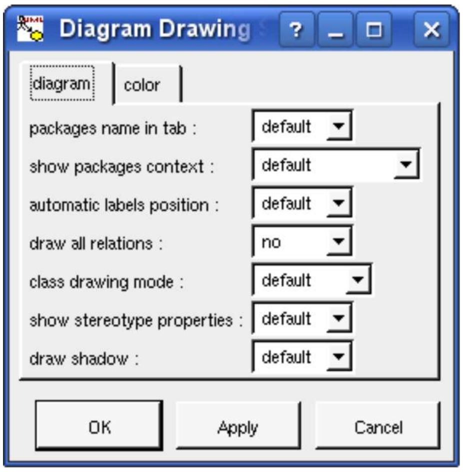
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

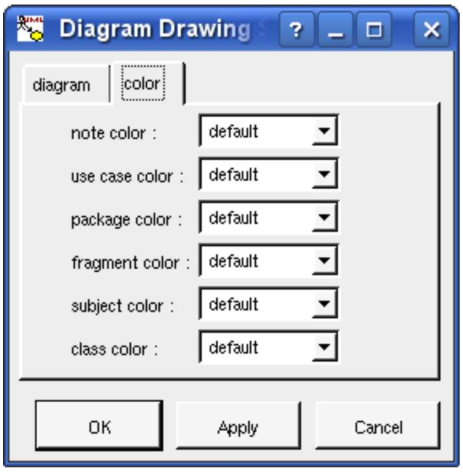
The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Browser Menu : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).

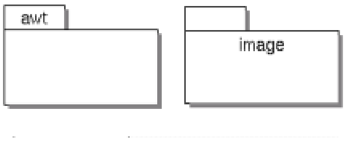


packages name in tab : default
show packages context : default
automatic labels position : default
draw all relations : no
class drawing mode : default
show stereotype properties : default
draw shadow : default

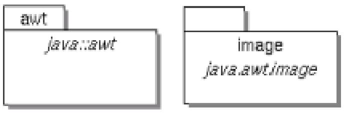


note color : default
use case color : default
package color : default
fragment color : default
subject color : default
class color : default

- *package name in tab* : to indicate if the package's name must be written in the tab which is the small rectangle on the top (note : a transparent *package* doesn't have shadow) :



- *show packages context* : to indicate if the context where the package is defined must be written, it is not the case just above. The context may be the "UML context" which is the path of the package in the browser (choice followed for *awt* below), or the C++ namespace specified by the package, or the Java package specified by the package (choice followed for *picture* below) or at least the Idl module :



- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in a diagram when the relation is edited or the connected items are moved etc ...

- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

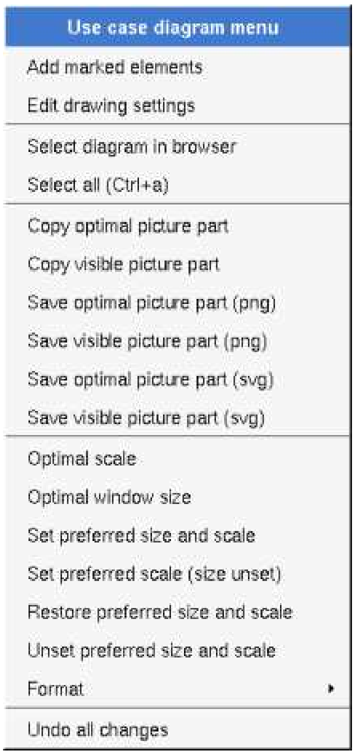
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Use case diagram menu
Add marked elements
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : add marked elements

Only appears when a elements whose can be added in the diagram are marked in the browser, all these elements whose are not yet present in the diagram are added in the diagram, allowing to not have to do several *drag & drop* from the browser to them, but their position will probably not be the good one

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, also done through a *control a*.

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy visible part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality. To easily get all the diagram's elements use *optimal window size*

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

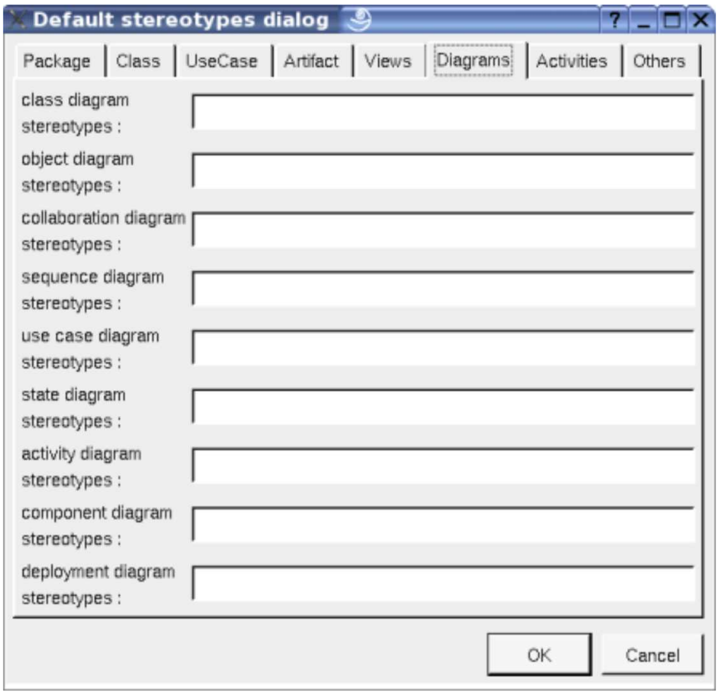
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

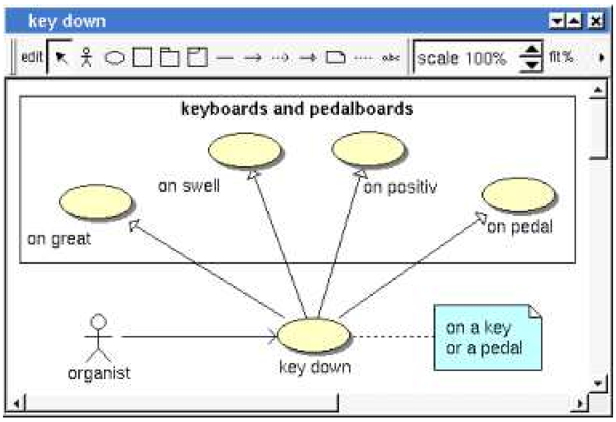
Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



class diagram stereotypes :
object diagram stereotypes :
collaboration diagram stereotypes :
sequence diagram stereotypes :
use case diagram stereotypes :
state diagram stereotypes :
activity diagram stereotypes :
component diagram stereotypes :
deployment diagram stereotypes :

Drawing



A use case diagram may contain actors, classes, use cases, packages, fragment, notes, texts, diagram icons, subjects and the relations.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

The *scale* may be changed from 30 up to 200 %. To allows to see the relation kinds even with a small scale, the size of the arrows and other is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

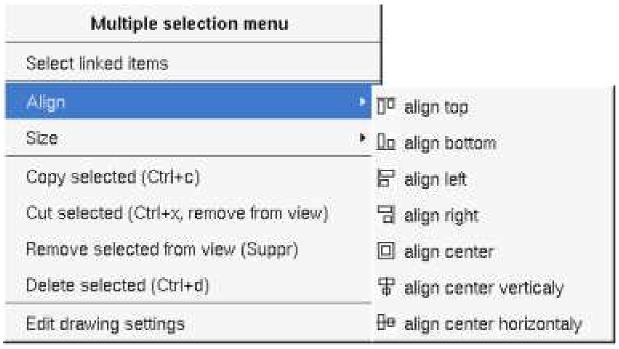
control x is a shortcut to cut (remove from view) the selected diagram's elements

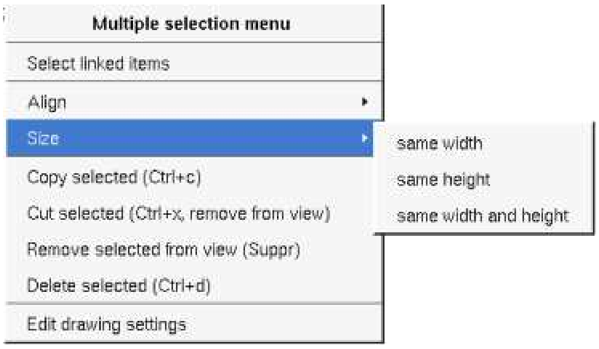
control v is a shortcut to paste the selected diagram's elements

the keyboard arrows allow to move the selected items

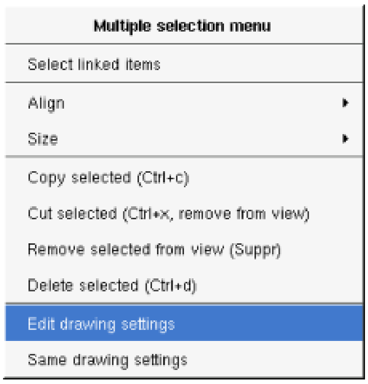
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

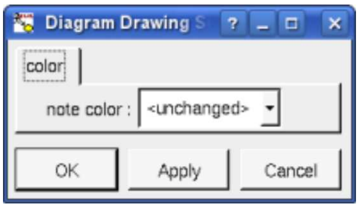




If all the selected elements has the same kind (for instance all are a use case), you edit their *drawing settings* globally :



and for instance when the elements are notes :



note color : <unchanged>

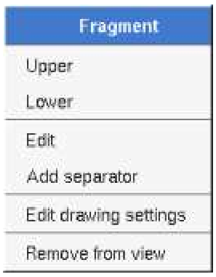
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

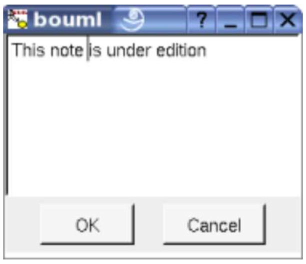
A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

Note

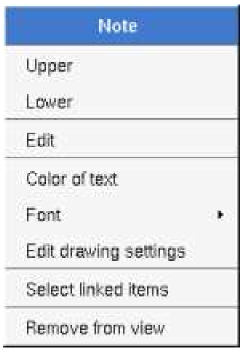
A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text :



This note is under edition

A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :"* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

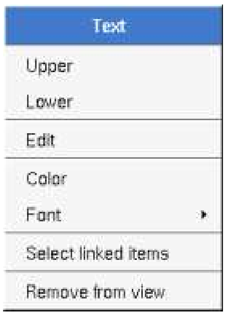
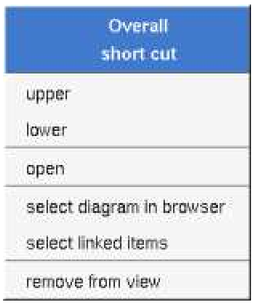


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

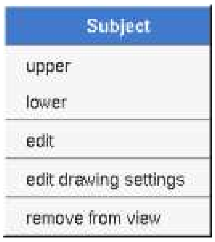
A right mouse click on a diagram icon show the following menu :



The other diagram's elements have an own chapter, refer to them.

Subject

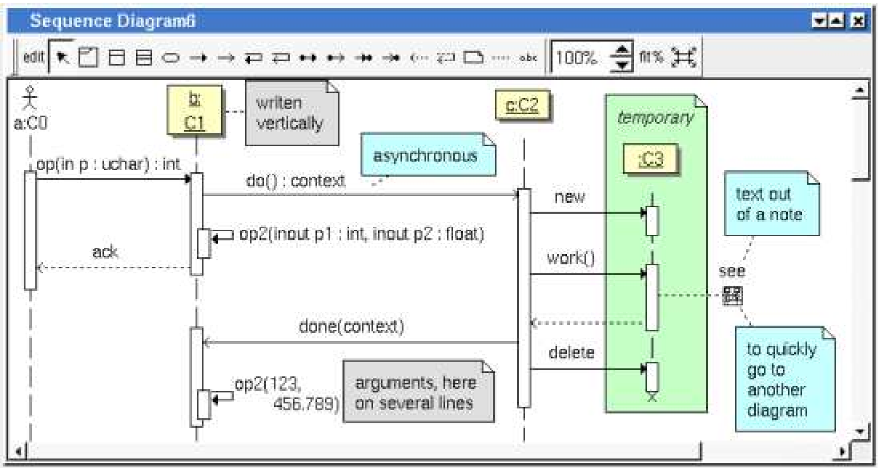
A *subject* is drawn as a rectangle, to set/modify the title do a double left mouse click on the representation or call the menu through a right mouse click and choose *edit* :



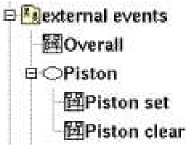
Previous : deployment node

Next : sequence diagram

Sequence diagram



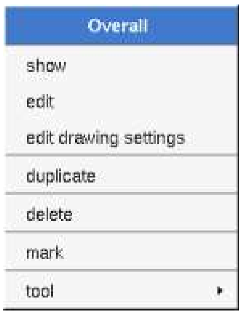
The sequence diagrams may be placed in a use case view or a use case or a class view.



A sequence diagram is created through the *new sequence diagram* entry of the use case view, use case or class view browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



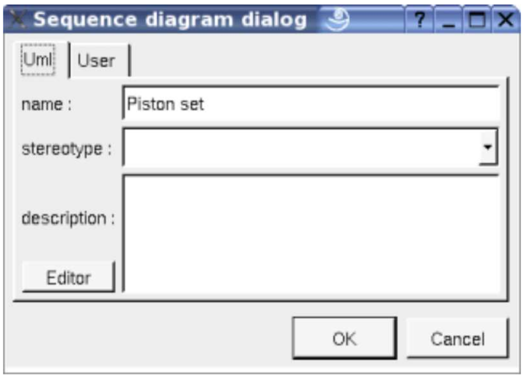
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

sequence diagram dialog, tab Uml



name : Piston set

stereotype :

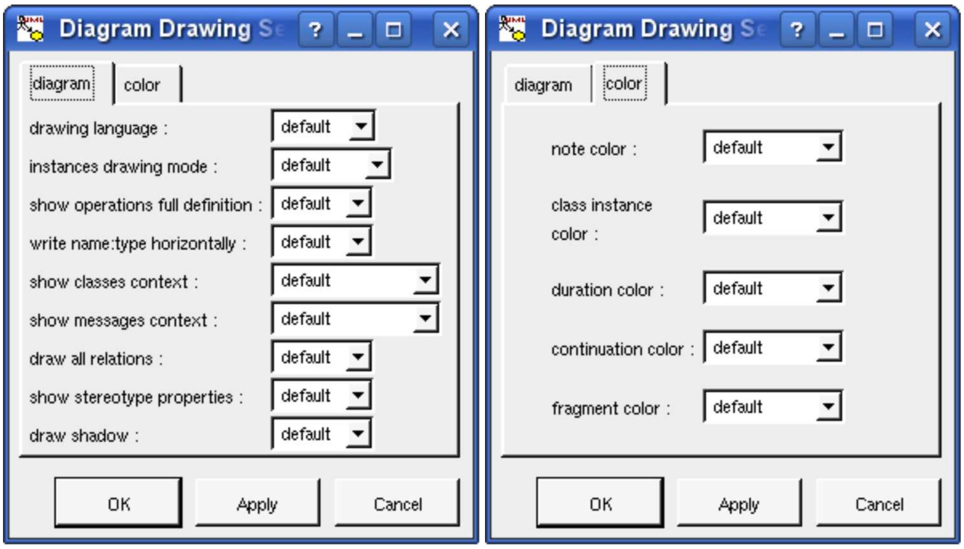
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Browser Menu : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



drawing language : default

instances drawing mode : default

show operations full definition : default

write name:type horizontally : default

show classes context : default

show messages context : default

draw all relations : default

show stereotype properties : default

draw shadow : default

note color : default

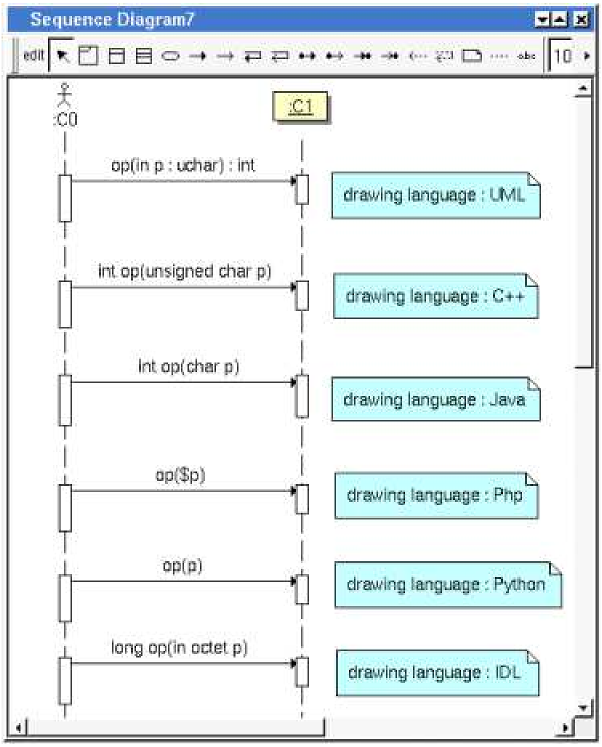
class instance color : default

duration color : default

continuation color : default

fragment color : default

- *drawing language* : to indicate in which language the operations must be written when the full definition is showed (see below), like for the class drawing in a class diagram. For instance, the class *C* has the operation *op* returning an *uchar* (supposed translated *unsigned char* in C++, *char* in Java and *octet* in Idl) and having the *input* parameter *p* having the type *uchar* and only in Idl a second *out* parameter *p2* of the same type. Depending on the *drawing language* :



- *instances drawing mode* : to draw an instance in the standard way or tu use one of the icons actor boundary, control or entity.
- *show operations full definition* : to show all the operation profile or just its name (may be with the arguments specified at the operation level in the diagram, see edit)
- *write class instance horizontally* : To write the instance type and name on the same line, or on two lines
- *show classes context* : to write or not the context where the instance class is defined
- *show message context* : to write of not the context of the classes referenced in the operation full definition
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

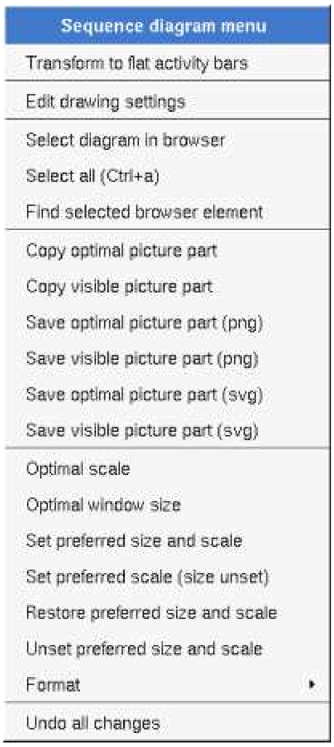
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Sequence diagram menu
Transform to flat activity bars
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Find selected browser element
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : transform to flat activity bars / transform to overlapping activity bars

Allows to automatically modify the diagram to use flat or overlapping activity bars.

The overlapping level introduced by a reflexive message is propaged to the next messages, you may have to add explicit returns before transforming flat activity bars to overlapping ones. Known problem : the fragments 'alt' are not taken into account by the transformation, cutting first the activity bars crossing over the separators may help for. The transformation can't be undo, to save the project before may be a good idea !

In a diagram using overlapping activity bars, the reception of a synchronous message create a new overlapping activity bars, this is not the case for the reception of an asynchronous message (but you can ask for to create an overlapping activity bars through the menu of the message).

in a diagram using overlapping activity bars, a reflexive synchronous messages is always at the beginning of an activity bars and a reflexive returns at the end, you can't move them.

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, also done through a *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

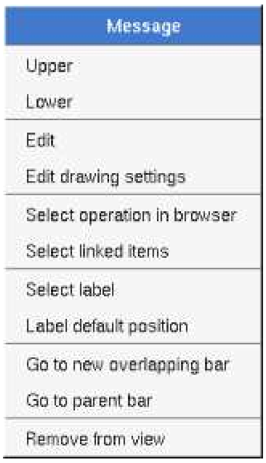
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

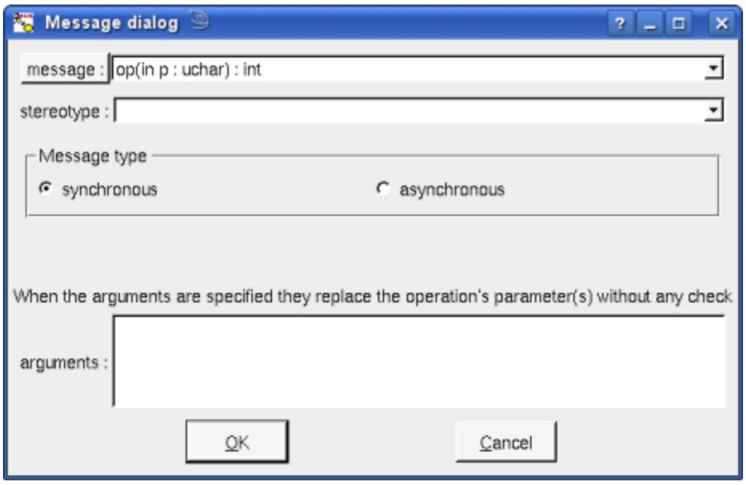
Operation/message Menu

The menu appearing with a right mouse click on an operation/message arrow is something like these, supposing the diagram not *read-only* :



Message Menu : edit

edit allows to edit the message. In case the diagram is read-only, the fields of the dialog are also read-only



message : op(in p : uchar) : int

stereotype :

Message type: ● synchronous ○ asynchronous

When the arguments are specified they replace the operation's parameter(s) without any check

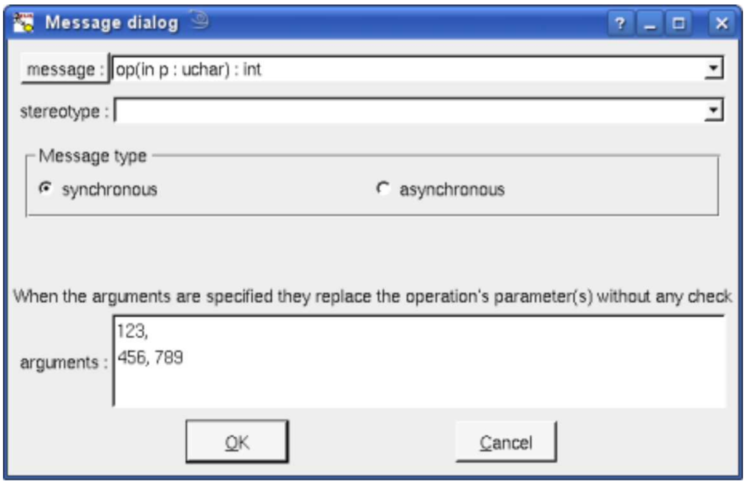
arguments :

The proposed messages are the operations defined on the message receiver more the current one, but you may also give any other message.

It is possible to change the synchronous/asynchronous state.

It is possible to indicate a stereotype (out of a profile), you can specify a default stereotype list through the *default stereotypes* dialog

It is also possible to specify explicitly the message/operation arguments, is possible to give then on several lines, obviously in this case BOUML produce the appropriate indent :



message : op(in p : uchar) : int

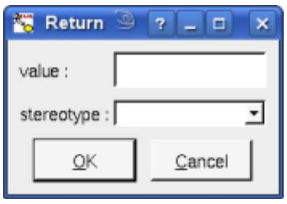
stereotype :

Message type
● synchronous ○ asynchronous

When the arguments are specified they replace the operation's parameter(s) without any check

arguments : 123,
456, 789

The edition of an explicit return allows to indicate the returned value :



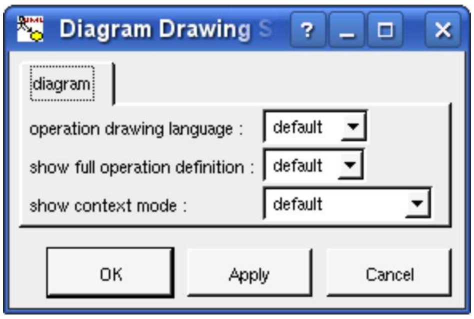
value :

stereotype :

The button *message* allows to create a new operation in the class of the instance and to select this new operation. If the current message is an operation this button also allows to select this operation in the browser.

Message Menu : edit drawing settings

This dialog allows to specify how the operation/message must be drawn, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



operation drawing language : default

show full operation definition : default

show context mode : default

see operation drawing language and show full operation definition.

Message Menu : select linked items

Select linked items select all the items connected this the current one through any line.

Message Menu : select label

Select the label given the associated message/operation

Message Menu : label default position

Move the label given the associated message/operation to its default position.

Message Menu : go to new overlapping bar / go to parent bar

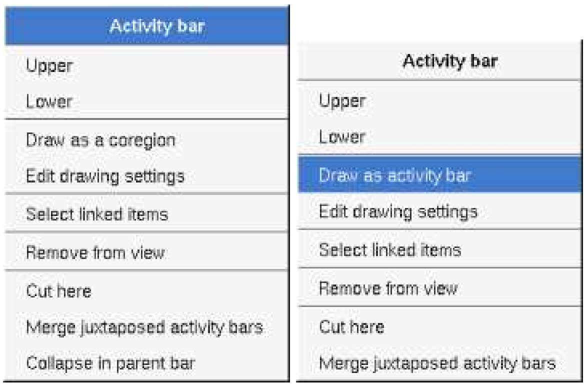
When the diagram use overlapping activity bars, to move the message in a new overlapping bar or in the bar containing the bar receiving/emiting the message

Activity bar Menu

The top and the bottom of an activity bars may be changed using the mouse, clicking down the left mouse button on the top or bottom and moving the mouse. The size of an activity bar is updated when you try to move a message above the top or below the bottom of the bar.

An activity bar can be drawn as a standard activity bar or a coregion.

The menu appearing with a right mouse click on an activity bar rectangle is something like these, supposing the diagram not *read-only* :



Message Menu : edit drawing settings

This dialog allows to specify the color of the activity duration rectangle.

Message Menu : select linked items

Select linked items select all the items connected this the current one through any line.

Message Menu : cut here

Cut the activity bar at the mouse place to obtain two activity bars, resize the bar when there is no message above or below the mouse position (an empty activity bar is not created)

Message Menu : merge juxtaposed activity bars

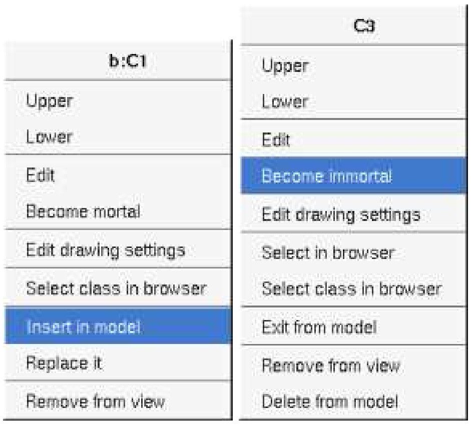
When a least two activity bars (of the same life line) are juxtaposed, replace these ones by only one activity bar.

Message Menu : collapse in parent bars

Available when the bar in overlapped, to remove it moving the messages in the bar containing the current bar.

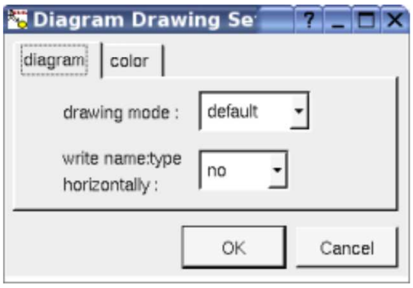
Class instance Menu

The menu appearing with a right mouse click on a class instance is something like these, supposing the diagram not *read-only* :



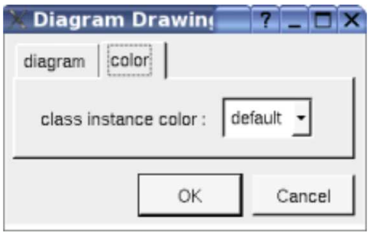
Message Menu : edit drawing settings

This dialog allows to specify how a the class instance must be drawn, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



drawing mode : default

write name:type horizontally : no



class instance color : default

write class instance horizontally : To write the instance type and name on the same line, or on two lines.

Message Menu : become mortal / immortal

By default an instance is immortal : its life line is infinite, else a X is automatically add under the last activity bar and the life line is finite. Note that it is possible to add a new message below the end of the instance life, the position of the end of life is updated, this is done also when you move/resize/delete the last activity bar.

Note that the vertical position of the instance is not fixed, to help you by default an instance is inserted on the top of the picture, use the mouse to move it horizontally or vertically.

Message Menu : Insert in model / exit from model

There are two kinds of class instances : instances part of the model (visible in the browser), and pure graphic instances (to not pollute the model with many useless instances). The button ⊟ add or create an instance part of the model. The button ☰ add or create a pure graphical instances. But after that you are able to transform a pure graphical instance to a modeled one, or to replace the drawing of a modeled instance by a pure graphic one (the modeled class instance itself is unchanged).

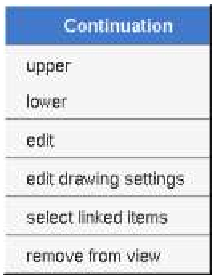
Message Menu : Replace it

This entry appears on a pure graphical instance and allows to replace it by a modeled instance of the same class.

Continuation Menu

The size of an activity bar is updated when it is renamed and the name is to long to be written inside the drawing, else the continuation drawing may may be resized by hand.

The menu appearing with a right mouse click on a continuation is something like these, supposing the diagram not *read-only* :



Message Menu : edit drawing settings

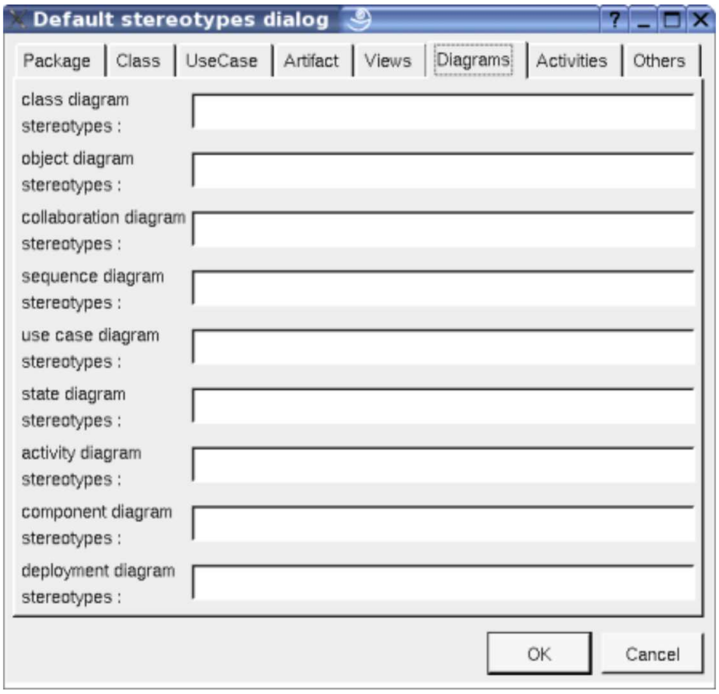
This dialog allows to specify the color of the continuation ellipsis

Message Menu : select linked items

Select linked items select all the items connected this the current one through any line.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



class diagram stereotypes :

object diagram stereotypes :

collaboration diagram stereotypes :

sequence diagram stereotypes :

use case diagram stereotypes :

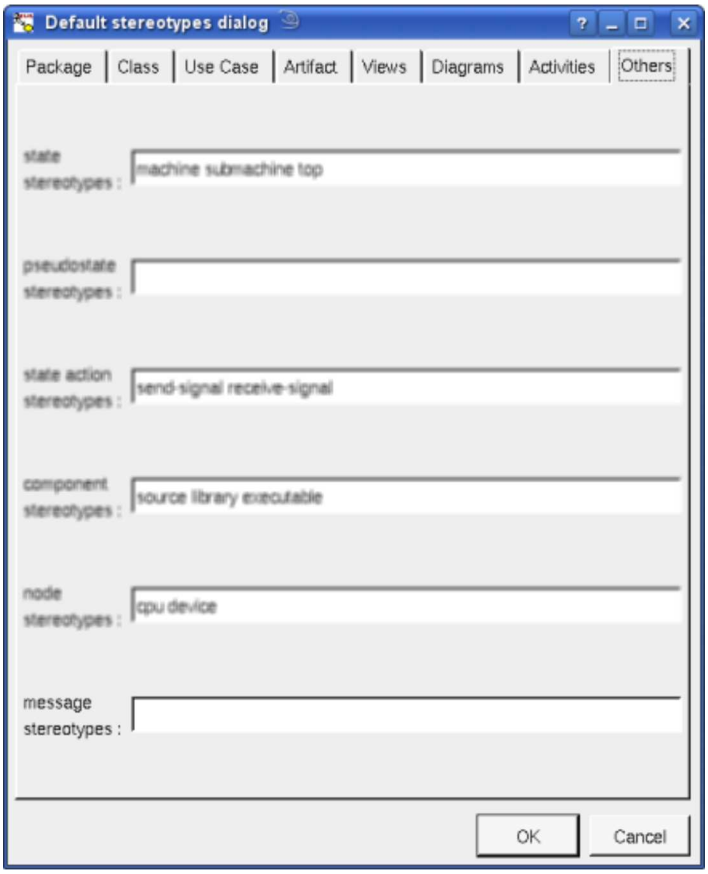
state diagram stereotypes :

activity diagram stereotypes :

component diagram stereotypes :

deployment diagram stereotypes :

and you can also set a default stereotype list for the messages :



state stereotypes : machine submachine top

pseudostate stereotypes :

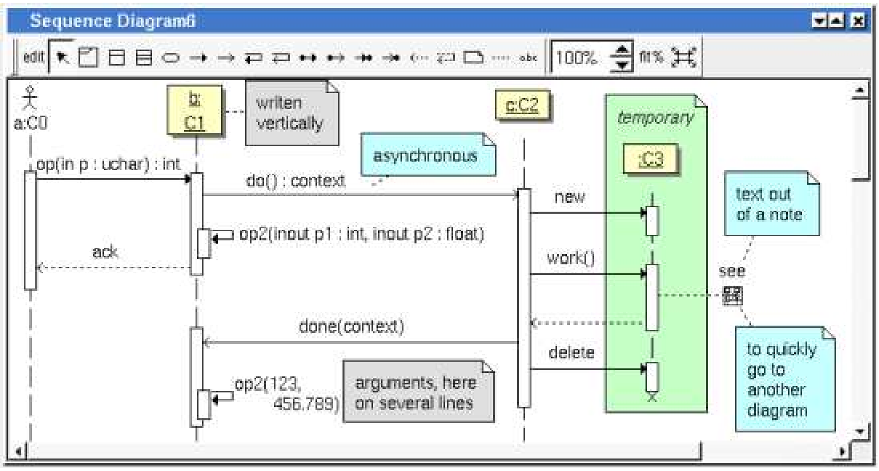
state action stereotypes : send-signal receive-signal

component stereotypes : source library executable

node stereotypes : cpu device

message stereotypes :

Drawing



A sequence diagram may contain classes (may be drawn as an actor), instances (part of the model or only graphical), fragment, notes, texts, diagram icons and the operations/messages including lost and found messages.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

To add an operation/message select the appropriate button (the synchronous/asynchronous state may be changed through the operation/message edit menu), click on the sender with the left mouse button, except for the self operation/message move the mouse to the receiver maintaining the mouse button down, then mouse button up.

BOUML doesn't fix the vertical size of the rectangle representing the activity duration, you are the master ! To do this click down the left mouse button on the top or bottom and move the mouse. The size of an activity bar is updated when you try to move a message above the top or below the bottom of the bar. When you move vertically a message/operation out of its current activity duration rectangle, a new one is automatically added is needed.

The *scale* may be changed from 30 up to 200 %. To allows to see the operation/message kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

control v is a shortcut to paste the selected diagram's elements

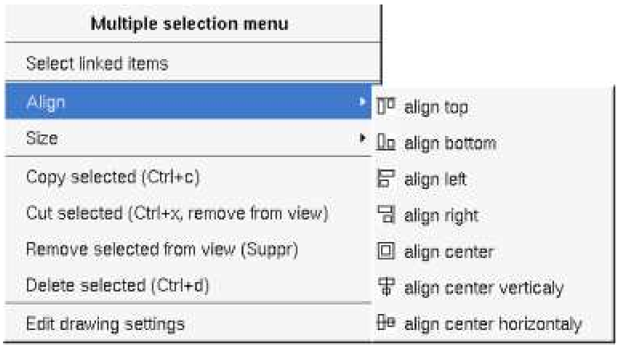
control z and *control u* are a shortcut of *undo*

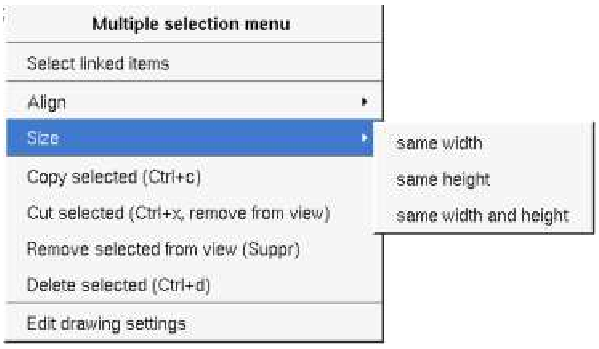
control r and *control y* are a shortcut of *redo*

the keyboard arrows allow to move the selected items

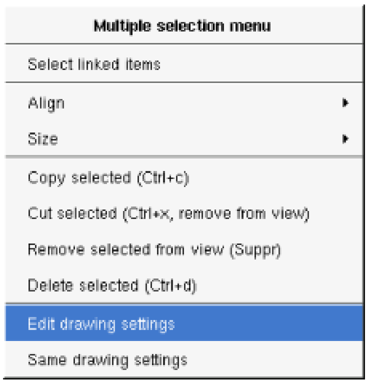
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

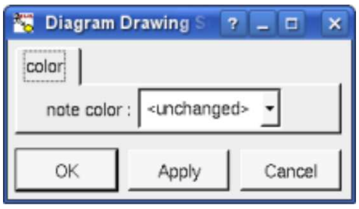




If all the selected elements has the same kind (for instance all are a class), you edit their *drawing settings* globally :



and for instance when the elements are notes :



note color : <unchanged>

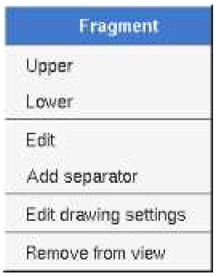
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

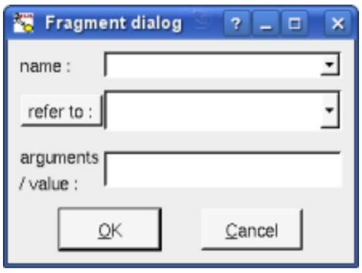
A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

When you edit a *fragment* the following dialog appears :

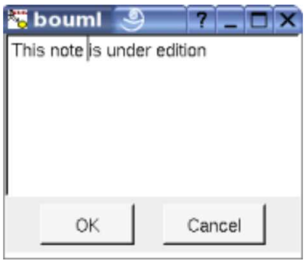


refer to : allows to reference any diagram, when you want to have an *interaction use* (fragment *ref*) choose the diagram corresponding to this interaction

arguments / value : allows mainly to set the arguments and return value of an *interaction use*, to be compatible with the norm you have to enter the full form using parameter list and a ':' in case the return form is set

Note

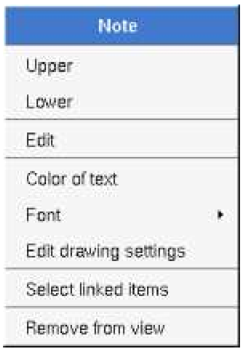
A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



This note is under edition

A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text “*upper diagram :”* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

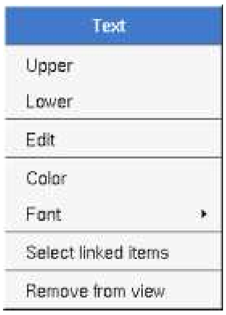
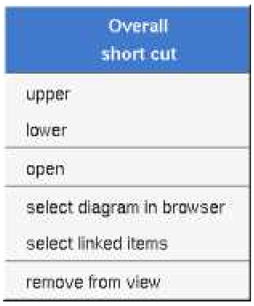


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

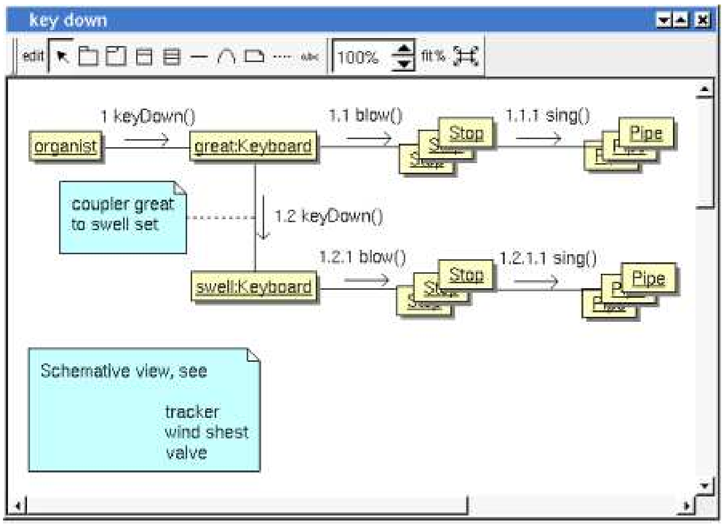


The other diagram's elements have an own chapter, refer to them.

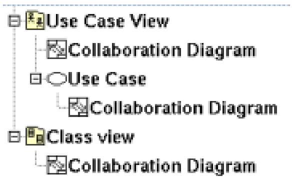
Previous : use case diagram

Next : collaboration diagram

Collaboration/communication diagram



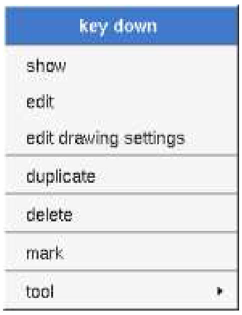
The collaboration/communication diagrams may be placed in a use case view, a use case or a class view



A collaboration/communication diagram is created through the *new collaboration diagram* entry of the use case view, use case and class view browser menus..

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



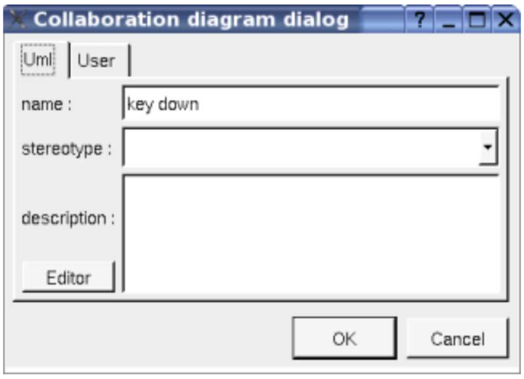
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

collaboration/communication diagram dialog, tab Uml



name : key down

stereotype :

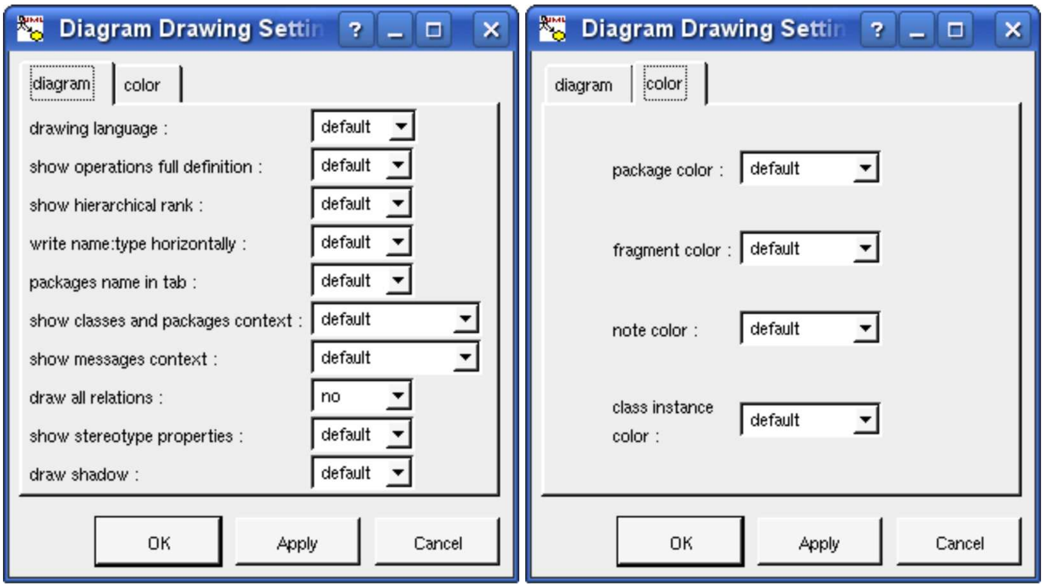
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Browser Menu : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



drawing language : default

show operations full definition : default

show hierarchical rank : default

write name:type horizontally : default

packages name in tab : default

show classes and packages context : default

show messages context : default

draw all relations : no

show stereotype properties : default

draw shadow : default

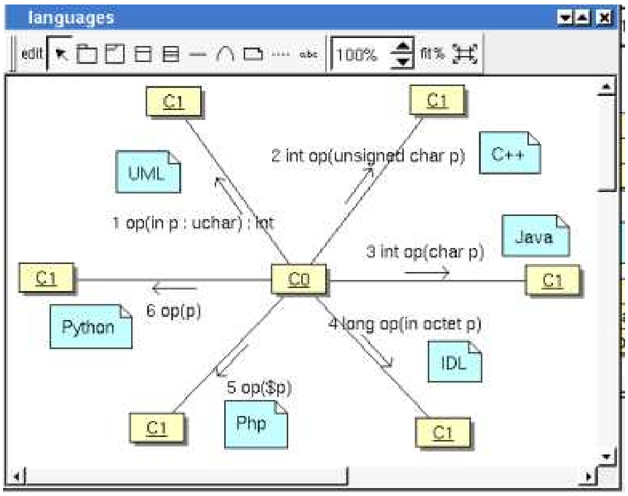
package color : default

fragment color : default

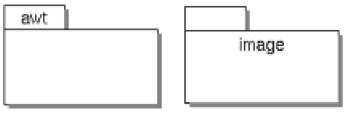
note color : default

class instance color : default

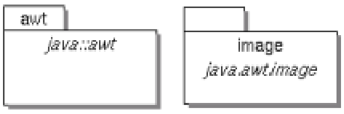
- *drawing language* : to indicate in which language the operations must be written when the full definition is showed (see below), like for the class drawing in a class diagram. For instance, the class *C* has the operation *op* returning an *int* (supposed translated *int* in C++ and Java, *octet* in Idl) and having the *input* parameter *p* having the type *uchar* (supposed translated *unsigned char* in C++, *char* in Java and *octet* in Idl). Depending on the *drawing language* :



- *show operations full definition* : to show all the operation profile or just its name (may be with the arguments specified at the operation level in the diagram, see edit)
- *show hierarchical rank* : a message may be numbered using its rank (a simple number) or its hierarchical rank (numbers separated with dot)
- *write class instance horizontally* : To write the instance type and name on the same line, or on two lines
- *package name in tab* : to indicate if the package's name must be written in the tab which is the small rectangle on the top (note : a transparent *package* doesn't have shadow) :



- *show packages context* : to indicate if the context where the package is defined must be written, it is not the case just above. The context may be the “UML context” which is the path of the package in the browser (choice followed for *awt* below), or the C++ namespace specified by the package, or the Java package specified by the package (choice followed for *picture* below) or at least the Idl module :



- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

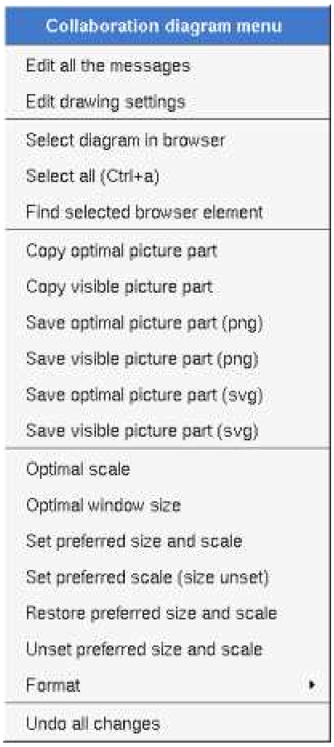
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

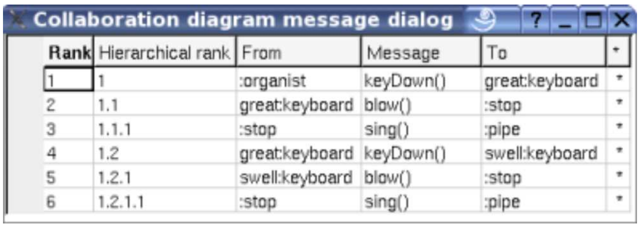
Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Collaboration diagram menu
Edit all the messages
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Find selected browser element
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : edit all the messages

To edit all the messages appearing in the diagram, to change the messages themselves or their numbering (recursively or not), or delete some of them (recursively or not) :



Rank	Hierarchical rank	From	Message	To	▾
1	1	:organist	keyDown()	great:keyboard	▾
2	1.1	great:keyboard	blow()	:stop	▾
3	1.1.1	:stop	sing()	:pipe	▾
4	1.2	great:keyboard	keyDown()	swell:keyboard	▾
5	1.2.1	swell:keyboard	blow()	:stop	▾
6	1.2.1.1	:stop	sing()	:pipe	▾

The proposed messages are the operations defined on the message receiver more the current one, but you may also give any other message.

A mouse click on the appropriate line and column allows to modify the appropriate cell.

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, also done through a *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472

- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

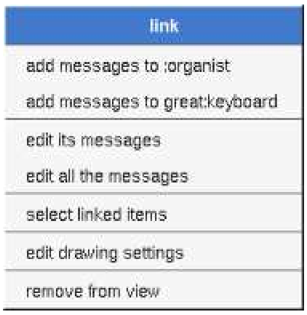
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

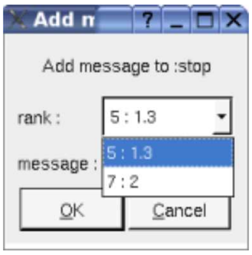
Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

Operation/message Menu

The menu appearing with a right mouse click on link is something like these, supposing the diagram not *read-only* :



The two first entries allows to add a message in each direction, you have to choose the new message rank among the proposed ones, but you may change it after with edit its message or edit all the messages. For instance in case a new message is added from from the *keyboard great* to a *stop* (see the first picture), the proposed ranks are :



Message Menu : edit its message

edit allows to edit the message of the link, or delete some of them (recursively or not), see edit.

Message Menu : edit all the messages

To edit all the messages appearing in the diagram, to change the messages themselves or their numbering (recursively or not), or delete some of them (recursively or not), see edit.

Message Menu : edit drawing settings

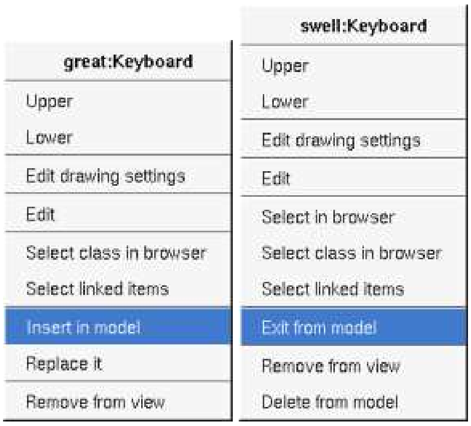
see drawing settings

Message Menu : select linked items

Select linked items select all the items connected this the current one through any line.

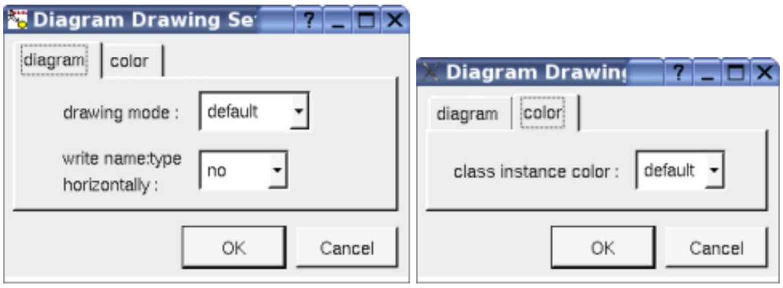
Class instance Menu

The menu appearing with a right mouse click on a class instance is something like these, supposing the diagram not *read-only* :



Message Menu : edit drawing settings

This dialog allows to specify how a the class instance must be drawn, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



drawing mode : default

write name:type horizontally : no

class instance color : default

write class instance horizontaly : To write the instance type and name on the same line, or on two lines.

Message Menu : Insert in model / exit from model

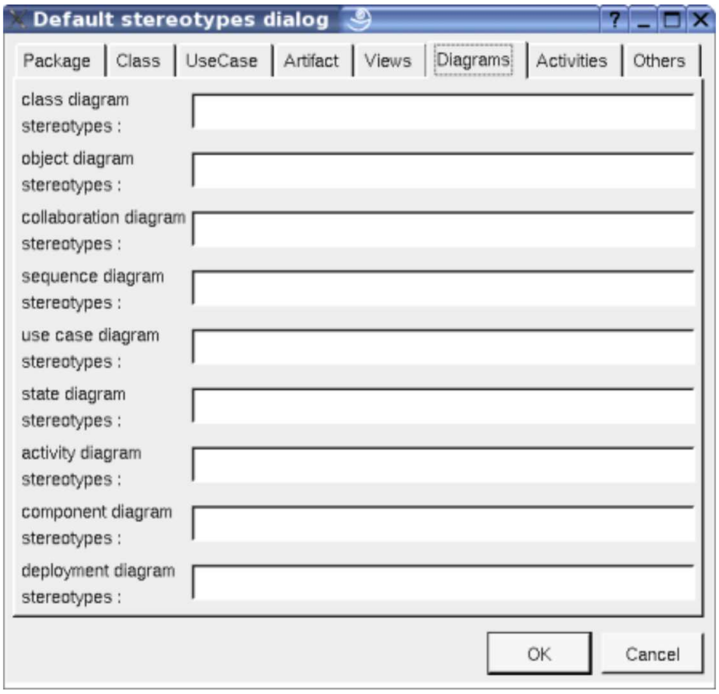
There are two kinds of class instances : instances part of the model (visible in the browser), and pure graphic instances (to not pollute the model with many useless instances). The button ⊟ add or create an instance part of the model. The button ⊟ add or create a pure graphical instances. But after that you are able to transform a pure graphical instance to a modeled one, or to replace the drawing of a modeled instance by a pure graphic one (the modeled class instance itself is unchanged).

Message Menu : Replace it

This entry appears on a pure graphical instance and allows to replace it by a modeled instance of the same class.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



Default stereotypes dialog

Package | Class | UseCase | Artifact | Views | Diagrams | Activities | Others

class diagram stereotypes :

object diagram stereotypes :

collaboration diagram stereotypes :

sequence diagram stereotypes :

use case diagram stereotypes :

state diagram stereotypes :

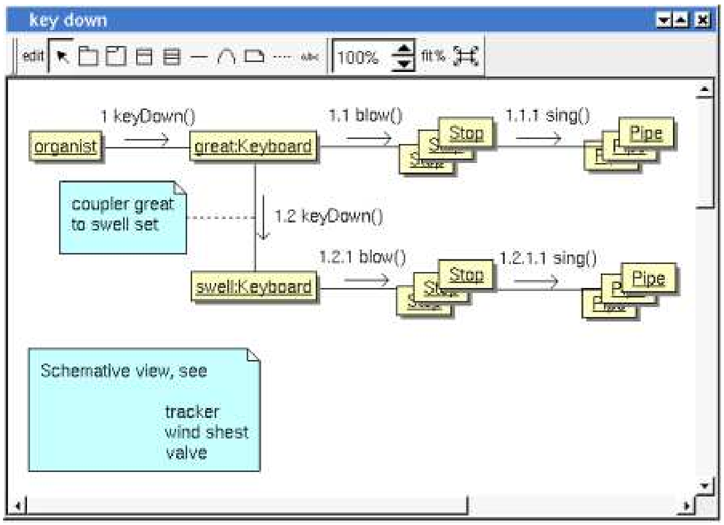
activity diagram stereotypes :

component diagram stereotypes :

deployment diagram stereotypes :

OK | Cancel

Drawing



A collaboration/communication diagram may contain classes (may be drawn as an actor) instances, notes, texts, diagram icons, packages and the operations/messages.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

To add an operation/message on an already existing link, double mouse click on it or use the menu appearing though a right mouse click.

The *scale* may be changed from 30 up to 200 %. To allows to see the operation/message kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project *control shift s* is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

control v is a shortcut to paste the selected diagram's elements

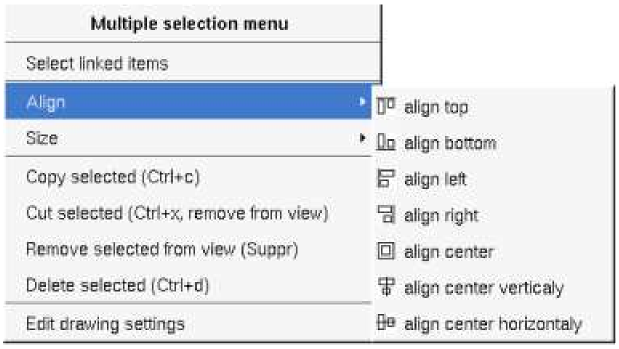
control z and *control u* are a shortcut of *undo*

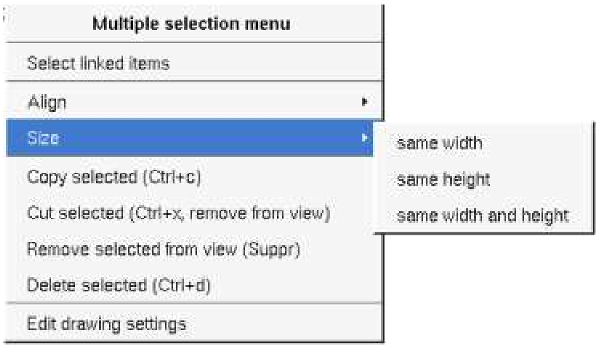
control r and *control y* are a shortcut of *redo*

the keyboard arrows allow to move the selected items

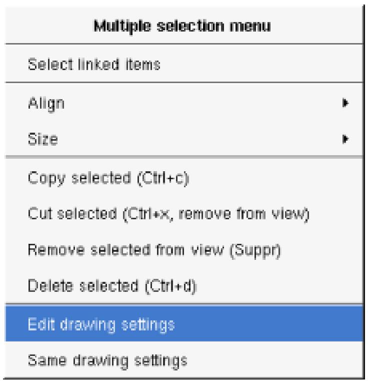
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

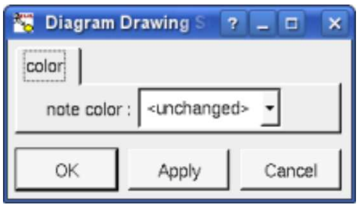




If all the selected elements has the same kind (for instance all are a class), you edit their *drawing settings* globally :



and for instance when the elements are notes :



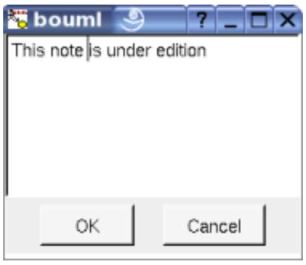
note color : <unchanged>

The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Note

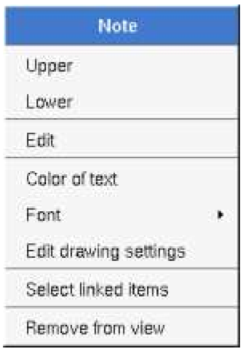
A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



This note is under edition

A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :*" and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

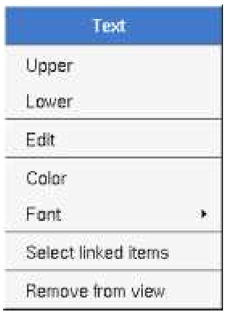
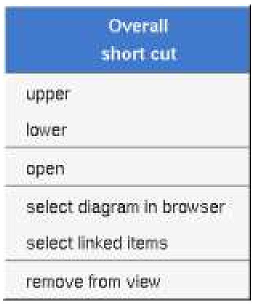


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

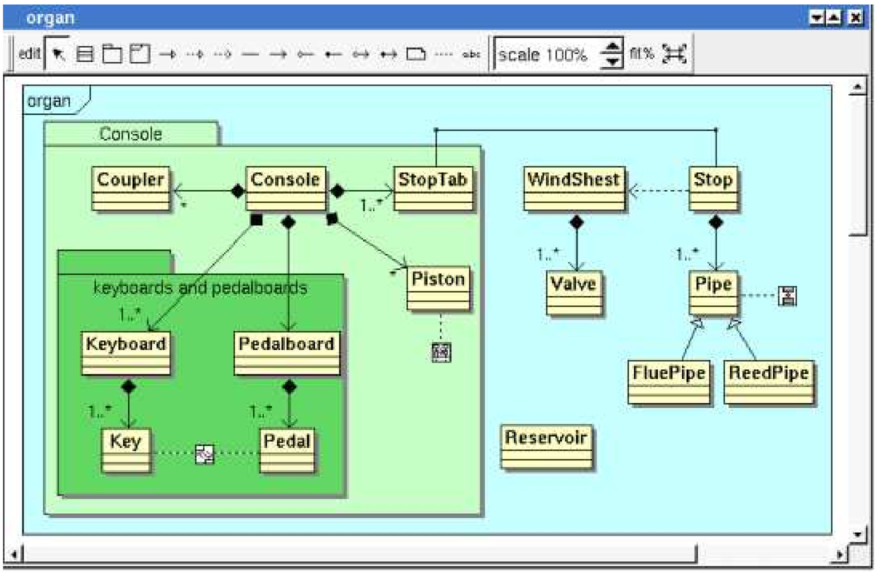


The other diagram's elements have an own chapter, refer to them.

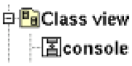
Previous : sequence diagram

Next : class diagram

Class diagram



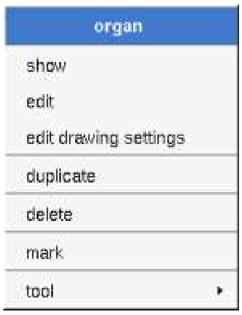
The class diagrams may be placed in a class view, an use case view or an use case.



A class diagram is created through the *new static class diagram* entry of the class view browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



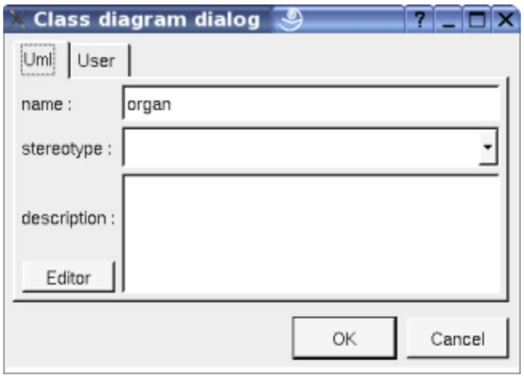
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

class diagram dialog, tab Uml



Class diagram dialog

Uml | User

name : organ

stereotype :

description :

The proposed ***stereotypes*** are the default one specified through the [Default stereotypes dialog]() more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the [environment dialog](). Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

[Browser Menu]() : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).

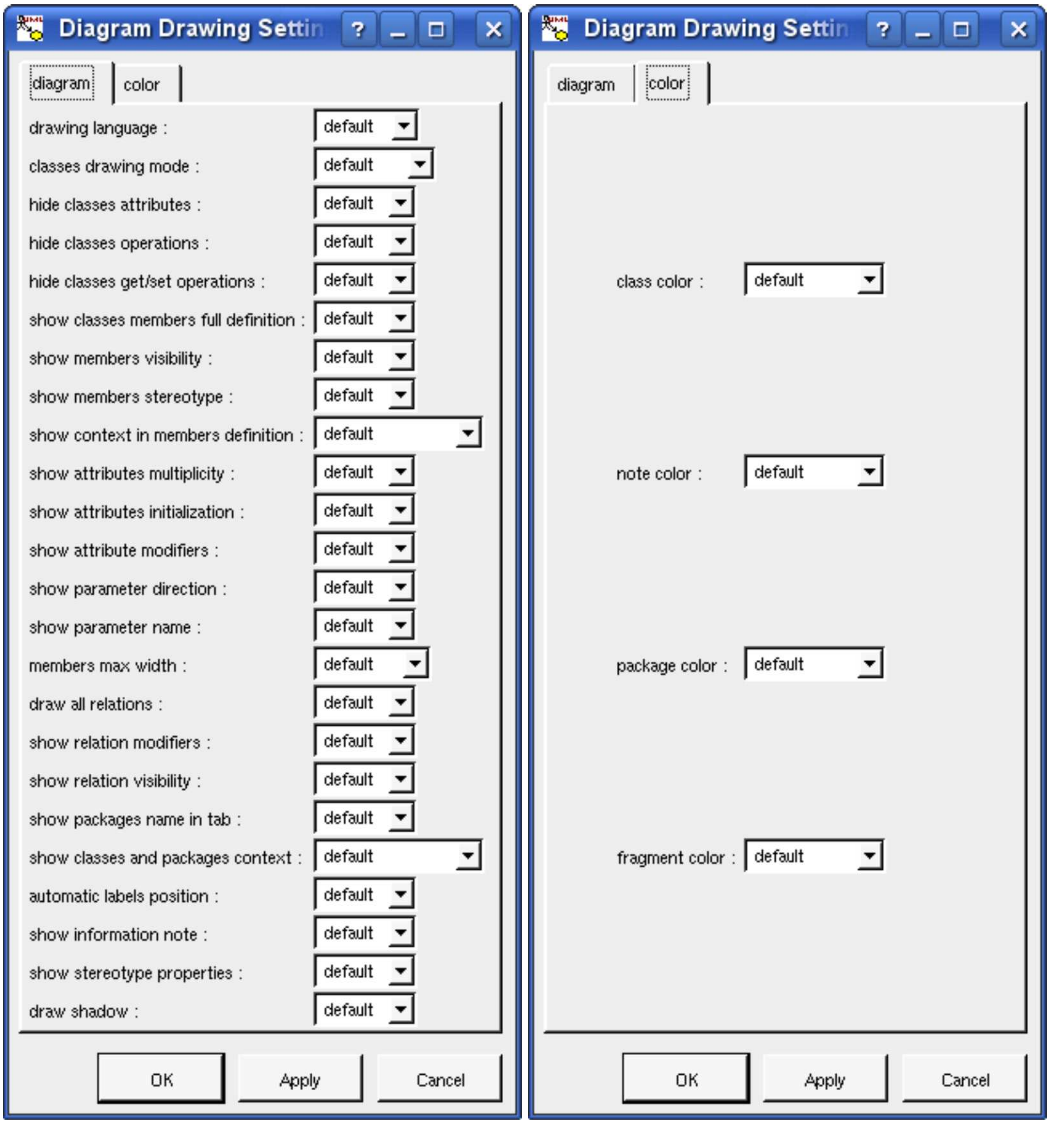


Diagram Drawing Settin

diagram | color

drawing language : default
classes drawing mode : default
hide classes attributes : default
hide classes operations : default
hide classes get/set operations : default
show classes members full definition : default
show members visibility : default
show members stereotype : default
show context in members definition : default
show attributes multiplicity : default
show attributes initialization : default
show attribute modifiers : default
show parameter direction : default
show parameter name : default
members max width : default
draw all relations : default
show relation modifiers : default
show relation visibility : default
show packages name in tab : default
show classes and packages context : default
automatic labels position : default
show information note : default
show stereotype properties : default
draw shadow : default

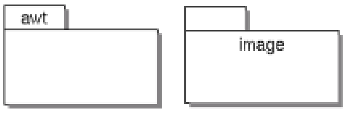
Diagram Drawing Settin

diagram | color

class color : default
note color : default
package color : default
fragment color : default

- *drawing language* : to indicate in which language the operations must be written when the full definition is showed (see below), see [class drawing]() in a class diagram.

- *classes drawing mode* : to draw the class using a rectangle or an icon, see drawing mode in a class diagram.
- *hide classes attributes* : to hide or not the attributes, it is also possible to specify the visibility for each one.
- *hide classes operations* : to hide or not the operations, it is also possible to specify the visibility for each one.
- *show classes member full definition* : to show all the attributes and operation profile or just their name
- *show members visibility :* to write or not the visibility
- *show members stereotype :* to write or not the stereotypes
- *show context in members definition :* to write or not the context of classes indicated in the full member definition
- *show attributes multiplicity :* to write or not the multiplicity of the attributes when the drawing language is UML and you ask to show for full members definition
- *show attributes initialization :* to write or not the default value of the attributes when you ask to show for full members definition
- *member max width :* to limit the width (in characters) used to produce the definition of the operations and attributes. When the width is greater that the max width, the string is cut and ... is added. Doesn't take into account the stereotype.
- *show parameter direction :* to write or not the direction of the operation's parameters
- *show parameter name :* to write or not the name of the operation's parameters
- *draw all classes relations* : to automatically draw or not the new relations, obviously a relation will be added in a diagram only when the start and end classes (may be the same) are drawn.
- *package name in tab* : to indicate if the package's name must be written in the tab which is the small rectangle on the top (note : a transparent *package* doesn't have shadow) :



- *show classes and packages context* : To indicate if the context where the class/package is defined must be written, and if yes, how. The context may be the "UML context" which is the path of the class/package in the browser, or the C++ *namespace*, or the Java *package,* or the Python *package* or at least the Idl *module*. See class context and package context.
- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in a diagram when the relation is edited or the associated class pictures moved etc ...
- *show information note* : to show or not the constraints through note
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

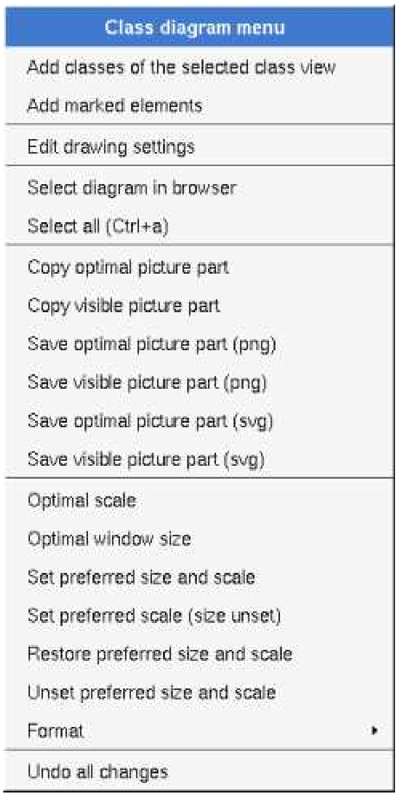
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Class diagram menu
Add classes of the selected class view
Add marked elements
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : add classes of the selected class view

Only appears when a class view is selected in the browser, all the classes of the *class view* whose are not yet present in the diagram are added in the diagram, allowing to not have to do several *drag & drop* from the browser to add these classes, but the position of the classes will probably not be the good one

Picture Menu : add marked elements

Only appears when a elements whose can be added in the diagram are marked in the browser, all these elements whose are not yet present in the diagram are added in the diagram, allowing to not have to do several *drag & drop* from the browser to them, but their position will probably not be the good one

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, may also be done through *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

Similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible picture part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116

- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

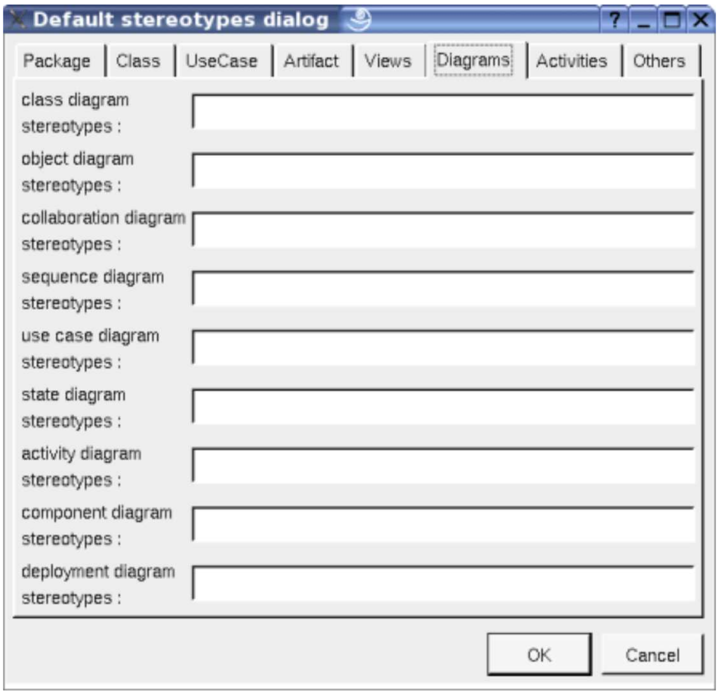
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

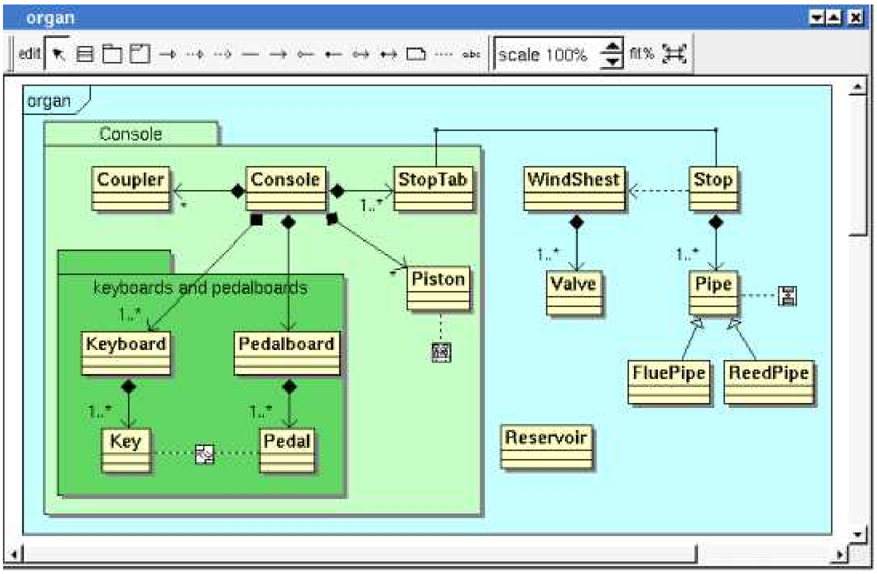
Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :


Default stereotypes dialog
Package
Class
UseCase
Artifact
Views
Diagrams
Activities
Others
class diagram stereotypes :
object diagram stereotypes :
collaboration diagram stereotypes :
sequence diagram stereotypes :
use case diagram stereotypes :
state diagram stereotypes :
activity diagram stereotypes :
component diagram stereotypes :
deployment diagram stereotypes :
OK
Cancel

Drawing



A class diagram may contain classes, packages, fragment, notes, texts, diagram icons and the relations.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

To add a new relation between classes, select the appropriate relation through the buttons on the top of the diagram sub window, click on the start class with the left mouse button, move the mouse, each time the mouse button is raised a new line break is introduced, at least click on the end class. To abort a relation construction press the right mouse button or do a double click with the left mouse button.

A line may be broken, during its construction of after clicking on the line with the left mouse button and moving the mouse with the mouse button still pushed. To remove a line break, a double click on the point with the left mouse button is enough, or use the line break menu of the point using the right mouse button.

By default the lines go to the center of their extremities, to decenter a line click near the desired extremity and move the mouse click down. To come back to a center line, use the menu geometry

The *scale* may be changed from 30 up to 200 %. To allows to see the operation/message kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

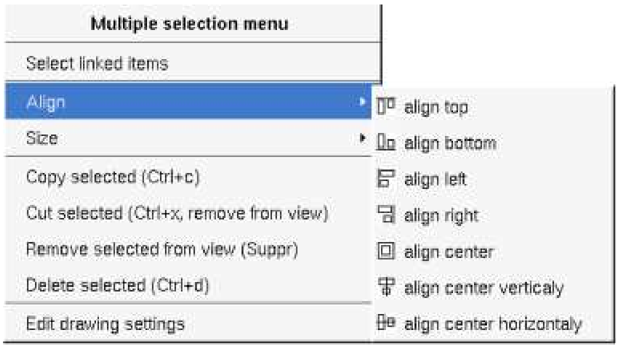
control v is a shortcut to paste the selected diagram's elements

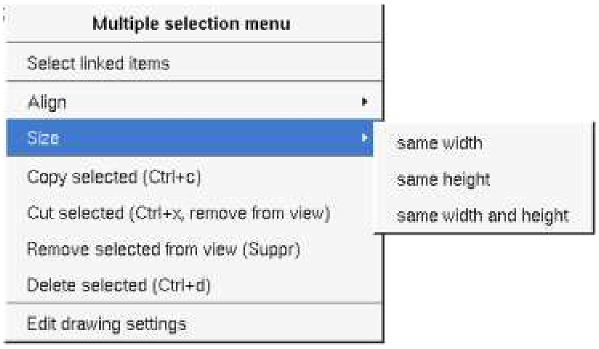
control z and *control u* are a shortcut of *undo*

control r and *control y* are a shortcut of *redo* the keyboard arrows allow to move the selected items

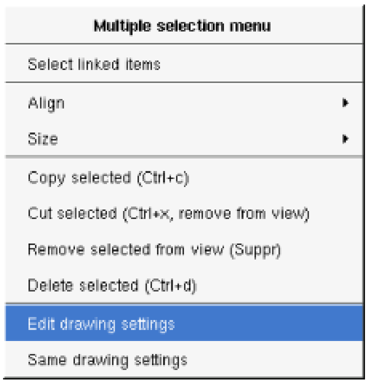
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

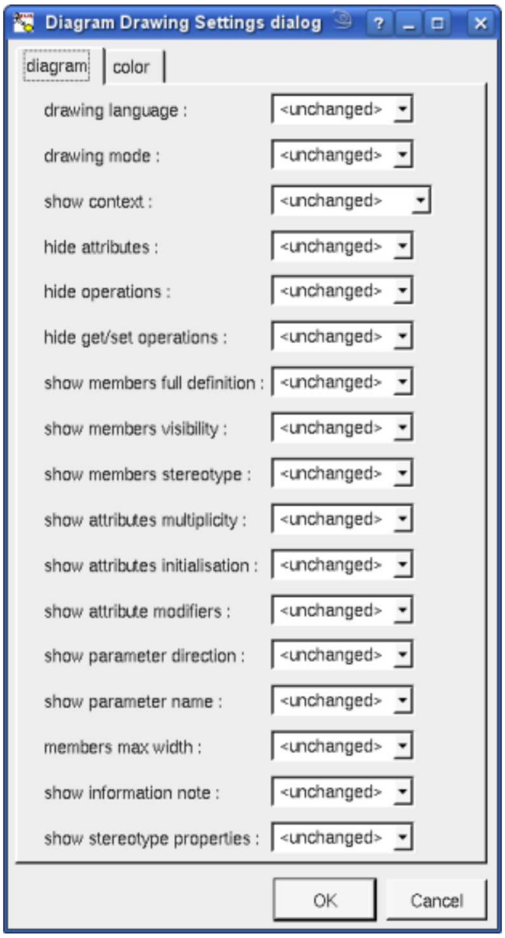




If all the selected elements has the same kind (for instance all are a class), you can edit their *drawing settings* globally :



and for instance when the elements are classes in a class diagram :



drawing language : <unchanged>

drawing mode : <unchanged>

show context : <unchanged>

hide attributes : <unchanged>

hide operations : <unchanged>

hide get/set operations : <unchanged>

show members full definition : <unchanged>

show members visibility : <unchanged>

show members stereotype : <unchanged>

show attributes multiplicity : <unchanged>

show attributes initialisation : <unchanged>

show attribute modifiers : <unchanged>

show parameter direction : <unchanged>

show parameter name : <unchanged>

members max width : <unchanged>

show information note : <unchanged>

show stereotype properties : <unchanged>

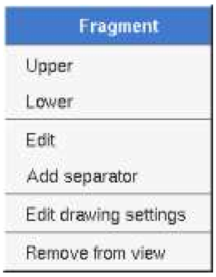
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

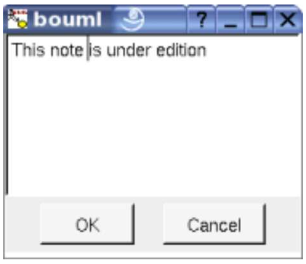
A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

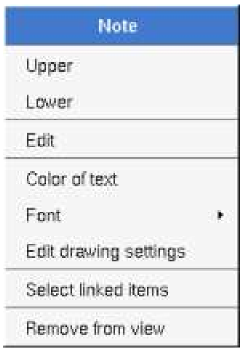
Note

A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :*" and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

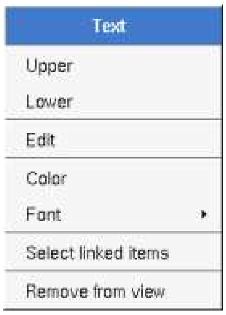
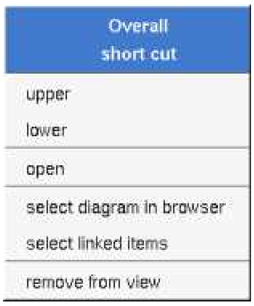


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

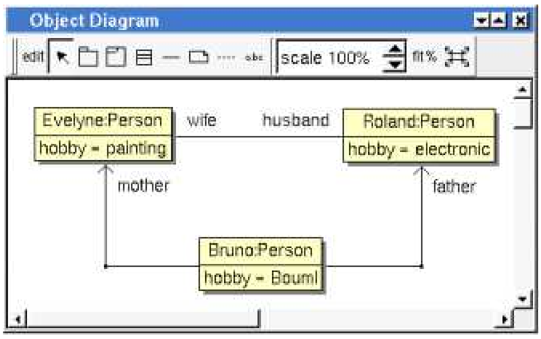


The other diagram's elements have an own chapter, refer to them.

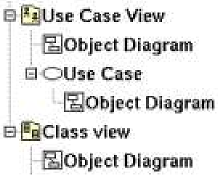
Previous : collaboration diagram

Next : object diagram

Object diagram



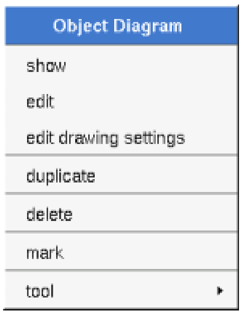
The object diagrams may be placed in a use case view, a use case or a class view



An object diagram is created through the *new object diagram* entry of the use case view, use case and class view browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



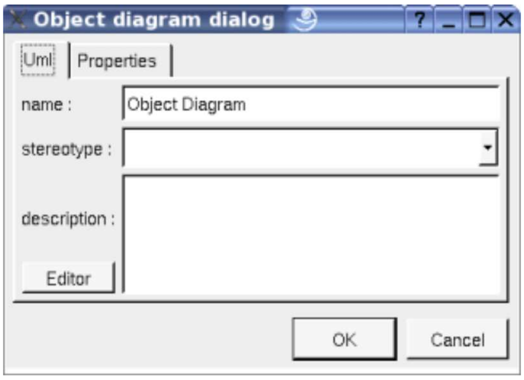
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

object diagram dialog, tab Uml



name : Object Diagram

stereotype :

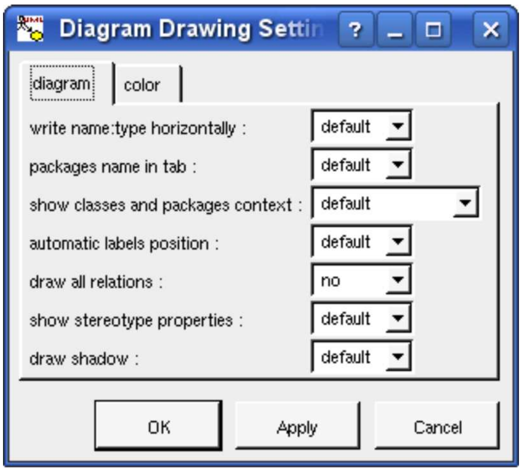
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

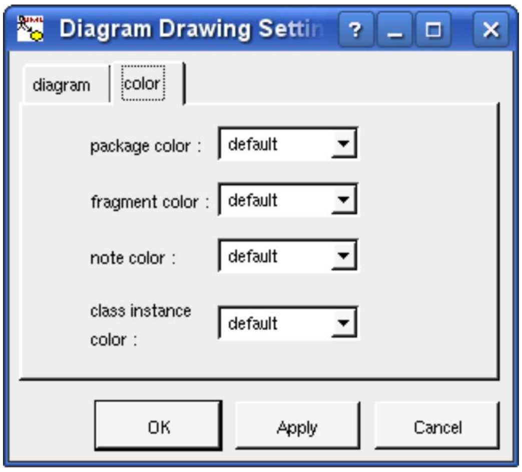
The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Browser Menu : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).

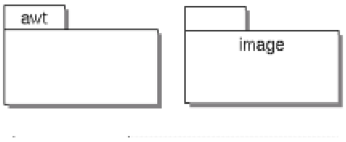


write name:type horizontally : default
packages name in tab : default
show classes and packages context : default
automatic labels position : default
draw all relations : no
show stereotype properties : default
draw shadow : default

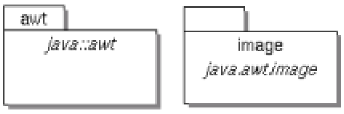


package color : default
fragment color : default
note color : default
class instance color : default

- *write class instance horizontally* : To write the instance type and name on the same line, or on two lines
- *package name in tab* : to indicate if the package's name must be written in the tab which is the small rectangle on the top (note : a transparent *package* doesn't have shadow) :



- *show classes and packages context* : to indicate if the context where the class/package is defined must be written, it is not the case just above for a package. The context may be the “UML context” which is the path of the package in the browser (choice followed for *awt* below), or the C++ namespace specified by the package, or the Java package specified by the package (choice followed for *picture* below), or the Python package specified by the package or at least the Idl module, for instance for a package :



- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in a diagram when the relation is edited or the associated class pictures moved etc ...
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the object is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

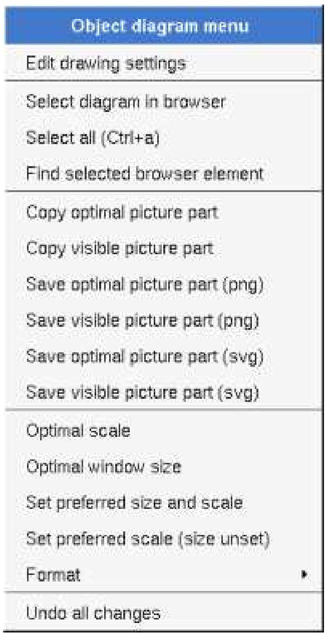
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Object diagram menu
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Find selected browser element
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Format
Undo all changes

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, also done through a *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

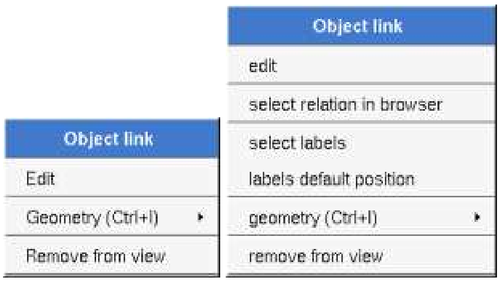
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

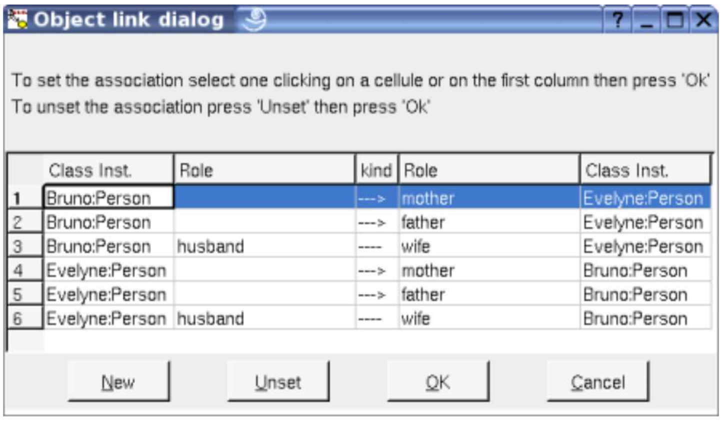
Link Menu

The menu appearing with a right mouse click on link is something like these, supposing the diagram not *read-only* (in the first case the link is doesn't have an associated relation) :



Link Menu : edit

edit allows to choose the relation supported by the link, the available relations depends on the type of each extremities, the current relation (if set) is shown by the selection :



To set the association select one clicking on a cellule or on the first column then press 'Ok'
To unset the association press 'Unset' then press 'Ok'

	Class Inst.	Role	kind	Role	Class Inst.
1	Bruno:Person		--->	mother	Evelyne:Person
2	Bruno:Person		--->	father	Evelyne:Person
3	Bruno:Person	husband	----	wife	Evelyne:Person
4	Evelyne:Person		--->	mother	Bruno:Person
5	Evelyne:Person		--->	father	Bruno:Person
6	Evelyne:Person	husband	----	wife	Bruno:Person

Link Menu : select relation in browser

Is of course only available when the relation is set

Message Menu : select labels

Of course only available when the relation is set, to select the labels (relation's name, stereotypes, role(s) and multiplicity(ies)) associated to the relation. Useful when you are lost after many label movings.

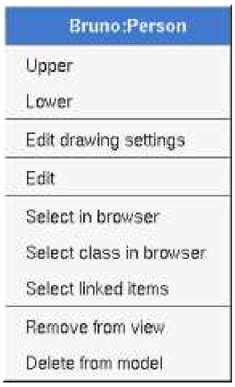
Message Menu : labels default position

Of course only available when the relation is set, to place the roles's name associated to the relation in the default position. Useful when you are lost after many label movings.

By default when you move a class instance or a link point break or edit the link, the labels are moved to their default position, this may be irritating. To ask BOUML to not move the labels in a diagram, use the *drawing settings* of the diagrams.

Class instance Menu

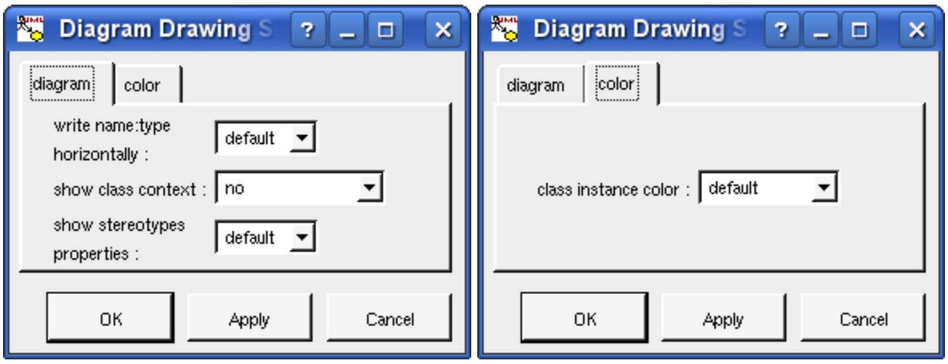
The menu appearing with a right mouse click on a class instance is something like this, supposing the diagram not *read-only* :



Contrarily to the sequence and collaboration diagrams, an object diagram show modeled instances : there is no pure graphical instances.

Message Menu : edit drawing settings

This dialog allows to specify how a the class instance must be drawn, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



write name:type horizontally : default

show class context : no

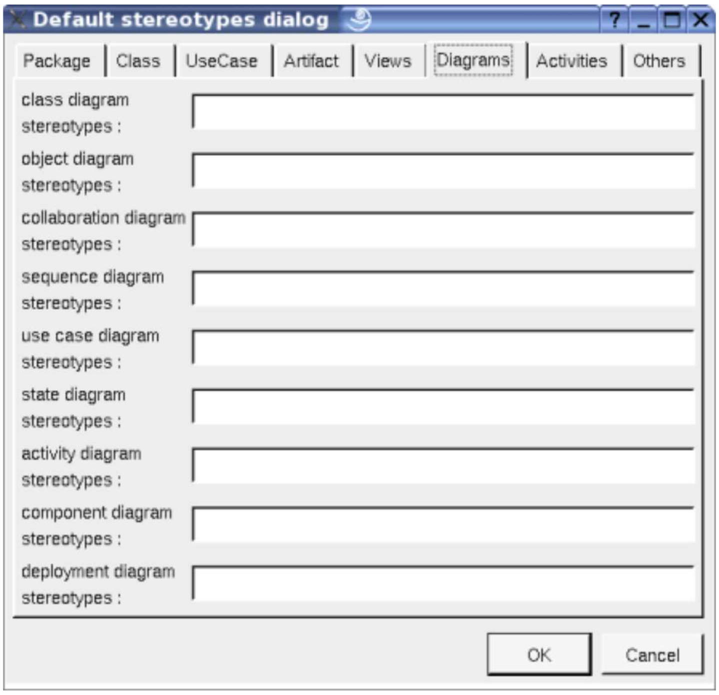
show stereotypes properties : default

class instance color : default

write class instance horizontaly : To write the instance type and name on the same line, or on two lines.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



class diagram stereotypes :

object diagram stereotypes :

collaboration diagram stereotypes :

sequence diagram stereotypes :

use case diagram stereotypes :

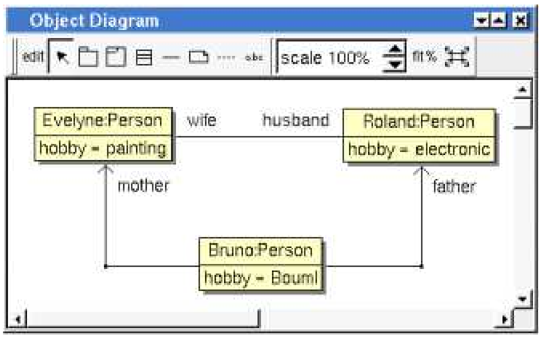
state diagram stereotypes :

activity diagram stereotypes :

component diagram stereotypes :

deployment diagram stereotypes :

Drawing



An object diagram may contain classes instances, notes, texts, diagram icons, packages, fragment and links.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

To show a relation between two class instances, add a link between the instance then edit the link through a double click or through a right mouse click.

The *scale* may be changed from 30 up to 200 %. To allows to see the relation kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

control v is a shortcut to paste the selected diagram's elements

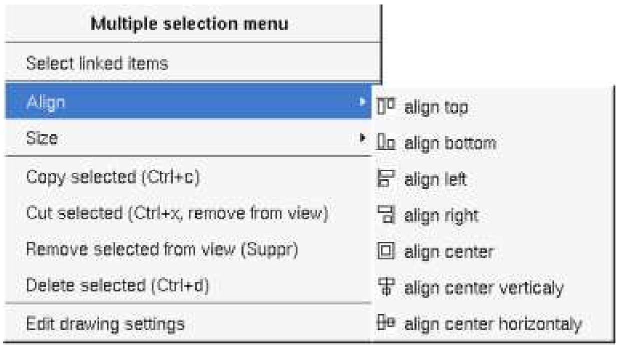
control z and *control u* are a shortcut of *undo*

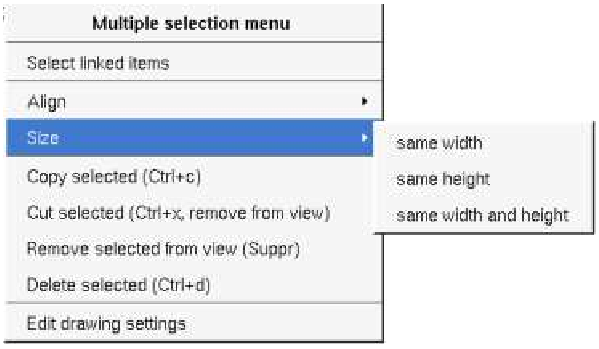
control r and *control y* are a shortcut of *redo*

the keyboard arrows allow to move the selected items

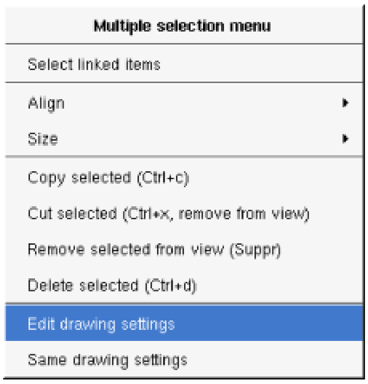
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

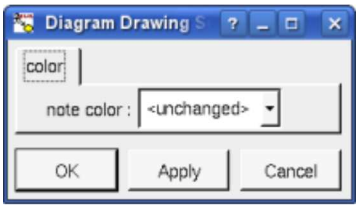




If all the selected elements has the same kind (for instance all are a class), you edit their *drawing settings* globally :



and for instance when the elements are notes :



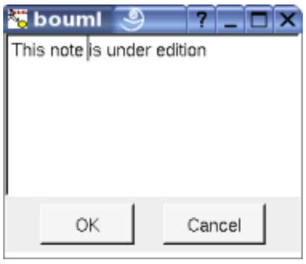
note color : <unchanged>

The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

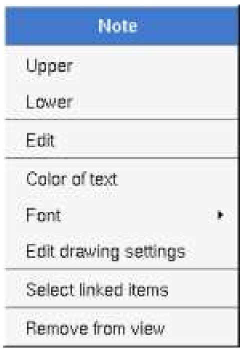
Note

A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :"* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

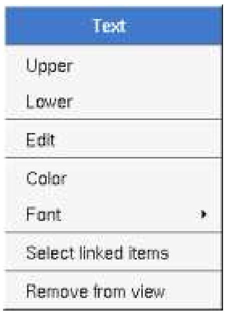
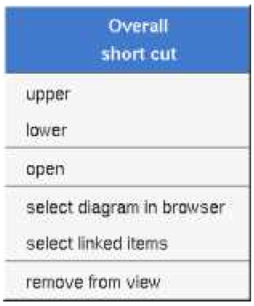


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

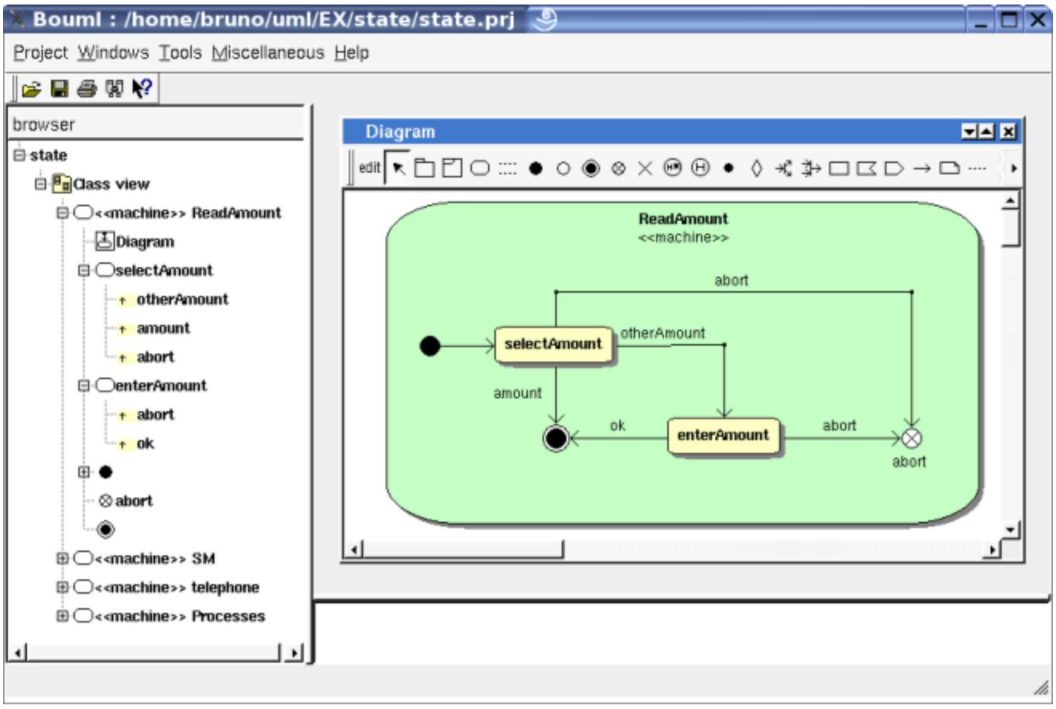


The other diagram's elements have an own chapter, refer to them.

Previous : class diagram

Next : state diagram

State diagram

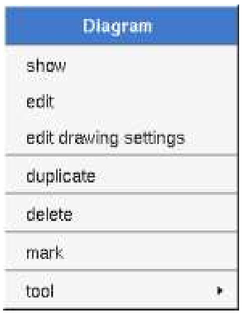


The *state diagram*s may be placed in a state

A *state diagram* is created through the *new state diagram* entry of the state browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



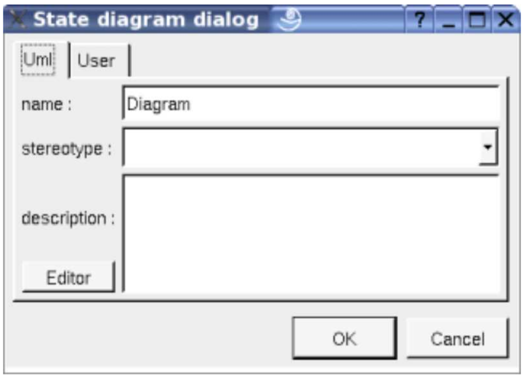
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

State diagram dialog, tab Uml



State diagram dialog

name : Diagram

stereotype :

description :

The proposed ***stereotypes*** are the default one specified through the [Default stereotypes dialog](#) more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the [environment dialog](#). Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

[Browser Menu](#) : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).

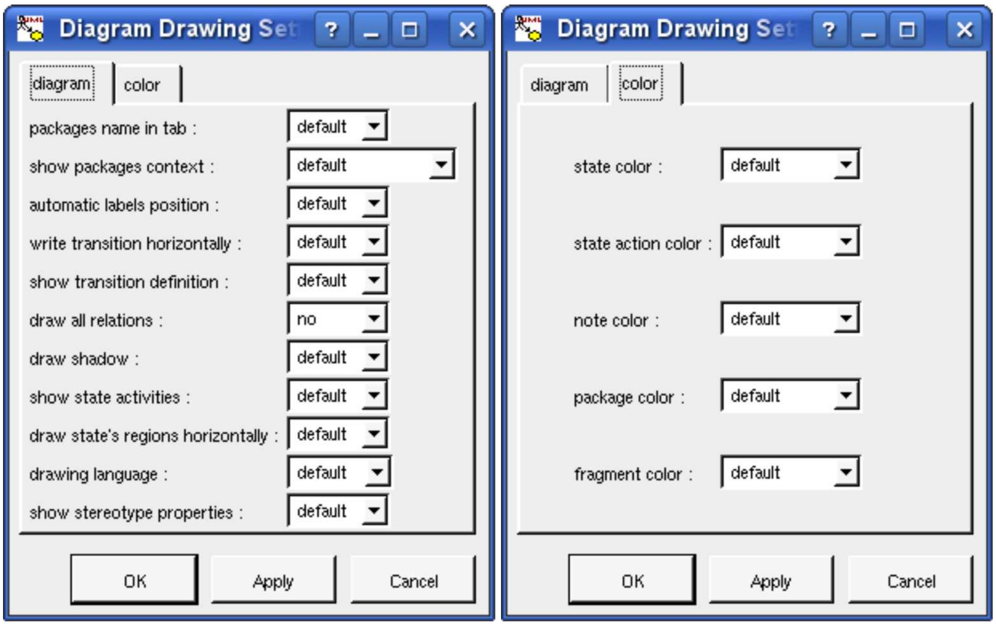


Diagram Drawing Set

packages name in tab : default

show packages context : default

automatic labels position : default

write transition horizontally : default

show transition definition : default

draw all relations : no

draw shadow : default

show state activities : default

draw state's regions horizontally : default

drawing language : default

show stereotype properties : default

state color : default

state action color : default

note color : default

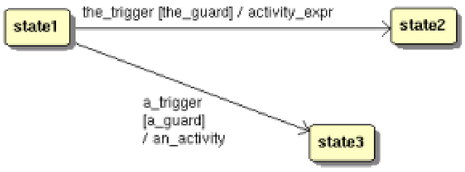
package color : default

fragment color : default

- *show packages context* : To indicate if the context where the package is defined must be written, and if yes, how. The context may be the “UML context” which is the path of the package in the browser, or the C++ *namespace*, or the Java *package* or at least the Idl *module*. See [package context](#).

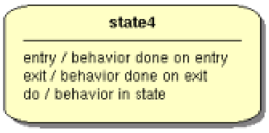
- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in a diagram when the relation is edited or the associated State pictures moved etc ...

- *write transition horizontally* : to write the transition's *trigger, guard constraint* and *activity* on only one line or each one on a different line.



- *show transition definition* : to write the name of the transition or its *trigger, guard constraint* and *activity*

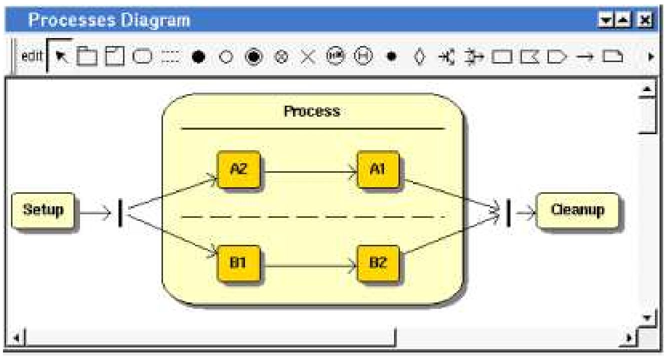
- *show state activities* : to show or not the *state*'s activities in a compartment depending on the drawing language.



state4

entry / behavior done on entry
exit / behavior done on exit
do / behavior in state

- *draw state's regions horizontally* : to indicate if the *regions* are drawn horizontally or vertically, for instance :



Note : the regions are not visible while the state picture is too small.

- *drawing language* : to indicate in which language the transition and state's compartment must be written

- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

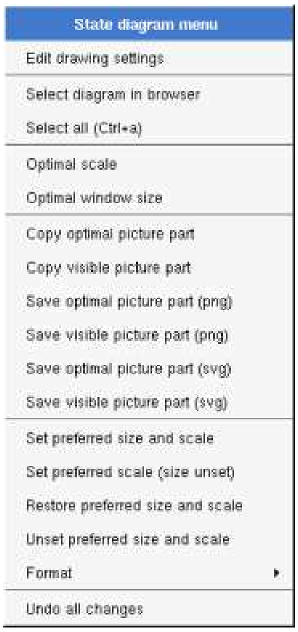
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


State diagram menu
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Optimal scale
Optimal window size
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, may also be done through *control a*

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible picture part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

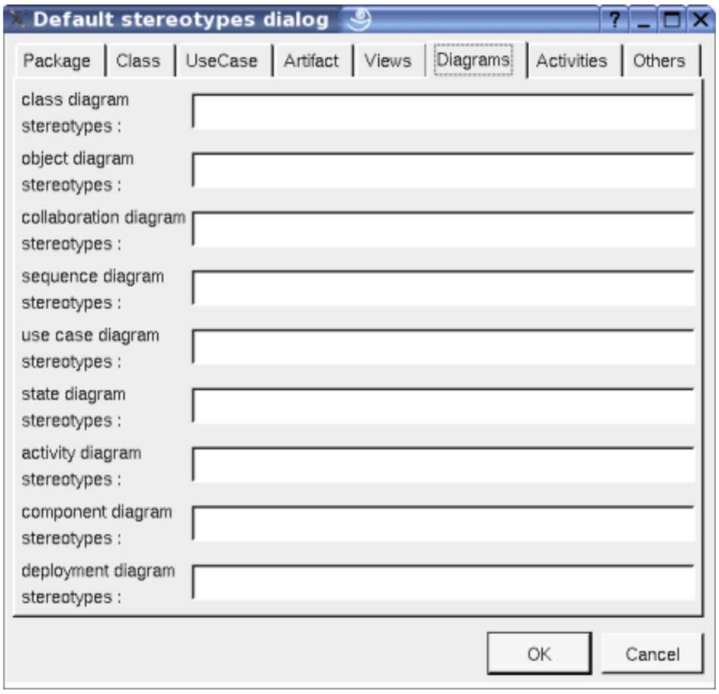
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



class diagram stereotypes :

object diagram stereotypes :

collaboration diagram stereotypes :

sequence diagram stereotypes :

use case diagram stereotypes :

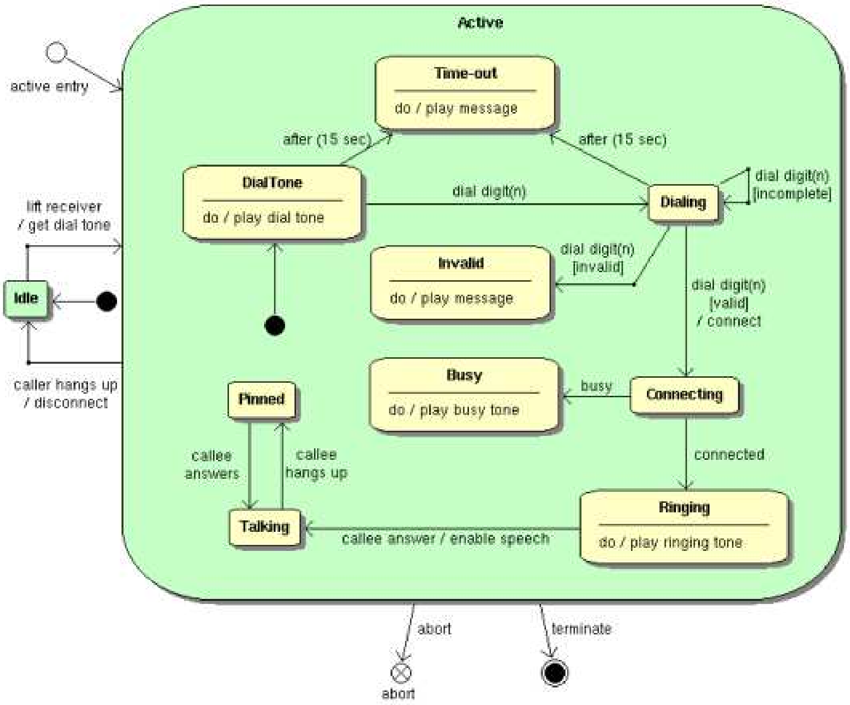
state diagram stereotypes :

activity diagram stereotypes :

component diagram stereotypes :

deployment diagram stereotypes :

Drawing



A *state diagram* may contain states, packages, fragment, notes, texts, diagram icons, pseudo states and the transitions.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

Warning : when you use the buttons to add a *state* or *pseudo state* and you click on a *state* drawing, the new state will be nested in the other state. In case you place the new *state* or *pseudo state* out of any *state* drawing, the new one will be nested in *state* owning the diagram.

To add a new relation between *states* and *pseudo states*, select the appropriate relation through the buttons on the top of the diagram sub window, click on the start *state* or *pseudo state* with the left mouse button, move the mouse, each time the mouse button is raised a new line break is introduced, at least click on the end *state* or *pseudo state*. To abort a relation construction press the right mouse button or do a double click with the left mouse button.

A line may be broken, during its construction of after clicking on the line with the left mouse button and moving the mouse with the mouse button still pushed. To remove a line break, a double click on the point with the left mouse button is enough, or use the line break menu of the point using the right mouse button.

By default the lines go to the center of their extremities, to decenter a line click near the desired extremity and move the mouse click down. To come back to a center line, use the menu geometry

The *scale* may be changed from 30 up to 200 %. To allows to see the operation/message kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

control v is a shortcut to paste the selected diagram's elements

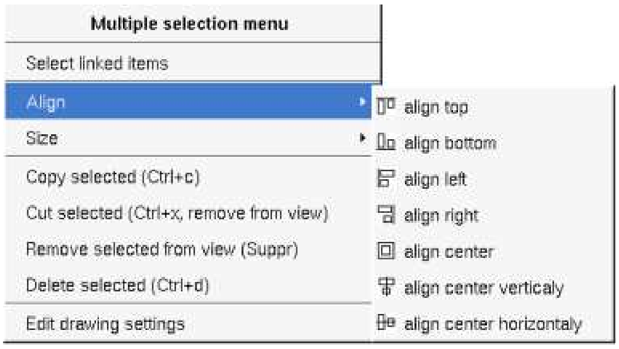
control z and *control u* are a shortcut of *undo*

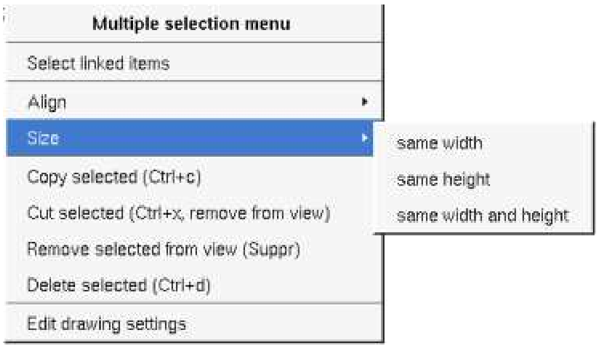
control r and *control y* are a shortcut of *redo*

the keyboard arrows allow to move the selected items

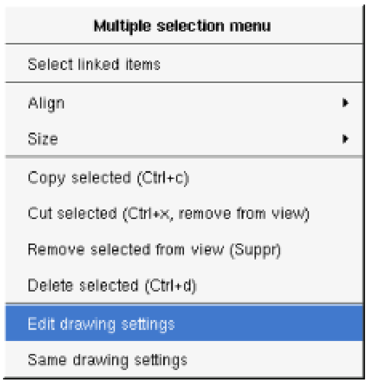
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

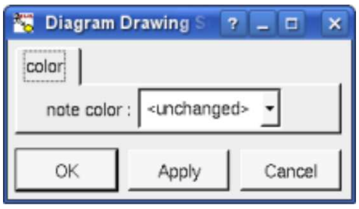




If all the selected elements has the same kind (for instance all are a state), you edit their *drawing settings* globally :



and for instance when the elements are notes :



note color : <unchanged>

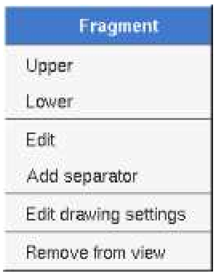
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

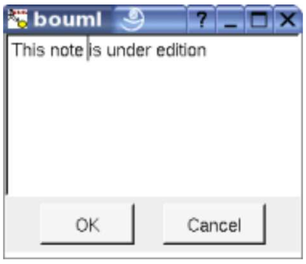
A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

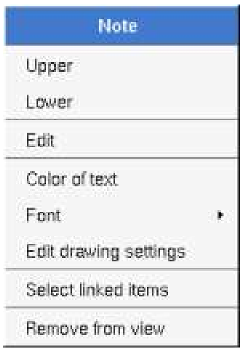
Note

A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text “*upper diagram :”* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see “*upper diagram :*” on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

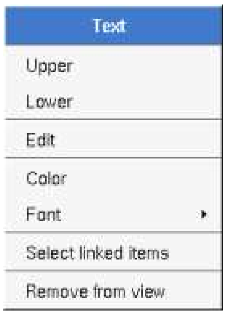
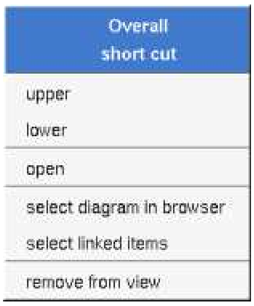


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

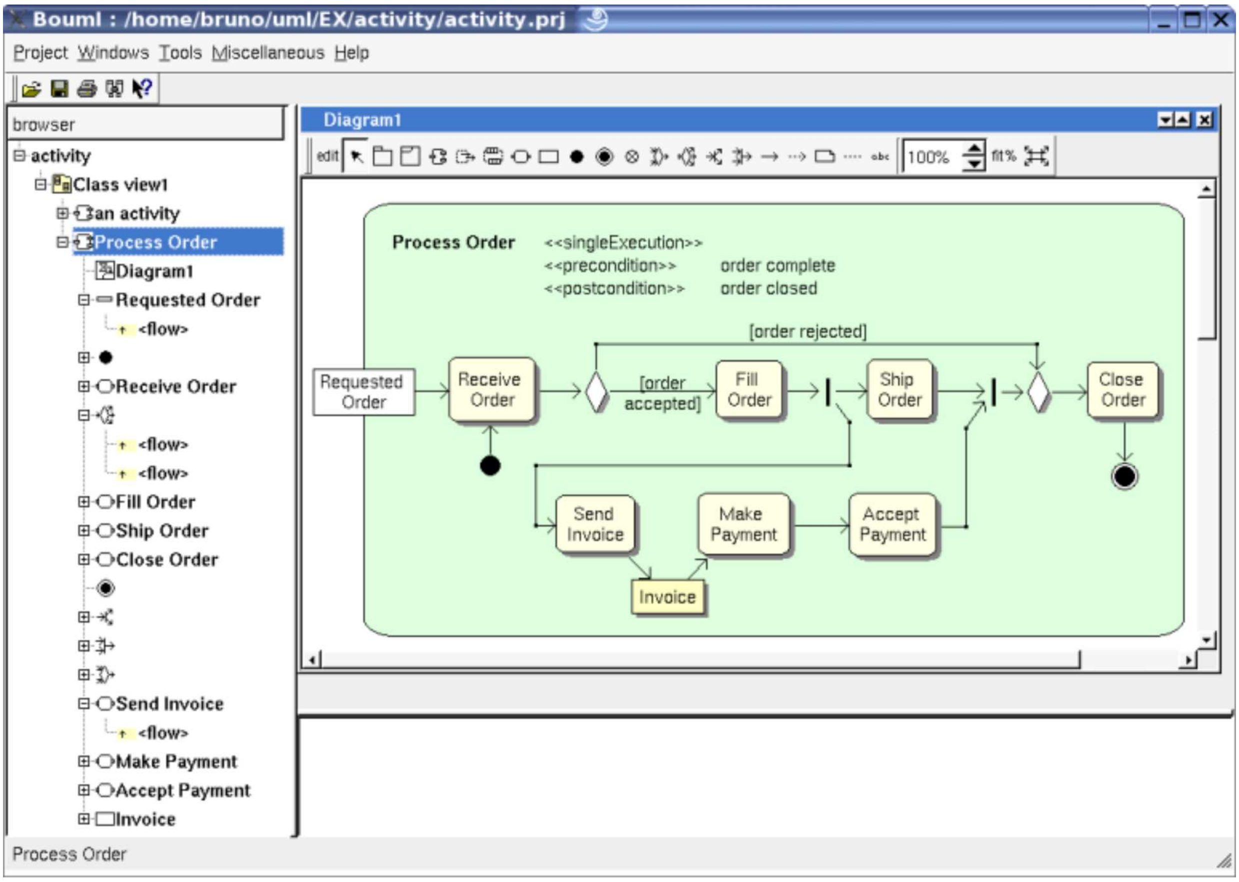


The other diagram's elements have an own chapter, refer to them.

Previous : class diagram

Next : activity diagram

Activity diagram

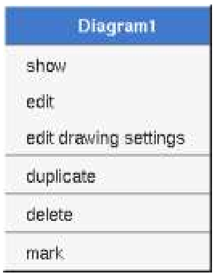


The *activity diagrams* may be placed in an activity

A *activity diagram* is created through the *new activity diagram* entry of the activity browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



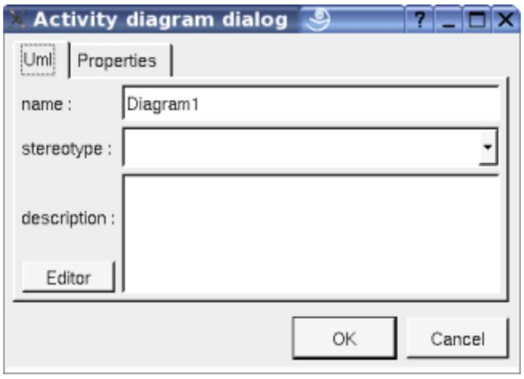
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

Activity diagram dialog, tab Uml



name : Diagram1

stereotype :

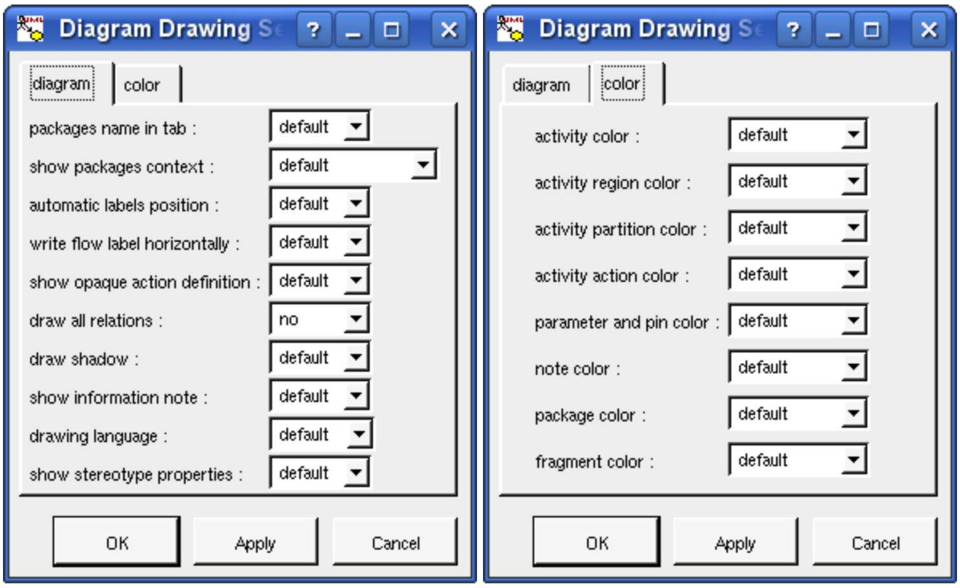
description :

The proposed ***stereotypes*** are the default one specified through the [Default stereotypes dialog]() more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML.

The ***editor*** button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the [environment dialog](). Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

[Browser Menu]() : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



packages name in tab : default
show packages context : default
automatic labels position : default
write flow label horizontally : default
show opaque action definition : default
draw all relations : no
draw shadow : default
show information note : default
drawing language : default
show stereotype properties : default

activity color : default
activity region color : default
activity partition color : default
activity action color : default
parameter and pin color : default
note color : default
package color : default
fragment color : default

- *show packages context* : To indicate if the context where the package is defined must be written, and if yes, how. The context may be the "UML context" which is the path of the package in the browser, or the C++ *namespace*, or the Java *package* or at least the Idl *module*. See [package context]().
- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in a diagram when the relation is edited or the associated Activity pictures moved etc ...
- *write flow label horizontally* : to write the flow description on only one line or each information on a different line.
- *show opaque action definition* : to write the name of an *opaque action* or its *behavior* definition
- *show information note* : to show or not the notes associated to the *condition, selection and transformation*, and also to write or not the *activity*'s conditions.
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.
- *drawing language* : to indicate which language must be used to write the definitions

[Browser Menu]() : duplicate

Clone the diagram in a new one

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

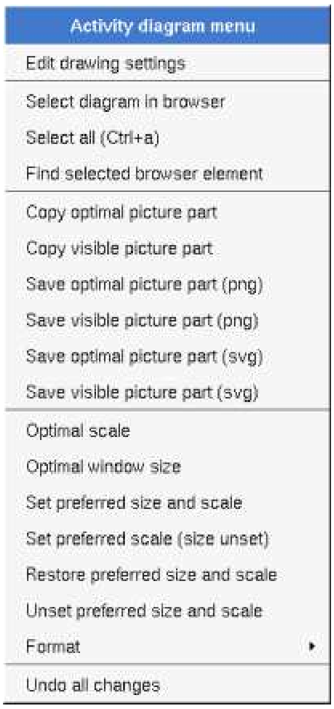
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Activity diagram menu
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Find selected browser element
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, may also be done through *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible picture part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472

- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

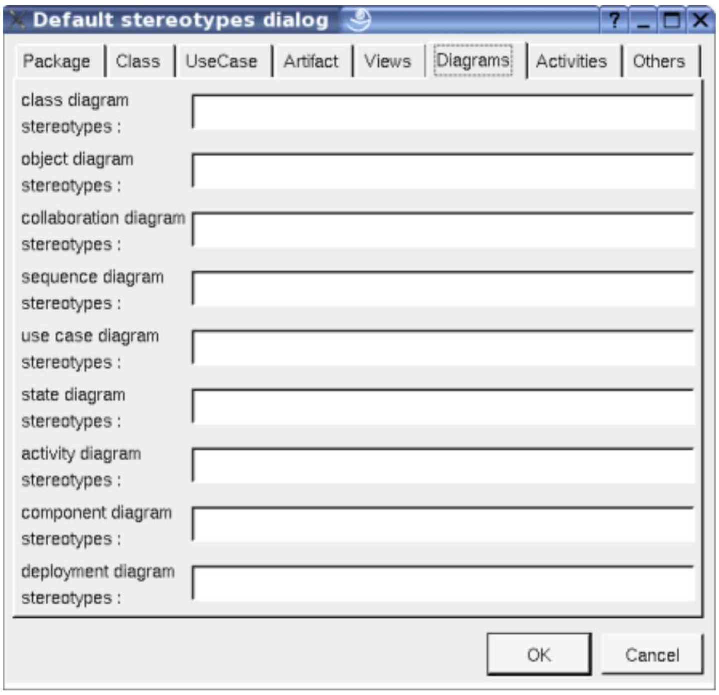
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

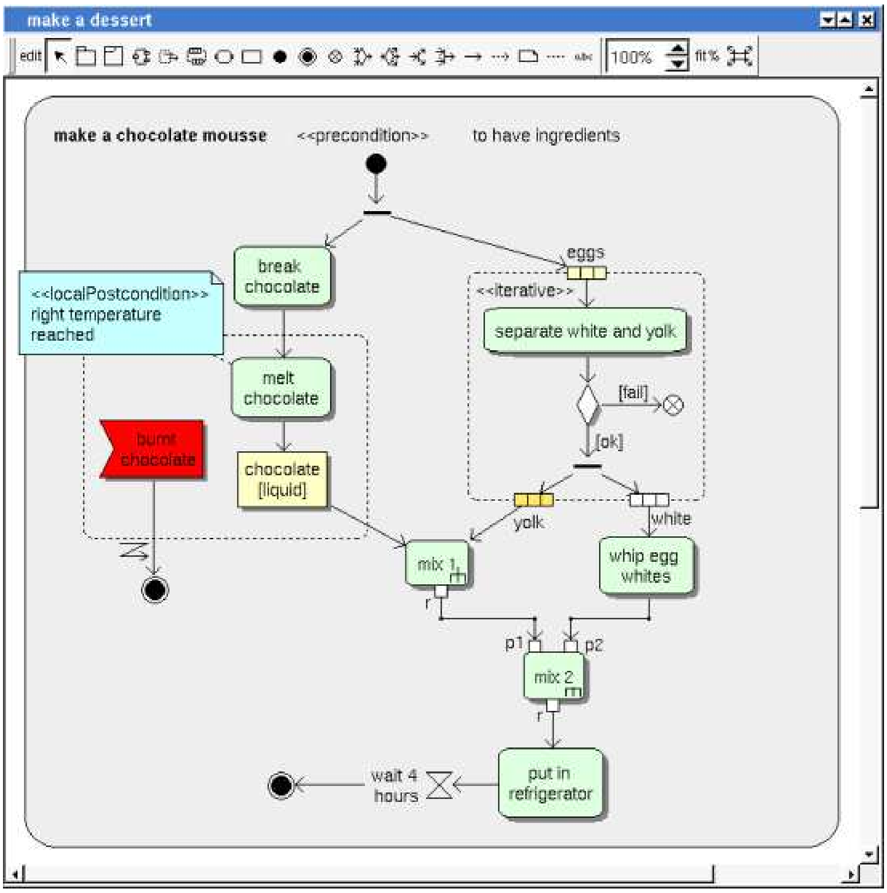
Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



class diagram stereotypes :
object diagram stereotypes :
collaboration diagram stereotypes :
sequence diagram stereotypes :
use case diagram stereotypes :
state diagram stereotypes :
activity diagram stereotypes :
component diagram stereotypes :
deployment diagram stereotypes :

Drawing



A *activity diagram* may contain activity, activity regions, activity actions, activity objects, activity control nodes, packages, fragment, notes, texts, diagram icons, and the flows.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

Warning : when you use the buttons to add an *activity node* and you click on a *activity* or *region* drawing, the new activity will be nested in the *activity* or *region*. In case you place the new *element* out of any *activity* or *region* drawing, the new one will be nested in *activity* owning the diagram.

To add a new *flow* or *dependency* between elements, select the appropriate arrow through the buttons on the top of the diagram sub window, click on the start element with the left mouse button, move the mouse, each time the mouse button is raised a new line break is introduced, at least click on the end element. To abort a line construction press the right mouse button or do a double click with the left mouse button.

A line may be broken, during its construction of after clicking on the line with the left mouse button and moving the mouse with the mouse button still pushed. To remove a line break, a double click on the point with the left mouse button is enough, or use the line break menu of the point using the right mouse button.

By default the lines go to the center of their extremities, to decenter a line click near the desired extremity and move the mouse click down. To come back to a center line, use the menu geometry

The *scale* may be changed from 30 up to 200 %. To allows to see the operation/message kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram *control a* is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

control v is a shortcut to paste the selected diagram's elements

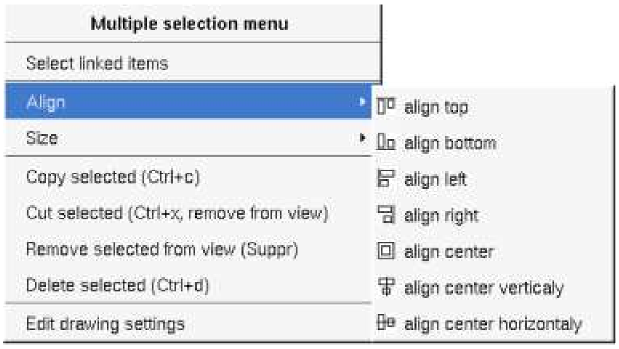
control z and *control u* are a shortcut of *undo*

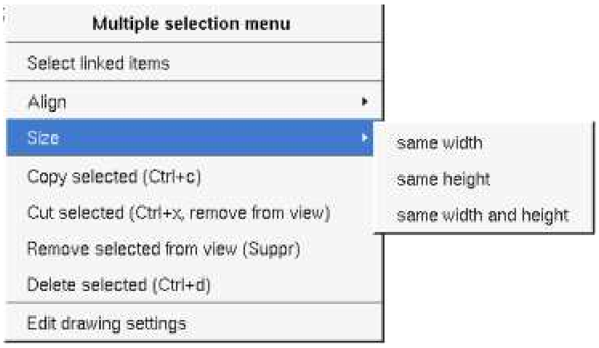
control r and *control y* are a shortcut of *redo*

the keyboard arrows allow to move the selected items

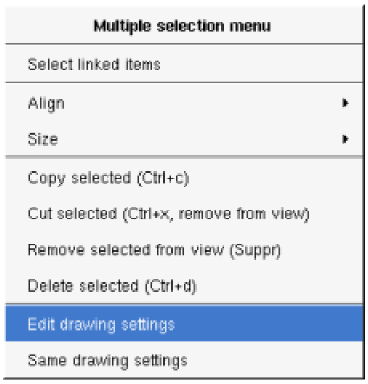
You can define your own shortcut using the shortcut editor through the *Miscellaneous* menu.

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

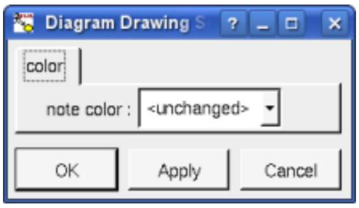




If all the selected elements has the same kind (for instance all are a activity action), you edit their *drawing settings* globally :



and for instance when the elements are notes :



note color : <unchanged>

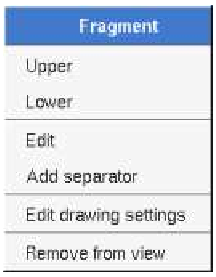
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

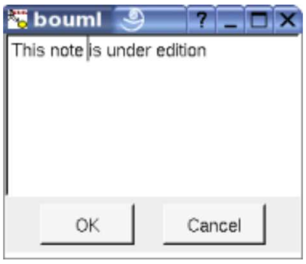
A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

Note

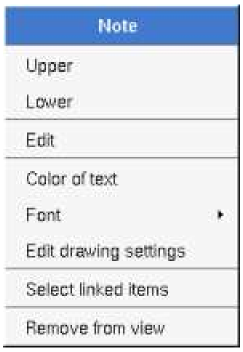
A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



This note is under edition

A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :"* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

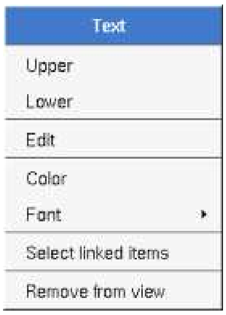
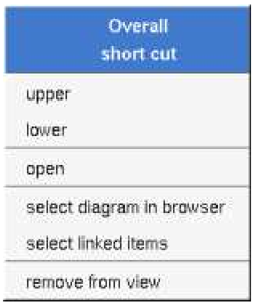


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

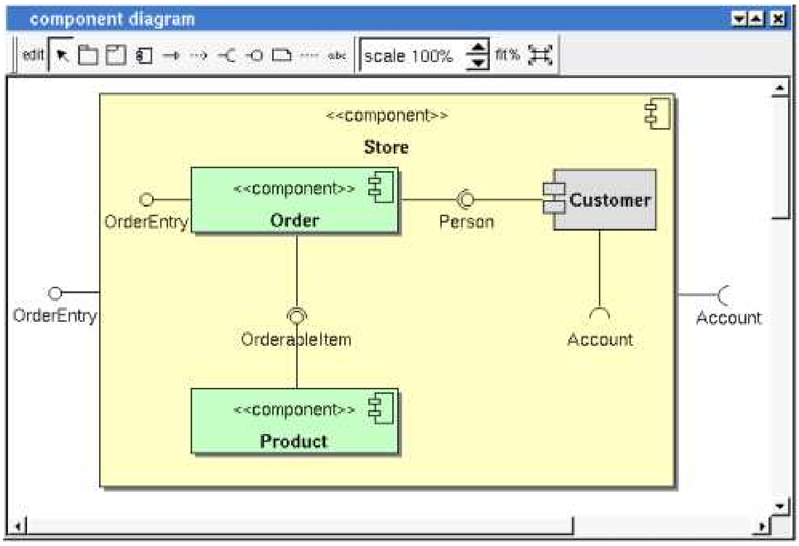


The other diagram's elements have an own chapter, refer to them.

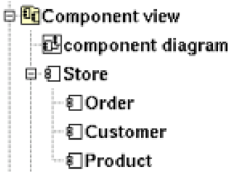
Previous : state diagram

Next : component diagram

Component diagram



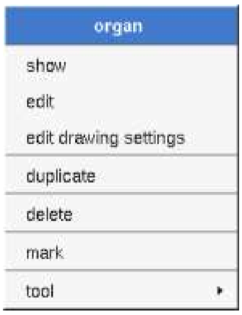
The component diagrams may be placed in a component view



A component diagram is created through the *new component diagram* entry of the component view browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



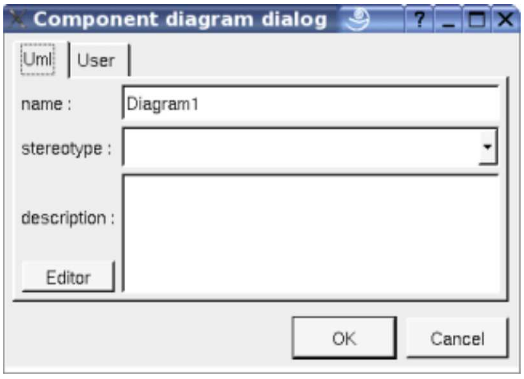
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

component diagram dialog, tab Uml



name : Diagram1

stereotype :

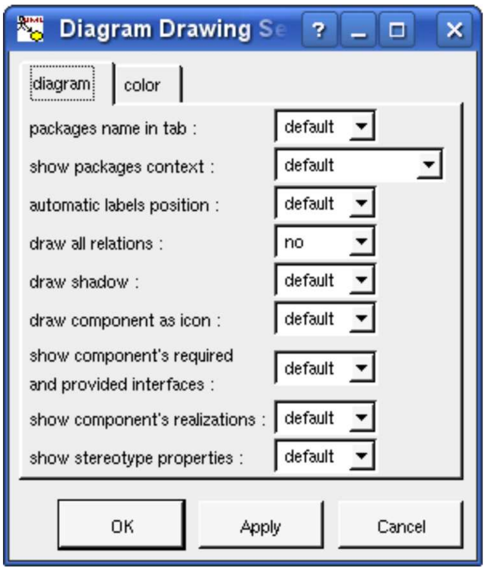
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Browser Menu : edit drawing settings

This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



packages name in tab : default

show packages context : default

automatic labels position : default

draw all relations : no

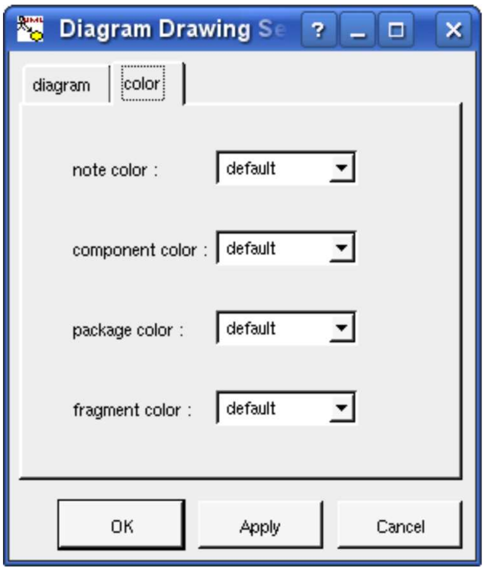
draw shadow : default

draw component as icon : default

show component's required and provided interfaces : default

show component's realizations : default

show stereotype properties : default



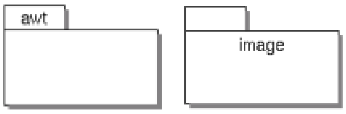
note color : default

component color : default

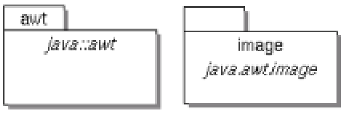
package color : default

fragment color : default

- *package name in tab* : to indicate if the packages's name must be written in the tab which is the small rectangle on the top :



- *show package context* : to indicate if the context where the packages are defined must be written, it is not the case just above. The context may be the “UML context” which is the path of the package in the browser (choice followed for *awt* below), or the C++ namespace specified by the package, or the Java package specified by the package (choice followed for *picture* below) or at least the Idl module :



- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in the diagram when the relation is edited or the linked items moved etc ...

- *draw component as icon* : by default the component drawing follows the UML 2.0 notation, this setting allows to use the old representation (see *customer*)
- *show component's required and provided interfaces*: to indicate if the required and provided interfaces of the component must be written in the drawing of the component as a compartment.
- *show component's realization* : to indicate if the realizations of the component must be written in the drawing of the component as a compartment.
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one in the same diagram view

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

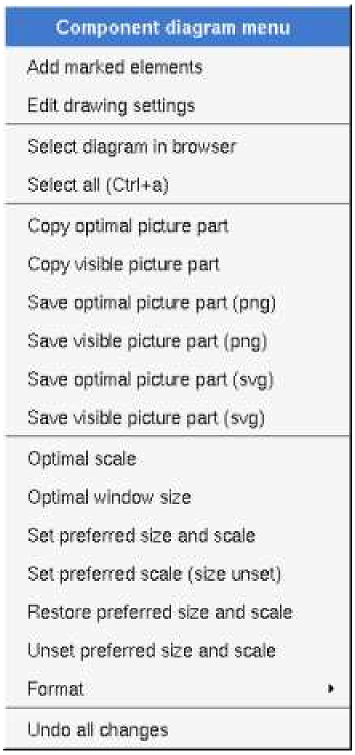
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Component diagram menu
Add marked elements
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : add marked elements

Only appears when a elements whose can be added in the diagram are marked in the browser, all these elements whose are not yet present in the diagram are added in the diagram, allowing to not have to do several *drag & drop* from the browser to them, but their position will probably not be the good one

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, may also be done through *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

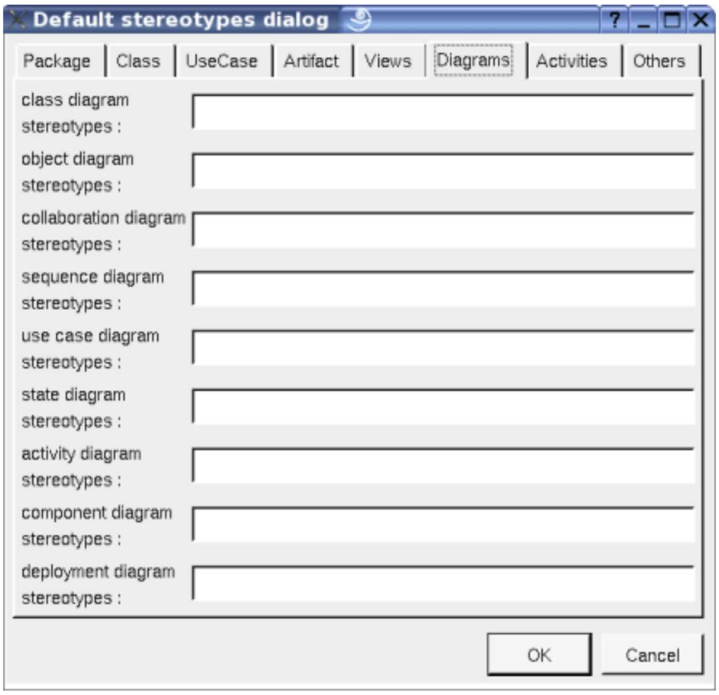
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



Default stereotypes dialog

class diagram stereotypes :

object diagram stereotypes :

collaboration diagram stereotypes :

sequence diagram stereotypes :

use case diagram stereotypes :

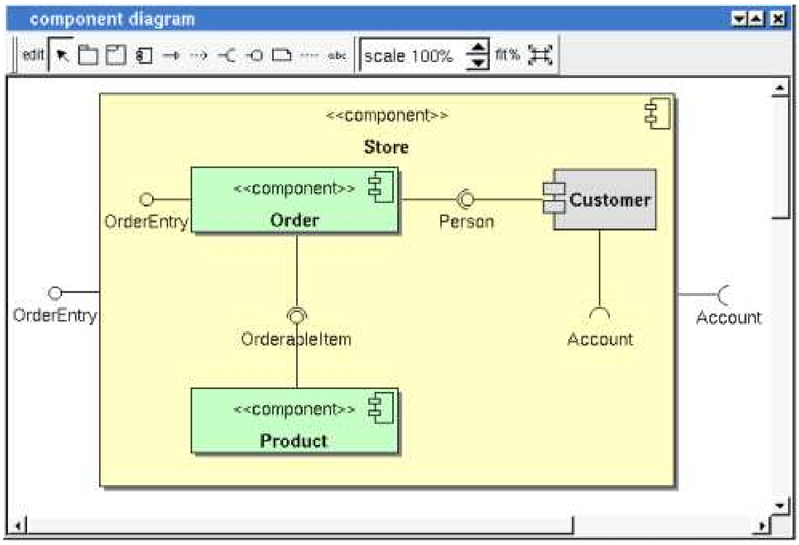
state diagram stereotypes :

activity diagram stereotypes :

component diagram stereotypes :

deployment diagram stereotypes :

Drawing



A component diagram may contain component, package, fragment, notes, texts, diagram icons and the relations.

Note that the association between components does not appears in the browser, there are establish/deleted throw the component diagrams or when you edit the component from where the relation start.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

To show a *required* or *provided* interface indications, use the appropriate button, click on the component, move the mouse click down and release the click on an already placed –(or –○ or nowhere, in this least case BOUML will ask you to select a class from the list set by editing the component (*OrderEntry* and *Account* are available for the component *Store* because *Customer* and *Order* are nested in *Store*).

The *scale* may be changed from 30 up to 200 %. To allows to see the relation kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

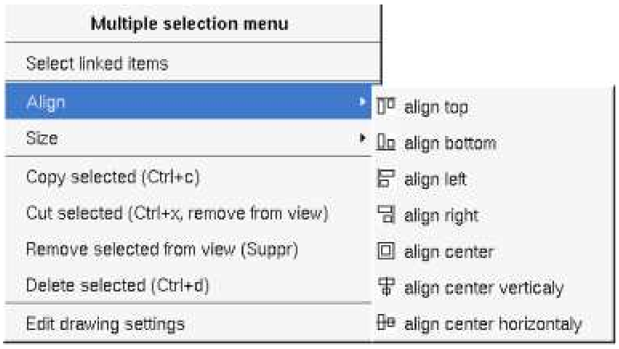
control v is a shortcut to paste the selected diagram's elements

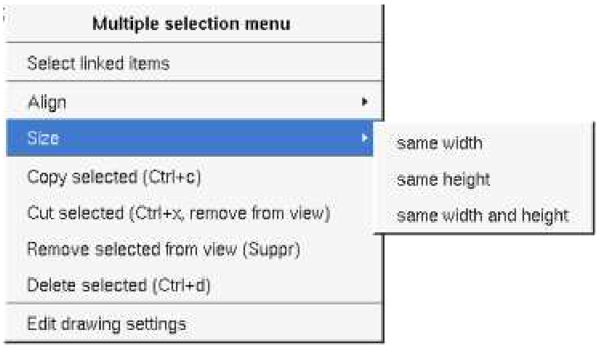
control z and *control u* are a shortcut of *undo*

control r and *control y* are a shortcut of *redo*

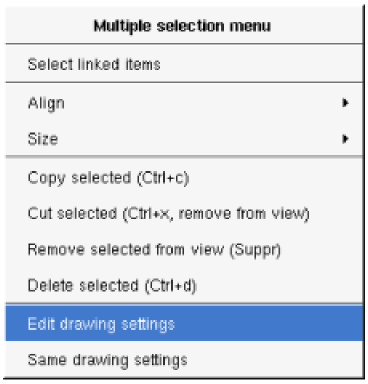
the keyboard arrows allow to move the selected items

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

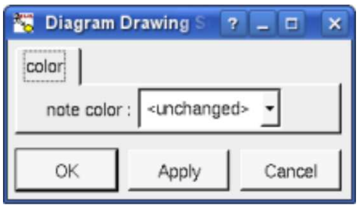




If all the selected elements has the same kind (for instance all are a class), you edit their *drawing settings* globally :



and for instance when the elements are notes :



note color : <unchanged>

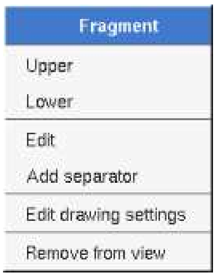
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

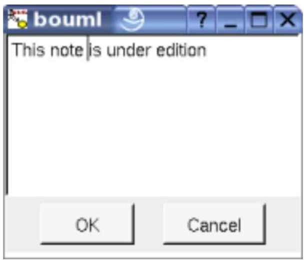
A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

Note

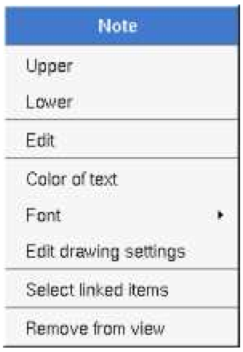
A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



This note is under edition

A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :"* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

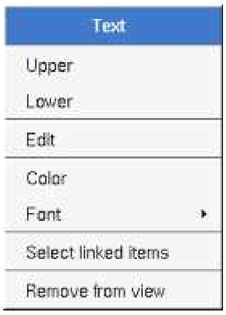
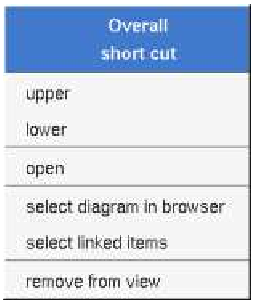


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :

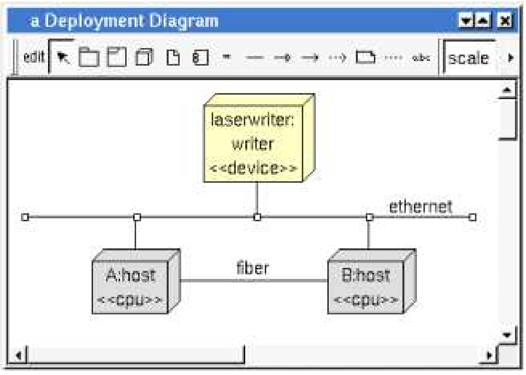


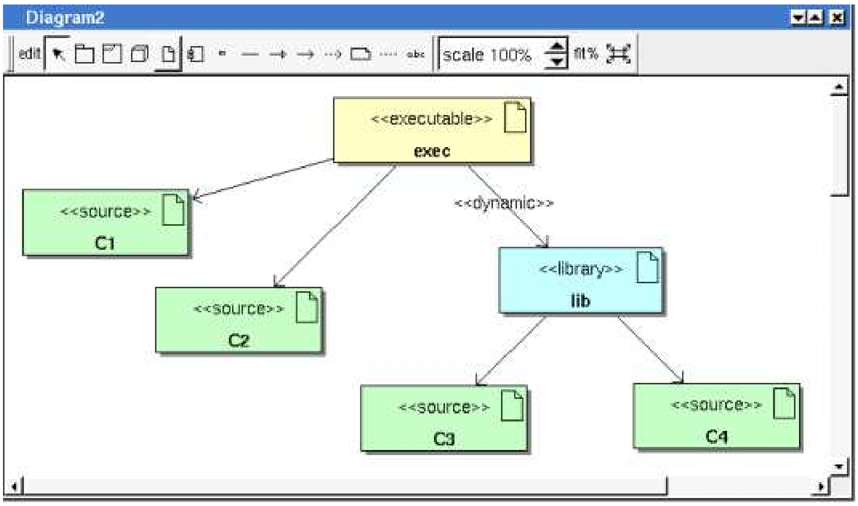
The other diagram's elements have an own chapter, refer to them.

Previous : class diagram

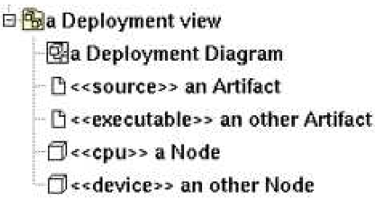
Next : deployment diagram

Deployment diagram





The deployment diagrams may be placed in a deployment view

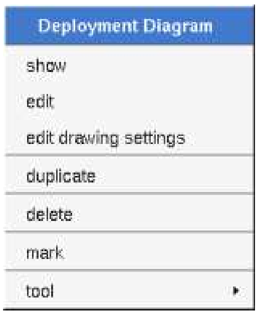


a Deployment view
a Deployment Diagram
<<source>> an Artifact
<<executable>> an other Artifact
<<cpu>> a Node
<<device>> an other Node

A deployment diagram is created through the *new deployment diagram* entry of the deployment view browser menus.

Browser menu

The node menu appearing with a right mouse click on its representation in the browser is something like these, supposing the diagram not *read-only* nor deleted :



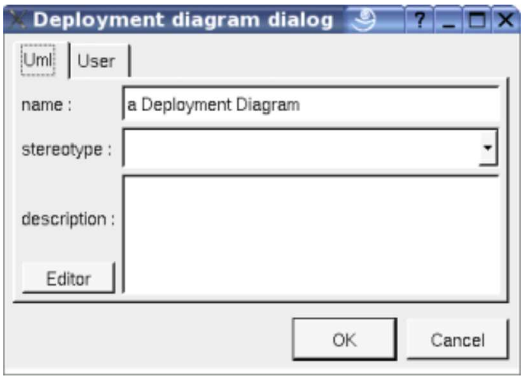
Browser Menu : show

show allows to show the diagram picture, and edit it in case it is not read only.

Browser Menu : edit

edit allows to show/modify the diagram properties. In case the diagram is read-only, the fields of the dialog are also read-only.

deployment diagram dialog, tab Uml



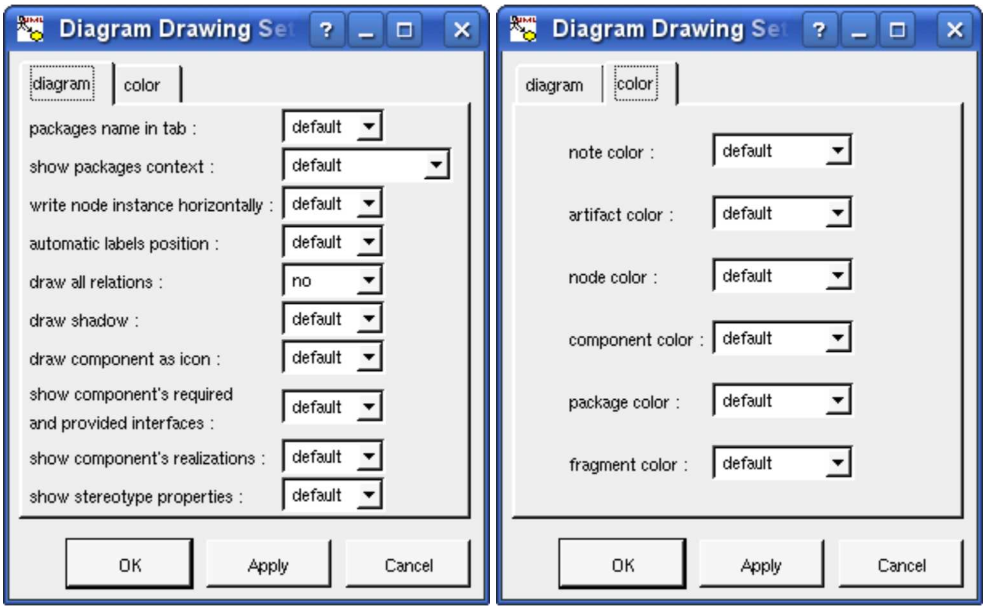
name : a Deployment Diagram
stereotype :
description :

The proposed ***stereotypes*** are the default one specified through the Default stereotypes dialog more the current one (empty here). It is possible to choose into the list or to give a new one, or to empty it. The *stereotype* of a diagram doesn't have a special meaning for BOUML

The *editor* button visible above and associated here to the description, allows to edit the description in an other window, or to call an external editor (for instance *Xcoral*) specified through the environment dialog. Note that this external editor have to create an own window, its parameter is the pathname of the file containing the description, its execution is done in parallel with BOUML which looks each second at the file contents to get the new definition until the dialog is closed (I do not like very much this polling but this works even QT isn't compiled with the thread support).

Browser Menu : edit drawing settings

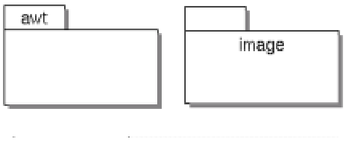
This dialog allows to specify how the items of the diagram must be drawn by default, you may choose *default* for each value, in this case the effective value if specified in the upper level (which itself may specify *default* etc ... up to the *project* level).



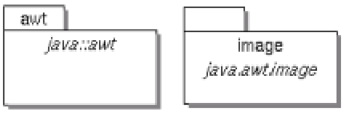
packages name in tab : default
show packages context : default
write node instance horizontally : default
automatic labels position : default
draw all relations : no
draw shadow : default
draw component as icon : default
show component's required and provided interfaces : default
show component's realizations : default
show stereotype properties : default

note color : default
artifact color : default
node color : default
component color : default
package color : default
fragment color : default

- *package name in tab* : to indicate if the package's name must be written in the tab which is the small rectangle on the top (note : a transparent *package* doesn't have shadow) :



- *show packages context* : to indicate if the context where the package is defined must be written, it is not the case just above. The context may be the “UML context” which is the path of the package in the browser (choice followed for *awt* below), or the C++ namespace specified by the package, or the Java package specified by the package (choice followed for *picture* below) or at least the Idl module :



- *write node instance horizontally* : Allows to write the the node type and the instance name on the same line (see host below) or on two lines (see laserwriter below).
- *automatic labels position* : To ask BOUML to move or to not move the associated labels on the relations in the diagram when the relation is edited or the linked items moved etc ...
- *show stereotype properties* : to indicate through a note the (non empty) value of the stereotype properties in case the element is stereotyped by a stereotype part of a profile. By default the stereotype properties are hidden.

Browser Menu : duplicate

Clone the diagram in a new one in the same deployment view.

Browser Menu : delete

The *delete* entry is only present when the diagram is not *read-only*.

Delete the diagram and all its representation in the opened diagrams. After that it is possible to undelete it (from the browser) until you close the project : obviously the deleted items are not saved !

Menu : mark

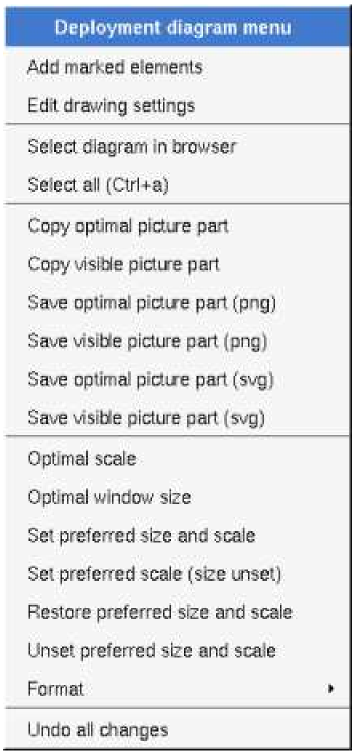
See mark

Browser Menu : tools

The menu entry *tool* is only present in case at least a *plug-out* may be applied on the diagram. The selected tool is called and applied on the current diagram.

Picture menu

The diagram menu appearing with a right mouse click out off any item in the diagram picture is something like these, supposing the diagram not *read-only* :


Deployment diagram menu
Add marked elements
Edit drawing settings
Select diagram in browser
Select all (Ctrl+a)
Copy optimal picture part
Copy visible picture part
Save optimal picture part (png)
Save visible picture part (png)
Save optimal picture part (svg)
Save visible picture part (svg)
Optimal scale
Optimal window size
Set preferred size and scale
Set preferred scale (size unset)
Restore preferred size and scale
Unset preferred size and scale
Format
Undo all changes

Picture Menu : add marked elements

Only appears when a elements whose can be added in the diagram are marked in the browser, all these elements whose are not yet present in the diagram are added in the diagram, allowing to not have to do several *drag & drop* from the browser to them, but their position will probably not be the good one

Picture Menu : edit drawing settings

see edit drawing settings.

Picture Menu : select all

Select all the items of the current diagram, may also be done through *control a*

Picture Menu : find selected browser element

To find in the diagram a representation of the elements selected in the browser

Picture Menu : optimal scale

similar to the *fit scale* button, change scale to see all the diagram's elements at great as possible

Picture Menu : optimal window size

Similar to the button , change the size of the windows to see all the diagram's elements with the current scale

Picture Menu : copy optimal picture part

Copy all the diagram elements, equivalent to a *optimal windows size* followed by a *copy visible picture part* then a restore of the original windows size

Picture Menu : copy visible part

Put the visible part of the current diagram in the clipboard (*copy*), it is a screen copy, the current scale have impact on the picture quality.

It is also possible to print all (not only the visible part) the current diagram on printer or a file through the button

Picture Menu : save optimal picture part

To save all the diagram elements in a file, equivalent to a *optimal windows size* followed by a save *visible picture part* then a restore of the original windows size

Picture Menu : save visible picture part

To save the visible part of the current diagram in a file, it is a screen copy, the current scale have impact on the picture quality.

Picture Menu : set preferred size and scale

To memorize the current diagram sub window size and the current scale. These ones will be used the next time the diagram will be opened.

Picture Menu : set preferred scale

To memorize the current scale. These one will be used the next time the diagram will be opened.

Picture Menu : restore preferred size and scale

In case a preferred sub window size and preferred scale was set, follow them.

Picture Menu : unset preferred and scale

To stop to define a preferred size and scale was set

Picture Menu : format

By default the diagram's canvas size is 840 x 1188 points corresponding to an iso A4 format (210*4 x 297*4), all the available formats are :

- iso A5 : 592 x 840
- iso A4 : 840 x 1188
- iso A3 : 1188 x 1680
- iso A2 : 1680 x 2376
- iso A1 : 2376 x 3364
- iso A0 : 3364 x 4756
- USA A : 864 x 1116
- USA B : 1116 x 1728
- USA C : 1728 x 2236
- USA D : 2236 x 3456
- USA E : 3456 x 4472
- USA Letter : 864 x 1116
- USA Legal : 864 x 1424
- USA Tabloid : 1116 x 1728

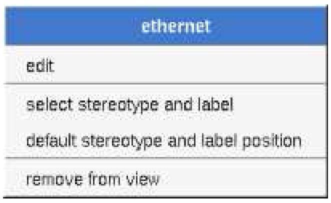
Each format also exists in *landscape* (it is *Ledger* in case of *Tabloid*)

Picture Menu : undo changes

Undo all the changes made since the diagram was opened the last time. Note that the diagram is restored independently of the the project saving. Obviously the deleted browser items was not restored !

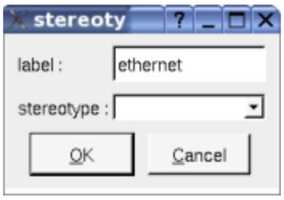
Network Menu

The menu appearing with a right mouse click on a network line is something like these, supposing the diagram not *read-only* :


ethernet
edit
select stereotype and label
default stereotype and label position
remove from view

Network Menu : edit

edit allows to edit the network :

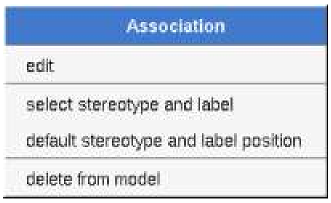


Network Menu : select stereotype and label

To select the network label and stereotype. Useful when you are lost after many label movings.

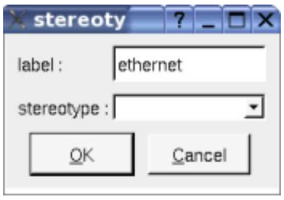
Artifact association Menu

The menu appearing with a right mouse click on an association between artifacts is something like these, supposing the diagram not *read-only* :


Association
edit
select stereotype and label
default stereotype and label position
delete from model

Association Menu : edit

edit allows to edit the association :



Association Menu : select stereotype and label

To select the association's label and stereotype. Useful when you are lost after many label movings. Only appears when the association have a stereotype or a label or both.

Association Menu : default stereotype and label position

To place the association's label and stereotype in the default position. Only appears when the association have a stereotype or a label or both.. Useful when you are lost after many label movings.

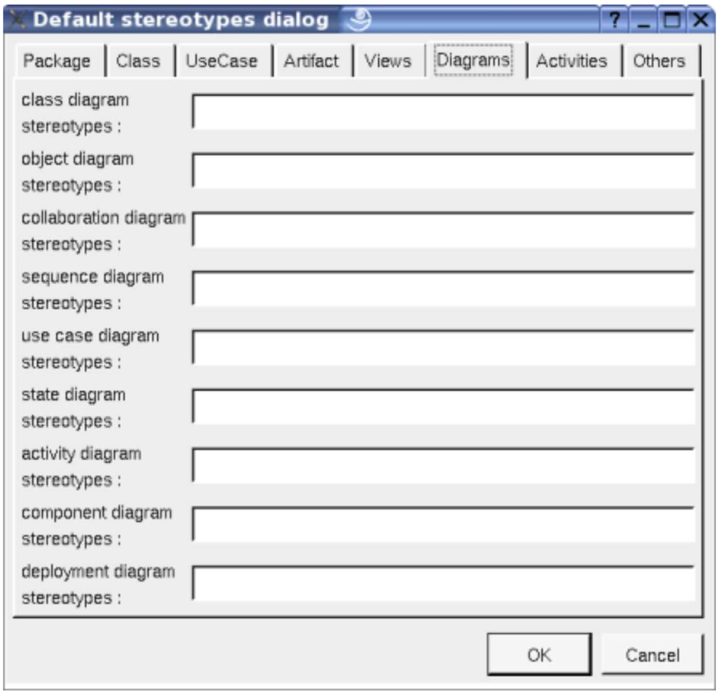
By default when you move a class or a relation point break or edit the relation, the associated labels are moved to their default position, this may be irritating. To ask BOUML to not move them automatically in a diagram, use the *drawing settings* of the diagrams.

Association Menu : delete from model

Remove the association.

Default stereotypes

The dialog allowing to set the default stereotypes has a tab reserved for the diagrams :



class diagram stereotypes :

object diagram stereotypes :

collaboration diagram stereotypes :

sequence diagram stereotypes :

use case diagram stereotypes :

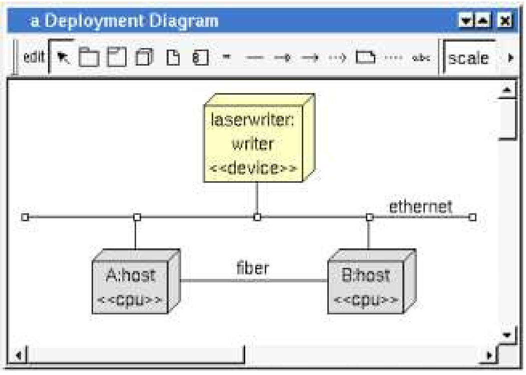
state diagram stereotypes :

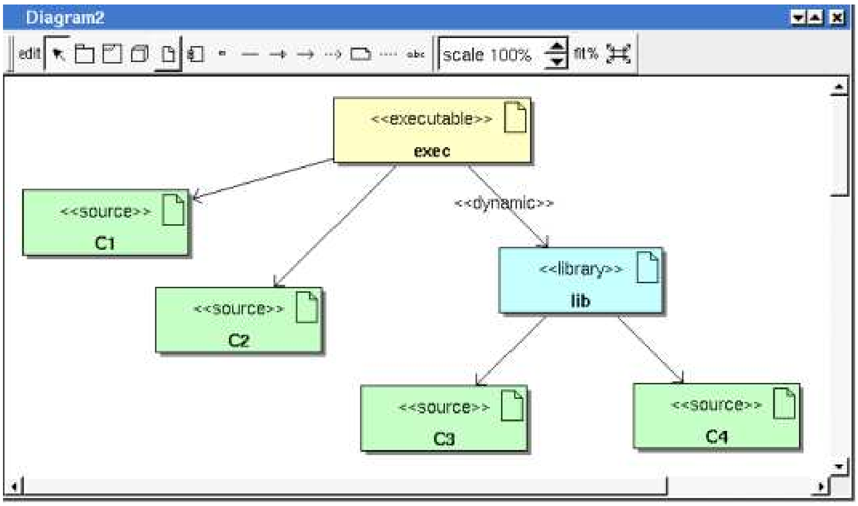
activity diagram stereotypes :

component diagram stereotypes :

deployment diagram stereotypes :

Drawing





A deployment diagram may contain deployment node, network line, network connexion, component, fragment, notes, texts, diagram icons and the relations.

To place these elements in the diagram, use the buttons on the top (to create a new element or choose from the already defined ones) then click at the appropriate position in the diagram, or *grab* the element from the browser into the diagram.

The ***network line***s may connect deployment nodes and/or network connexion. The ***network connexion***s (represented by small squares) allows to have network lines out of deployment node as it is the case in the picture above.

The *scale* may be changed from 30 up to 200 %. To allows to see the relation kinds even with a small scale, the size of the arrows is unmodified.

fit% allows to set the largest scale allowing to show all the picture, as it is possible. Because of the scrollbar management, hitting several times on *fit%* may give several scales.

Classically, the left mouse click may be used to select an element, or several when the *control* key is down, a multiple selection may also be done defining a region using the mouse left click out of any element and moving the mouse with the click and maintaining the click down. The diagram's elements may be moved after a left mouse click on an element and maintaining the click down during the mouse move. The right mouse click is used to show context dependent menus.

control s is a shortcut to save the project

control shift s is a shortcut to save the project in a new one

control p is a shortcut to print the active diagram

control a is a shortcut to select all the diagram's elements

control d is a shortcut to delete the selected element(s), the model is affected

suppr is a shortcut to remove the selected element(s) from the diagram, these elements are not deleted

control c is a shortcut to copy the selected diagram's elements

control x is a shortcut to cut (remove from view) the selected diagram's elements

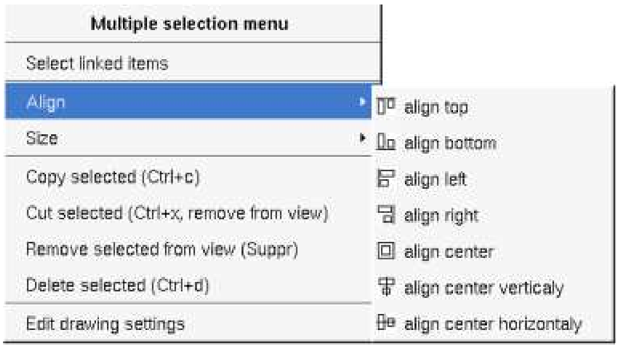
control v is a shortcut to paste the selected diagram's elements

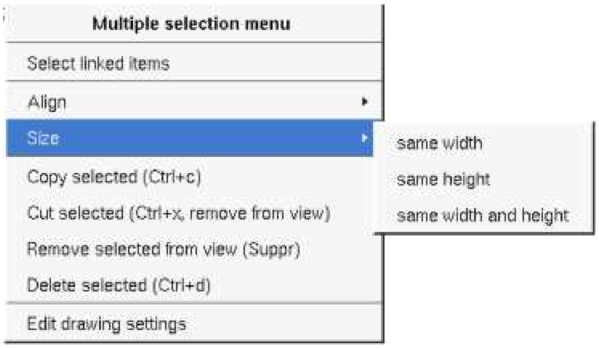
control z and *control u* are a shortcut of *undo*

control r and *control y* are a shortcut of *redo*

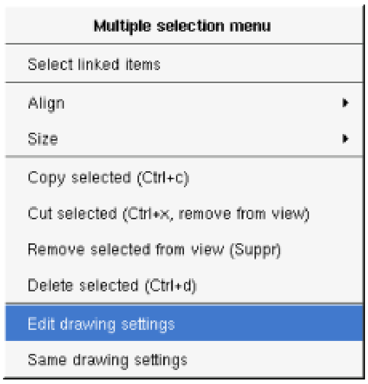
the keyboard arrows allow to move the selected items

When several diagram's elements are selected, the menu appearing on a left mouse click allows to align or resize them :

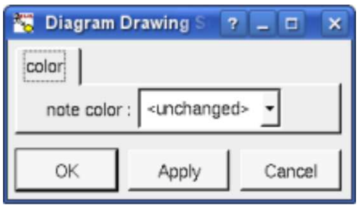




If all the selected elements has the same kind (for instance all are a class), you edit their *drawing settings* globally :



and for instance when the elements are notes :



note color : <unchanged>

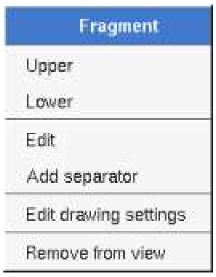
The settings valuing <*unchanged*> are not changed for the selected elements, in the other case the same value is set for all the elements.

You can also reuse the drawing settings set for the first selected element for the other selected elements.

Fragment

A *fragment* is resizeable. To change the fragment's name choose the *edit* entry of its menu or double click on it

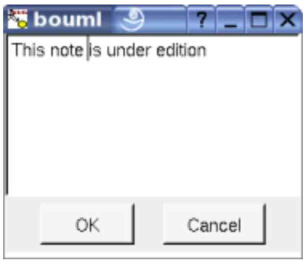
A right mouse click on a note show the following menu :



Edit drawing settings allows to change the fill color

Note

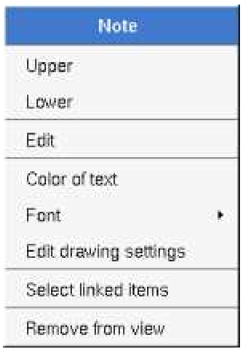
A *note* may contain any text, a note is resizeable. To change the text of a note choose the *edit* entry of its menu or double click on it, this open a window containing the text, close the window to end the edition :



This note is under edition

A right click on the edited note calls a dialog allowing some text manipulations thanks Qt.

A right mouse click on a note show the following menu :



The *font* may be changed, by default the font is the one used to write the other texts.

The color of the text may be changed, a text is black by default.

Edit drawing settings allows to change the fill color

Select linked items select all the items connected this the current one through any line, in the previous picture this select all except the package, the text "*upper diagram :"* and the use case diagram icon.

Text

Text is another way to write a text, contrary to the note a *text* is written alone (see "*upper diagram :*" on the picture below), by default a text contains *blabla*: a text cannot be empty. The edition of a text is done like for a note. A text is resizeable, a resize is not automatically done when the contains is modified.

A right mouse click on a *text* show the following menu :

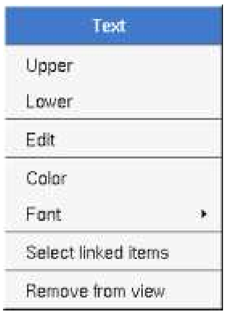
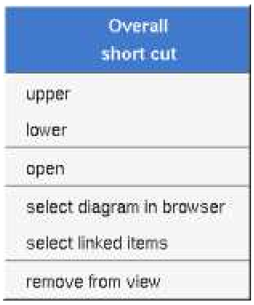


Diagram icon

A diagram icon is a shortcut to a diagram, this allows to quickly navigate through the diagram without limitation (a class or some other item kinds may be associated to only one diagram). The used icon indicates the diagram kind, but its name is not written.

A double mouse left click on a diagram icon opens the diagram, the *open* entry of the diagram icon menu does the same thing.

A right mouse click on a diagram icon show the following menu :



The other diagram's elements have an own chapter, refer to them.

Previous : component diagram

Next : profile

Profiles

A profile is supported by a package stereotyped *profile*, the main goal is to define stereotypes, themselves supported by classes stereotyped *stereotype.* A Stereotype has attributes producing properties on the element having this stereotype. *Plug-outs* can be associated to a stereotype to automatically call them when an element receive the stereotype or when the element was edited (the *plug-outs* are not called when the modifications are made through *a plug-out*). A profile can define standard classes, probably enumerations to type the stereotype's attributes.

When you stereotype an element you can choose to use a stereotype defined in a profile, or a non modeled stereotype (pure text).

When the set stereotype is defined in a profile, the associated properties (may be inherited) are automatically added to the element with the specified default value (may be empty), then the *plug-out* optionally associated to the setting of the stereotype is applied to the element receiving the stereotype. This is done after validating the new stereotype by validating the element edition through its dedicated dialog, so, if you want to modify the element's properties associated to its stereotype you have to edit the elements two times : one to set the stereotype, the second to set the properties to the desired values. Nothing is done when the stereotype is set through a *plug-out.*

When you unset or change the stereotype and it was a stereotype defined in a profile, the associated properties (may be inherited) are automatically removed. Nothing is done when the stereotype is modified through a *plug-out.*

By default the values of the stereotype properties for a stereotyped element are not shown in the diagrams, to show them through notes set the drawing setting *show stereotype properties*

A stereotypes defined in profile can be projected in stereotype known by a code generator by defining the projection through the generation settings, like for textual stereotypes.

Contrarily to some other modelers, you can modify profiles and stereotypes even when there are applied to elements, and stereotypes part of a profile are applicable immediately in the model where there are defined without asking for that explicitly.

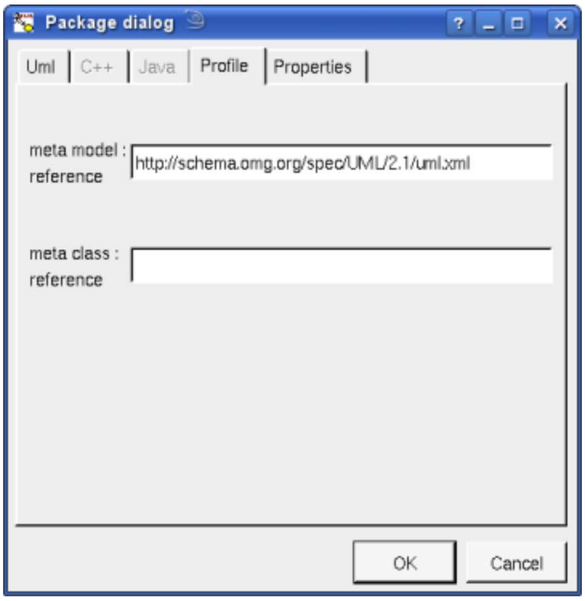
Profile

A package-profile has some restrictions regarding to the standard packages :

- the menus doesn't propose to add sub deployment view nor component view
- the dialog doesn't give access to the *C++, Java, Idl* nor *python* tabs
- the dialog doesn't propose to generate / reverse / roundtrip

To create a new profile, use the package menu entry *New profile* and enter its name or cancel its creation. Obviously you can also add profiles in a project by importing a project definition profiles, and you can also add a package then change its stereotype to *profile*.

When you edit a package-profile the dedicated tab *profile* is enabled :



meta model : reference http://schema.omg.org/spec/UML/2.1/uml.xml

meta class : reference

When the stereotype of the package is *profile*, the tab *Profile* allows to set the meta model reference (by default *http://schema.omg.org/spec/UML/2.1/uml.xml*, specifies the value of the href produced in the XMI through an imported package) and meta class reference (specifies the value of the href produced in the XMI through an imported element). For a *plug*-out there are supported by the properties *metamodelReference* and *metaclassreference*.

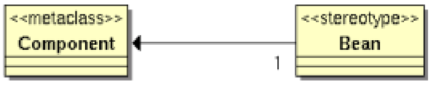
When you delete a profile, Bouml asks for to propagate or not the deletion. If the propagation is done all the its stereotypes are also deleted and the corresponding properties removed from the stereotyped elements.

When a profile is defined in an other project and you re-import it to upgrade its use : delete the profile asking for to not propagate the deletion, then imports the new definition. In case used profiles are coming from several other projects, process step by step, before importing a given project defining a group of stereotypes delete these profiles and only them, then import the project. In case profiles are placed under a package grouping them, delete the profiles directly, don't delete them by deleting the container package because Bouml doesn't ask for to not propagate the deletion when the profiles are deleted indirectly.

Stereotype

A class-stereotype has some restrictions regarding to the standard classes:

- it doesn't have an associated artifact
- it doesn't have projection in the languages (C++, Java ...)
- the menu doesn't propose to add a sub-class
- the dialog doesn't propose to generate / reverse / roundtrip
- the unidirectional associations from the class to *meta classes* (classes stereotyped *metaclass*) are drawn as extensions and indicate the extended *meta classes.* The explicit multiplicity 1 indicates the extension is required :

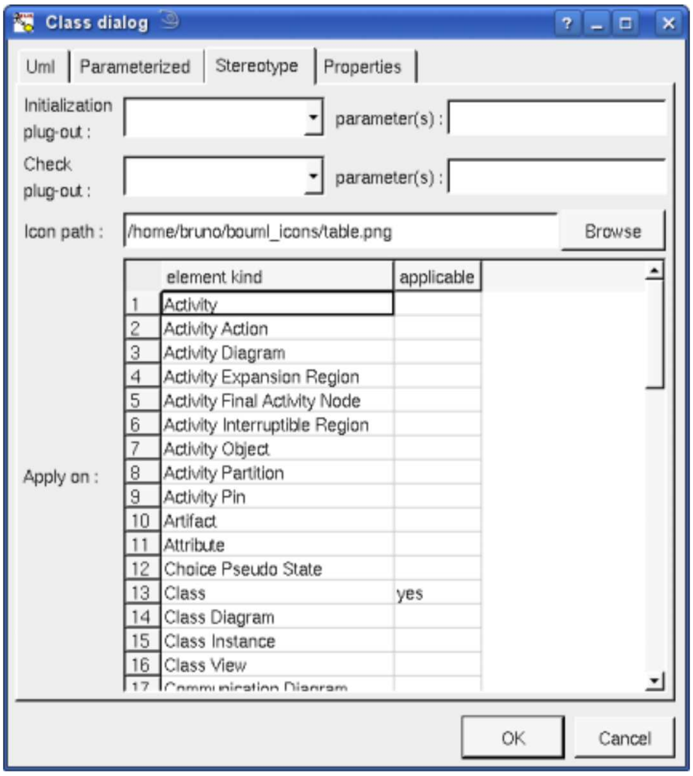


- the attributes support the attribute of the properties. For the element receiving the stereotype, each property's name is the name of the profile followed by ':' followed by the name of the stereotype followed by a ':' followed by the name of the stereotype attribute. The type of an attribute is considered to be a string in case it is not an enumeration (a class stereotyped *enum*).
- a class-stereotype can generalize or realize other class-stereotypes and inherits attributes

Bouml doesn't manage OCL, so the constraints aren't checked, however you can attach *plug-outs* to a class-stereotype, refer to the corresponding dialogs described below.

To create a stereotype in a profile, choose the menu entry *New stereotype* proposed by the menu of a class view part of a package-profile.

When you edit a class-stereotype the dedicated tab *stereotype* is enabled :



Initialization plug-out : parameter(s) :

Check plug-out : parameter(s) :

Icon path : /home/bruno/bouml_icons/table.png

Apply on :

	element kind	applicable
1	Activity	
2	Activity Action	
3	Activity Diagram	
4	Activity Expansion Region	
5	Activity Final Activity Node	
6	Activity Interruptible Region	
7	Activity Object	
8	Activity Partition	
9	Activity Pin	
10	Artifact	
11	Attribute	
12	Choice Pseudo State	
13	Class	yes
14	Class Diagram	
15	Class Instance	
16	Class View	
17	Communication Diagram	

The tab *Stereotype* allows to set who is extended, the elements on which the stereotype applies, and to set dedicated plug-outs :

- *initialization plug-out* : indicate the *plug-out* to be applied after the edition of an element setting its stereotype to the current stereotype. When the *plug-out* is applied the stereotype's attributes was already added to the element and initialized with their default values. It is your responsibility to call the corresponding *plug-out* for the inherited stereotypes. Obviously to set this *plug-out* is optional.

- *check plug-out* : indicates the *plug-out* to be applied after the edition of an element which stereotype is unchanged. It is your responsibility to call the corresponding *plug-out* for the inherited stereotypes. This *plug-out* is also called when a children in the *browser* tree is edited. Obviously to set this *plug-out* is optional.

- *parameters* : to give parameters to the *plug-out* allowing to limit the number of *plug-outs*, and for instance to define only one plug-out for a *profile* and to use these parameters to to indicate the stereotype and if this is an initialization or a check.

- *icon path* : to specify an icon, several kind of image can be used depending on the QT release (png, gif, jpeg, xpm ...). If specified this icon will be always used in the browser for the elements having this stereotype except when there are deleted, the image is resized to have its width and weight less or equal to 16. In a diagram the image is used without modification when the scale is 100%, else it is resized. This image is used in the diagrams for classes when the drawing mode is natural, components when you ask for to use an icon, packages (context not written), state actions (behavior not written), activity object nodes, deployment nodes and artifacts

- *apply on* : to set the types of element on which the stereotype can be applied, to filter the stereotypes and to not propose all the stereotypes part of profiles on any element. Note this field is set independently of who is extended, the consistency is not checked.

Note : these *plug-outs* aren't called when the modifications are made by an other *plug-out*.

The extension is supported by an implicit attribute whose name is prefixed by *base_*, for instance *base_Element* when the stereotype extends *http://schema.omg.org/spec/UML/2.1/uml.xml#Element*

For a *plug-out* the list of elements on which the stereotype applies is supported by the property *stereotypeApplyOn* and the attached *plug-outs* are supported by the properties *stereotypeSet* and *stereotypeCheck* and their parameters by *stereotypeSetParameters* and *stereotypeCheckParameters*. The icon path is attached to the property *stereotypeIconPath*.

If the stereotype *MyStereotype* is defined in the profile *MyProfile*, an element stereotyped by *MyStereotype* has in fact the stereotype *MyProfile:MyStereotype*, and this couple of name must be unique without considering the case of the characters. You have to use the full stereotype name in the generation setting if you to project it in the target languages.

When you delete a profile (may be by changing its stereotype to not be *profile*), all its stereotypes are of course also deleted (except if the deletion is not propagated). When you rename a profile, the stereotypes of the elements are updated. When you move a class view out of a profile, the own stereotypes are first deleted and may be re-created after if the new package is a profile, the stereotyped elements are updated.

When you delete a stereotype (perhaps changing its stereotype to not be *stereotype* or moving its container class view), the stereotype and the associated properties are removed on the elements having this stereotype, the elements having a stereotype inheriting the deleted stereotype are also updated to remove the associated properties. When you rename a stereotype, the properties of the elements having its stereotype or having a stereotype inheriting it are also renamed. When you undelete a stereotype the consistency of the information related to the stereotypes is forced. Nothing is done when the stereotype is deleted through a *plug-out* except if this one calls *UmlBasePackage::updateProfiles()*.

When you modify the inheritance between stereotypes, the properties of the elements are added/removed. When you undelete an inheritance between stereotypes the consistency of the information related to the stereotypes is forced. Nothing is done when the inheritance is modified through a *plug-out* except if this one calls *UmlBasePackage::updateProfiles()*.

When you add/delete a stereotype attribute, the corresponding property of the elements are added/removed. When you undelete a stereotype attribute the consistency of the information related to the stereotypes is forced. Nothing is done when the modifications is done through a *plug-out* except if this one calls *UmlBasePackage::updateProfiles()*.

When you load a model the consistency of the information related to the stereotypes is forced, adding or removing properties on the stereotyped elements. You can also ask for that phase, this is useful when you delete profiles without propagation and you want later to propagate the deletions, or when the modifications was made through a *plug-out*. You can also ask for to apply the plug-out dedicated to check the stereotyped elements.

Meta classes

A meta class is a class stereotyped *metaclass*

The path of a meta class (by default *http://schema.omg.org/spec/UML/2.0/uml.xml* or *http://schema.omg.org/spec/UML/2.1/uml.xml* depending on the XMI generation) is memorized through the property (tagged value) *metaclassPath*.

Previous : Deployment diagram

Next : C++ generator

C++ Generator

The C++ code generator is a *plug-out* directly written in C++ (the C++ code generator does not generate itself !).

The generated sources follows the definition made in BOUML at the artifact / class / operation / relation / attribute / extra member levels.

When the code generation is applied on a artifact associated to several classes, the code generation is made for all these classes. Nevertheless the C++ code generator produce first the code in memory and update the appropriate files only when it is necessary, to not change the last write date of the files for nothing. Depending on the toggle *verbose code generation* of the global menu *Languages* the code generator is verbose or not.

The C++ code generator *plug-out* may be called on :

- a class : in this case the code generation is in fact applied on the class's artifact, then on all the classes associated to this artifact
- a artifact : in this case the code generation is in fact applied on all the classes associated to the artifact
- a class view : the code generation will be applied on all the sub classes, then on all the artifacts associated to these classes
- a deployment view : the code generation is applied on all the sub artifacts
- a package (may be the project itself) : the code generation will be applied on all the sub class views and deployment views, then on all their sub classes and artifacts.

When the C++ code generator is ask through the Tools menu, it is applied on the project, then on all the artifacts.

The name of the generated files depend on the artifact name, the extension depend on the language and is fixed for each by the generations settings (see below), the directory where the files are generated may be set in each package containing directly or indirectly the artifact (see generation directory).

artifact

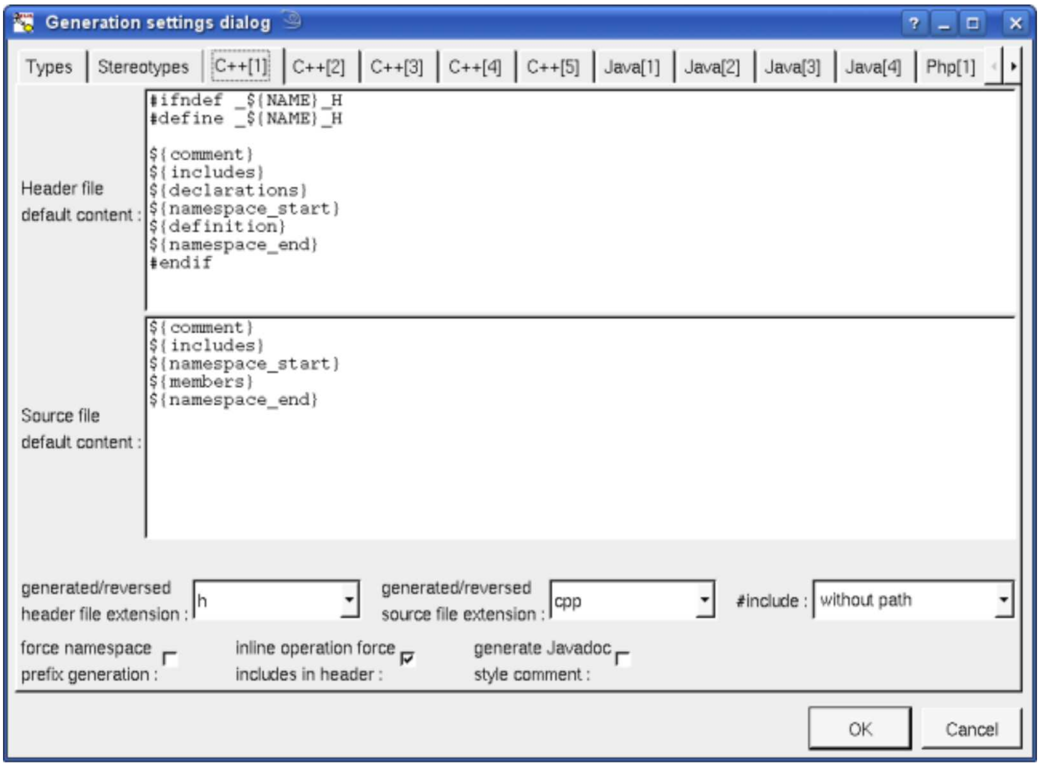
The C++ definition of a artifact is set through the C++ header and C++ source tabs of the artifact dialog.

The code generation depend on the stereotype of the artifact :

- *text* : the C++ definition of the artifact is produced without changes, the name of the generated file is the name of the artifact, including the extension.
- *source* : see below.
- else nothing is generated for the artifact.

artifact header C++

The generated file name is the artifact's name with the extension specified in the first C++ tab of the generations settings :



Header file default content :

```
#ifndef _${NAME}_H
#define _${NAME}_H

${comment}
${includes}
${declarations}
${namespace_start}
${definition}
${namespace_end}
#endif
```

Source file default content :

```
${comment}
${includes}
${namespace_start}
${members}
${namespace_end}
```

generated/reversed header file extension : h

generated/reversed source file extension : cpp

#include : without path

force namespace prefix generation : □

inline operation force includes in header : ☑

generate Javadoc style comment : □

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the C++ code generator are :

- ***${NAME}*** produce the artifact name capitalized, ***${Name}*** produce the artifact name with the first letter capitalized, ***${nAME}*** produce the artifact name forced in lowercase, at least ***${name}*** produce the artifact name without modification.

- ***${comment}*** is replaced by the artifact description adding //

- ***${description}*** is replaced by the artifact description without adding //

- ***${includes}*** is replaced by the automatically generated *#include* and *using* forms, it is also a good place to add your *#include* and *using* forms, when the ones produced by the code generator are not sufficient. To limit the included files number and to not produce circular #include, the C++ code generator does not produce an *#include* to define a type only used by pointer (*) or reference (&) or place between <> in a template form. The C++ code generator does not look at in the operations body, only the operation's profiles, relations and attributes, classes inheritances etc ... are used to compute the needed *#include* list. You can also use dependencies between classes to add *#includ*e, and to choose to place them in the header of the source file editing the dependency tab C++. *${includes}* and *${all_includes}* are exclusive.

  Note : the generation settings allows to choose between four ways to produce #include :

- *without path* : ask for the C++ code generator to generate the #include without relative or absolute path

- *with absolute path :* ask for the C++ code generator to generate the absolute path of the automatically included files.

- *with relative path :* ask for the C++ code generator to generate the relative path of the automatically included files, relative to the file containing the #include

- *with root relative path* : ask for the C++ code generator to generate the relative path of the automatically included files, relative to the directory specified by the *generation settings*

- ***${all_includes}*** is replaced by all the automatically generated *#include* and *using* forms, it is also a good place to add your *#include* and *using* forms, when the ones produced by the code generator are not sufficient. In this case the code generator doesn't produce declarations in the header file nor *#include* in the source file, except the ones added by you. *${all_includes}* and *${includes}* are exclusive.

- ***${declarations}*** is replaced by the class declarations when the *#include* form is not produced, it is also a good place to add your declarations, when the ones produced by the code generator are not sufficient. Produce nothing if *${all_includes}* is used.

- ***${namespace_start}*** is replaced by the *namespace xx {* forms, dependent on the *namespace* specifications associated to the package containing the *deployment view* where the artifact is defined.

- ***${definition}*** is replaced by the definition of the classes associated to the artifact.

- ***${namespace_end}*** is replaced by the *}* forms, dependent on the *namespace* specifications associated to the package containing the *deployment view* where the artifact is defined.

- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the *artifact*, if not found for the *deployment view* containing the *artifact*, if not found in the *package* containing the *deployment view* etc ...

When *inline force include in header* is set the types referenced in the profile of the *inline* operations produce includes in the header, else the code generator doesn't take care if there are *inline* operations to compute dependencies

artifact source C++

The generated file name is the artifact's name with the extension specified in the first C++ tab of the generations settings.

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the C++ code generator are :

- ***${NAME}*** produce the artifact name capitalized, ***${Name}*** produce the artifact name with the first letter capitalized, ***${nAME}*** produce the artifact name forced in lowercase, at least ***${name}*** produce the artifact name without modification.

- ***${comment}*** is replaced by the description of the artifact adding //

- ***${description}*** is replaced by the artifact description without adding //

- ***${includes}*** if ***${all_includes}*** is not used in the header definition, it is replaced by the automatically generated *#include* and *using* forms, corresponding to the declaration generated in the header file. If *${all_includes}* is used in the header definition, it is replaced by the *#include* of the header. It is also a good place to add your *#include* and *using* forms.

- ***${namespace_start}*** is replaced by the *namespace xx {* forms, dependent on the *namespace* specifications associated to the package containing the *deployment view* where the artifact is defined.

- ***${members}*** is replaced by the non *inline* members of the classes associated to the artifact.

- ***${namespace_end}*** is replaced by the *}* forms, dependent on the *namespace* specifications associated to the package containing the *deployment view* where the artifact is defined.

- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the *artifact*, if not found for the *deployment view* containing the *artifact*, if not found in the *package* containing the *deployment view* etc ...

Class

The C++ definition of a class is set through the Uml, Parametrized, Instantiate and C++ tabs of the class dialog.

A C++ type definition may be a class, a struct, an union, an enum or a typedef, depending on the stereotype and its translation in C++ (see generation settings).

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the C++ code generator are :

- ***${comment}*** is replaced by the description of the class adding //

- ***${description}*** is replaced by the class description without adding //

- ***${template}*** produce a template declaration in case the class is a template class

- ***${name}*** is replaced by the class's name

- ***${inherit}*** is replaced by the class inheritance

- ***${members}*** is replaced by the code generated for all the class's members (relations, attributes, operations and extra members) following the browser order.

- ***${items}*** only for the enums, is replaced by the enum's items

- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the class, if not found for the container of the class (an other class of a *class view)* etc ...

In the special case where the class is declared ***external***, its C++ type declaration must contains at least one line indicating how the name of the class is generated, the other lines will be added in the header file of the *components* referencing the class. By default the first line only contain *${name}* meaning that the name is produced unchanged, the only allowed keywords are *${name}, ${Name}* and *${NAME}*. For instance you want to define the external class *string* and you want to automatically generate *#include <string>* followed by *using namespace std;* you just have to create the class *string*, to set it *external* in C++ and to have the declaration form :

```
${name}

#include <string>

using namespace std;
```

If you don't want to *use* the *namespace* and ask to write *std::string* the declaration must be :

```
std::${name}

#include <string>
```

Operation

The C++ definition of an operation is set through the Uml and C++ tabs of the operation dialog.

The indentation of the first line of the declaration/definition give the indentation added to the visibility specification in the class definition for all the operation declaration/definition (except for the pre-processor forms beginning by # whose are placed at the beginning of the line).

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the C++ code generator are :

- ***${comment}*** is replaced by the description of the operation adding //
- ***${description}*** is replaced by the operation description without adding //
- ***${static}*** produce *static* when the operation is a class operation (see the UML tab)
- ***${const}*** produce *const* when the operation is const
- ***${volatile}*** produce volatile when the operation is volatile
- ***${friend}*** produce *friend* when the operation is friend
- **${*virtual*}** produce *virtual* when the oprration is virtual
- ***${inline}*** produce *inline* when the operation is inline
- ***${type}*** is replaced by the returned value type (see the UML tab)
- ***${name}*** is replaced by the operation's name
- ***${class}*** is replaced by the name of the class containing the operation.
- ***${(}*** and ***${)}*** produce (and), but there are also a mark for BOUML to find the parameters list
- ***${abstract}*** produce the string = 0 when the operation is abstract (see the UML tab)
- ***${staticnl}*** produce a line break when the operation is static, else an empty string.
- ***${t<n>}**, **${p<n>}*** and **${v<*n*>}** produce the type, name and default value of each parameter (count from 0), this allows you to remove a parameter, add type modifiers etc ...
- ***${throw}*** is replaced by the form *throw (...)* when at least an exception is defined in the UML tab. It is also possible to produce *throw()* when there is no exception depending on the generation settings.
- ***${body}*** is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body}* has a great advantage : when you hit ***Default definition*** or ***From declaration*** the body is not cleared ! At least BOUML share the declaration and definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! The indentation of the keyword *${body}* is added at the beginning of each line except the ones starting by a '#' or when the previous one ends by '\'.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the operation, if not found for the class containing the operation etc ...
- A ***template operation*** is defined with an empty declaration (allowing Bouml to detect this case) and placing the actuals between *${class}* and *::* in the declaration part.

If the toggle *preserve operations's body* is set through the *Languages* menu, the generators do not modify the body of the operations protected by dedicated delimiters. This means that for them the body definition set through BOUML is not used. The first time you generate the code with the toggle set, because the delimiters are not yet present in the generated code, the operation's body will be updated depending on their definition under BOUML. After, while the toggle is set and the delimiters present, the bodies will not change, allowing you to modify them out of BOUML.

Notes :

- In case the file containing a body definition is not consistent with the artifact under BOUML, the body will be regenerated by the code generation, using its definition under the model. Of course an operations becoming *inline* or stopping to be *inline* is not a problem.
- When you import a project, the body of the imported operations must be the right one in the imported model. The preserved bodies of the imported operations will not be find because the identifier of an operation used to mark its body changes during the import.
- The bodies under the model are not updated by the code generation, use roundtrip body for that
- Only the operations using the keyword *${body}* may have a preserved body.
- The only modification you can do in the lines containing the delimiters is the indent.
- The toggle is saved in the file associated to the project, be sure the save is done when you change this toggle !

Attribute

The C++ definition of an attribute is set through the Uml and C++ tabs of the attribute dialog.

The indentation of the first line of the definition give the indentation added to the visibility specification in the class definition for all the attribute definition (except for the pre-processor commands beginning by # whose are placed at the beginning of the line).

An attribute may be a standard attribute or the item of an enumeration.

standard attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the C++ code generator are :

- ***${comment}*** is replaced by the description of the attribute adding //
- ***${description}*** is replaced by the attribute description without adding //
- ***${static}*** produce *static* when the attribute is a class attribute (see the UML tab)
- ***${mutable}*** produce *mutable* when the attribute is mutable
- ***${volatile}*** produce *volatile* when the attribute is volatile
- ***${const}*** produce *const* when the attribute is const (see the UML tab)
- ***${type}*** is replaced by the type of the attribute (see the UML tab)
- ***${stereotype}*** is replaced by the translation in C++ of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab), must be used in case the multiplicity is a vector or array dimensioning ([and] are added when they are not present).
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***${value}*** is replaced by the initial value of the *static* attribute in the definition part generated in the source file (see the UML tab), *${value}* and *${h_value}* are exclusive
- ***${h_value}*** is replaced by the initial value of the *static* attribute in the declaration part generated in the header file (see the UML tab), *${value}* and *${h_value}* are exclusive
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

enumeration item

The macros known by the C++ code generator are :

- ***${comment}*** is replaced by the description of the item adding //
- ***${description}*** is replaced by the item description without adding //
- ***${name}*** is replaced by the item's name (see the UML tab)
- ***${value}*** is replaced by the value of the item (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

Relation

The C++ definition of a relation is set through the Uml and C++ tabs of the relation dialog.

The indentation of the first line of the definition give the indentation added to the visibility specification in the class definition for all the relation definition (except for the pre-processor commands beginning by # whose are placed at the beginning of the line).

Relation equivalent to an attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the C++ code generator are :

- ***${comment}*** is replaced by the description of the relation adding //
- ***${description}*** is replaced by the relation description without adding //
- ***${static}*** produce static when the relation is a class relation (see the UML tab)
- *$**{const}*** produce const when the relation is read-only (see the UML tab)
- ***${type}*** is replaced by the class pointed by the relation (see the UML tab)
- ***${name}*** is replaced by the relation's role name (see the UML tab)
- ***${inverse_name}*** is replaced by the name of the inverse role (see the UML tab)
- ***${value}*** is replaced by the initial value of the *static* relation in the definition part generated in the source file (see the UML tab), *${value}* and *${h_value}* are exclusive
- ***${h_value}*** is replaced by the initial value of the *static* relation in the declaration part generated in the header file (see the UML tab), *${value}* and *${h_value}* are exclusive
- ***${mutable}*** produce *mutable* when the relation is mutable
- ***${volatile}*** produce *volatile* when the relation is volatile
- ***${stereotype}*** is replaced by the translation in C++ of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab), must be used in case the multiplicity is a vector or array dimensioning ([and] are added when they are not present).
- ***${association}*** is replaced by the association class (see UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the relation, if not found for the class containing the relation etc ...

Dependency

A dependency having the stereotype *friend* produce a C++ friend declaration of the pointed class.

With an other stereotype the dependency may produce an *#include* of the artifact associated to the target class, and you can choose to place this *#include* in the header or source file by editing the dependency usingn the tab C++.

Inheritance

The class inheritance are managed at the class level.

- ***${type}*** is replaced by the name of the inherited class more the *actuals* if the generated class instantiate a *template*.

Extra member

The C++ definition of an extra member is set through the C++ tabs of the extra member dialog.

No macros.

Previous : profile

Next : C++ reverse

C++ reverse

The *C++ code reverse* is a *plug-out* directly written in C++, as the C++ generator.

Note that the *C++ code reverse* cannot be used as a C++ code round trip and doesn't allows to update already defined classes having at least one member. Furthermore the preprocessing phase is not made by the *C++ code reverse* whose ignore all the preprocessor forms, but some substitutions may be asked, see at the end of this chapter.

The *C++ code reverse plug-out* may be applied only on packages.

When you start the *C++ code reverse*, it asks you for directories (enter the directories then choose *cancel* to start the reverse), then it reads all the sources placed under the selected directories and sub-directories. The sources read by the *C++ code reverse* are the ones having the extension specified in the generation settings. The tree formed by the directories and sub-directories produce an equivalent tree of sub-packages, on whose the needed class view and artifact view are made to support the classes and artifacts. When a type is referenced but not defined in the reverse files, a class having the same name is defined under an additional package named *unknown*.

The *reverse/roundtrip* setting dialog of the modeler allows to specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs.

Obviously the *C++ code reverse* tries to produce the definitions made in BOUML at the artifact / class / operation / relation / attribute levels. When it is possible it creates a relation rather than an attribute.

Except for the special case of the templates class definition like *vector<bool>*, a artifact is created for each type definition, then a future C++ code generation may not produce a list of files similar to the reversed ones.

A C function cannot be specified in UML, the *C++ code reverse* loses them (generating a warning) except the ones declared *friend* in a class.

The *C++ code reverse* works in two steps, during the first step it scans all the files to establish the list of defined types, then the second step may reverse the files. The first phase tries to replace the missing *#include* management, but it is not enough because the files whose are not under the selected directory (for instance the standard headers files !) are never taken into account and the synonym types are confusing.

When the *C++ code reverse* has a problem, for instance when it reads a C function definition, it produces a warning in the trace window. The trace window is automatically opened by BOUML, it may also be manually opened through the Tools menu.

To do simple substitution on the read files : edit the *project* (top level *package*) to add a *user property* (through the tab '*Properties*') with the key *#file* and the value must be the absolute pathname of a file. Each line of the specified file must contain :

- just an identifier : in this case this identifier will be ignored during reverse. This is like *#define identifier*
- a form *identifier=value* : in this case the identifier will replaced by the value during reverse. The value must a token, for instance an other identifier, a float, a string etc. This is like *#define identifier value*.

Warning : the lines must not contains spaces or tabs.

Previous : C++ generator

Next : C++ roundtrip

C++ roundtrip

The *C++ code roundtrip* is a *plug-out* directly written in C++

The *C++ code roundtrip* updates from sources the classes of the model, add missing ones and remove useless classes (after confirmation). If you use Bouml to generate C++ code it is not recommended to also use the C++ roundtrip because you will loose preprocessing forms and C functions and other forms not representable in UML. The roundtrip is mainly dedicated to update a model used for documentation purpose.

The behavior of the *C++ code roundtrip plug-out* depends on the kind of the element it is applied :

- applied on a class it updates this classes and nested classes, the other classes may be defined in the same file (having the same associated artifact) are not updated nor the artifact. The plug-out can't be applied on a nested class
- applied on an artifact it updates the artifact and all the associated classes, and add classes newly defined in the associated source file
- applied on a class view it updates all the classes of the view and their nested classes, the other classes may be defined in the corresponding files (associated to the same artifacts) are not updated nor the artifacts
- applied on a deployment view it updates all the artifacts in the view and their associated classes, and add classes newly defined in the associated source files
- applied on a package it updates all the artifacts and classes defined under this packages and sub packages, and all the classes associated to the artifacts defined in the package and sub packages. Furthermore a reverse is performed in files placed in the directories corresponding to the package and sub packages and their sub directories. To apply the roundtrip at the project level update all the project and create classes not yet part of the model and defined in the referenced directories and their sub directories.

The sources read by the *C++ code roundtrip* are the ones having the extension specified in the generation settings. The tree formed by the directories and sub-directories produce an equivalent tree of sub-packages, on whose the needed class view and artifact view are made to support the classes and artifacts. The preprocessing phase is not made by the *C++ code roundtrip* whose ignore all the preprocessor forms, but some substitutions may be asked, see at the end of this chapter.

The *reverse/roundtrip* setting dialog of the modeler allows to specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs.

Obviously the *C++ code roundtrip* tries to produce the definitions made in BOUML at the artifact / class / operation / relation / attribute levels. When it is possible it creates a relation rather than an attribute.

Except for the special case of the templates class definition like *vector<bool>*, a artifact is created for each type definition, then a future C++ code generation may not produce a list of files similar to the reversed ones.

A C function cannot be specified in UML, the *C++ code roundtrip* loses them (generating a warning) except the ones declared *friend* in a class.

The *C++ code roundtrip* works in four steps, during the first step all the project is upload, in the second step the elements to roundtrip are prepared, in the third step it scans all the files to establish the list of defined types, then the last step may roundtrip/reverse the files. The third phase tries to replace the missing *#include* management, but it is not enough because the files whose are not under the selected directory (for instance the standard headers files !) are never taken into account and the synonym types are confusing.

The trace window is used to indicate the steps, the updated classes and possible problems for instance when it reads a C function definition it produces a warning in the trace window. The trace window is automatically opened by BOUML, it may also be manually opened through the Tools menu.

To do simple substitution on the read files : edit the *project* (top level *package*) to add a *user property* (through the tab '*Properties*') with the key *#file* and the value must be the absolute pathname of a file. Each line of the specified file must contain :

- just an identifier : in this case this identifier will be ignored during roundtrip. This is like *#define identifier*
- a form *identifier=value* : in this case the identifier will replaced by the value during roundtrip. The value must a token, for instance an other identifier, a float, a string etc. This is like *#define identifier value*.

Warning : the lines must not contains spaces or tabs.

Previous : C++ reverse

Next : Java generator

Java generator

The Java code generator is a *plug-out* directly written in C++.

The generated sources follows the definition made in BOUML at the artifact / class / operation / relation / attribute / extra member levels.

When the code generation is applied on a artifact associated to several classes, the code generation is made for all these classes. Nevertheless the the Java code generator produce first the code in memory and update the appropriate files only when it is necessary, to not change the last write date of the files for nothing. Depending on the toggle *verbose code generation* of the global menu *Languages* the code generator is verbose or not.

The Java code generator *plug-out* may be called on :

- a class : in this case the code generation is in fact applied on the class's artifact, then on all the classes associated to this artifact
- a artifact : in this case the code generation is in fact applied on all the classes associated to the artifact
- a class view : the code generation will be applied on all the sub classes, then on all the artifacts associated to these classes
- a deployment view : the code generation is applied on all the sub artifacts
- a package (may be the project itself) : the code generation will be applied on all the sub class views and deployment views, then on all their sub classes and artifacts.

When the Java code generator is ask through the Tools menu, it is applied on the project, then on all the artifacts.

The name of the generated files depend on the artifact name, the extension depend on the language and is fixed for each by the generations settings (see below), the directory where the files are generated may be set in each package containing directly or indirectly the artifact (see generation directory).

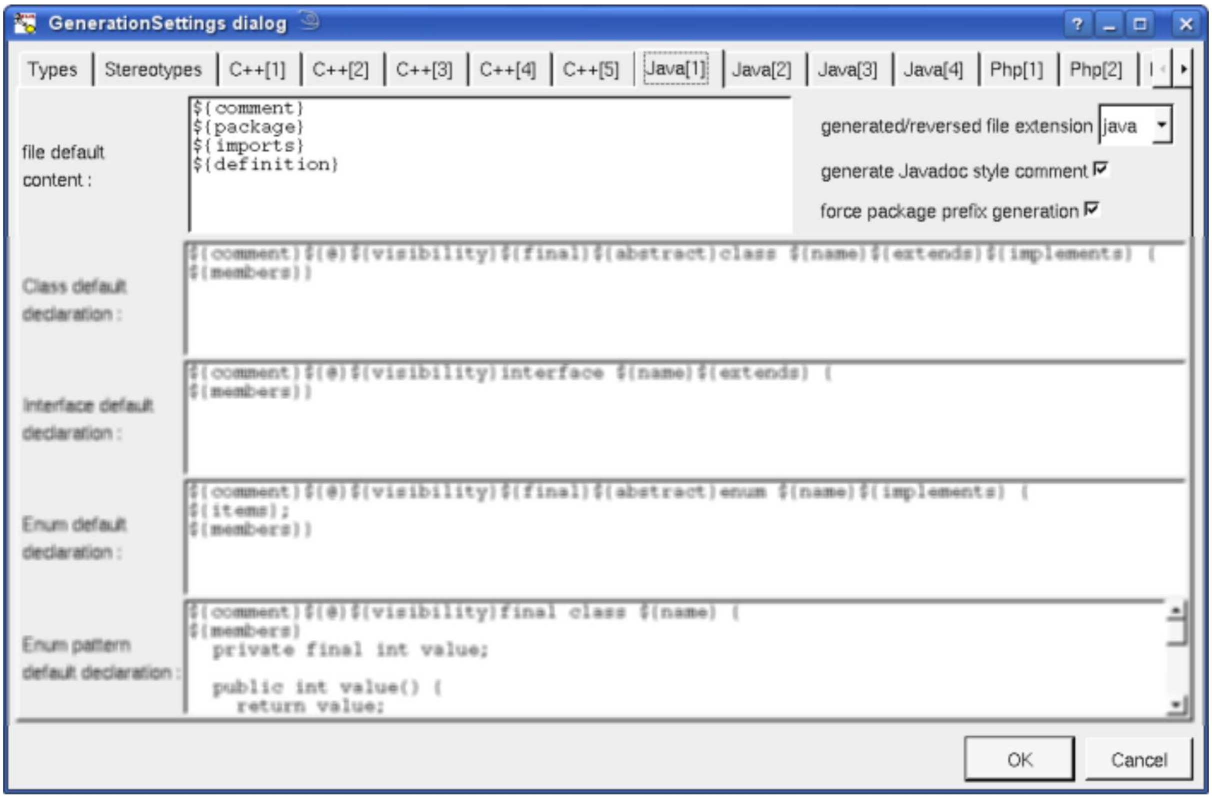
artifact

The Java definition of a artifact is set through the Java source tabs of the artifact dialog.

The code generation depend on the stereotype of the artifact :

- *text* : the Java definition of the artifact is produced without changes, the name of the generated file is the name of the artifact, including the extension.
- *source* : see below.
- else nothing is generated for the artifact.

The generated file name is the artifact's name with the extension specified in the first Java tab of the generations settings :



file default content :

```
${comment}
${package}
${imports}
${definition}
```

generated/reversed file extension java

generate Javadoc style comment ☑

force package prefix generation ☑

Class default declaration :

```
${comment}${@}${visibility}${final}${abstract}class ${name}${extends}${implements} {
${members}}
```

Interface default declaration :

```
${comment}${@}${visibility}interface ${name}${extends} {
${members}}
```

Enum default declaration :

```
${comment}${@}${visibility}${final}${abstract}enum ${name}${implements} {
${items};
${members}}
```

Enum pattern default declaration :

```
${comment}${@}${visibility}final class ${name} {
${members}
  private final int value;

  public int value() {
    return value;
```

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Java code generator are :

- ***${NAME}*** produce the artifact name capitalized, ***${Name}*** produce the artifact name with the first letter capitalized, ***${nAME}*** produce the artifact name forced in lowercase, at least ***${name}*** produce the artifact name without modification.
- ***${comment}*** is replaced by the artifact description adding /* */
- ***${description}*** is replaced by the artifact description without adding /* */
- ***${package}*** is replaced by the *package xx* forms, dependent on the *package* specifications associated to the BOUML package containing the *deployment view* where the artifact is defined.
- ***${import}*** is replaced by import forms specified by dependencies stereotypes *import* from classes produced by the artifact to classes or packages.
- ***${definition}*** is replaced by the definition of the classes associated to the artifact.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the *artifact*, if not found for the *deployment view* containing the *artifact*, if not found in the *package* containing the *deployment view* etc ...

Class

The Java definition of a class is set through the Uml, Parametrized, Instantiate and Java tabs of the class dialog.

A Java type definition may be a class, an interface or an enum (may be defined through a class), depending on the stereotype and its translation in Java (see generation settings).

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Java code generator are :

- ***${comment}*** is replaced by the description of the class adding /* */
- ***${description}*** is replaced by the class description without adding /* */
- ***${public}*** produce *public* when the class is declared public
- ***${final}*** produce *final* when the class is declared final
- ***${abstract}*** produce *abstract* when the class is abstract
- ***${name}*** is replaced by the class's name

- ***${extend}*** is replaced by the class inheritance
- ***${implement}*** is replaced by the interface inheritance
- ***${members}*** is replaced by the code generated for all the class's members (relations, attributes, operations and extra members) following the browser order.
- ***${cases}*** only for the enums, is replaced by the enum's items definition
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the class, if not found for the container of the class (an other class of a *class view)* etc ...

In the special case where the class is declared ***external***, its Java type declaration must contains a line indicating how the name of the class is generated, by default *${name}* meaning that the name is produced unchanged, the only allowed keywords are *${name}, ${Name}* and *${NAME}*.

Operation

The Java definition of an operation is set through the Uml and Java tabs of the operation dialog.

The indentation of the first line of the declaration/definition give the indentation added to the class definition for all the operation definition.

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Java code generator are :

- ***${comment}*** is replaced by the description of the operation adding /* */
- ***${description}*** is replaced by the operation description without adding /* */
- ***${visibility}*** produce the visibility (see the UML tab)
- ***${final}*** produce *final* when ye operation is specified final
- ***${static}*** produce *static* when the operation is a class operation (see the UML tab)
- ***${abstract}*** produce *abstract* when the operation is abstract (see the UML tab)
- ***${synchronized}*** produce *synchronized* when the operation is synchronized
- ***${type}*** is replaced by the value type (see the UML tab)
- ***${name}*** is replaced by the name of the operation.
- ***${(}*** and ***${)}*** produce (and), but there are also a mark for BOUML to find the parameters list
- ***${t<n>}*** and ***${p<n>}*** produce the type and the name of each parameter (count from 0), this allows you to remove a parameter, etc ...
- ***${throws}*** is replaced by the form *throws ...* when at least an exception is defined in the UML tab.
- ***${staticnl}*** produce a line break when the operation is static, else an empty string. In case you do not like this notation, change the generation settings to remove this macro.
- ***${body}*** is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body}* has a great advantage : when you hit ***Default definition*** the body is not cleared ! At least BOUML share the definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! The indentation of the keyword *${body}* is added at the beginning of each line.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the operation, if not found for the class containing the operation etc ...If the toggle *preserve operations's body* is set through the *Languages* menu, the generators do not modify the body of the operations protected by dedicated delimiters. This means that for them the body definition set through BOUML is not used. The first time you generate the code with the toggle set, because the delimiters are not yet present in the generated code, the operation's body will be updated depending on their definition under BOUML. After, while the toggle is set and the delimiters present, the bodies will not change, allowing you to modify them out of BOUML.

Notes :

- In case the file containing a body definition is not consistent with the artifact under BOUML, the body will be regenerated by the code generation, using its definition under the model.
- When you import a project, the body of the imported operations must be the right one in the imported model. The preserved bodies of the imported operations will not be find because the identifier of an operation used to mark its body changes during the import.
- The bodies under the model are not updated by the code generation, use roundtrip body for that
- Only the operations using the keyword *${body}* may have a preserved body.
- The only modification you can do in the lines containing the delimiters is the indent.
- The toggle is saved in the file associated to the project, be sure the save is done when you change this toggle !

Attribute

The Java definition of an attribute is set through the Uml and Java tabs of the attribute dialog.

The indentation of the first line of the definition give the indentation added to the class definition for all the attribute definition.

An attribute may be a standard attribute or the item of an enumeration defined through a class.

standard attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Java code generator are :

- ***${comment}*** is replaced by the description of the attribute adding /* */
- ***${description}*** is replaced by the attribute description without adding /* */
- ***${visibility}*** produce the visibility (see the UML tab)
- ***${static}*** produce *static* when the attribute is a class attribute (see the UML tab)
- ***${final}*** produce final when the attribute is final
- ***${transient}*** produce *transient* when the attribute is transient
- ***${volatile}*** produce volatile when the operation is volatile
- ***${type}*** is replaced by the type of the attribute (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Java of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab), must be used in case the multiplicity is a vector or array dimensioning ([and] are added when they are not present).
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***${value}*** is replaced by the initial value of the attribute (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

enumeration item

The macros known by the Java code generator are :

- ***${comment}*** is replaced by the description of the item adding /* */
- ***${description}*** is replaced by the item description without adding /* */
- ***${name}*** is replaced by the item's name (see the UML tab)
- ***${class}*** is replaced by the name of the class supporting the enumeration
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

Relation

The Java definition of a relation is set through the Uml and Java tabs of the relation dialog.

The indentation of the first line of the definition give the indentation added to the class definition for all the relation definition.

Relation equivalent to an attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Java code generator are :

- ***${comment}*** is replaced by the description of the attribute adding /* */
- ***${description}*** is replaced by the attribute description without adding /* */
- ***${visibility}*** produce the visibility (see the UML tab)
- ***${static}*** produce *static* when the attribute is a class attribute (see the UML tab)
- ***${final}*** produce final when the attribute is final
- ***${transient}*** produce *transient* when the attribute is transient
- ***${volatile}*** produce volatile when the operation is volatile
- ***${type}*** is replaced by the name of the class pointed by the relation (see the UML tab)
- ***${name}*** is replaced by the role's name (see the UML tab)
- ***${inverse_name}*** is replaced by the name of the inverse role (see the UML tab)
- ***${value}*** is replaced by the initial value of the relation (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Java of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab), must be used in case the multiplicity is a vector or array dimensioning ([and] are added when they are not present).
- ***${association}*** is replaced by the association class (see UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the relation, if not found for the class containing the relation etc ...

Inheritance

The class inheritance are managed at the class level.

- ***${type}*** is replaced by the name of the inherited class more the *actuals* if the generated class instantiate a generic.

Extra member

The Java definition of an extra member is set through the Java tabs of the extra member dialog.

No macros.

Previous : C++ reverse

Next : Java reverse

Java reverse

The *Java code reverse* is a *plug-out* directly written in C++.

Note that the *Java code reverse* cannot be used to update already defined classes, the reverse creates the reversed classes into the model without considering already existing classes. To update existing classes from source use the *Java code roundtrip*.

The *Java code reverse plug-out* may be applied only on a package.

When you start the *Java code reverse*, it asks you for java catalog files, use *cancel* to finish to give the catalogs (may be immediately), then it ask for a directory, then it reads all the sources placed under the selected directory and sub-directories. The sources read by the *Java code reverse* are the ones having the extension specified in the generation settings. The tree formed by the sub-directories produce an equivalent tree of sub-packages, on whose the needed class view and deployment view are made to support the classes and artifacts. When a type is referenced but not defined in the reverse files, a class having the same name is defined under an additional package named *unknown*.

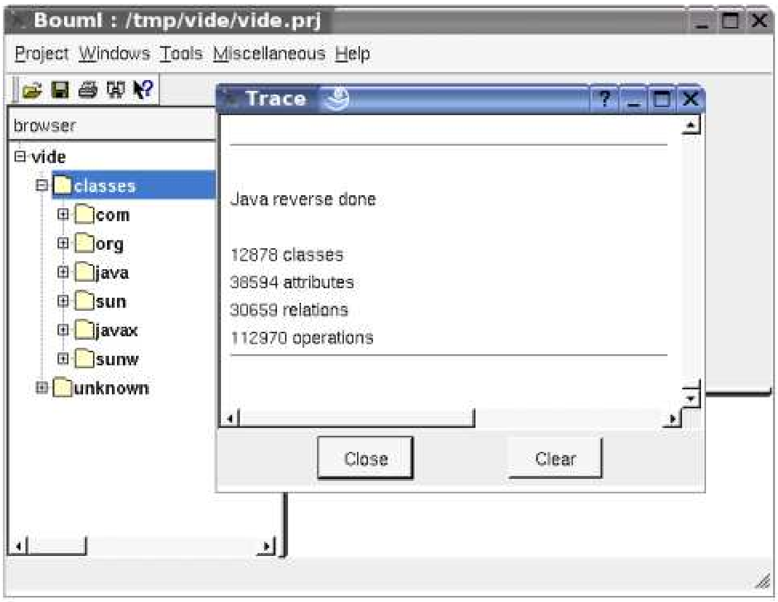
The *reverse/roundtrip* setting dialog of the modeler allows to specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs.

Obviously the *Java code reverse* tries to produce the definitions made in BOUML at the artifact / class / operation / relation / attribute levels. When it is possible it creates a relation rather than an attribute.

The *Java code reverse* works in two steps, during the first step it scans all the files to establish the list of defined types, then the second step may reverse the files.

When the *Java code reverse* has a problem, for instance on a syntax error, it produces a warning in the trace window. The trace window is automatically opened by BOUML, it may also be manually opened through the Tools menu.

When the reverse is done, the number of reversed classes, operations, attributes and relations is written, for instance in case I reverse a full JDK Java distribution :



Java reverse done

12878 classes
38594 attributes
30659 relations
112970 operations

See also Java roundtrip and Java catalog.

Previous : Java generator

Next : Java roundtrip

Java roundtrip

The *Java code roundtrip* is a *plug-out* directly written in C++.

The *Java code roundtrip* updates from sources the classes of the model, add missing ones and remove useless classes (after confirmation).

The behavior of the *Java code roundtrip plug-out* depends on the kind of the element it is applied :

- applied on a class it updates this classes and nested classes, the other classes may be defined in the same file (having the same associated artifact) are not updated nor the artifact. The plug-out can't be applied on a nested class
- applied on an artifact it updates the artifact and all the associated classes, and add classes newly defined in the associated source file
- applied on a class view it updates all the classes of the view and their nested classes, the other classes may be defined in the corresponding files (associated to the same artifacts) are not updated nor the artifacts
- applied on a deployment view it updates all the artifacts in the view and their associated classes, and add classes newly defined in the associated source files
- applied on a package it updates all the artifacts and classes defined under this packages and sub packages, and all the classes associated to the artifacts defined in the package and sub packages. Furthermore a reverse is performed in files placed in the directories corresponding to the package and sub packages and their sub directories. To apply the roundtrip at the project level update all the project and create classes not yet part of the model and defined in the referenced directories and their sub directories.

When you start the *Java code roundtrip*, it asks you for java catalog files, use *cancel* to finish to give the catalogs (may be immediately), then it perform the roundtrip and may be reverse depending on the case. The sources read by the *Java code roundtrip* are the ones having the extension specified in the generation settings. The tree formed by the sub-directories produce an equivalent tree of sub-packages, on whose the needed class view and deployment view are made to support the classes and artifacts. When a type is referenced but not defined in the reverse files, a class having the same name is defined under an additional package named *unknown*.

The *reverse/roundtrip* setting dialog of the modeler allows to specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs.

Obviously the *Java code roundtrip* tries to update existing classes and members, but sometimes it can't recognize and old member (mainly in case of renaming) deletes it and create a new one. Of course the *Java code roundtrip* tries to produce the definitions made in BOUML at the artifact / class / operation / relation / attribute levels. When it is possible it creates a relation rather than an attribute.

The *Java code roundtrip* works in four steps, during the first step all the project is upload, in the second step the elements to roundtrip are prepared, in the third step it scans all the files to establish the list of defined types, then the last step may roundtrip/reverse the files.

The trace window is used to indicate the steps, the updated classes and possible problems. The trace window is automatically opened by BOUML, it may also be manually opened through the Tools menu.

When the reverse is done the number of updated and created classes is written, then the useless elements are marked (all previous marks are removed) to allow you to know who they are, and the roundtrip ask for you to confirm if is delete these elements or not.

See also Java reverse and Java catalog.

Previous : Java reverse

Next : Java catalog

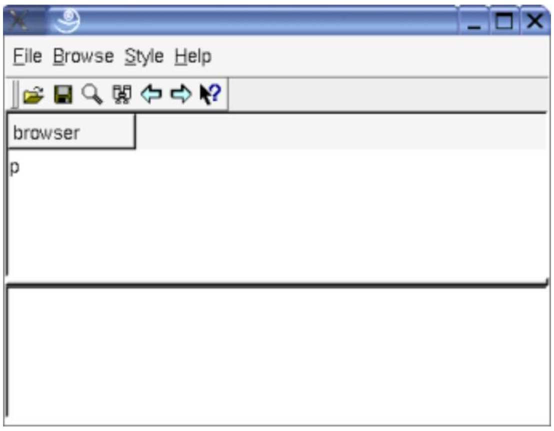
Java catalog

Java Catalog is a *plug-out* directly written in C++.

Java catalog is a very practical tool allowing you to import classes into BOUML. An imported class comes in BOUML without the body of its operations and without its *private* members : the goal is to import Java library classes in the model, not to generate them. *Java catalog* may also be used to browser through the Java packages, search information about a given class etc ... without sending them to BOUML.

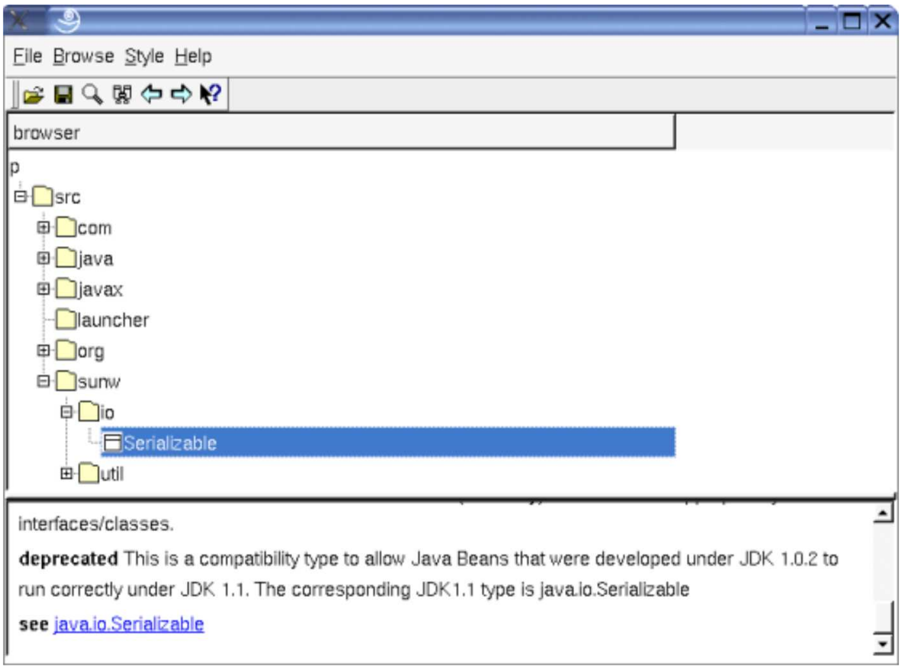
To work, *Java catalog* need Java sources, this must not be a problem, these ones are generally available even for your preferred JDK version.

The *Java catalog plug-out* may be applied only on a package, it is used through a window :



The upper part is a browser like in BOUML except that only the package and classes are showed. The lower part (reduced when Java catalog starts) shows the description of the selected class interpreting the *html* forms. The top level package in the browser part (here *p*) is the name of the package in BOUML in which *Java catalog* is applied.

To make a catalog, use the ***scan*** entry of the *file* menu or the button representing a microscope, *Java catalog* will ask for a directory and scan all the Java files in this one and its sub-directories. For instance if *src* contains all the Java sources :



interfaces/classes.

deprecated This is a compatibility type to allow Java Beans that were developed under JDK 1.0.2 to run correctly under JDK 1.1. The corresponding JDK1.1 type is java.io.Serializable

see java.io.Serializable

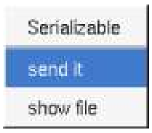
Obviously it is possible to do several scan phase in different directories to complete the catalog. At this level nothing is done on the BOUML side.

The *reverse/roundtrip* setting dialog of the modeler allows to specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs.

To save your catalog use the ***save*** entry of the *file* menu or the associated button.

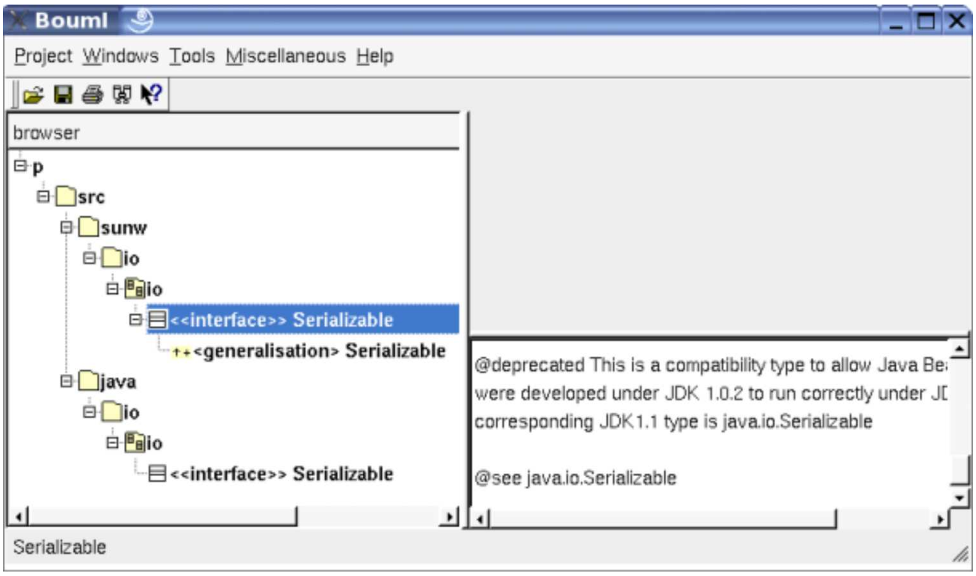
Open allows to get an already made catalog, may be to complete it.

The main goal of *Java catalog* is to send a class or all the classes under a package and its sub-packages to BOUML, using the menu appearing with a right mouse button click on a class or a package into the *Java catalog* browser :



In case the sent class(es) reference other classes (for instance to inherits them), these classes are also sent with the classes they reference etc ...

For instance, in case the BOUML project *p* is empty and the class *sunw.io.Serializable* is sent, the result will be :


Bouml
Project Windows Tools Miscellaneous Help
browser
p
src
sunw
io
io
<<interface>> Serializable
<generalisation> Serializable
java
io
io
<<interface>> Serializable
Serializable

@deprecated This is a compatibility type to allow Java Be
were developed under JDK 1.0.2 to run correctly under JI
corresponding JDK1.1 type is java.io.Serializable

@see java.io.Serializable

As you can see, contrarily to the result of a standard Java reverse, the two classes do not have associated artifact, because the goal is just to allow to have a class generalizing *Serializable,* or having an attribute of this type etc ...

Thanks to *Java catalog*, you do not have to define the JDK and other classes by hand in BOUML to use them !

Note : the saving of a catalog is just a list of classes and the pathname of the file defining them, not the classes definitions. When you send a class to BOUML, *Java catalog* reverse the associated file to get the class definition, this implies that you must not delete or move the Java source files defining the classes of the catalog.

Previous : Java roundtrip

Next : Php generator

PHP generator

The PHP code generator is a *plug-out* directly written in C++.

The generated sources follows the definition made in BOUML at the artifact / class / operation / relation / attribute / extra member levels.

When the code generation is applied on a artifact associated to several classes, the code generation is made for all these classes. Nevertheless the the Php code generator produce first the code in memory and update the appropriate files only when it is necessary, to not change the last write date of the files for nothing. Depending on the toggle *verbose code generation* of the global menu *Languages* the code generator is verbose or not.

The Php code generator *plug-out* may be called on :

- a class : in this case the code generation is in fact applied on the class's artifact, then on all the classes associated to this artifact
- a artifact : in this case the code generation is in fact applied on all the classes associated to the artifact
- a class view : the code generation will be applied on all the sub classes, then on all the artifacts associated to these classes
- a deployment view : the code generation is applied on all the sub artifacts
- a package (may be the project itself) : the code generation will be applied on all the sub class views and deployment views, then on all their sub classes and artifacts.

When the Php code generator is ask through the Tools menu, it is applied on the project, then on all the artifacts.

The name of the generated files depend on the artifact name, the extension depend on the language and is fixed for each by the generations settings (see below), the directory where the files are generated may be set in each package containing directly or indirectly the artifact (see generation directory).

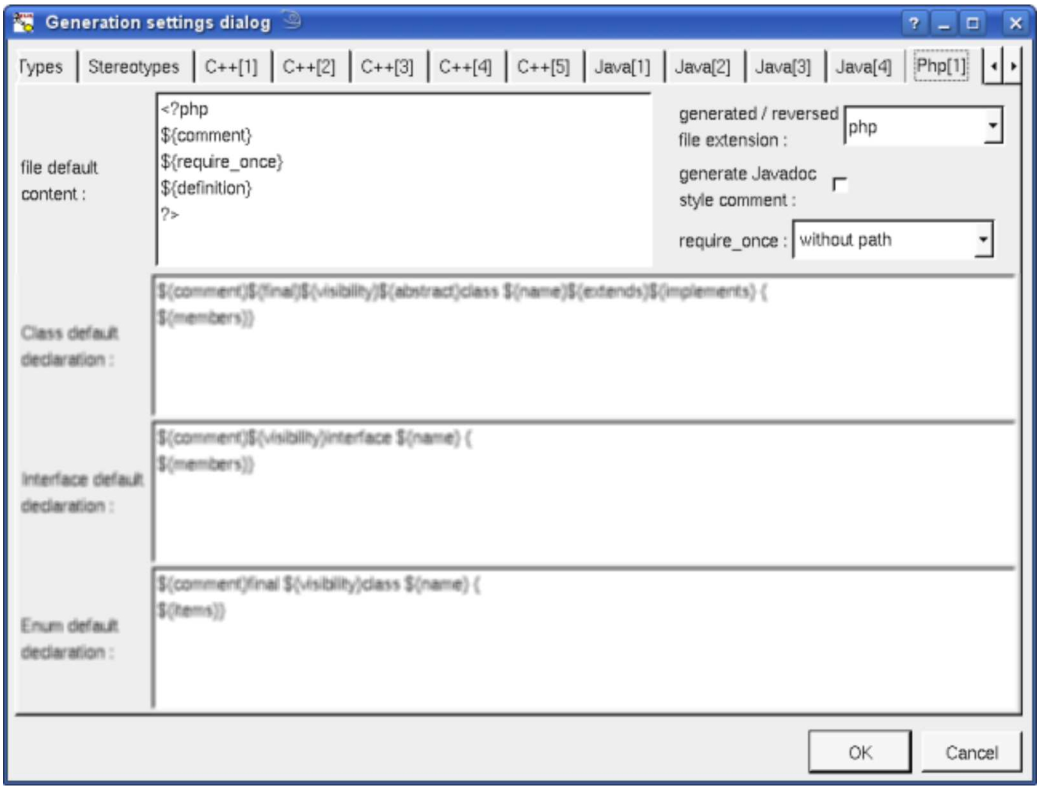
artifact

The Php definition of a artifact is set through the Php source tabs of the artifact dialog.

The code generation depend on the stereotype of the artifact :

- *text* : the Php definition of the artifact is produced without changes, the name of the generated file is the name of the artifact, including the extension.
- *source* : see below.
- else nothing is generated for the artifact.

The generated file name is the artifact's name with the extension specified in the first Php tab of the generations settings :



file default content :

```
<?php
${comment}
${require_once}
${definition}
?>
```

generated / reversed file extension : php

generate Javadoc style comment : □

require_once : without path

Class default declaration :

```
${comment}${final}${visibility}${abstract}class ${name}${extends}${implements} {
${members}}
```

Interface default declaration :

```
${comment}${visibility}interface ${name} {
${members}}
```

Enum default declaration :

```
${comment}final ${visibility}class ${name} {
${items}}
```

There are four ways to produce the *require_once* forms

- *without path* : ask for the Php code generator to generate them without relative or absolute path
- *with absolute path :* ask for the Php code generator to generate the absolute path of the automatically required files.
- *with relative path :* ask for the Php code generator to generate the relative path of the automatically required files, warning : relatively to the file containing the require_once
- *with root relative path :* ask for the Php code generator to generate the relative path of the automatically required files, relative to the directory specified by the *generation settings* (it is probably indicated in Php *include_path*)

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Php code generator are :

- ***${NAME}*** produce the artifact name capitalized, ***${Name}*** produce the artifact name with the first letter capitalized, ***${nAME}*** produce the artifact name forced in lowercase, at least ***${name}*** produce the artifact name without modification.
- ***${comment}*** is replaced by the artifact description adding /* */
- ***${description}*** is replaced by the artifact description without adding /* */
- ***${require_once}*** is replaced by the *require_once* forms for the files associated to the classes referenced by the ones produced by the artifact. It is also a good place to add your *required_once* forms, when the ones produced by the code generator are not sufficient. The Php code generator does not look at in the operations body, only the operation's profiles, relations and attributes, classes inheritances etc ... are used to compute the needed *require_once* list.
- ***${definition}*** is replaced by the definition of the classes associated to the artifact.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the *artifact*, if not found for the *deployment view* containing the *artifact*, if not found in the *package* containing the *deployment view* etc ...

Class

The Php definition of a class is set through the Uml, Parametrized, Instantiate and Php tabs of the class dialog.

A Php type definition may be a class, an interface or an enum defined through a class, depending on the stereotype and its translation in Php (see generation settings).

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Php code generator are :

- ***${comment}*** is replaced by the description of the class adding /* */
- ***${description}*** is replaced by the class description without adding /* */
- ***${public}*** produce *public* when the class is declared public
- ***${final}*** produce *final* when the class is declared final
- ***${abstract}*** produce *abstract* when the class is abstract
- ***${name}*** is replaced by the class's name
- ***${extend}*** is replaced by the class inheritance
- ***${implement}*** is replaced by the interface inheritance
- ***${members}*** is replaced by the code generated for all the class's members (relations, attributes, operations and extra members) following the browser order.
- ***${items}*** produces the enumeration items of an *enum*. other members are not produced
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the class, if not found for the container of the class (an other class of a *class view)* etc ...

In the special case where the class is declared ***external***, its Php type declaration must contains a line indicating how the name of the class is generated, by default *${name}* meaning that the name is produced unchanged, the only allowed keywords are *${name}, ${Name}* and *${NAME}*.An optional second line may be given to specify the *require_once* form to produce in artifact containing classes referencing this external class.

Operation

The Php definition of an operation is set through the Uml and Php tabs of the operation dialog.

The indentation of the first line of the declaration/definition give the indentation added to the class definition for all the operation definition.

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Php code generator are :

- ***${comment}*** is replaced by the description of the operation adding /* */
- ***${description}*** is replaced by the operation description without adding /* */
- ***${visibility}*** produce the visibility (see the UML tab), except if the visibility is *package* (use this case to produce Php4 code)
- ***${static}*** produce *static* when the operation is a class operation (see the UML tab)
- ***${final}*** produce an empty string when the check box *final* is not checked, else produce *final*
- ***${abstract}*** produce *abstract* when the operation is abstract (see the UML tab)
- ***${name}*** is replaced by the name of the operation.
- ***${type}*** is replaced by the returned value type (see the UML tab)
- ***${(}*** and ***${)}*** produce (and), but there are also a mark for BOUML to find the parameters list
- ***${t<n>}, ${p<n>}*** and **${v<n>}** produce the type, name and default value of each parameter (count from 0), this allows you to remove a parameter, etc ...
- ***${staticnl}*** produce a line break when the operation is static, else an empty string. In case you do not like this notation, change the generation settings to remove this macro.
- ***${body}*** is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body}* has a great advantage : when you hit ***Default definition*** the body is not cleared ! At least BOUML share the definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! The indentation of the keyword *${body}* is added at the beginning of each line.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the

operation, if not found for the class containing the operation etc ...If the toggle *preserve operations's body* is set through the *Languages* menu, the generators do not modify the body of the operations protected by dedicated delimiters. This means that for them the body definition set through BOUML is not used. The first time you generate the code with the toggle set, because the delimiters are not yet present in the generated code, the operation's body will be updated depending on their definition under BOUML. After, while the toggle is set and the delimiters present, the bodies will not change, allowing you to modify them out of BOUML.

Notes :

- In case the file containing a body definition is not consistent with the artifact under BOUML, the body will be regenerated by the code generation, using its definition under the model.
- When you import a project, the body of the imported operations must be the right one in the imported model. The preserved bodies of the imported operations will not be find because the identifier of an operation used to mark its body changes during the import.
- The bodies under the model are not updated by the code generation, use roundtrip body for that
- Only the operations using the keyword *${body}* may have a preserved body.
- The only modification you can do in the lines containing the delimiters is the indent.
- The toggle is saved in the file associated to the project, be sure the save is done when you change this toggle !

Attribute

The Php definition of an attribute is set through the Uml and Php tabs of the attribute dialog.

The indentation of the first line of the definition give the indentation added to the class definition for all the attribute definition.

An attribute may be a standard attribute or the item of an enumeration defined through a class.

standard attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Php code generator are :

- ***${comment}*** is replaced by the description of the attribute adding /* */
- ***${description}*** is replaced by the attribute description without adding /* */
- ***${visibility}*** produce the visibility (see the UML tab), except if the visibility is *package* (use this case to produce Php4 code)
- ***${static}*** produce *static* when the attribute is a class attribute (see the UML tab)
- ***${const}*** produce *const* when the attribute is read only (see the UML tab)
- ***${var}*** produce *var* when the relation is not read only nor static(see the UML tab) and the visibility is not *package*, else produce an empty string
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***${value}*** is replaced by the initial value of the attribute (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

Relation

The Php definition of a relation is set through the Uml and Php tabs of the relation dialog.

The indentation of the first line of the definition give the indentation added to the class definition for all the relation definition.

Relation equivalent to an attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Php code generator are :

- ***${comment}*** is replaced by the description of the attribute adding /* */

- ***${description}*** is replaced by the attribute description without adding /* */
- ***${visibility}*** produce the visibility (see the UML tab), except if the visibility is *package* (use this case to produce Php4 code)
- ***${static}*** produce *static* when the attribute is a class attribute (see the UML tab)
- ***${const}*** produce *const* when the attribute is read only (see the UML tab)
- ***${var}*** produce *var* when the relation is not read only nor static(see the UML tab) and the visibility is not *package*, else produce an empty string
- ***${name}*** is replaced by the role's name (see the UML tab)
- ***${inverse_name}*** is replaced by the name of the inverse role (see the UML tab)
- ***${value}*** is replaced by the initial value of the relation (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Php of the relation's stereotype (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the relation, if not found for the class containing the relation etc ...

Inheritance

The class inheritance are managed at the class level.

- ***${type}*** is replaced by the name of the inherited class.

Extra member

The Php definition of an extra member is set through the Php tabs of the extra member dialog.

No macros.

Previous : Java catalog

Next : Php reverse

Php reverse

The *Php code reverse* is a *plug-out* directly written in C++.

Note that the *Php code reverse* cannot be used as a Php code round trip and doesn't allows to update already defined classes having at least one member.

The *Php code reverse plug-out* may be applied only on a package.

When you start the *Php code reverse*, it ask for a directory, then it reads all the sources placed under the selected directory and sub-directories. The sources read by the *Php code reverse* are the ones having the extension specified in the generation settings. The tree formed by the sub-directories produce an equivalent tree of sub-packages, on whose the needed class view and deployment view are made to support the classes and artifacts. When a type is referenced but not defined in the reverse files, a class having the same name is defined under an additional package named *unknown*.

The *reverse/roundtrip* setting dialog of the modeler allows to specify through regular expression the files and / or directories whose must not be taken into account during a *reverse* and *roundtrip*, for instance to bypass test programs.

Obviously the *Php code reverse* tries to produce the definitions made in BOUML at the artifact / class / operation / relation / attribute levels. When it is possible it creates a relation rather than an attribute.

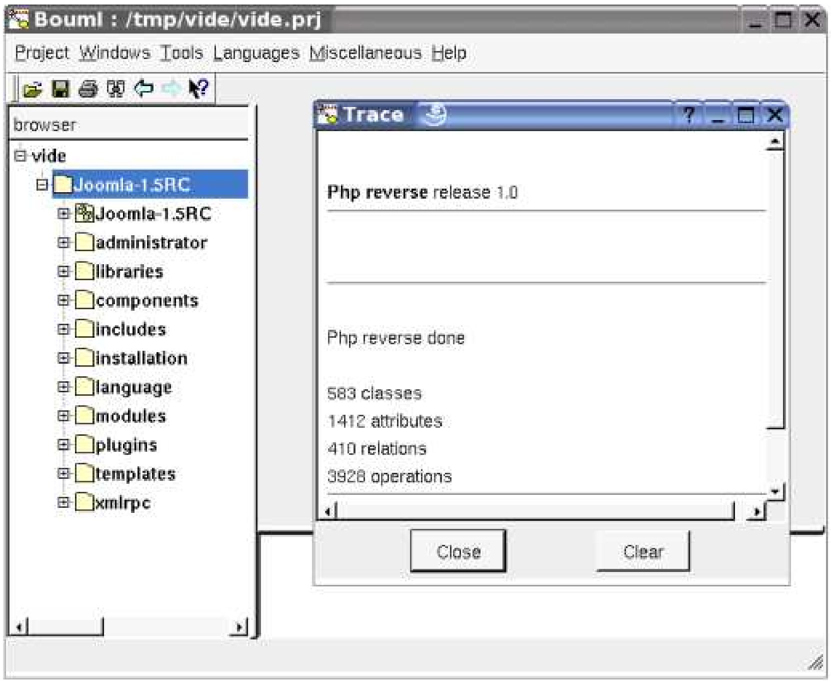
The *Php code reverse* works in two steps, during the first step it scans all the files to establish the list of defined types, then the second step may reverse the files.

When the *Php code reverse* has a problem, for instance on a syntax error, it produces a warning in the trace window. The trace window is automatically opened by BOUML, it may also be manually opened through the Tools menu.

The reversed files are considered composed in three parts :

- a header without class definition and containing “<?php". This part if placed at the beginning of the generated artifact
- only classes / interfaces definition, this part start with the first class or interface and stops before the first form which is not a class nor an interface. The classes and interfaces must be at the toplevel level, this means not embedded in a *if* or other form. This part produces *${definition}* in the definition of the artifact
- the rest if the file, probably containing the marker "?>", this part is placed at the end of the definition of the artifact.

When the reverse is done, the number of reversed classes, operations, attributes and relations is written, for instance in case I reverse the sources of Joomla 1.5RC :



Php reverse release 1.0

Php reverse done

583 classes
1412 attributes
410 relations
3928 operations

Previous : Php generator

Next : Python Generator

Python generator

The Python code generator is a *plug-out* directly written in C++.

The generated sources follows the definition made in BOUML at the artifact / class / operation / relation / attribute / extra member levels.

When the code generation is applied on a artifact associated to several classes, the code generation is made for all these classes. Nevertheless the Python code generator produce first the code in memory and update the appropriate files only when it is necessary, to not change the last write date of the files for nothing. Depending on the toggle *verbose code generation* of the global menu *Languages* the code generator is verbose or not.

The Python code generator *plug-out* may be called on :

- a class : in this case the code generation is in fact applied on the class's artifact, then on all the classes associated to this artifact
- a artifact : in this case the code generation is in fact applied on all the classes associated to the artifact
- a class view : the code generation will be applied on all the sub classes, then on all the artifacts associated to these classes
- a deployment view : the code generation is applied on all the sub artifacts
- a package (may be the project itself) : the code generation will be applied on all the sub class views and deployment views, then on all their sub classes and artifacts.

When the Python code generator is ask through the Tools menu, it is applied on the project, then on all the artifacts.

The name of the generated files depend on the artifact name, the extension depend on the language and is fixed for each by the generations settings (see below), the directory where the files are generated may be set in each package containing directly or indirectly the artifact (see generation directory).

The generator change automatically the indentation, adding/removing when necessary the indentation step specified through the generations settings (see dialog screen below) At least the first line of an operation's body must not be indented when you enter it through the operation dialog (except if you ask for non contextual indent), but of course you have to manage yourself the indentation change due to control statement for instance.

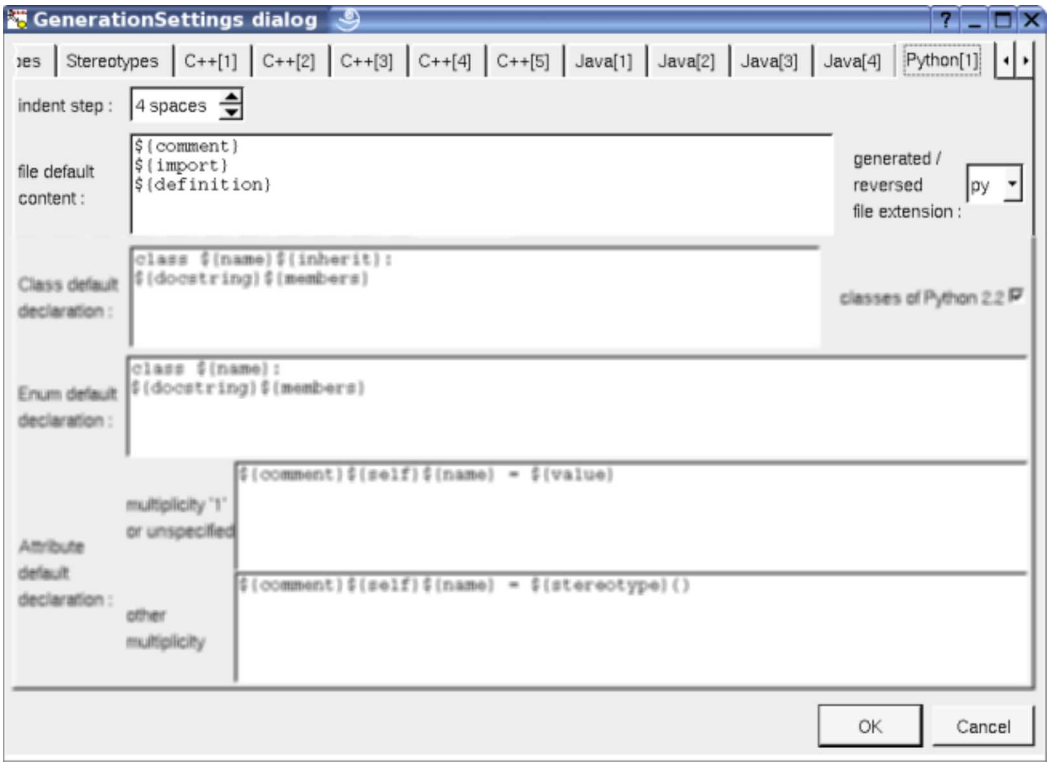
artifact

The Python definition of a artifact is set through the Python source tabs of the artifact dialog.

The code generation depend on the stereotype of the artifact :

- *text* : the Python definition of the artifact is produced without changes, the name of the generated file is the name of the artifact, including the extension.
- *source* : see below.
- else nothing is generated for the artifact.

The generated file name is the artifact's name with the extension specified in the first Python tab of the generations settings :



indent step : 4 spaces

file default content :

```
${comment}
${import}
${definition}
```

generated / reversed file extension : py

Class default declaration :

```
class ${name}${inherit}:
${docstring}${members}
```

classes of Python 2.2 ☑

Enum default declaration :

```
class ${name}:
${docstring}${members}
```

Attribute default declaration :

multiplicity "1" or unspecified

```
${comment}${self}${name} = ${value}
```

other multiplicity

```
${comment}${self}${name} = ${stereotype}()
```

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Python code generator are :

- ***${NAME}*** produce the artifact name capitalized, ***${Name}*** produce the artifact name with the first letter capitalized, ***${nAME}*** produce the artifact name forced in lowercase, at least ***${name}*** produce the artifact name without modification.

- ***${comment}*** is replaced by the artifact description adding ## at the beginning of each line and a newline at end, or nothing if the description is empty

- ***${description}*** is replaced by the artifact description without adding ##

- ***${imports}*** is replaced by *import* and *from .. import* forms from the dependencies between classes and between *artifacts* stereotyped *import* or *from*. A dependency stereotyped *import* between artifact produces an *import*, stereotyped *from* this produces a from ... *import* *. A dependency stereotyped *import* between classes produces an *import*, stereotyped *from* this produces a form *from ... import*. Or course the packages are taken into account. You can also directly add *import* forms by hand in the artifact definition, they will be taken into account to not produce useless package path when classe names will be generated.

- ***${definition}*** is replaced by the definition of the classes associated to the artifact.

- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the *artifact*, if not found for the *deployment view* containing the *artifact*, if not found in the *package* containing the *deployment view* etc ...

Class

Bouml allows to define class for any releases of Python, to help for Python 2.2 classes generation a toggle *Python 2.2* is defined in each class, its default value is set through the generation settings. When *Python 2.2* is set and a class doesn't inherit in the model, the inheritance or *object* is automatically added.

The Python definition of a class is set through the Uml and Python tabs of the class dialog.

A Python type definition may be a class, or an enum defined through a class, depending on the stereotype and its translation in Python (see generation settings).

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Python code generator are :

- ***${docstring}*** is replaced by the description of the class placed between ””” and followed by a newline. If the description is empty nothing is produced. By default (set through the generation settings *${docstring}* is used rather than *${comment}* or *${description}*.

- ***${comment}*** is replaced by the description of the class adding #
- ***${description}*** is replaced by the class description without adding #
- ***${name}*** is replaced by the class's name. If needed the package path is produced, the code generator tale into account the *imports* associated to the depdencies and the ones writtent by hand directly in the *artifact* definition.
- ***${inherit}*** is replaced by the class inheritance
- ***${members}*** is replaced by the code generated for all the class's members (relations, attributes, operations, extra members and nested classes) following the browser order.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the class, if not found for the container of the class (an other class of a *class view)* etc ...

In the special case where the class is declared ***external***, its Python type declaration must contains a line indicating how the name of the class is generated, and followed by an optional line giving the needed *import* forms. By default the specification of the name is *${name}* meaning that the name is produced unchanged, the only allowed keywords are *${name}, ${Name}* and *${NAME}*.

Operation

The Python definition of an operation is set through the Uml and Python tabs of the operation dialog.

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Python code generator are :

- ***${@}*** is replaced by the decorators, don't use decorator to produce *@staticmethod* and *@abstractmethod*, see *${static}* and *${abstract}* bellow
- ***${comment}*** is replaced by the description of the operation adding # at the beginning of each line and forcing a newline at the end. Produce nothing when the description is empty.
- ***${description}*** is replaced by the operation description without adding #. Produce nothing when the description is empty.
- ***${static}*** is replaced by *@staticmethod* followed by a newline if the method is declared *static* in the UML tab, else an empty string
- ***${abstract}*** is replaced by *@abstractmethod* followed by a newline if the method is declared *abstract* in the UML tab, else an empty string
- ***${name}*** is replaced by the name of the operation.
- ***${class}*** is replaced by the name of the class containing the operation.
- ***${(}*** and ***${)}*** produce (and), but there are also a mark for BOUML to find the parameters list
- ***${t<n>}, ${p<n>}*** and **${v<*n*>}** produce the type, name and default value of each parameter (count from 0), this allows you to remove a parameter, etc ...
- ***${type}*** produces the operation return type, if it is not empty the type generation is preceded by -> (ref. pep3107)
- ***${body}*** is replaced by the body of the operation, this macro may also be replaced by the body itself (BOUML use this way for the *get* and *set* operations associated to a relation/attribute). The usage of *${body}* has a great advantage : when you hit ***Default definition*** the body is not cleared ! At least BOUML share the definition forms of the operations (and other objects) to minimize the needed memory size, *${body}* help for this ! The indentation of the keyword *${body}* is added at the beginning of each line. In the special case of the *__init__* operation the initialization of the instance attributes and relations is added just before the body, they are not produced if *${body}* is not part of the operation definition.
- ***${association}*** in case the operation is a getter/setter on a relation produce the association (may be the class forming a class-association with the relation) set on the relation
- ***${type}*** is replaced by the class pointed by the return type, a priori used in a comment, may be for a form *@return*
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the operation, if not found for the class containing the operation etc ...If the toggle *preserve operations's body* is set through the *Languages* menu, the generators do not modify the body of the operations protected by dedicated delimiters. This means that for them the body definition set through BOUML is not used. The first time you generate the code with the toggle set, because the delimiters are not yet present in the generated code, the operation's body will be updated depending on their definition under BOUML. After, while the toggle is set and the delimiters present, the bodies will not change, allowing you to modify

them out of BOUML.

Notes :

- In case the file containing a body definition is not consistent with the artifact under BOUML, the body will be regenerated by the code generation, using its definition under the model.
- When you import a project, the body of the imported operations must be the right one in the imported model. The preserved bodies of the imported operations will not be find because the identifier of an operation used to mark its body changes during the import.
- The bodies under the model are not updated by the code generation, use roundtrip body for that
- Only the operations using the keyword *${body}* may have a preserved body.
- The only modification you can do in the lines containing the delimiters is the indent.
- The toggle is saved in the file associated to the project, be sure the save is done when you change this toggle !

Attribute

The Python definition of an attribute is set through the Uml and Python tabs of the attribute dialog.

An attribute may be a standard attribute or the item of an enumeration defined through a class.

The static attributes are produced in order directly in the class definition. The instance attributes are produced at the beginning of the operation __*init*__ when its definition contains *${body}*. The operation __*init*__ is automatically added by the code generation, even if they are no instance attribute or relation.

Attribute corresponding to variable

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Python code generator are :

- ***${comment}*** is replaced by the description of the attribute adding # at the beginning of each line and forcing a newline at the end. Produce nothing when the description is empty.
- ***${description}*** is replaced by the attribute description without adding #. Produce nothing when the description is empty.
- ***${self}*** inside the operation __*init*__ this produces the name of the first parameter followed by a dot, else nothing.
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the attribute, probably used inside a comment
- ***${stereotype}*** is replaced by the translation in Python of the attribute's stereotype (see the UML tab), probably something like *list*
- ***${type}*** produces the type of the attribute, probably used inside a comment, may be for a form @*var*
- ***${value}*** is replaced by the initial value of the attribute (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

Relation

The Python definition of a relation is set through the Uml and Python tabs of the relation dialog.

The static relations corresponding to variables are produced in order directly in the class definition. The instance relations corresponding to variables are produced at the beginning of the operation __*init*__ when its definition contains *${body}*. The operation __*init*__ is automatically added by the code generation, even if they are no instance attribute or relation.

Relation corresponding to variable

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Python code generator are :

- ***${comment}*** is replaced by the description of the relation adding # at the beginning of each line and forcing a newline at the end. Produce nothing when the description is empty.
- ***${description}*** is replaced by the relation description without adding #. Produce nothing when the description is empty.
- ***${self}*** inside the operation __*init*__ this produces the name of the first parameter followed by a dot, else nothing.
- ***${name}*** is replaced by the role's name (see the UML tab)
- ***${inverse_name}*** is replaced by the name of the inverse role (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation, probably used inside a comment
- ***${stereotype}*** is replaced by the translation in Python of the relation's stereotype (see the UML tab), probably something like *list*
- ***${type}*** is replaced by the type of the relation, it is used by default when the relation is a composition to create an instance of this type, can also be used in a comment for a form @*var*
- ***${value}*** is replaced by the initial value of the attribute (see the UML tab)
- ***${association}*** produce the association (may be the class forming a class-association with the relation)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

Inheritance

The class inheritance are managed at the class level.

- ***${type}*** is replaced by the name of the inherited class.

An inheritance implicitly produces an *import* form in the *artifact* if needed.

Dependencies

The dependencies allows to add *import* forms in the *artifact*, refer to *${import}* description

Extra member

The Python definition of an extra member is set through the Python tabs of the extra member dialog.

The definition of the extra members are produced without any modification, this means you are also responsible to the indent

No macros.

Previous : Php reverse

Next : Python reverse

Python reverse

Warning : this *plug-out* is not yet available

The *Python code reverse* is a *plug-out* directly written in C++.

Note that the *Python code reverse* cannot be used as a Python code round trip and doesn't allows to update already defined classes having at least one member.

The *Python code reverse plug-out* may be applied only on a package.

When you start the *Python code reverse*, it ask for a directory, then it reads all the sources placed under the selected directory and sub-directories. The sources read by the *Python code reverse* are the ones having the extension specified in the generation settings. The tree formed by the sub-directories produce an equivalent tree of sub-packages, on whose the needed class view and deployment view are made to support the classes and artifacts. When a type is referenced but not defined in the reverse files, a class having the same name is defined under an additional package named *unknown*.

Obviously the *Python code reverse* tries to produce the definitions made in BOUML at the artifact / class / operation / relation / attribute levels. When it is possible it creates a relation rather than an attribute. The instance attributes and relation are created from the variable initializations made in the reverse operation *__init__*. The static attributes and relations are created from the variable initializations made at the toplevel of the class. An operation is declared static when it has the decorator *@staticmethod*, is it declared *abstract* when it has the decorator *@abstractmethod*.

The *Python code reverse* works in two steps, during the first step it scans all the files to establish the list of defined types, then the second step may reverse the files.

When the *Python code reverse* has a problem, for instance on a syntax error, it produces a warning in the trace window. The trace window is automatically opened by BOUML, it may also be manually opened through the Tools menu.

The reversed files are considered composed in three parts :

- a header without class definition
- only classes definition, this part start with the first class and stops before the first form which is not a class. The classes must be at the toplevel level, this means not embedded in a *if* or other form. This part produces *${definition}* in the definition of the artifact
- the rest if the file, this part is placed at the end of the definition of the artifact.

Previous : Python generator

Next : Idl generator

Idl generator

The Idl code generator is a *plug-out* directly written in C++.

The generated sources follows the definition made in BOUML at the artifact / class / operation / relation / attribute / extra member levels.

When the code generation is applied on a artifact associated to several classes, the code generation is made for all these classes. Nevertheless the the Idl code generator produce first the code in memory and update the appropriate files only when it is necessary, to not change the last write date of the files for nothing. Depending on the toggle *verbose code generation* of the global menu *Languages* the code generator is verbose or not.

The Idl code generator *plug-out* may be called on :

- a class : in this case the code generation is in fact applied on the class's artifact, then on all the classes associated to this artifact
- a artifact : in this case the code generation is in fact applied on all the classes associated to the artifact
- a class view : the code generation will be applied on all the sub classes, then on all the artifacts associated to these classes
- a deployment view : the code generation is applied on all the sub artifacts
- a package (may be the project itself) : the code generation will be applied on all the sub class views and deployment views, then on all their sub classes and artifacts.

When the Idl code generator is ask through the Tools menu, it is applied on the project, then on all the artifacts.

The name of the generated files depend on the artifact name, the extension depend on the language and is fixed for each by the generations settings (see below), the directory where the files are generated may be set in each package containing directly or indirectly the artifact (see generation directory).

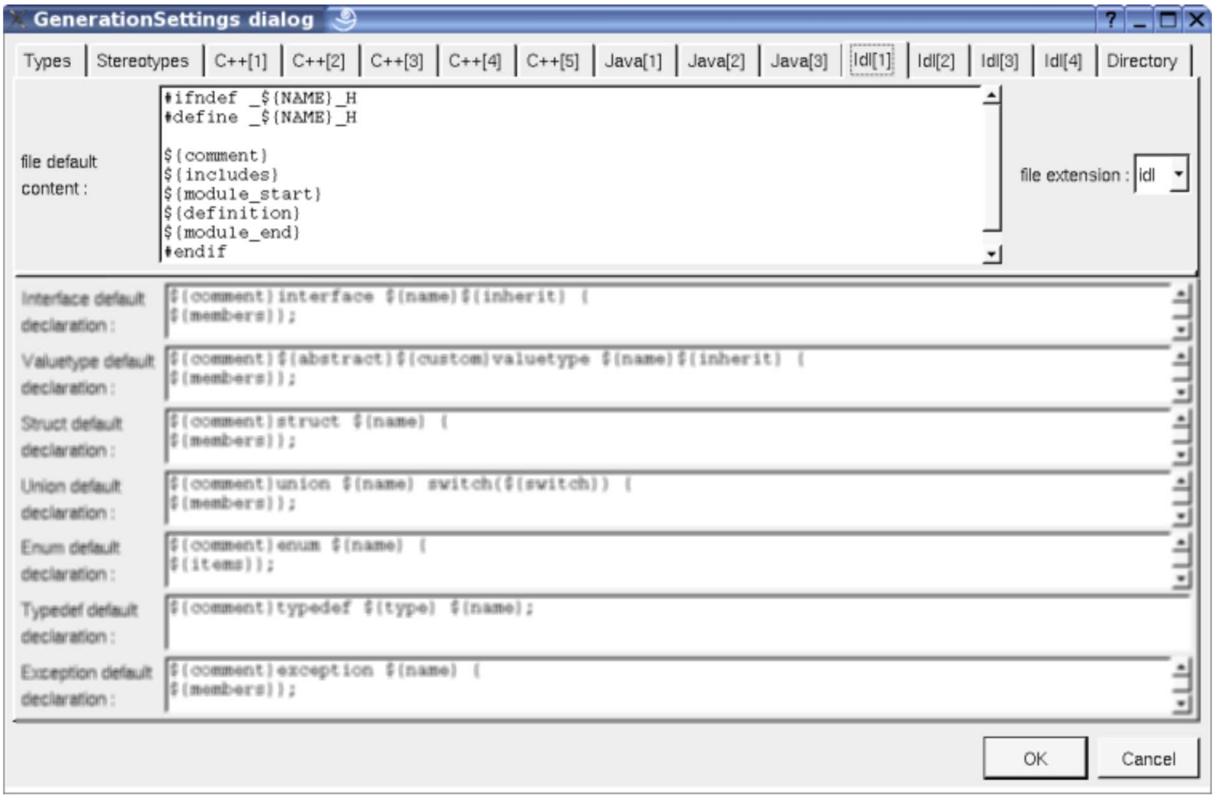
artifact

The Idl definition of a artifact is set through the Idl source tabs of the artifact dialog.

The code generation depend on the stereotype of the artifact :

- *text* : the IDL definition of the artifact is produced without changes, the name of the generated file is the name of the artifact, including the extension.
- *source* : see below
- else nothing is generated for the artifact.

The generated file name is the artifact's name with the extension specified in the first Idl tab of the generations settings :



file default content :

```
#ifndef _${NAME}_H
#define _${NAME}_H

${comment}
${includes}
${module_start}
${definition}
${module_end}
#endif
```

file extension : idl

Interface default declaration :

```
${comment}interface ${name}${inherit} {
${members}};
```

Valuetype default declaration :

```
${comment}${abstract}${custom}valuetype ${name}${inherit} {
${members}};
```

Struct default declaration :

```
${comment}struct ${name} {
${members}};
```

Union default declaration :

```
${comment}union ${name} switch(${switch}) {
${members}};
```

Enum default declaration :

```
${comment}enum ${name} {
${items}};
```

Typedef default declaration :

```
${comment}typedef ${type} ${name};
```

Exception default declaration :

```
${comment}exception ${name} {
${members}};
```

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${NAME}*** produce the artifact name capitalized, ***${Name}*** produce the artifact name with the first letter capitalized, at least ***${name}*** produce the artifact name without modification.
- ***${comment}*** is replaced by the artifact description adding //
- ***${description}*** is replaced by the artifact description without adding //
- ***${includes}*** is not yet managed by the Idl generator and produce an empty string.
- ***${module_start}*** is replaced by the *module xx* forms, dependent on the *module* specifications associated to the BOUML package containing the *deployment view* where the artifact is defined.
- ***${definition}*** is replaced by the definition of the classes associated to the artifact.
- ***${module_end}*** is replaced by }, dependent on the *module* specifications associated to the BOUML package containing the *deployment view* where the artifact is defined.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the *artifact*, if not found for the *deployment view* containing the *artifact*, if not found in the *package* containing the *deployment view* etc ...

Class

The Idl definition of a class is set through the Uml and Idl tabs of the class dialog.

A Idl type definition may be a valuetype, an interface, a struct, an union, an enum, an exception or a typedef defined through a class, depending on the stereotype and its translation in Idl (see generation settings).

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the class adding //
- ***${description}*** is replaced by the class description without adding //
- ***${abstract}*** only for the valuetypes, produce *abstract* when the valuetype is abstract
- ***${custom}*** only for the valuetypes, produce *abstract* when the valuetype is custom
- ***${name}*** is replaced by the class's name

- ***${inherit}*** is replaced by the inheritance
- ***${members}*** is replaced by the code generated for all the class's members (relations, attributes, operations and extra members) following the browser order.
- ***${switch}*** only for the unions, is replaced by the union switch type
- ***${items}*** only for the enums, is replaced by the enum's items definition
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the class, if not found for the container of the class (an other class of a *class view)* etc ...

Operation

The Idl definition of an operation is set through the Uml and Idl tabs of the operation dialog.

The indentation of the first line of the declaration/definition give the indentation added to the class definition for all the operation definition.

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the operation adding //
- ***${description}*** is replaced by the operation description without adding //
- ***${oneway}*** produce *oneway* when the operation is oneway
- ***${type}*** is replaced by the value type (see the UML tab)
- ***${name}*** is replaced by the name of the operation.
- ***${(}*** and ***${)}*** produce (and), but there are also a mark for BOUML to find the parameters list
- ***${t<n>}*** and ***${p<n>}*** produce the type and the name of each parameter (count from 0), this allows you to remove a parameter, etc ...
- ***${raise}*** is replaced by the form *raise (...)* when at least an exception is defined in the UML tab.
- ***${raisenl}*** produce a line break when the operation have exception. In case you do not like this notation, change the generation settings to remove this macro.
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the operation, if not found for the class containing the operation etc ...

Attribute

The Idl definition of an attribute is set through the Uml and Idl tabs of the attribute dialog.

The indentation of the first line of the definition give the indentation added to the class definition for all the attribute definition.

The definition of an attribute depend on the stereotype of its class.

interface's attribute

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the attribute adding //
- ***${description}*** is replaced by the attribute description without adding //
- ***${readonly}*** produce *readonly* when the attribute is read only (see the UML tab)
- ***${attribute}*** produce *attribute*
- ***${type}*** is replaced by the type of the attribute (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Idl of the relation's stereotype (see the UML tab)

- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab)
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

valuetype's attribute

The macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the item adding //
- ***${description}*** is replaced by the item description without adding //
- ***${visibility}*** produce the visibility (see the UML tab)
- ***${type}*** is replaced by the type of the attribute (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Idl of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab)
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

union's attribute

The macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the item adding //
- ***${description}*** is replaced by the item description without adding //
- ***${readonly}*** produce *readonly* when the attribute is read only (see the UML tab)
- ***${case}*** is replaced by the case associated to the attribute
- ***${type}*** is replaced by the type of the attribute (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Idl of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab)
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

enumeration item

The macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the item adding //
- ***${description}*** is replaced by the item description without adding //
- ***${name}*** is replaced by the item's name (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

constant

The macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the item adding //

- ***${description}*** is replaced by the item description without adding //
- ***${type}*** is replaced by the type of the attribute (see the UML tab)
- ***${name}*** is replaced by the attribute's name (see the UML tab)
- ***${value}*** is replaced by the initial value of the attribute (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the attribute, if not found for the class containing the attribute etc ...

Relation

The Idl definition of a relation is set through the Uml and Idl tabs of the relation dialog.

The indentation of the first line of the definition give the indentation added to the class definition for all the relation definition.

Relation equivalent to an attribute in an interface

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the attribute adding //
- ***${description}*** is replaced by the relation description without adding //
- ***${readonly}*** produce *readonly* when the relation is read only (see the UML tab)
- ***${attribute}*** produce *attribute*
- ***${type}*** is replaced by the name of the class pointed by the relation (see the UML tab)
- ***${name}*** is replaced by the role's name (see the UML tab)
- ***${inverse_name}*** is replaced by the name of the inverse role (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Idl of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the relation, if not found for the class containing the relation etc ...

Relation equivalent to an attribute in a valuetype

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the relation adding //
- ***${description}*** is replaced by the relation description without adding //
- ***${visibility}*** produce the visibility (see the UML tab)
- ***${type}*** is replaced by the name of the class pointed by the relation (see the UML tab)
- ***${name}*** is replaced by the role's name (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Idl of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab)
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the relation, if not found for the class containing the relation etc ...

Relation equivalent to an attribute in an union

In BOUML the generated code is obtained by the substitution of macros in a text, the macros known by the Idl code generator are :

- ***${comment}*** is replaced by the description of the relation adding //

- ***${description}*** is replaced by the relation description without adding //
- ***${readonly}*** produce *readonly* when the relation is read only (see the UML tab)
- ***${type}*** is replaced by the name of the class pointed by the relation (see the UML tab)
- ***${name}*** is replaced by the role's name (see the UML tab)
- ***${stereotype}*** is replaced by the translation in Idl of the relation's stereotype (see the UML tab)
- ***${multiplicity}*** is replaced by the multiplicity of the relation (see the UML tab)
- ***${case}*** is replaced by the case associated to the relation
- ***@{xyz}*** is replaced by the *user property* value in case *xyz* is the key of this property. The property if searched first for the relation, if not found for the class containing the relation etc ...

Inheritance

The class inheritance are managed at the class level.

Extra member

The Idl definition of an extra member is set through the Idl tabs of the extra member dialog.

No macros.

Previous : Python reverse

Next : Roundtrip body

Roundtrip body

This is a *plug-out* directly written in C++.

When you set *preserve operations's body* through the *miscellaneous* menu, you edit the operation's bodies out of Bouml, and this one doesn't contains up to date operation's bodies (except for operations setting *force body generation*). This *plug-out* updates the operation's bodies in Bouml from the sources.

Roundtrip body works on the artifact, not at class level. So, when you ask for *roundtrip body* on an artifact (or an upper level), all the operations of all the classes having the mark in the sources associated to the artifact will be *roundtripped*.

You can ask for *roundtrip body* at package, deployment view or artifact level, except in this last case, the *roundtrip* is done recursively.

Previous : Idl generator

Next : State machine generator

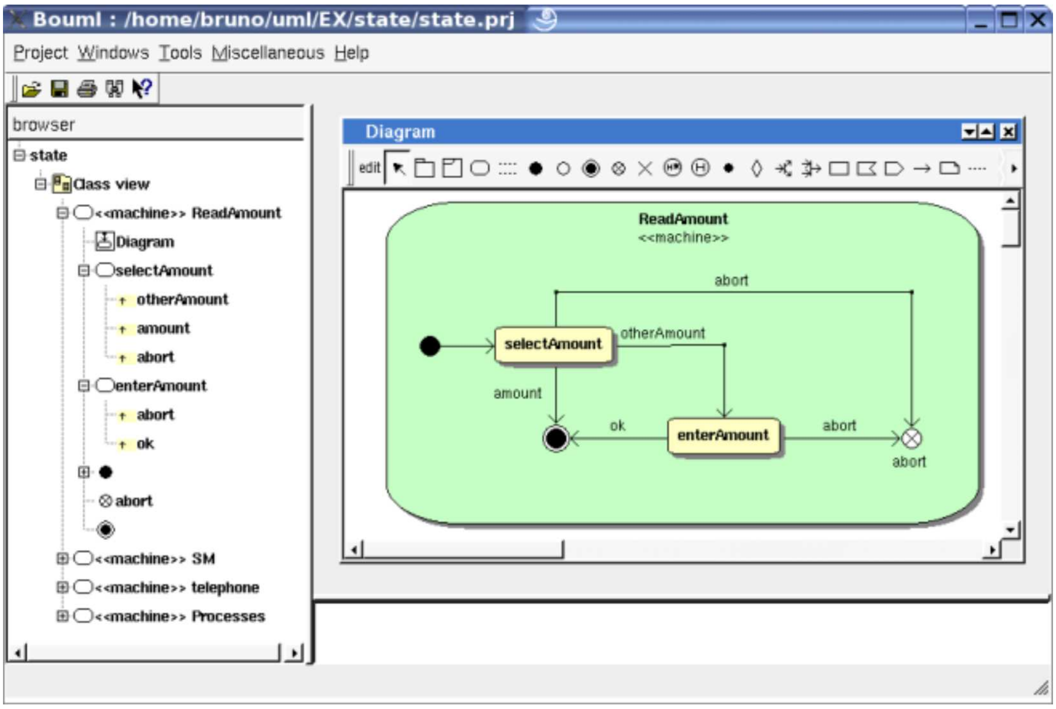
State machine generator

The state machine generator create or update the classes implementing a behavioral state machine on which it is applied.

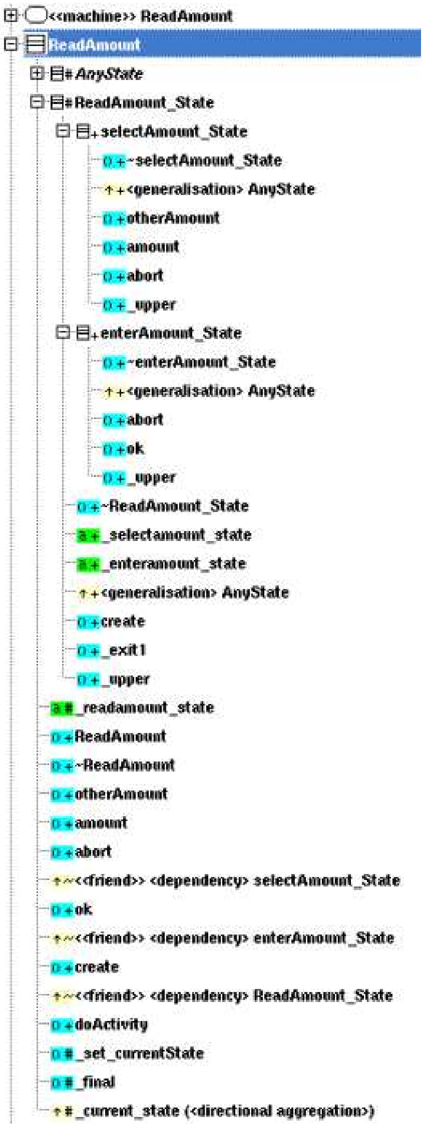
Currently the state machine generator only generates C++ definitions.

When you apply this plug-out on a state machine, a class having the same name (removing non legal characters) is created (or updated in case it already exist) in the same class view to implement it. This class doesn't contain static attributes and may have several instances. Each sub-state is managed through an own sub-class, the tree of the states and the associated classes is the same. For each trigger, whatever the state waiting for it, an operation having the same name (the C++ trigger must have a legal C++ name, the C++ guards must be legal C++ forms etc ...) is defined. Currently the triggers can't have parameters, and a transition can't have several triggers. You must apply these operations on the instance of the class implementing the state machine to simulate the event, the returned value is true until the final state is reached. The operation starting the execution is named *create* (the only legal trigger for a transition from an initial pseudo state). The operation *doActivity()* allows to explicitly execute out of a transition the *do activity* of the current state if it is not empty. A trigger's name can't start by the character '_', allowing me to produce operations and attributes starting by '_' without collision.

For instance, in case you apply the state machine generator on the following state machine :



you will obtain these definitions :



```
⊞ <<machine>> ReadAmount
⊟ ReadAmount
   ⊞ #AnyState
   ⊟ #ReadAmount_State
      ⊟ +selectAmount_State
            +~selectAmount_State
            +<generalisation> AnyState
            +otherAmount
            +amount
            +abort
            +_upper
      ⊟ +enterAmount_State
            +~enterAmount_State
            +<generalisation> AnyState
            +abort
            +ok
            +_upper
         +~ReadAmount_State
         +_selectamount_state
         +_enteramount_state
         +<generalisation> AnyState
         +create
         +_exit1
         +_upper
      #_readamount_state
      +ReadAmount
      +~ReadAmount
      +otherAmount
      +amount
      +abort
      ~<<friend>> <dependency> selectAmount_State
      +ok
      ~<<friend>> <dependency> enterAmount_State
      +create
      ~<<friend>> <dependency> ReadAmount_State
      +doActivity
      #_set_currentState
      #_final
      #_current_state (<directional aggregation>)
```

Having an instance of *ReadAmount*, you must first call *create* to execute the initial transition, then you may call *otherAmount* etc ...

When you modify the *state machine* then you recall this *plug-out*, the classes are updated. The classes, operations and attributes produced by a previous state machine definition but now useless are deleted. Warning : if a state or other elements is renamed or was moved to have a new parent, the corresponding class or class member is deleted and a new one is created. If you add classes or class members, these ones will not be deleted while their container is not itself deleted, and if they don't have a user property named *STM generated* (so, don't duplicate elements created by the *state machine generator* to not have this property or remove it after).

Some parts of the generated source code are instrumented to produce a debug message using the function *puts* of *stdio*. The instrumentation is always a form :

#ifdef VERBOSE_STATE_MACHINE

puts("<the message>");

#endif

To activate these traces you must compile the code defining VERBOSE_STATE_MACHINE.

Previous : Roundtrip body

Next : XMI generator

XMI generator

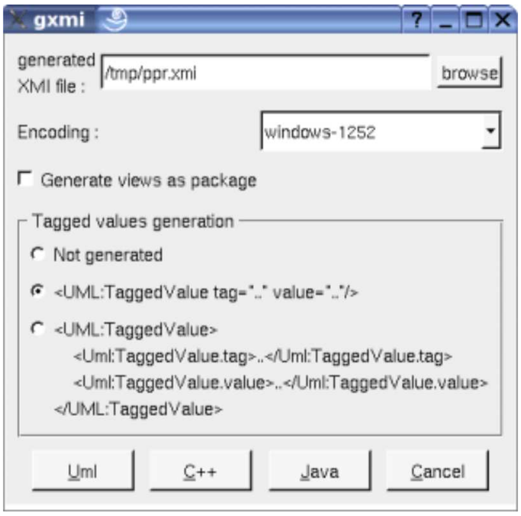
As it is signified by their name, the XMI *generators* generates the definition of the project using XMI.

They are two generators, one producing XMI 1.2 the other XMI 2.1

XMI 1.2 generator

To be compatible with existing tools, the used format is *xml 1.0, xmi 1.2* for *UML 1.4*.

This *plug-out* must applied on the project itself, it asks you to specify where the *xmi* file must be generated and if you want to produce the UML, C++ or Java definitions :



generated XMI file : /tmp/ppr.xmi

Encoding : windows-1252

□ Generate views as package

Tagged values generation

○ Not generated

● <UML:TaggedValue tag=".." value=".."/>

○ <UML:TaggedValue>
    <Uml:TaggedValue.tag>..</Uml:TaggedValue.tag>
    <Uml:TaggedValue.value>..</Uml:TaggedValue.value>
</UML:TaggedValue>

Currently only the UML definition of the *packages, views* (generated as package or not generated depending on the toggle above), *classes, attributes, relations, operations, use cases, components* (without UML2.0 features) and *nodes* are saved in the produced file. Classes defined under a *use case* or a *use case view* are generated as *actor*, their operations, attributes and relations are not generated except *dependencies* and *generalizations.*

The XMI generator manages the following options (in order) :

- *-uml* or *-c++* or *-java* to specify the target language, mandatory if other arguments are given (except the port number given by Bouml itself)
- *generated XMI file path* (must not contains space)
- *encoding*, for instance windows-1252
- *-view*, optional, to generate views as package
- *-simpleTv* to generate tagged values with the simple form, *-complexTv* to generate tagged values with the complex form, else the tagged values are not generated

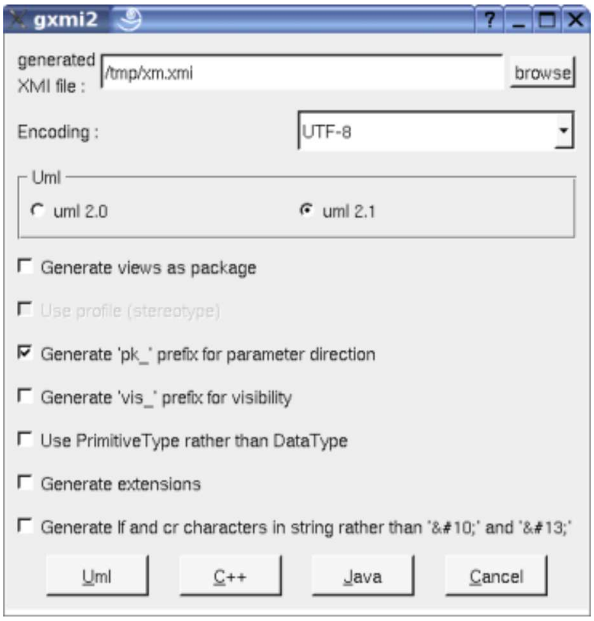
In case these arguments are given the dialog doesn't appears, this allows to export a project in XMI without any manual action.

These options may be set through the Tool setting dialog, or when you ask to start a plug-out when Bouml is lauched (see here).

XMI 2.1 generator

The used format is *xml 1.0, xmi 2.1* for *UML 2.0* or *2.1*

This *plug-out* must applied on the project itself, it asks you to specify where the *xmi* file must be generated and if you want to produce the UML, C++ or Java definitions following some options :



generated XMI file : /tmp/xm.xmi

Encoding : UTF-8

Uml

○ uml 2.0 ● uml 2.1

□ Generate views as package

□ Use profile (stereotype)

☑ Generate 'pk_' prefix for parameter direction

□ Generate 'vis_' prefix for visibility

□ Use PrimitiveType rather than DataType

□ Generate extensions

□ Generate lf and cr characters in string rather than '&#10;' and '&#13;'

Uml C++ Java Cancel

The XMI generator manages the following options (in order) :

- *-uml* or *-c++* or *-java* to specify the target language, mandatory if other arguments are given (except the port number given by Bouml itself)
- *generated XMI file path* (must not contains space)
- *encoding*, for instance *UTF-8*
- *-view*, optional, to generate views as package
- *-uml2.0*, optional, to generate for UML 2.0 rather than UML 2.1
- *-pk*, optional, to prefix the parameter direction by *pk_*
- *-vis*, optional, to prefix the visibility by *vis_*
- *-primitiveType*, optional, to define primitive and derived types (like *int* *) through a *primitive* type rather than a *data type*
- *-extension*, optional, to ask the generator to produce or not through an extension the *stereotypes* and user properties (*tagged value*)
- *-lf*, optional, to produce the characters *line feed* and *carriage return* without modification, else there are replaced by *&#10;* and *&#13;*

In case these arguments are given the dialog doesn't appears, this allows to export a project in XMI without any manual action.

These options may be set through the Tool setting dialog, or when you ask to start a plug-out when Bouml is lauched (see here).

Previous : State machine generator

Next : XMI import

XMI import

The XMI *import* allows to import XMI 2.1 for *UML 2.0* or *2.1* file. Bypassing comments and *?xml* the first element in the imported file must be *xmi:xmi* or *uml:model* or *uml:profile* else nothing is imported

This *plug-out* must be applied on the project itself or a package, it asks for a file and import it, at end the number of main imported elements is written.

This release doesn't look at the language indications, and only define elements at UML level.

Previous : XMI generator

Next : UML projection

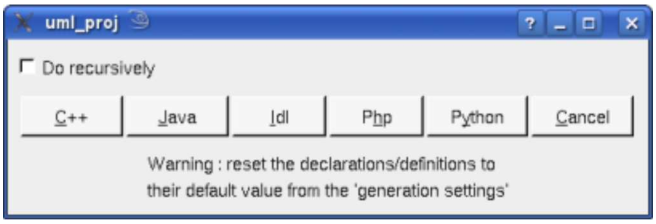
UML projection

This *plug-out* projects the UML elements in the desired language, setting the definitions/declarations to their default value according to the *generation settings* like when you use the *button default declaration/definition* in a dialog.

This *plug-out* can be applied on the project, a *package*, a *class view*, a *class*, an *operation*, an *attribute* or a *relation* and works recursively in case you ask for.

To not project classes stereotyped *stereotype* nor *metaclass* nor placed under a package stereotyped *profile*.

When you launch it the following dialog appears :



Warning : reset the declarations/definitions to their default value from the 'generation settings'

Ask to also project the sub elements if desired, then hit the button corresponding to the desired language projection.

Previous : XMI import

Next : Html documentation generator

HTML documentation generator

The *HTML documentation generator* is developed using BOUML and is an example of a program implemented simultaneously in C++ and Java.

As it is signified by its name, the *HTML documentation generator* generates HTML pages describing the object on which it is applied and its sub objects, with some indexes. When the generator is started some dialogs appear to configure the result, you may also set them using the options, see below

The diagrams are produced in the generated page(s), the used scale and picture size are the default ones except when there are set (for instance see use case diagram).

The HTML code generator manages the following options (in order) :

- *-flat*, optional, to produce the class definitions in index.html rather than in separate files.
- *-svg*, optional, to produce SVG images rather than PNG ones.
- *generated Html files directory* (must not contains space) mandatory if the next arguments are given (except the port number given by Bouml itself)
- *-del_html*, optional, to remove already existing HTML files in the specified directory
- *-del_css*, optional, to replace the file style.css if it already exists in the specified directory, do not use this option if you have your own styles. Of course in all the cases style.css is created if it doesn't exist

In case the generated files directory is specified the dialogs don't appears, this allows to generate the HTML documentation without any manual action.

These options may be set through the Tool setting dialog, or when you ask to start a plug-out when Bouml is lauched (see here).

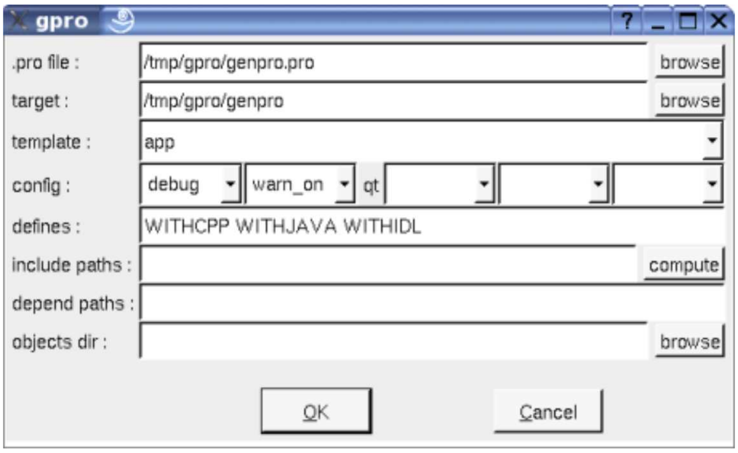
Previous : XMI import

Next : genpro

Genpro : .pro generator

genpro is an other example of *plug-out developed* with BOUML, its goal is to generate the *.pro* file used by *qmake* or *tmake* to produce the *Makefile* of a C++ program using *Qt* ... for instance a *plug-out*.

genpro has itself a graphical interface implemented thanks to *Qt*, when it is applied on a artifact stereotyped *executable* the following window appears (here it is applied on the *gpro* executable artifact itself, the C++ generation directory is */tmp/gpro*) :



.pro file : /tmp/gpro/genpro.pro

target : /tmp/gpro/genpro

template : app

config : debug warn_on qt

defines : WITHCPP WITHJAVA WITHIDL

include paths :

depend paths :

objects dir :

By default the *.pro* file is produced in the directory where the executable is made, the executable's name is the artifact's name except when this least is '*executable*', in this case is is the project's name. You may specify the *template* (*app, lib* or *subdirs*), set some flags like *debug,* the *C++ pre-processor* variable definitions (see *plug-out* for explanations on WITHCPP WITHJAVA and WITHIDL), ask to place the *objects* in a directory which is not the one used for the sources etc ...

The source files considered by *genpro* are the ones produced by the *source* artifacts associated to the *executable* artifact on which *genpro* is applied.

The same technique may be used to directly generate a *Makefile* for a C++ or Java program.

Previous : Html documentation generator

Next : Rose project import

Rose project import

This *plug-out* is developed using BOUML in C++. As it is signified by its name, this one import a Rose model from its .mdl (and associated files) into BOUML in the package/project where it is launch.

This *plug-out* is under development, actually the imported diagrams are created empty, the BOUML's API doesn't yet allows to modify them. Actually the reverse C++ doesn't allows to complete the imported model with the files generated by Rose.

BOUML manages the case of the controlled packages through a *.cat* or a *.sub* files find through a $variable rather than a fixed path. When a variable is not an environment variable, BOUML ask for its value (only one time, or course).

BOUML write a message into the tool window each time it cannot import something.

Previous : genpro

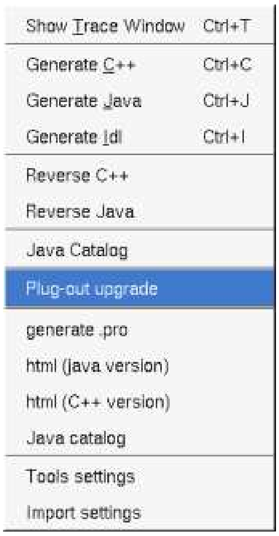
Next : Plug-out upgrade

Plug-out Upgrade

When new features are introduced in BOUML these ones are not managed by your (now old) *plus-out*s, to automatically upgrade them, the distribution of BOUML contains the *upgrade plug-out.*

Its goal is to upgrade the *plug-outs* not made from the last up to date version of the *plug-out empty*, adding the missing features.

It is applied through the entry *plug-out upgrade* of the menu *Tools* (this entry doesn't appears while a dialog is opened or when the project is not a *plug-out*) :



When it is applied, the *plug-out* ask you for a confirmation, thus it adds the needed classes etc ... When all is done a new dialog appears for information and a *save-as* is called asking you to save your *plug-out* in a new location, thus in all the cases the project is closed.

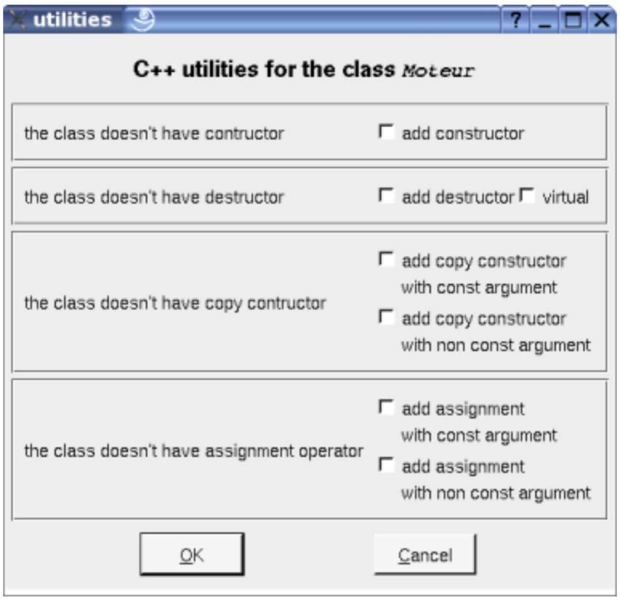
Previous : Rose import

Next : C++ utilities

C++ Utilities

Some utilities concerning C++.

When it is applied to a class, it allows to add specific operations not yet defined :



C++ utilities for the class *Moteur*

the class doesn't have contructor □ add constructor

the class doesn't have destructor □ add destructor □ virtual

the class doesn't have copy contructor □ add copy constructor with const argument □ add copy constructor with non const argument

the class doesn't have assignment operator □ add assignment with const argument □ add assignment with non const argument

The content of the dialog depend on the already defined operations.

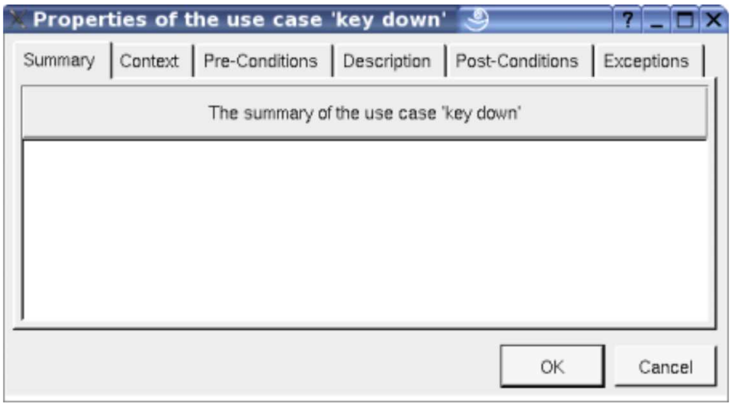
Previous : Plug-out upgrade

Next : Use case wizard

Use case wizard

A very simple plug-out defined in C++ and Java both (like the HTML code generator) to extend use case features.

When it is applied to a use case, it allows to specify through text a summary, context, pre-conditions, description, port-conditions and exception :



The summary of the use case 'key down'

Don't hesitate to modify this plug-out (saving it output of the Bouml installation directory to not loose your modifications on a future Bouml installation) for your own purposes !

Previous : C++ utilities

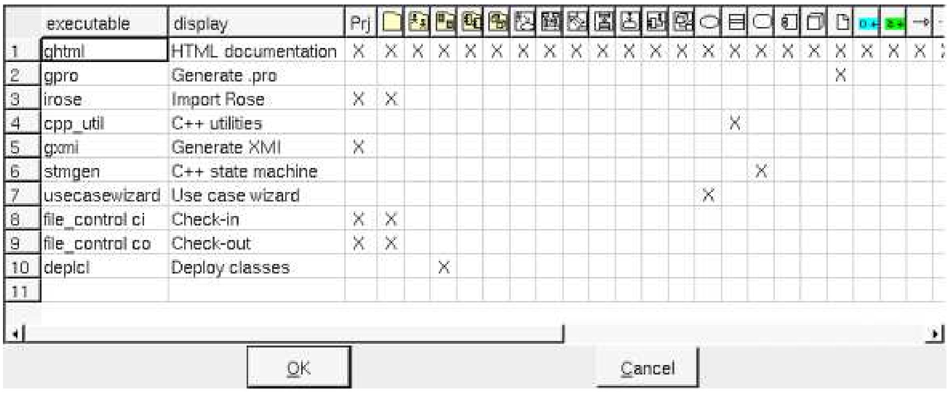
Next : File control

File control

A very simple plug-out defined in C++ to control the project files with CVS, Subversion, Clear Case or other file controller, doing the *check in / out* on the appropriate files.

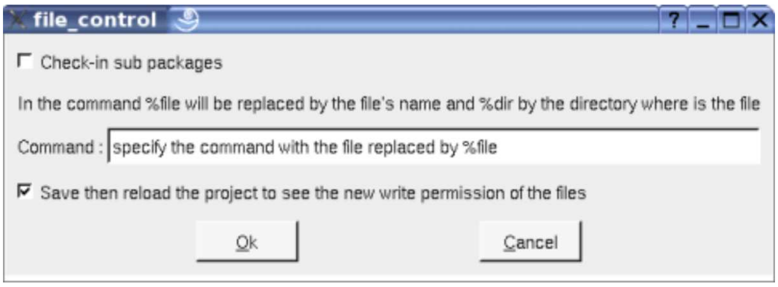
This plug-out asks for the command to be made on each file. The command is executed through the function system, don't forget to give the option -nc for Clear Case. Of course in case you don't use a file control you may use this plug-out to set the file permissions using *chmod* in the commands under Linux etc ...

The first parameter of the plug-out must be *ci* or *co* to know what must be done, this means that the plug-out is configured two times, for instance like this :



	executable	display	Prj	□												○	☰	▢			🗋	0+	2+	→
1	ghtml	HTML documentation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	gpro	Generate .pro																			X			
3	irose	Import Rose	X	X																				
4	cpp_util	C++ utilities															X							
5	gxmi	Generate XMI	X																					
6	stmgen	C++ state machine																X						
7	usecasewizard	Use case wizard														X								
8	file_control ci	Check-in	X	X																				
9	file_control co	Check-out	X	X																				
10	deplcl	Deploy classes				X																		
11																								

When it is applied to a the project or an other *package* it ask you for the command (proposing the last used one) :

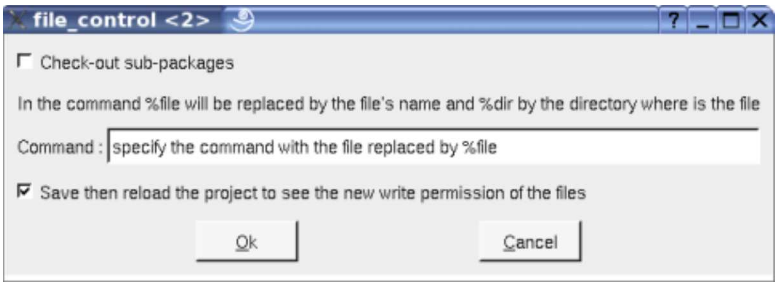


□ Check-in sub packages

In the command %file will be replaced by the file's name and %dir by the directory where is the file

Command : specify the command with the file replaced by %file

☑ Save then reload the project to see the new write permission of the files



□ Check-out sub-packages

In the command %file will be replaced by the file's name and %dir by the directory where is the file

Command : specify the command with the file replaced by %file

☑ Save then reload the project to see the new write permission of the files

When you just want to change the write permissions using *chmod* under Linux, the *check in* command is *chmod -w %dir/%file* and the *check out* command is *chmod +w %dir/%file*

Note : the file permissions are set when a project is read, you must re-read a project to force Bouml to know the new ones.

Previous : C++ utilities

Next : Deploy classes

Deploy classes

A very simple plug-out defined in C++ and Java both (like the HTML code generator) to automatize the creation of the artifact for all the classes of the class view on which the plug-out is applied :

- If the class view doesn't have an associated deployment view, an associated deployment view having the name of the class view is created in the same package.
- An artifact with the stereotype source is created and associated to all the classes of the class view without associated artifact and deployed for at least one language, the name of the artifact is the name of the class.
- A class is deployed for a given language only when it is non external and has a non empty definition. Classes stereotyped *stereotype* or *metaclass* are not deployed.

Previous : File control

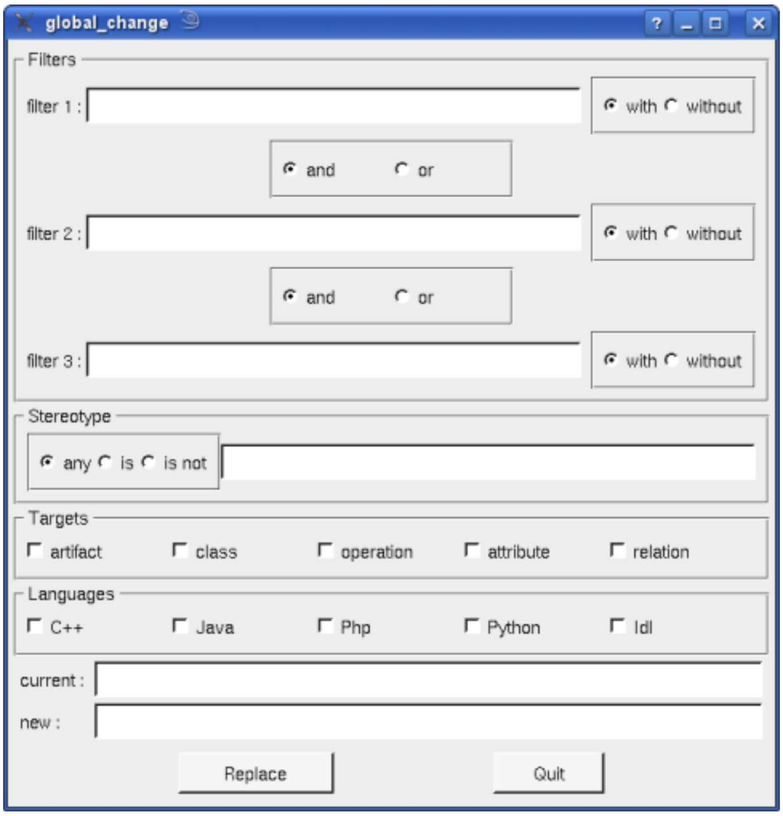
Next : global change

Global change

This *plug-out* defined in C++ allows to do global modification of the *artifact*, *classes*, *operations*, *attributes* and *relations* definitions, working recursively from the *browser* element on which it is applied.

When you change default definitions or declarations in the *generation settings*, these changes are not propagated in the already existing elements to not broke them. This *plug-out* allows you to apply these changes if needed on a controlled way.

This *plug-out* may be applied on a *package* (including the *project* itself), *class view*, *deployment view* or a *class*, and works through this dialog :



The *filters* are optional are allow to not do the change on all the potential definitions and declarations. An empty filter is ignored, else a filter may be used to consider the forms containing it (*with* is set) or not containing it (*without* is set). When you have several filters you may conjugate them with *and* or *or*, the priority of *and* and *or* are the standard ones (like in C++ Java Php or Python). In case you have one filter, you must use filter 1. In case you have two filters you must use filter 1 and 2.

It is also possible to filter through the *stereotype*. Choose *any* to not consider the stereotypes, *is* to consider only the elements having the specified stereotype (may be an empty one), and *is not* to not consider the elements having the specified stereotype (may be an empty one).

Several *targets* may be set, to choose on which kind of elements the change must be done.

Several *languages* may be set too, to choose for which language the definition / declarations the changes must be done.

Current indicates the current form to be changed, *new* the value, the substitution being done on the element definitions / declarations compatible with all the previous indications.

Notes : except for the stereotype where there are not available, a \n is used to indicate a line break and a \t indicates a tab in the inputs. At most one replacement is done by form.

Examples of use :

- you want to replace everywhere *${comment}* by *${description}* : all the filters must be empty, set *any*, *artifact, class, operation, attribute* and *relation*, set the right languages, set *current* to *${comment}* and *$new* to *${description}*, press *Replace.*
- In the old releases, the operation body indent must be set inside the body because the form *${body}* was not preceded by two spaces, to replace the old definitions by the new default one where *${body}* is placed after two spaces, and to keep the definition having these to spaces unchanged : the first filter must be set to *<space><space>${body}* (where *<space>* is a space character !) and you set *without*, the other filters are empty, set *operation* only, set the right languages, set *current* to *${body}* and *$new* to *<space><space>${body}* (where *<space>* is a space character !), press *Replace.*

When you ask for a replacement, a dialog indicate how many changes was done, and may be how many can't be done because it is not possible to set the definition / declaration of a *read only* element.

Warning, global changes may have dramatic consequences when the filtering is not sufficient,because you can't undo them it is a good idea to save the project before changes !

Previous : Deploy classes

Next : plug-outs

Plug-outs

Plug-outs are external programs written in C++ or Java which interact with BOUML via a network socket. These programs may be written using BOUML itself. The previous chapters describe some *plug-out* including the code generators and code reverse.

A *plug-out* is a very practical way to automate treatment on the model; do not hesitate to write one. I just recommend you to save your model before executing your *plug-outs* when you debug them :-) !

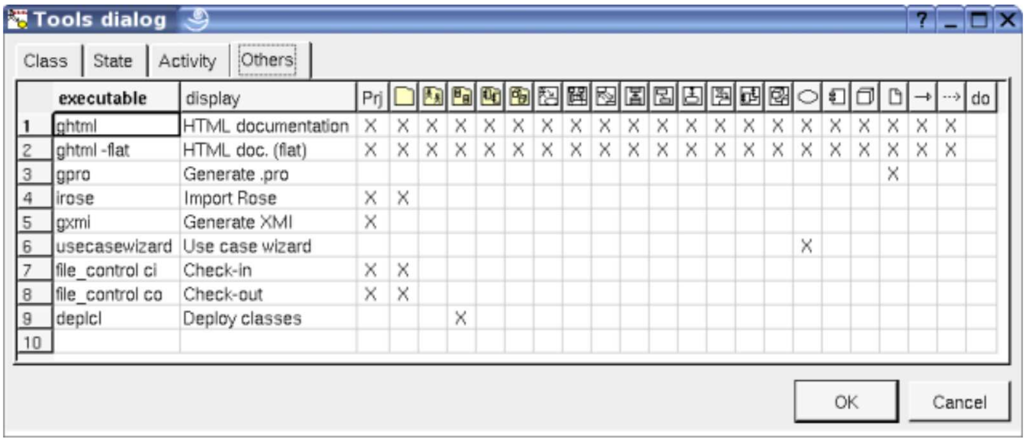
Applying a *plug-out*

If you right-click on any item in the browser tree, you will see a pop-up menu. Select the *Tool* item and you will see a list of all the plug-outs which can operate on the item you right-clicked.

Additionally, if a *plug-out* is able to operate at project level (see the *Prj* column described below), then the *plug-out*'s description will also appear in the *Tool* menu in the menu-bar at the top of the BOUML window.

Declaring a *plug-out*

To be executed, a *plug-out* must be declared through the *tool dialog* called when you select the *tools settings* entry of the *tools* menu :



	executable	display	Prj	□														○				→	⇢	do
1	ghtml	HTML documentation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	ghtml -flat	HTML doc. (flat)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	gpro	Generate .pro																			X			
4	irose	Import Rose	X	X																				
5	gxmi	Generate XMI	X																					
6	usecasewizard	Use case wizard																X						
7	file_control ci	Check-in	X	X																				
8	file_control co	Check-out	X	X																				
9	deplcl	Deploy classes				X																		
10																								

The first column specify how the *plug-out* is executed, for a C++ program you just have to give its name and may be the path depending on your environment, in Java the *-cp* option allows to specify the path and the starting class is *Main* (except if you change the definition of the *executable* artifact !).

The content of the second column will be displayed in the menu when your *plug-out* is applicable on the target item.

The other columns allows to specify the kind of the items on whose the *plug-out* is applicable. The icon in each column header corresponds to all instances of that icon in the browser view (see the browser items page for a summary of the meaning of all icons). If a column in a *plug-out* row is checked, it means that you can right-click an instance of that icon in the browser view, select the *Tool* item at the bottom of the pop-up menu, and then initiate the *plug-out*'s operation on the instance you right-clicked.

For instance, in the screenshot above, the row for the *gpro* executable contains a single X in the column corresponding to the artifact icon. This means that you can right-click any artifact in the browser tree, select *Tool* then *Generate .pro* to generate the corresponding *.pro* file.

As usual the last column *do* allows to copy/past/cut/insert line and applies on the line where you did the mouse click.

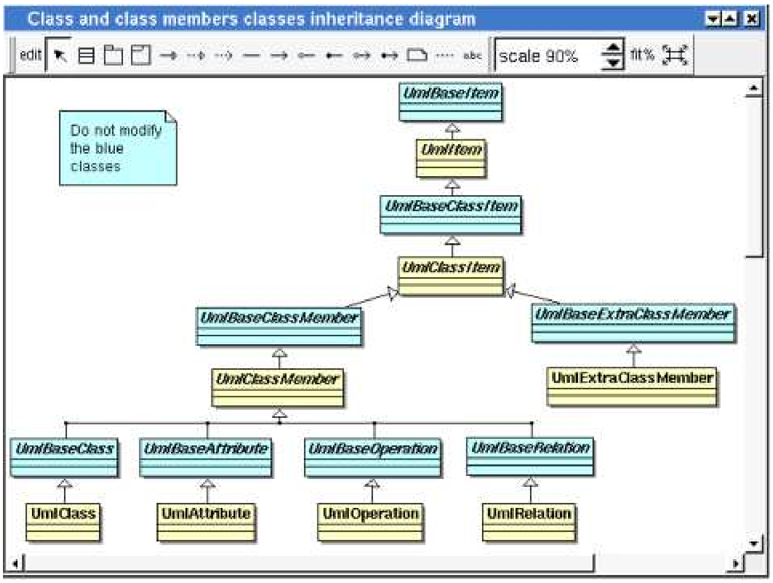
Note that the declaration of the *plug-out* is saved in the file named *tools*, this allows you to quickly set the tools list after creating a new project copying the tools file of an old project (this file is read when you load the project).

Creating a new *plug-out*

The distribution of BOUML contains a project named *empty*, this one is a *plug-out* doing nothing for you point of view, in fact it implements in C++ and Java the API allowing to interact with BOUML. To develop a new *plug-out* open the *empty* project, BOUML will ask you to save it in an other project to keep *empty* unmodified. You may also develop a *plug-out* from one of the others available *plug-outs*, you just have to know that these ones was developed at different step of the BOUML definition, then they do not contain all the BOUML API and some operations may not be defined. By definition, *empty* contains all the API.

The *empty plug-out* contains several already defined classes with their associated artifact, half of them are placed under the *package*

API BASE and implement the API with BOUML, you cannot modify them, they define the *system* part of a *plus-out*. The other half is yours, each of these *user* classes inherits to a *system* class, and sometimes a *system* class inherits of a *user* class, for instance the classes associated to ... the classes are:



In this diagram the blue classes are the *system* classes, the other classes are yours. *UmlItem* is the *user* class inherited by almost all the other classes.

The disadvantage of this choice in C++ is to recompile many files when a base class is modified, but this allows to define (*virtual*) operations managing several classes.

I do not describe in this documentation all the predefined classes and their operations, the better is to look at the model of a newly created *plug-out* or to generate the html pages describing it (this is done under the empty_html directory, the html entry page is *index-withframe.html*). I also recommend you to look at the *plug-outs* given with the BOUML distribution. Nevertheless you have to know :

- the entry point of a *plug-out* in C++ and Java is placed in the artifact named *Main* under *USER API*, refer to it
- in C++ :

  if the C++ pre-processor variables WITHCPP, WITHJAVA, WITHPHP and WITHIDL are defined (using *#define* or -D option of the G++ compiler, etc ...) you will get all the informations from BOUML.

  if the C++ pre-processor variables WITHCPP, WITHJAVA, WITHPHP and WITHIDL are not defined you will access only to UML data, this means for instance that the operations *cppDecl javaDecl phpDecl* and *idlDecl* will not be defined for *UmlBaseClassItem,* this limits the amount of data managed by a *plug-out* and reduce the execution time and used memory space

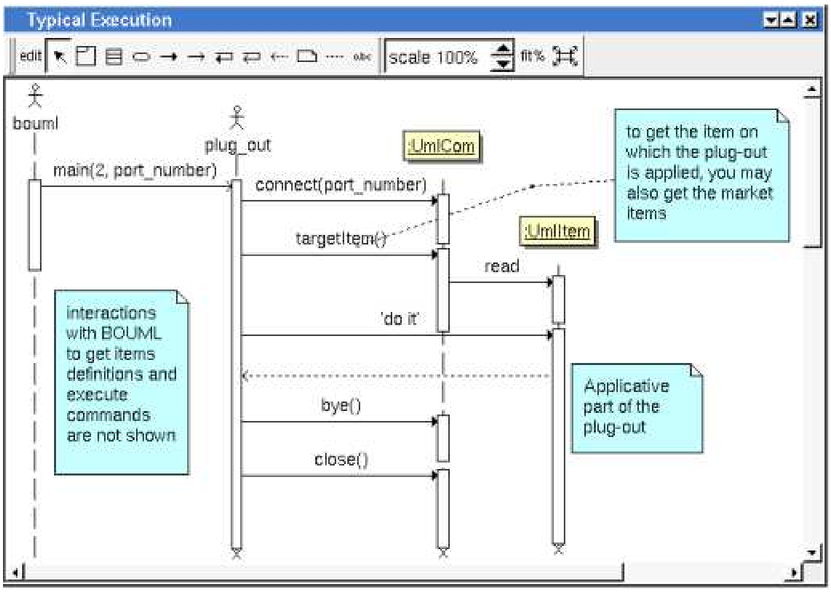
  if only WITHCPP is defined you will access only to UML and C++ data, this means for instance that the operations *javaDecl phpDecl* and *idlDecl* will not be defined for *UmlBaseClassItem,* this limits the amount of data managed by a *plug-out* and reduce the execution time and used memory space

  if only WITHJAVA is defined you will access only to UML and Java data, this means for instance that the operations *cppDecl phpDecl* and *idlDecl* will not be defined for *UmlBaseClassItem,* this limits the amount of data managed by a *plug-out* and reduce the execution time and used memory space

  if only WITHPHP is defined you will access only to UML and Php data, this means for instance that the operations *cppDecl javaDecl* and *idlDecl* will not be defined for *UmlBaseClassItem,* this limits the amount of data managed by a *plug-out* and reduce the execution time and used memory space

  if only WITHIDL is defined you will access only to UML and IDL data, this means for instance that the operations *cppDecl javaDecl* and *phpDecl* will not be defined for *UmlBaseClassItem,* this limits the amount of data managed by a *plug-out* and reduce the execution time and used memory space

  the other combinations where only two of these three pre-processor variables are defined are illegal.


Typical Execution
edit
scale 100%
fit%
bouml
plug_out
:UmlCom
:UmlItem
main(2, port_number)
connect(port_number)
targetItem()
read
'do it'
bye()
close()
to get the item on which the plug-out is applied, you may also get the market items
interactions with BOUML to get items definitions and execute commands are not shown
Applicative part of the plug-out

Updating a *plug-out*

See upgrade plug-out.

To start a *plug-out* when Bouml is launch

It is possible to apply a plug-out on the project when Bouml is started through your *shell* or command line : *bouml <project file> -exec <plug out> <plug out options> -exit*

To not see the graphical interface replace *-exec by -execnogui*. Warning, under *Windows* the export of the diagrams doesn't work correctly with the option *-execnogui*.

- *<project file>* indicates the model to load as usual.
- *<plug out>* indicates the plug-out to apply on the project. The C++ generator is named *cpp_generator*, the Java generator *java_generator*, the Php generator *php_generator*, the Idl generator *idl_generator*, the HTML generator *ghtml*, the XMI generator *gxmi* and *gxmi2*. If necessary the full path of the plug-out have to be done, warning : under Windows this path must not contain space.
- *<plug out options>* are the optional options you give to the *plug out*
- *-exit* is optional and allows to exit from Bouml when the plug-out execution is done.

For instance (HTML generator options are given here, XMI generator options are given here) :

- "C:\Program Files\Bouml\bouml" "D:\...\aze\aze.prj" -exec C:\Progra~1\Bouml\gxmi -uml c:\aze.xmi windows-1252 -exit
- bouml .../qsd/qsd.prj -exec -flat /usr/lib/bouml/ghtml /tmp/qsd_html -del_html -exit

Exchanges with BOUML

The exchanges between BOUML and the *plug-outs* are supported by a TCP/IP socket. When you ask BOUML to start a *plug-out*, it search for a free port number starting at 1024. In case you have a *firewall* it may be necessary to configure it.

To reduce the number of exchanges with BOUML and run faster, a *plug-out* does not ask for BOUML each time you want to get a value. The *system* classes read and memorize all the data of a given item the first time you access to one of them (with the restrictions allowed by WITHCPP, WITHJAVA, WITHPHP and WITHIDL). This is transparent for you until two *plug-outs* access to the same data, when one *plug-out* modify a value already read by the other, the second *plug-out* does not see the new value until it *unload* (an operation defined *on UmlBaseItem)* the object, then ask for the value.

User properties

A *user property* is a couple key – value, the value may be empty.

By default the *user properties* are not used, nevertheless they exist! It is the only way to add information concerning any item (without modifying BOUML !), and obviously they are accessible in the *plug-outs*. The alone limitation is that the keys and the values must contain *string*, may be on several lines ... even the editor called by the dialogs is not a multi-lines editor !

The *plug-out* *genpro* use the properties of the artifact on which it is applied to save its data and give them is a future usage (supposing the project saved !).

To see/modify them, select the last tab named *User* present in the dialog of any kind of item.

Compile a Java *plug-out*

To compile the java files, go in the directory where the files are and do *javac *.java* (don't compile file by file because some files associated to the API contain several classes).

Compile a C++ *plug-out* under *Windows*

Qt 2.3 for Windows and Microsoft Visual C++ is available here : ftp://ftp.trolltech.com/qt/non-commercial/

Because this release of Qt is old, if you install Qt on a recent release of *Windows* (for instance *Xp*) the installation may be frozen at the end, in this case just kill the installation process and in fact the installation is done.

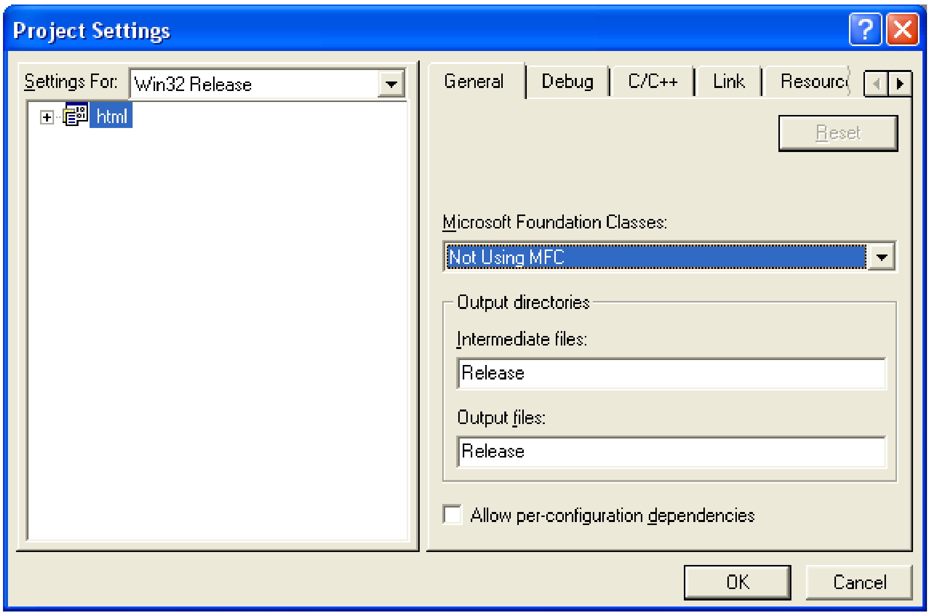
Read the Qt documents to see how to use Qt under *Microsoft Visual C++*.

On recent releases of *Windows / Visual C++* the macros allowing to automatically create a Qt project and / or to ask for the usage of *moc* on header files may not work, in this case read the following

To have a QT project

Edit project settings :

- the MFC must not be used :



Settings For: Win32 Release

Microsoft Foundation Classes: Not Using MFC

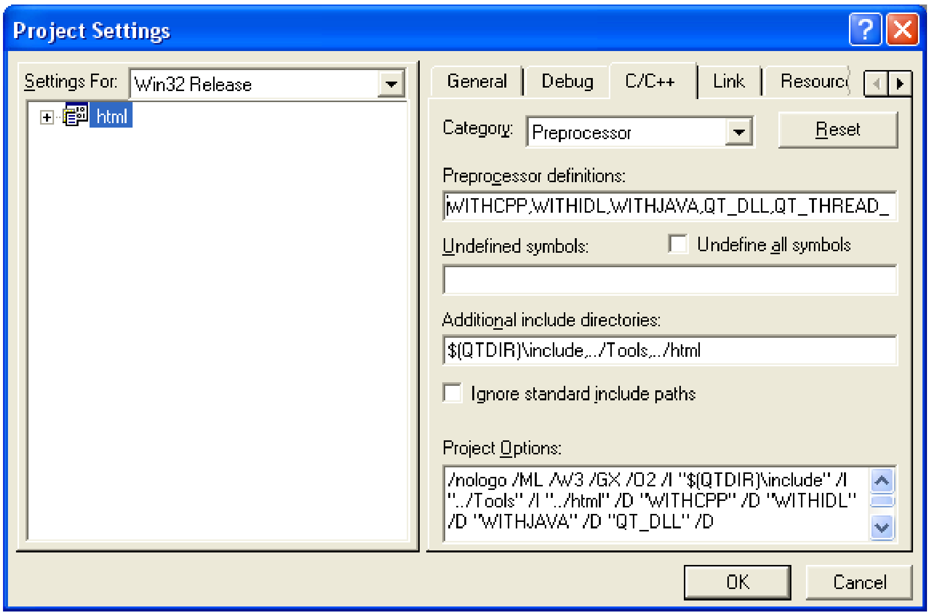
Output directories

Intermediate files: Release

Output files: Release

□ Allow per-configuration dependencies

- add the *preprocessor definitions* WITHCPP WITHJAVA WITHPHP WITHIDL QT_DLL QT_THREAD_SUPPORT (having both WITHCPP WITHJAVA WITHPHP and WITHIDL is not mandatory, you may define only one of them, for instance WITHJAVA in case you are only interested by the Java definition of the items, this allows to save memory space at the execution), add the *additional include directory* $(QTDIR)\include :



Project Settings

Settings For: Win32 Release

html

Category: Preprocessor

Preprocessor definitions:

WITHCPP,WITHIDL,WITHJAVA,QT_DLL,QT_THREAD_

Undefined symbols:

□ Undefine all symbols

Additional include directories:

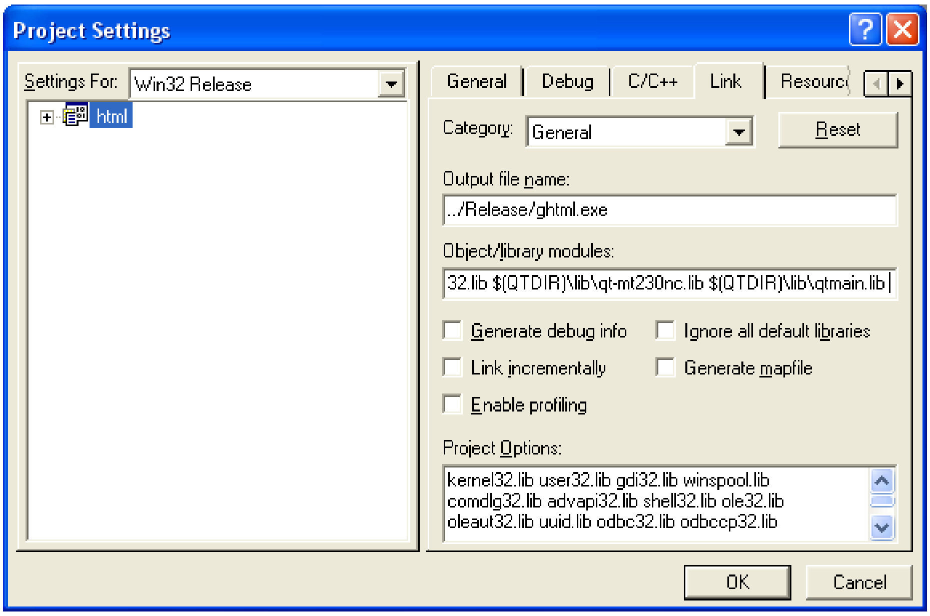
$(QTDIR)\include,../Tools,../html

□ Ignore standard include paths

Project Options:

/nologo /ML /W3 /GX /O2 /I "$(QTDIR)\include" /I "../Tools" /I "../html" /D "WITHCPP" /D "WITHIDL" /D "WITHJAVA" /D "QT_DLL" /D

- add the *library modules* $(QTDIR)\lib\qt-mt230nc.lib and $(QTDIR)\lib\qtmain.lib :



Project Settings

Settings For: Win32 Release

html

Category: General

Output file name:

../Release/ghtml.exe

Object/library modules:

32.lib $(QTDIR)\lib\qt-mt230nc.lib $(QTDIR)\lib\qtmain.lib

□ Generate debug info □ Ignore all default libraries

□ Link incrementally □ Generate mapfile

□ Enable profiling

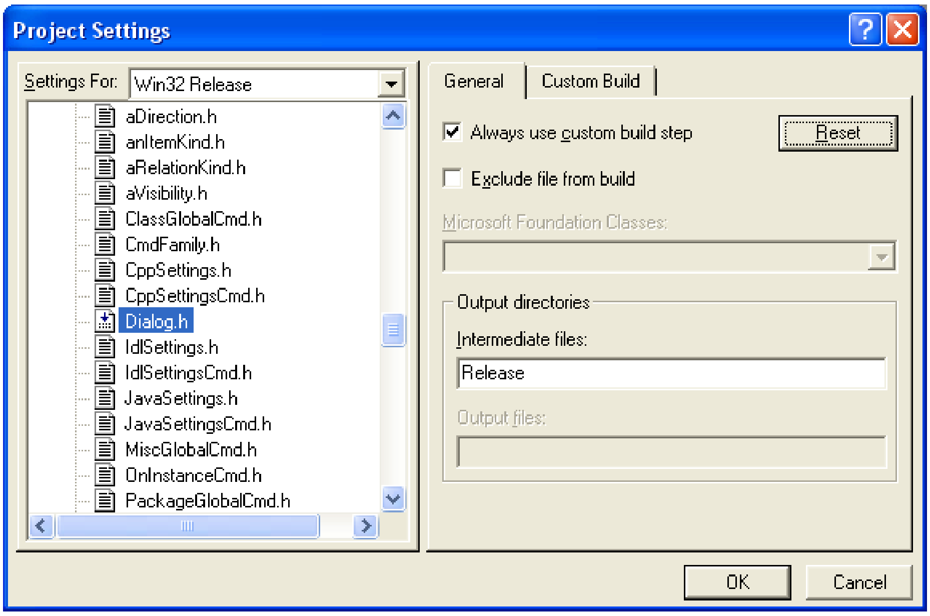
Project Options:

kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib

To apply *moc* on a header

Edit the settings of the file in the following order :

- *use custom build step*:



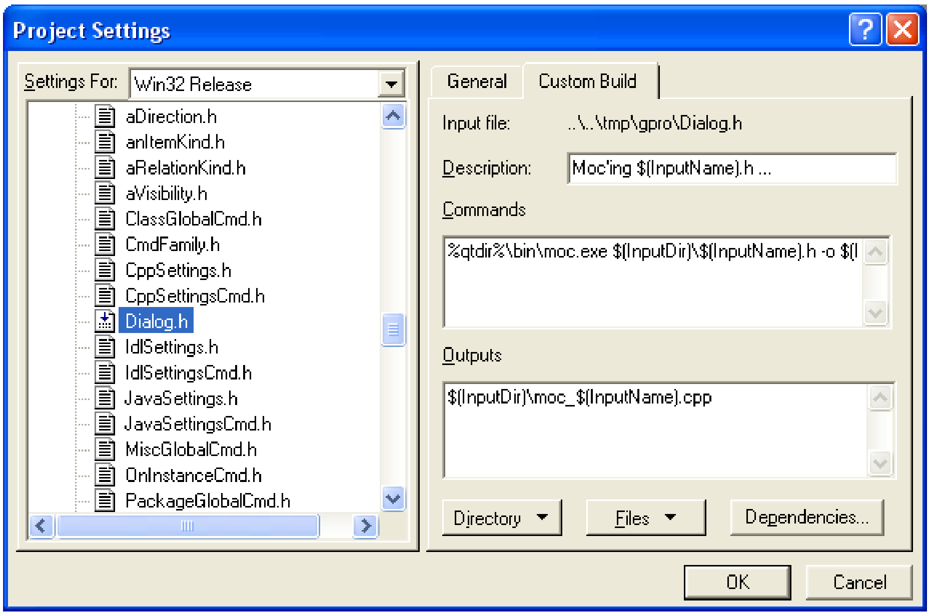
Settings For: Win32 Release

☑ Always use custom build step

□ Exclude file from build

Intermediate files: Release

- set *Output* to $(InputDir)\moc_$(InputName).cpp
- set *Commands* to %qtdir%\bin\moc.exe $(InputDir)\$(InputName).h -o $(InputDir)\moc_$(InputName).cpp
- set *Description* to Moc'ing $(InputName).h



Settings For: Win32 Release

Input file: ..\..\tmp\gpro\Dialog.h

Description: Moc'ing $(InputName).h ...

Commands

```
%qtdir%\bin\moc.exe $(InputDir)\$(InputName).h -o $(I
```

Outputs

```
$(InputDir)\moc_$(InputName).cpp
```

Previous : Use case wizard

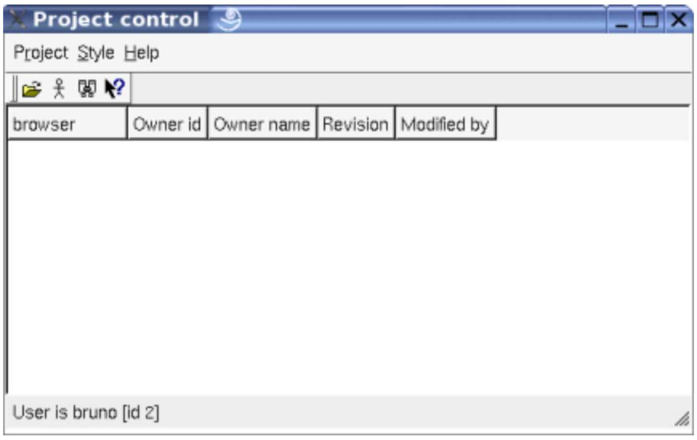
Next : Project control

Project control

This tool manages an applicative write access to the project files without using the may be existing operating system capabilities. The goal is to give the write access of a the project files to at most one user per file, to avoid to merge modifications made by several users. The tool *Project synchro* associated to p*roject control* allows you to synchronize a repository project with the modifications made by several users (supposing each package modified by at most one user).

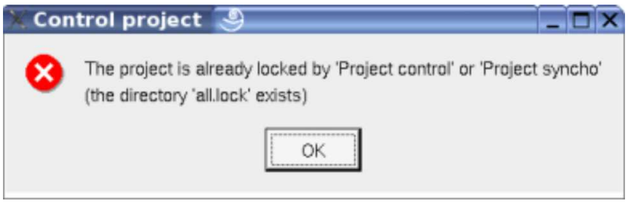
Because of the way the project data are saved by BOUML (see project files), the write access are managed at package level, and each information attached to a package (except its sub packages) have the write access of this package. Recall the *generation settings, default stereotypes* etc are associated to the *project* package, a good way is to not define views directly in the *project* package but to immediately create sub packages, each one owned by a different user or protected.

Project Control is not a *plug-out*, it is launch like BOUML or any tool, when you start it the following window appears :

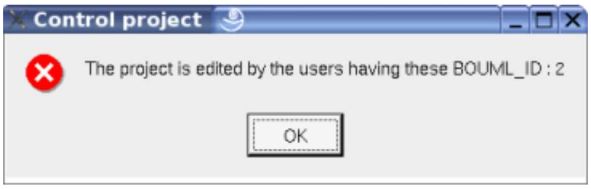


User is bruno [id 2]

To avoid inconsistencies, you can't apply *Project Control* several times on a given project, and you can't use it on a project while it is edited by BOUML or by *Project Synchro*, if this is the case a message warns you :



The project is already locked by 'Project control' or 'Project syncho' (the directory 'all.lock' exists)

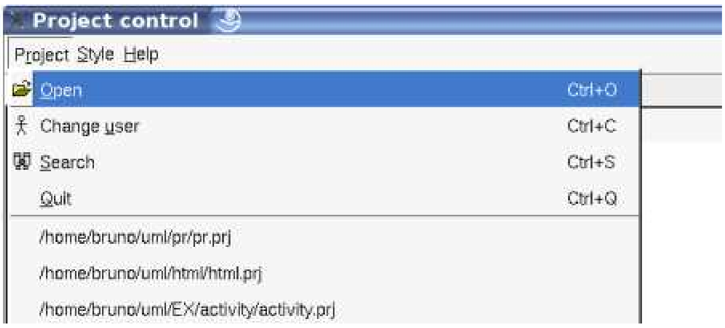


The project is edited by the users having these BOUML_ID : 2

The write access are written inside the project files associated to the packages, if all the users access to the same shared image of the project, the protection will be taken into account by BOUML. If there are several images of the project, after the use of *File Control* each image must be updated, or you must set the same write access using the tool by yourself.

All the operations are presented to be done for a given user, this user is indicated at the bottom of the window. Obviously the user is first the one starting the tool, the *id* is the value of the user own identifier set through the environment dialog.

Project menu

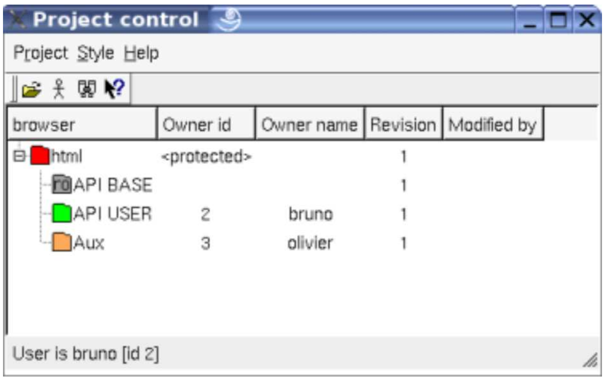

Project control
Project Style Help
Open Ctrl+O
Change user Ctrl+C
Search Ctrl+S
Quit Ctrl+Q
/home/bruno/uml/pr/pr.prj
/home/bruno/uml/html/html.prj
/home/bruno/uml/EX/activity/activity.prj

This menu allows

- to load project (may be through the historic list proposed at the bottom, this historic is the one of BOUML for the user starting *Project Control*),
- to change the current user,
- to search for a package from its name,
- or to quit the tool.

Browser

When you load a project, only the packages are shown in the browser, for example on the project doing the HTML generation, if the *project* package is protected, the *API USER* owned by *bruno* and *Aux* by *olivier* :



browser	Owner id	Owner name	Revision	Modified by
🟥 html	<protected>		1	
ro API BASE			1	
🟩 API USER	2	bruno	1	
🟧 Aux	3	olivier	1	

User is bruno [id 2]

The icon used to represent a package indicates the write access :

- ⬛ : the package is not protected and may be modified by any user using BOUML
- 🟥 : the package is protected, no users may modify it using BOUML
- 🟩 : the package is own by the current user, only the current user can modify it using BOUML
- 🟧 : the package is own by an other user (indicated by the columns *Owner id, Owner name)*, only this user can modify it using BOUML
- ro : the package is not protected and its associated file is read-only, you can't modify the write access
- ro : the package is protected and its associated file is read-only, you can't modify the write access
- ro : the package is own by the current user and its associated file is read-only, you can't modify the write access
- ro : the package is own by an other user and its associated file is read-only, you can't modify the write access

Package menu

A menu appears when you do a right mouse click on a package, its content depend on the package access, the entries are *(Ctrl* is replaced by *Apple* under MacOS X) *:*

- *Protect this package (Ctrl+p)* :to protect the current package, no user will be able to modify it using BOUML
- *Unassign this package (Ctrl+u)* : to not protect the current package, all the users will ne able to modify it using BOUML
- *Assign this package to <user> (Ctrl+a)* : to protect the current package except for the current user
- *Protect <user>'s packages recursively from this one* : to protect the packages own by the current user from the current package and going down recursively, the state of the packages not own by the current user is unchanged
- *Protect unassigned packages recursively from this one* : to protect all the unprotected packages from the current and going down recursively, the state of the other packages is unchanged
- *Protect all packages recursively from this one (Alt+p)* : to protect all the packages from the current and going down recursively
- *Assign to <user> unassigned packages recursively from this one* : to protect except for the current user all the unprotected packages from the current and going down recursively, the state of the other packages is unchanged
- *Assign to <user> all packages recursively from this one (Alt+a)* : to protect except for the current user all the packages from

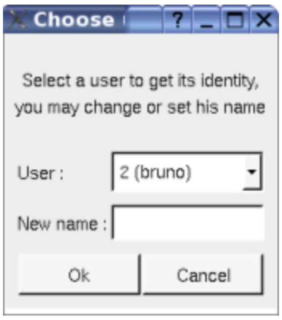
the current and going down recursively

- *Unassign <user>'s packages recursively from this one* : to not protect the packages own by the current user from the current package and going down recursively, the state of the other packages is unchanged
- *Unassign all packages recursively from this one (Alt+u)* : to not protect the packages from the current package and going down recursively

Warning : the change is immediately made, and these is no *undo* !

Change the current user

To change the current user, use the button representing an actor or the entry in the project menu, a dialog appears :



Select a user to get its identity, you may change or set his name

User : 2 (bruno)

New name :

Choose a user from the list, set the name through the line editor when it is unknown for the selected user identifier .

Previous : Plug-out

Next : Project synchro

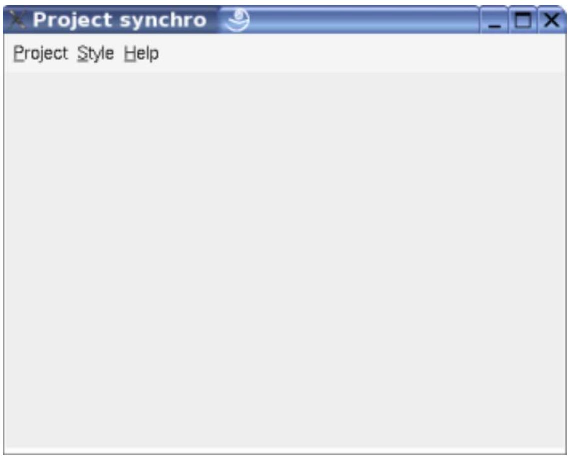
Project synchronization

This tool synchronize several images of a project developed in parallel by several users. The synchronization is made by replacing old files by new ones. Note that the files are copied, not merged.

To use *Project synchro* several conditions *must* be followed, else the synchronization may broke you projects :

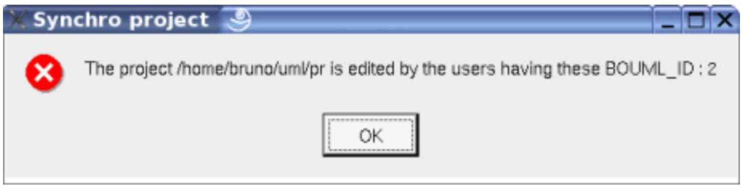
- To detect a file must be replaced by a new one, the tool uses the revision, not the date when the file was saved the last time. Because the revision is used, it is not possible to use the tool to synchronize projects modified by the releases of BOUML strictly less than 2.21 . If you already have several images of a project, you must first resynchronize them by yourself to obtain a unique image.
- Each user has his own copy of the project and works only on this copy. Obviously each user has his own identifier.
- A given project file must be modified by only one user, for instance thanks to *Project Control*. This means that when the owner of a file change, you must perform a synchronization before (obviously it is useless to do a synchronization when a file without owner since the last synchronization become owned by someone).
- The synchronization is not possible for an image having a read-only file.

Project Synchro is not a *plug-out*, it is launch like BOUML or any tool, when you start it the following window appears :

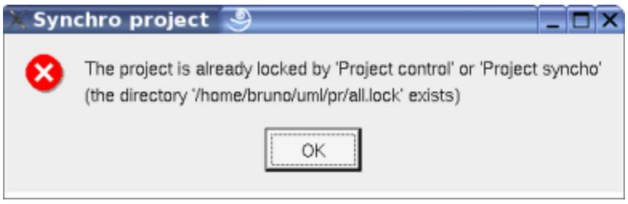


The menu *Project* is used to load several images of the same project, to synchronize them or a part of them. it is also possible to start the tool given a list of project images in parameter.

To avoid inconsistencies, you can't apply *Project Synchro* several times on a given project, and you can't use it on a project while it is edited by BOUML or by *Project Control*, if this is the case a message warns you :

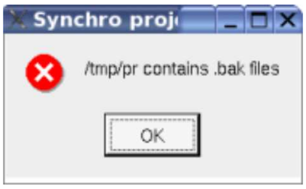


The project /home/bruno/uml/pr is edited by the users having these BOUML_ID : 2



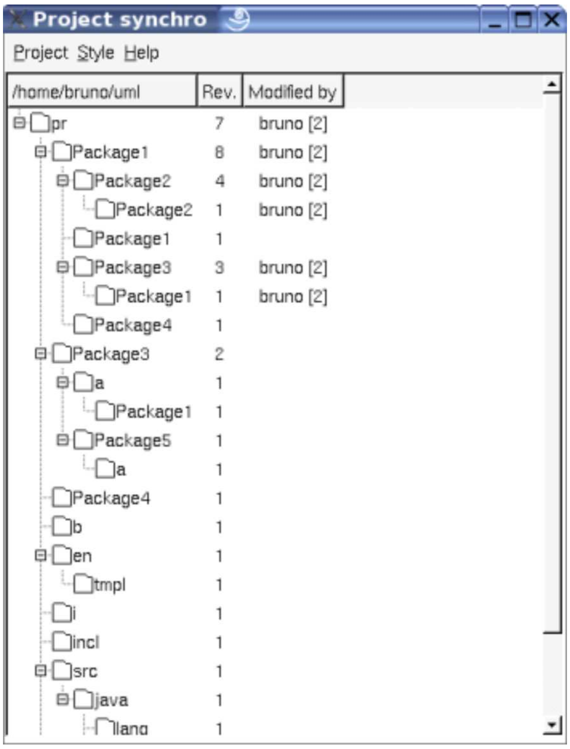
The project is already locked by 'Project control' or 'Project syncho'
(the directory '/home/bruno/uml/pr/all.lock' exists)

A project directory must also not contain *bak* files, these temporary files are present when BOUML or *File Synchro* crash during the modification of the files :



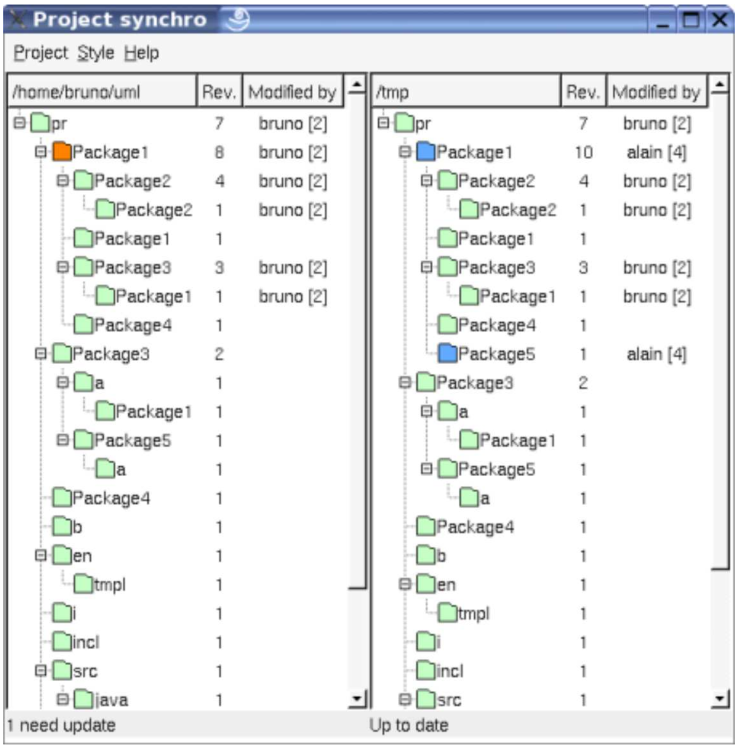
/tmp/pr contains .bak files

When only one project image is load the aspect is the following :



/home/bruno/uml	Rev.	Modified by
pr	7	bruno [2]
Package1	8	bruno [2]
Package2	4	bruno [2]
Package2	1	bruno [2]
Package1	1	
Package3	3	bruno [2]
Package1	1	bruno [2]
Package4	1	
Package3	2	
a	1	
Package1	1	
Package5	1	
a	1	
Package4	1	
b	1	
en	1	
tmpl	1	
i	1	
incl	1	
src	1	
java	1	
lang	1	

When you load a second project image, the color of the icons representing each package indicates if this one must be updated or not :



/home/bruno/uml	Rev.	Modified by
pr	7	bruno [2]
Package1	8	bruno [2]
Package2	4	bruno [2]
Package2	1	bruno [2]
Package1	1	
Package3	3	bruno [2]
Package1	1	bruno [2]
Package4	1	
Package3	2	
a	1	
Package1	1	
Package5	1	
a	1	
Package4	1	
b	1	
en	1	
tmpl	1	
i	1	
incl	1	
src	1	
java	1	

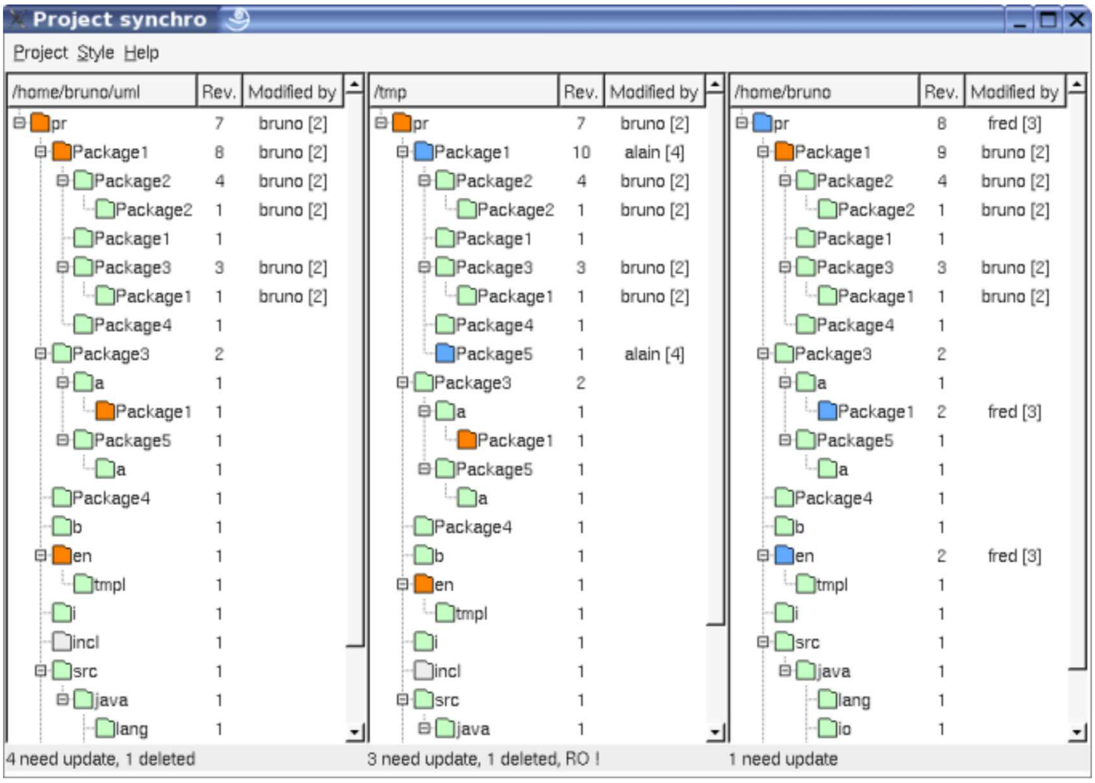
1 need update

/tmp	Rev.	Modified by
pr	7	bruno [2]
Package1	10	alain [4]
Package2	4	bruno [2]
Package2	1	bruno [2]
Package1	1	
Package3	3	bruno [2]
Package1	1	bruno [2]
Package4	1	
Package5	1	alain [4]
Package3	2	
a	1	
Package1	1	
Package5	1	
a	1	
Package4	1	
b	1	
en	1	
tmpl	1	
i	1	
incl	1	
src	1	

Up to date

A package is green when it is up to date in all the images. It is orange when it must be updated, this means that an other image has a new version of this package, and this new version is blue. A new package is also in blue. At least a deleted package is gray. In the previous picture *package5* is blue because it is new (it doesn't exist in */home/bruno/uml/pr*) and *package1* is blue on the right because it was modified to add the sub-package *package5*.

Each time a new image of the project is load, the colors are computed (obviously it is not possible to load several times the same project image) :



/home/bruno/uml	Rev.	Modified by
pr	7	bruno [2]
Package1	8	bruno [2]
Package2	4	bruno [2]
Package2	1	bruno [2]
Package1	1	
Package3	3	bruno [2]
Package1	1	bruno [2]
Package4	1	
Package3	2	
a	1	
Package1	1	
Package5	1	
a	1	
Package4	1	
b	1	
en	1	
tmpl	1	
i	1	
incl	1	
src	1	
java	1	
lang	1	

4 need update, 1 deleted

/tmp	Rev.	Modified by
pr	7	bruno [2]
Package1	10	alain [4]
Package2	4	bruno [2]
Package2	1	bruno [2]
Package1	1	
Package3	3	bruno [2]
Package1	1	bruno [2]
Package4	1	
Package5	1	alain [4]
Package3	2	
a	1	
Package1	1	
Package5	1	
a	1	
Package4	1	
b	1	
en	1	
tmpl	1	
i	1	
incl	1	
src	1	
java	1	

3 need update, 1 deleted, RO !

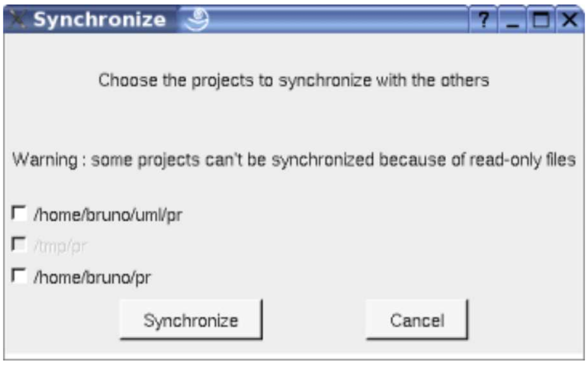
/home/bruno	Rev.	Modified by
pr	8	fred [3]
Package1	9	bruno [2]
Package2	4	bruno [2]
Package2	1	bruno [2]
Package1	1	
Package3	3	bruno [2]
Package1	1	bruno [2]
Package4	1	
Package3	2	
a	1	
Package1	2	fred [3]
Package5	1	
a	1	
Package4	1	
b	1	
en	2	fred [3]
tmpl	1	
i	1	
src	1	
java	1	
lang	1	
io	1	

1 need update

As you can see *incl* is gray indicating it was deleted, and the project itself was modified, at least to remove *incl*.

On the bottom of each image you have the number packages whose need to be updated or deleted. The indication *RO* means that at least one file of the project image is read-only, in this case the image can't be synchronized, even if the file correspond to an up to date package.

When enough images was load, you can ask for the synchronization through the menu *Project* or the shortcut *control-S*. A dialog appears :



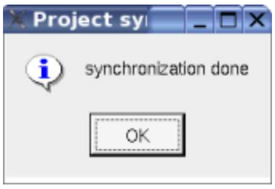
Choose the projects to synchronize with the others

Warning : some projects can't be synchronized because of read-only files

☐ /home/bruno/uml/pr
☐ /tmp/pr
☐ /home/bruno/pr

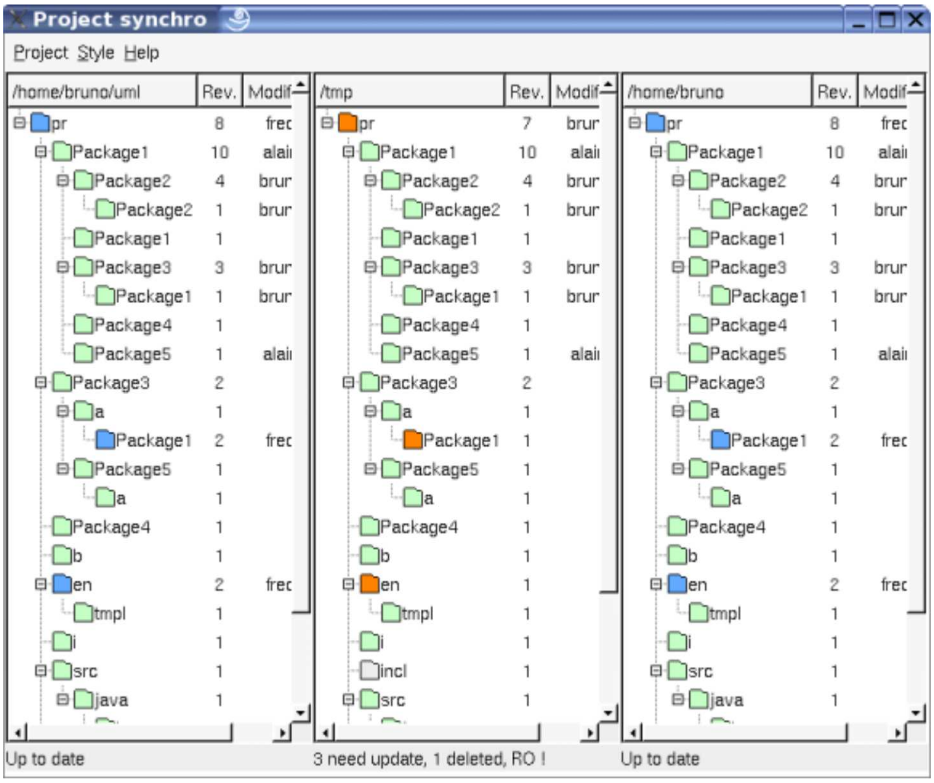
As you can see only two of the three images may be synchronized because of read only files in the second image. However the second image will be used during the synchronization to get the new version of *package1* and the new package *package5*.

After selecting at least one image and hitting on *synchronize* the synchronization the selected images are updated, then a dialog indicating the end of the synchronization appears :



synchronization done

When you confirm the execution of *Project Synchro* is done. Supposing the synchronization done for the first and third image, restarting *Project Synchro* this the same images, one obtains :



/home/bruno/uml	Rev.	Modif
pr	8	frec
Package1	10	alaii
Package2	4	brur
Package2	1	brur
Package1	1	
Package3	3	brur
Package1	1	brur
Package4	1	
Package5	1	alaii
Package3	2	
a	1	
Package1	2	frec
Package5	1	
a	1	
Package4	1	
b	1	
en	2	frec
tmpl	1	
i	1	
src	1	
java	1	

Up to date

/tmp	Rev.	Modif
pr	7	brur
Package1	10	alaii
Package2	4	brur
Package2	1	brur
Package1	1	
Package3	3	brur
Package1	1	brur
Package4	1	
Package5	1	alaii
Package3	2	
a	1	
Package1	1	
Package5	1	
a	1	
Package4	1	
b	1	
en	1	
tmpl	1	
i	1	
incl	1	
src	1	

3 need update, 1 deleted, RO !

/home/bruno	Rev.	Modif
pr	8	frec
Package1	10	alaii
Package2	4	brur
Package2	1	brur
Package1	1	
Package3	3	brur
Package1	1	brur
Package4	1	
Package5	1	alaii
Package3	2	
a	1	
Package1	2	frec
Package5	1	
a	1	
Package4	1	
b	1	
en	2	frec
tmpl	1	
i	1	
src	1	
java	1	

Up to date

Obviously the first and third images have the same aspect and don't contain old packages.

As I said it is possible to start the tool giving the project images in parameter, for instance under Linux :

projectControl ~bruno/uml/pr/pr.prj /tmp/pr/pr.prj ~bruno/pr/pr.prj

Previous : Project control

Next : Multi user considerations

Multi users considerations

BOUML attributes an identifier to the main objects to resolve the references to the not already read objects when you load a project. This identifier is establish during the object creation and will not change later (except if you import a project into an other one), to allow several users to work simultaneously on the same project, this object identifier contains the identifier of the user creating the object. This explains why BOUML ask you to have an own identifier between 2 and 127.

These identifiers are also used to name the files memorizing a project, refer to Project files. The *plug-out* API define the *UmlBaseItem::supportFile* to know whose file(s) support a given item.

Notes : When it loads a project, BOUML checks the write permission of the file done through the OS or the applicative permission indicated inside the file. In the *browser* the writable objects are written in **bold**. When you load a project, this one must be consistent, else the references to the unknown items are removed and these unknown items are considered deleted.

When you are several working on the same project you have to choose between two ways :

To share the same project files

In this case all the users work on the same project files, this means that no one has a copy of the project files. This is possible because when you do a save only the modified files are written. However this suppose at most one user may modify a given project file, else modifications made by several will quickly be done.

There are two way to allow at most one user to modify a file : to use the write permission set using your OS (difficult under Windows) with the help of *File Control*, or to use *Project Control*.

File Control

File control is a *plug-out* mainly dedicated to be an interface between BOUML and a file control like Clearcase, CVS *or Subversion* etc ..., however to use a file control may affect the write permission of the files.

Project control

Project control is a tool managing an applicative write permission optionally memorized in the project files associated to the *packages*. This allows to set the write permission independently of the OS you use.

To use project images

In this case each user has an own copy of the project, and sometimes all the modifications done in parallel are grouped. You may adopt two strategies : to allows any user to modify any part of the project, in this case you will have to merge the modifications by yourself, or to allow only one user to modify a given project file.

Even the Project files are Ascii files, I may be difficult to merge several version of the same file, I know several companies use this way, but it is possible to not have to merge the modifications using the write protection through *File control* or *Project control* and to resynchronize the model using *Project Synchro*.

To work without merge

Let's suppose Bruno, Olivier and Annie work on the same project and decide to use *Project Control* and *Project Synchro*.

At the beginning an unique image of the project exist. If the project already exists, using *Project Control* you give the write access of the package to at most one person. If you start from scratch with an empty project, immediately create at least a sub-package for each, this may be changed later. Because the project itself is used to memorize *generation settings* and other global information, I propose you to decide immediately what are the settings and to protect the package supporting the project, this means it is not owned by Bruno, Olivier or Annie.

When the write accesses are set, duplicate the project files (in fact the directory of the project) to have three images, and perhaps a fourth image placed under a file controller. Bruno, Olivier and Annie work each on its private image and don't change the write accesses, except to loose the write access, or to get the write access to a protected package(s) not own by the others since the last synchronization.

Sometimes, for instance because Annie define a class used by Olivier, you have to synchronize the parallel developments. In this case using *File Synchro*, Annie Olivier and may be Bruno get the modifications done by the others. When the project is synchronized it is also possible to change the write access from a user to an other one, obviously this must be made on all the images, or on one image and copying it in the others.

Obviously like in any development, when an element is removed from the model by Bruno, for instance a class, he has to ask for

Olivier and Annie except if this element was not yet delivered to them. To move an element inside the browser is not a problem, an element is referenced through an internal key, not through its location. In a similar way an element may be renamed because the key doesn't contains the name, but this may have impact in the body of the operations where the renaming is not taken into account by BOUML itself.

Previous : Project synchro

Next : Project files

Project files

A project is saved in an own directory through several files, all of them are text files, this may help you to do some searches or changes directly in the files (after a backup !), or of course to use a software configuration management. The files are :

- *<project name>.prj* : contains the top level package and project level data, for instance the generation directories.
- *<number>* : contains the data of a package (an *uml* package, not a *java* package !) and its sub-elements, the package's name is the second saved data, after a format indication. The number is the package's identifier (see Multi users considerations).
- *<number>.diagram* : contains a diagram definition. For time and memory save reason, BOUML does not load a diagram until it is edited. The number is the diagram's identifier (see Multi users considerations).
- *<number>.bodies* : contains the C++ and Java bodies of all the operations of a class. For time and memory save reason, BOUML does not load a body until it is edited. The number is the class's identifier (see Multi users considerations).
- *generation_settings* : contains the *generation settings*, this allows you to quickly set them after creating a new project copying the *generation_settings* file of an old project.
- *tools* : contains the plugs-outs declaration, this allows you to quickly set the tools list after creating a new project copying the *tools* file of an old project.
- *cpp_includes* : contains the C++ include & using specifications for the non defined types, used by the C++ generator and set through the C++ generation settings.
- *java_imports* : contains the Java imports associated to the non defined types, not already used by the Java generator and set through the Java generation settings.
- *idl_includes* : contains the Idl imports includes to the non defined types, not already used by the Idl generator and set through the Idl generation settings.
- *<user id>.session* : contains the session state (opened diagrams, browser view ...), set when the project is closed
- *<number>_<user id>.d* : contains the new definition of a diagram until a save.
- *<number>_<user id>.b* : contains the new definitions of a class's operations until a save.
- *<user_id>.lock* : a directory created when you load the project, and deleted when you close the project (see Multi users considerations).

Note : in a *plug-out* the *supportFile* operation defined on *UmlBaseItem* then applicable on all the browser items returns the absolute pathname of the file memorizing the item. In general an item is saved in a file associated to its package, the exceptions are :

- the body of the operations of a class which definition contains the keyword *'{$body}'*. This path name is returned when you apply *supportFile* on any operation of the class.
- the drawing of the diagrams, this path name is returned when you apply *supportFile* on the diagram.
- the configuration of the tools edited throw the entry '*Tools Settings*' of the menu Tools is saved in the file 'tools'
- the configuration of the *#include* and *using* forms associated to the external type and edited through the last C++ tab of the 'Generation Settings' dialog is saved in the file 'cpp_includes'
- the configuration of the *imports* forms associated to the external types and edited through the last Java tab of the 'Generation Settings' dialog is saved in the file 'java_imports'
- the configuration of the *#include* forms associated to the external type and edited through the last Idl tab of the 'Generation Settings' dialog is saved in the file 'idl_includes'

Some files are created in your home directory :

- *.bouml* : this file contains the last 10 load projects
- *.boumlrc* : contains the environment information entered through the entry *Set environment* of the menu *Miscellaneous*
- *.bouml_shortcuts* : contains your keyboard shortcuts

Previous : Multi users considerations

Next : Troubleshootings

Troubleshootings

The plug-outs start but do nothing

The exchanges between BOUML and each *plug-out* are supported by a TCP/IP socket, the used IP address is 127.0.0.1. When you ask BOUML to start a *plug-out*, it search for a free port number and give it in argument to the called *plug-out.* In case you have a *firewall* it may be necessary to configure it to allow BOUML and the *plug-outs* to use a socket.

A modification made by a plug-out is not see by the other ones

To reduce the number of exchanges with BOUML and run faster, a *plug-out* does not ask for BOUML each time you want to get a value. The *system* classes read and memorize all the data of a given item the first time you access to one of them (with the restrictions allowed by WITHCPP, WITHJAVA and WITHIDL). This is transparent for you until two *plug-outs* access to the same data, when one *plug-out* modify a value already read by the other, the second *plug-out* does not see the new value until it *unload* (an operation defined *on UmlBaseItem)* the object, then ask for the value.

A class is defined with operations, attributes ... but the C++/Java/Idl generator doesn't generate it

The class doesn't have an associated artifact, or the class/artifact is not defined for the language. Note that a default definition (set through the generation settings) may be done at the creation for each language if you ask for it through the *Languages* menu

I cannot edit a browser item, the edit menu entry or button does not appear :

you do not have the write permission for the associated files or the item is a *system* item supporting the *plug-out* API. It is also not possible to edit/delete a class when an other item is already edited.

I use a multiple monitor (side by side) configuration and the dialogs are placed partially on each

Through the environment dialog enter the coordinate of one of the screens. This screen will be used for the initial size and position of the BOUML's windows and when a dialog is opened, after that you are able to go out of these limits up to the true desktop limits.

After editing a description or other part the font is modified or several characters are replaced by a space

During the edition the characters encoded with a 16 bits unicode character set, but out of the editions the characters are saved on only 8 bits. When you use non ISO_8859-1 (latin1) characters you must specify how to do the conversion by setting a character set through the environment dialog.

Examples of character sets (the list depends on the release of Qt) :

- ISO_8859-1 (latin1) for English, French, Italien, German ...
- ISO_8859-7 for Greek
- KOI8-R or KOI8-RU or CP_1251 to allow Cyrillic
- JIS7 for Japan
- GB2312, GBK or GB18030 for Chinese

The specified encoding is used for :

- the description of every elements,
- the user properties and associate values of every elements,
- the stereotype of every elements,
- the definition of the *artifacts, classes, operations, attributes, relations* and *extra members*,

- the *state action* behavior
- the *state entry / exit / do behavior*
- the *transition trigger / guard / do behavior*
- the *attribute*'s value in an *object diagram*
- the *notes* and *text* in the diagrams

It is not used else where, for instance you can't use non ISO_8859-1 characters to name the elements or in a message of a sequence or collaboration diagram.

The specified encoding is followed in the project's files and for the exchanges with the plug-out, this means for instance that Cyrillic characters may be used in the comments and are generated unchanged by the code generators.

Previous : Project files

Next : GNU public license

GNU public license

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

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