pLinguaPlugin: User's Manual

Research Group on Natural Computing. University of Seville

Preamble

Thanks for downloading *pLinguaPlugin*. This document is a user's guide for *pLinguaPlugin*. We hope you find it useful. If you have any questions, please do not hesitate to send an e-mail with them to: `mgarcia.universidad@gmail.com`.

Yours sincerely,

Research Group on Natural Computing. University of Seville.

Contents

Part I

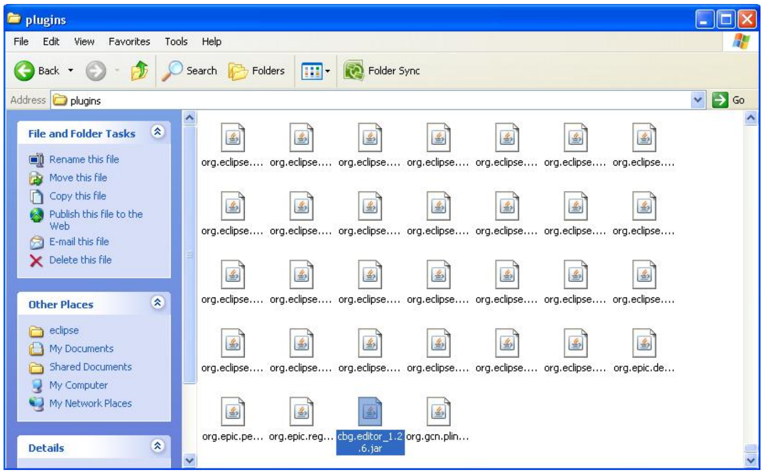
Installation of pLinguaPlugin

Before using *pLinguaPlugin*©, it is necessary to install it on the computer where it will be used. To do so, it is necessary to follow the following steps:

1. Install a version of Eclipse (3.4 or later). The last available version can be accessed on the website `http://www.eclipse.org`.

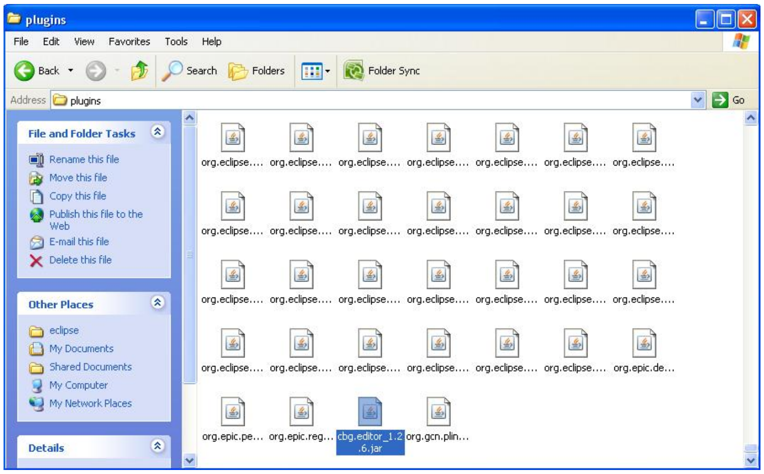
2. Install a version of ColorEditor, available in `http://www.gstaff.org/colorEditor/` (1.2.6 o later). By using this *plug-in*, *pLinguaPlugin*© provides syntax coloring, in other words, the elements of the P-Lingua files used (such as rules and objects) are colored so as to make them easier to identify at first glance. If that *plug-in* is not installed, there will not be syntax coloring. Instead, the entire specification of the P system will display the same color. **Important: After installing ColorEditor, the cause of the errors will not be able to be identified by rolling over them, unless the default editor included in *pLinguaPlugin* is used**. There are two possible ways to install this product:

   (a) Copy the file *cbg.editor_1.2.6.jar* on the directory *plugins*, which is inside the directory where the installation of Eclipse is located.

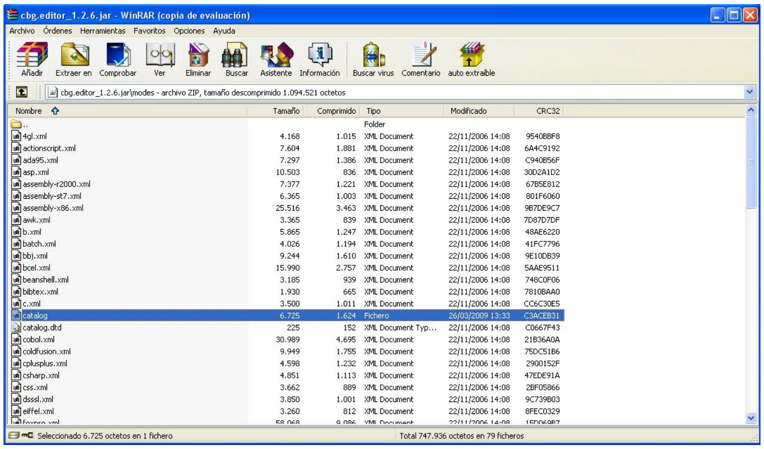


   (b) Download a version of *ColorEditor* (1.2.6 or later) from the website `http://www.gstaff.org/colorEditor` and follow the following steps:

      i. Move the downloaded version of *ColorEditor* into the directory *plugins*, which is inside the directory where the installation of Eclipse is located.



ii. Open the file *catalog*, inside the directory *modes*, which is contained in the file *ColorEditor*

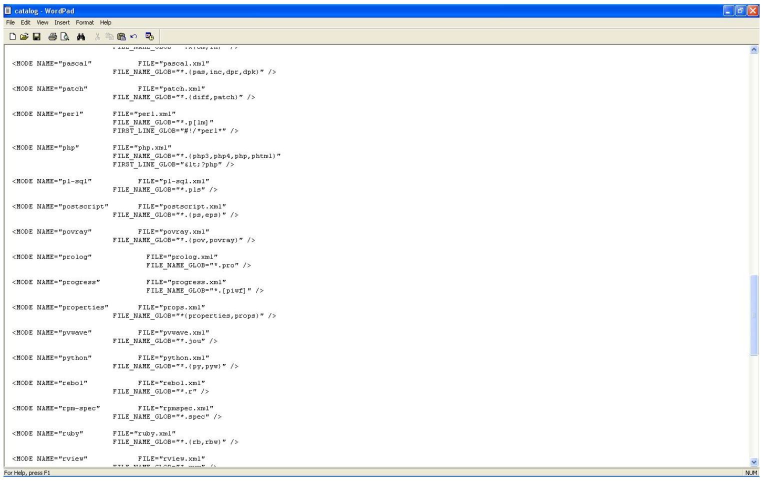

cbg.editor_1.2.6.jar - WinRAR (copia de evaluación)
Archivo Órdenes Herramientas Favoritos Opciones Ayuda
Añadir
Extraer en
Comprobar
Ver
Eliminar
Buscar
Asistente
Información
Buscar virus
Comentario
auto extraíble

cbg.editor_1.2.6.jar\modes - archivo ZIP, tamaño descomprimido 1.094.521 octetos

Nombre	Tamaño	Comprimido	Tipo	Modificado	CRC32
..			Folder		
4gl.xml	4.168	1.015	XML Document	22/11/2006 14:08	9540BBF8
actionscript.xml	7.604	1.881	XML Document	22/11/2006 14:08	6A4C9192
ada95.xml	7.297	1.386	XML Document	22/11/2006 14:08	C940B56F
asp.xml	10.503	836	XML Document	22/11/2006 14:08	30D2A1D2
assembly-r2000.xml	7.377	1.221	XML Document	22/11/2006 14:08	67B5E812
assembly-st7.xml	6.365	1.003	XML Document	22/11/2006 14:08	801F6060
assembly-x86.xml	25.516	3.463	XML Document	22/11/2006 14:08	9B7DE9C7
awk.xml	3.365	839	XML Document	22/11/2006 14:08	7D87D7DF
b.xml	5.865	1.247	XML Document	22/11/2006 14:08	48AE6220
batch.xml	4.026	1.194	XML Document	22/11/2006 14:08	41FC7796
bbj.xml	9.244	1.610	XML Document	22/11/2006 14:08	9E10DB39
bcel.xml	15.990	2.757	XML Document	22/11/2006 14:08	5AAE9511
beanshell.xml	3.185	939	XML Document	22/11/2006 14:08	748C0F06
bibtex.xml	1.930	665	XML Document	22/11/2006 14:08	7810BAA0
c.xml	3.500	1.011	XML Document	22/11/2006 14:08	CC6C30E5
catalog	6.725	1.624	Fichero	26/03/2009 13:33	C3ACEB31
catalog.dtd	225	152	XML Document Typ...	22/11/2006 14:08	C0667F43
cobol.xml	30.989	4.695	XML Document	22/11/2006 14:08	21B36A0A
coldfusion.xml	9.949	1.755	XML Document	22/11/2006 14:08	75DC51B6
cplusplus.xml	4.598	1.232	XML Document	22/11/2006 14:08	2900152F
csharp.xml	4.851	1.113	XML Document	22/11/2006 14:08	47EDE91A
css.xml	3.662	889	XML Document	22/11/2006 14:08	2BF05866
dsssl.xml	3.850	1.001	XML Document	22/11/2006 14:08	9C739B03
eiffel.xml	3.260	812	XML Document	22/11/2006 14:08	8FEC0329
foxpro.xml	58.068	9.086	XML Document	22/11/2006 14:08	15D069B7

Seleccionado 6.725 octetos en 1 fichero

Total 747.936 octetos en 79 ficheros

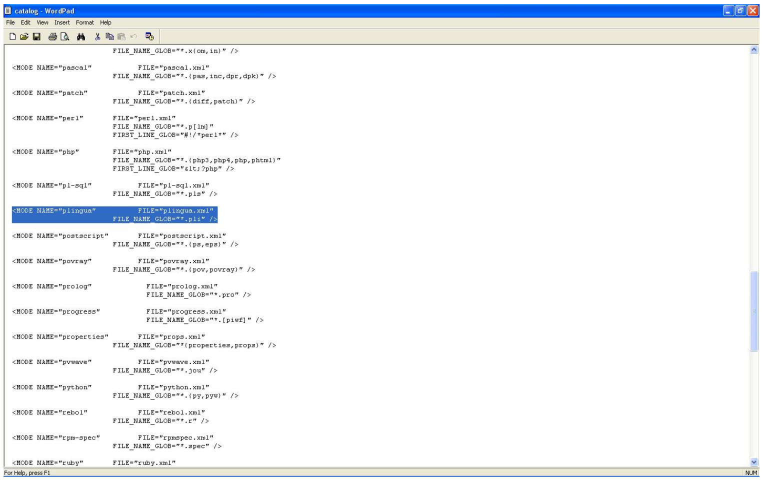


```
<MODE NAME="pascal"          FILE="pascal.xml"
                        FILE_NAME_GLOB="*.{pas,inc,dpr,dpk}" />

<MODE NAME="patch"           FILE="patch.xml"
                        FILE_NAME_GLOB="*.{diff,patch}" />

<MODE NAME="perl"       FILE="perl.xml"
                        FILE_NAME_GLOB="*.p[lm]"
                        FIRST_LINE_GLOB="#!/*perl*" />

<MODE NAME="php"        FILE="php.xml"
                        FILE_NAME_GLOB="*.{php3,php4,php,phtml}"
                        FIRST_LINE_GLOB="&lt;?php" />

<MODE NAME="pl-sql"          FILE="pl-sql.xml"
                        FILE_NAME_GLOB="*.pls" />

<MODE NAME="postscript"      FILE="postscript.xml"
                        FILE_NAME_GLOB="*.{ps,eps}" />

<MODE NAME="povray"          FILE="povray.xml"
                        FILE_NAME_GLOB="*.{pov,povray}" />

<MODE NAME="prolog"            FILE="prolog.xml"
                               FILE_NAME_GLOB="*.pro" />

<MODE NAME="progress"          FILE="progress.xml"
                               FILE_NAME_GLOB="*.[piwf]" />

<MODE NAME="properties"      FILE="props.xml"
                        FILE_NAME_GLOB="*{properties,props}" />

<MODE NAME="pvwave"          FILE="pvwave.xml"
                        FILE_NAME_GLOB="*.jou" />

<MODE NAME="python"          FILE="python.xml"
                        FILE_NAME_GLOB="*.{py,pyw}" />

<MODE NAME="rebol"           FILE="rebol.xml"
                        FILE_NAME_GLOB="*.r" />

<MODE NAME="rpm-spec"        FILE="rpmspec.xml"
                        FILE_NAME_GLOB="*.spec" />

<MODE NAME="ruby"       FILE="ruby.xml"
                        FILE_NAME_GLOB="*.{rb,rbw}" />

<MODE NAME="rview"           FILE="rview.xml"
```

iii. Modify the file *catalog*, inside the directory *modes* on the file *ColorEditor* by including the next XML tag:

```
        <MODE NAME="plingua" FILE="plingua.xml"
FILE_NAME_GLOB="*.pli" />
```

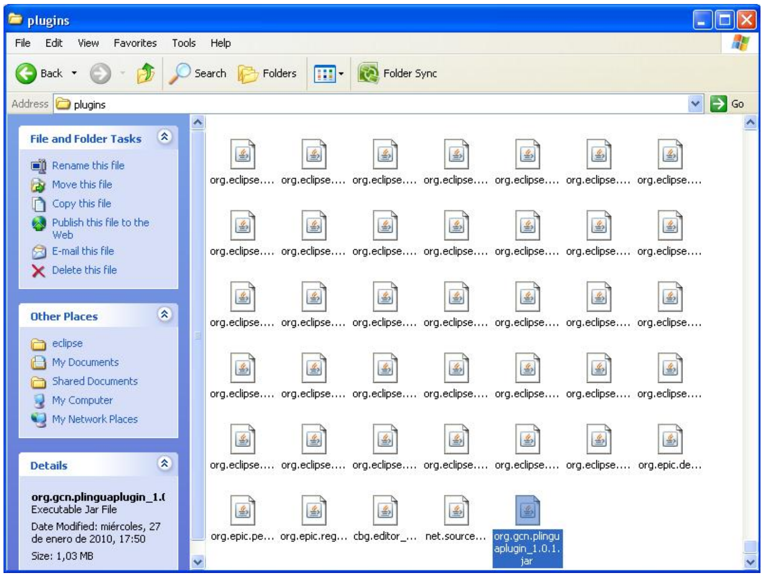
as a child tag of `<MODES>`.



```
                        FILE_NAME_GLOB="*.x{om,in}" />

<MODE NAME="pascal"          FILE="pascal.xml"
                        FILE_NAME_GLOB="*.{pas,inc,dpr,dpk}" />

<MODE NAME="patch"           FILE="patch.xml"
                        FILE_NAME_GLOB="*.{diff,patch}" />

<MODE NAME="perl"       FILE="perl.xml"
                        FILE_NAME_GLOB="*.p[lm]"
                        FIRST_LINE_GLOB="#!/*perl*" />

<MODE NAME="php"        FILE="php.xml"
                        FILE_NAME_GLOB="*.{php3,php4,php,phtml}"
                        FIRST_LINE_GLOB="&lt;?php" />

<MODE NAME="pl-sql"          FILE="pl-sql.xml"
                        FILE_NAME_GLOB="*.pls" />

<MODE NAME="plingua"         FILE="plingua.xml"
                        FILE_NAME_GLOB="*.pli" />

<MODE NAME="postscript"      FILE="postscript.xml"
                        FILE_NAME_GLOB="*.{ps,eps}" />

<MODE NAME="povray"          FILE="povray.xml"
                        FILE_NAME_GLOB="*.{pov,povray}" />

<MODE NAME="prolog"            FILE="prolog.xml"
                               FILE_NAME_GLOB="*.pro" />

<MODE NAME="progress"          FILE="progress.xml"
                               FILE_NAME_GLOB="*.[piwf]" />

<MODE NAME="properties"      FILE="props.xml"
                        FILE_NAME_GLOB="*{properties,props}" />

<MODE NAME="pvwave"          FILE="pvwave.xml"
                        FILE_NAME_GLOB="*.jou" />

<MODE NAME="python"          FILE="python.xml"
                        FILE_NAME_GLOB="*.{py,pyw}" />

<MODE NAME="rebol"           FILE="rebol.xml"
                        FILE_NAME_GLOB="*.r" />

<MODE NAME="rpm-spec"        FILE="rpmspec.xml"
                        FILE_NAME_GLOB="*.spec" />

<MODE NAME="ruby"       FILE="ruby.xml"
```

iv. Include in the same directory *modes* the file *plingua.xml* included on this website.

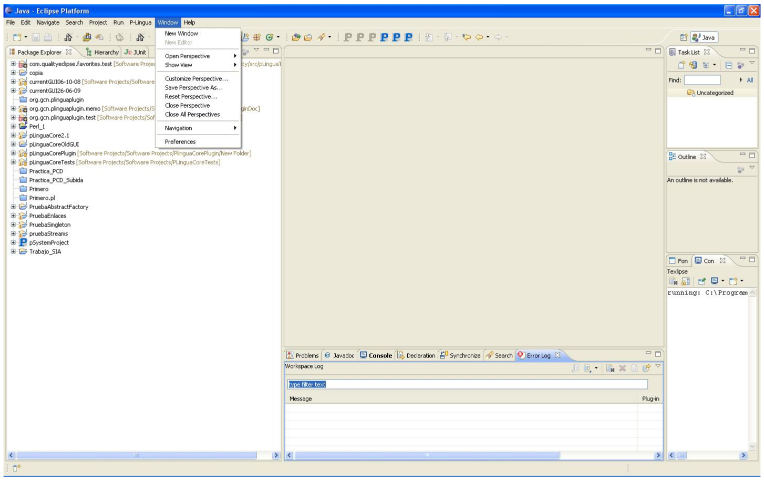
3. Copy the file *org.gcn.plinguaplugin_1.0.1.jar* inside the directory *plugins*, which is inside the directory where the installation of Eclipse is located.



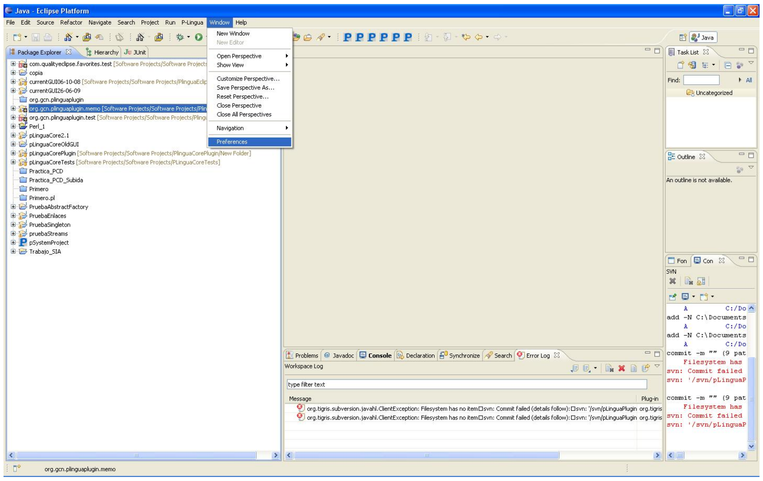
Once the steps listed above have been followed, it is necessary to associate the files whose extension is *.pli* to the *ColorEditor*. To do so, it is necessary to follow the following steps:

1. Launch the Eclipse IDE.

2. Left-click on the option *Window* on the main menu of Eclipse.



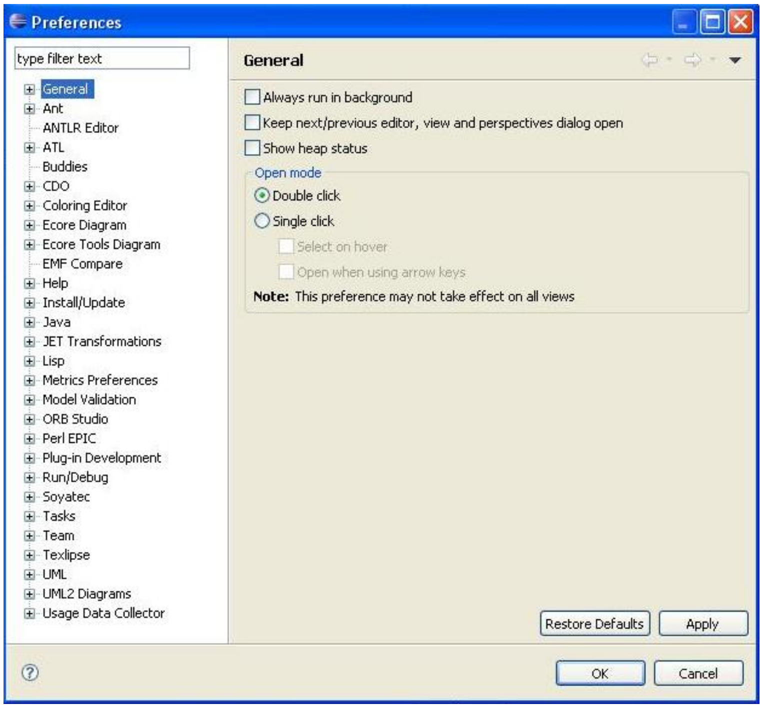
3. Left-click on the option *Preferences* on the deployed menu. Then, a new window appears.



```
org.tigris.subversion.javahl.ClientException: Filesystem has no item□svn: Commit failed (details follow):□svn: '/svn/pLinguaPlugin org.tigris
org.tigris.subversion.javahl.ClientException: Filesystem has no item□svn: Commit failed (details follow):□svn: '/svn/pLinguaPlugin org.tigris
```

```
    A           C:/Do
add -N C:\Documents
    A           C:/Do
add -N C:\Documents
    A           C:/Do
commit -m "" (9 pat
    Filesystem has
svn: Commit failed
svn: '/svn/pLinguaP

commit -m "" (9 pat
    Filesystem has
svn: Commit failed
svn: '/svn/pLinguaP
```

4. Left-click on the menu *General*, which belongs to the window mentioned above. This menu can be spread in order to see its options.



General

□ Always run in background

□ Keep next/previous editor, view and perspectives dialog open

□ Show heap status

Open mode

● Double click

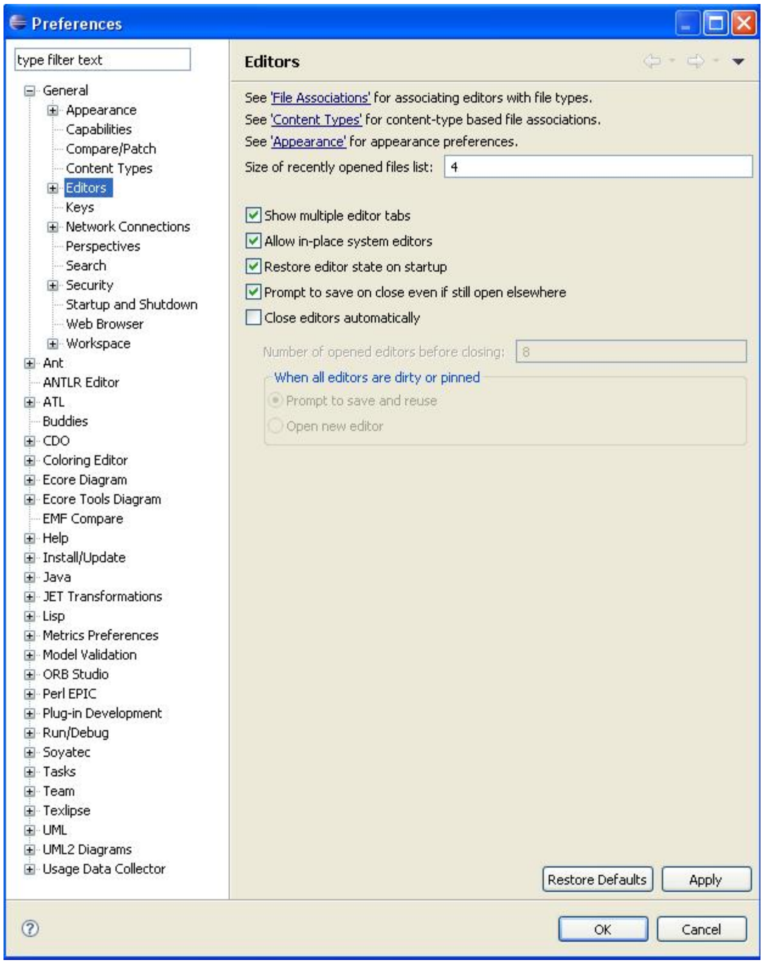
○ Single click

□ Select on hover

□ Open when using arrow keys

Note: This preference may not take effect on all views

5. Spread the menu *General* and, then, spread the menu *Editors*, which is inside *General*.



Editors

See 'File Associations' for associating editors with file types.
See 'Content Types' for content-type based file associations.
See 'Appearance' for appearance preferences.

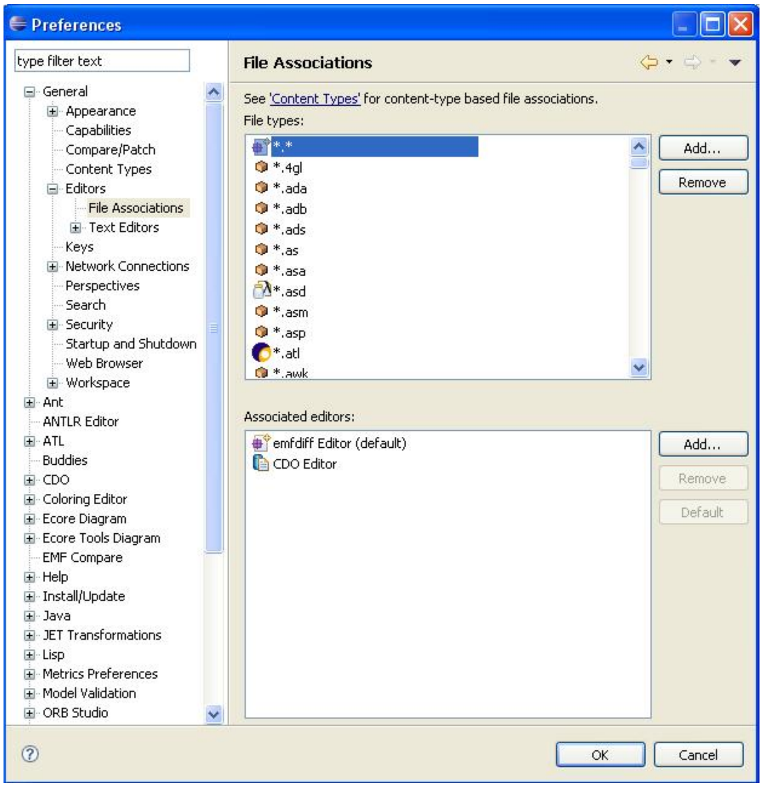
Size of recently opened files list: 4

☑ Show multiple editor tabs
☑ Allow in-place system editors
☑ Restore editor state on startup
☑ Prompt to save on close even if still open elsewhere
□ Close editors automatically

Number of opened editors before closing: 8

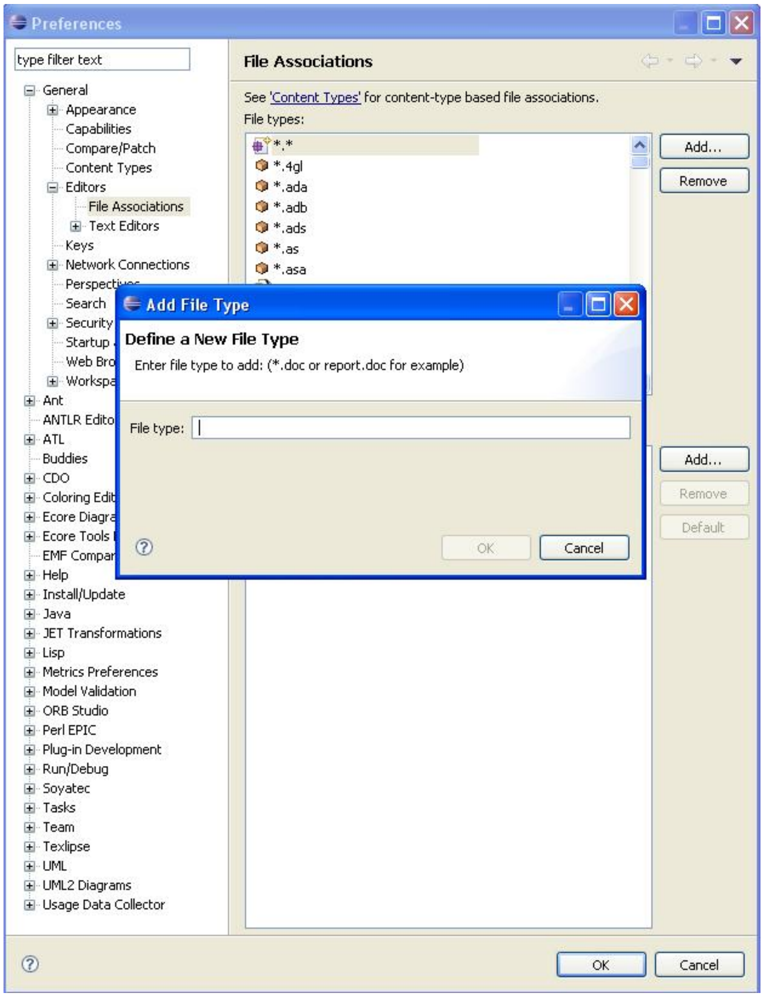
When all editors are dirty or pinned
● Prompt to save and reuse
○ Open new editor

6. Left-click on the option *File Associations*, which is insi de the menu *Editors*. A list of the file extensions recognized by Eclipse is displayed.



7. If the file extension **.pli* does not exist, follow the following steps:

- Left-click on the button *Add...* on the top right part of the window. A new window with the field *File Type:* is displayed.



File Associations

See 'Content Types' for content-type based file associations.

File types:

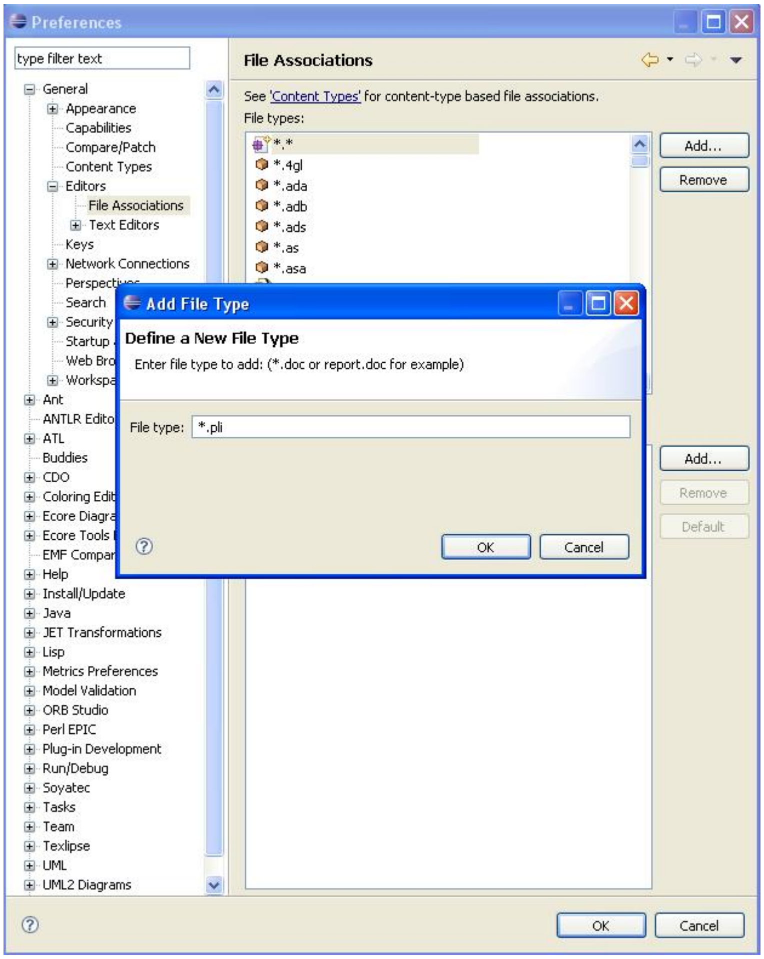
.
*.4gl
*.ada
*.adb
*.ads
*.as
*.asa

Define a New File Type

Enter file type to add: (*.doc or report.doc for example)

File type:

- Introduce the extension **.pli* on the field *File Type:* and left-click on the button *OK*.



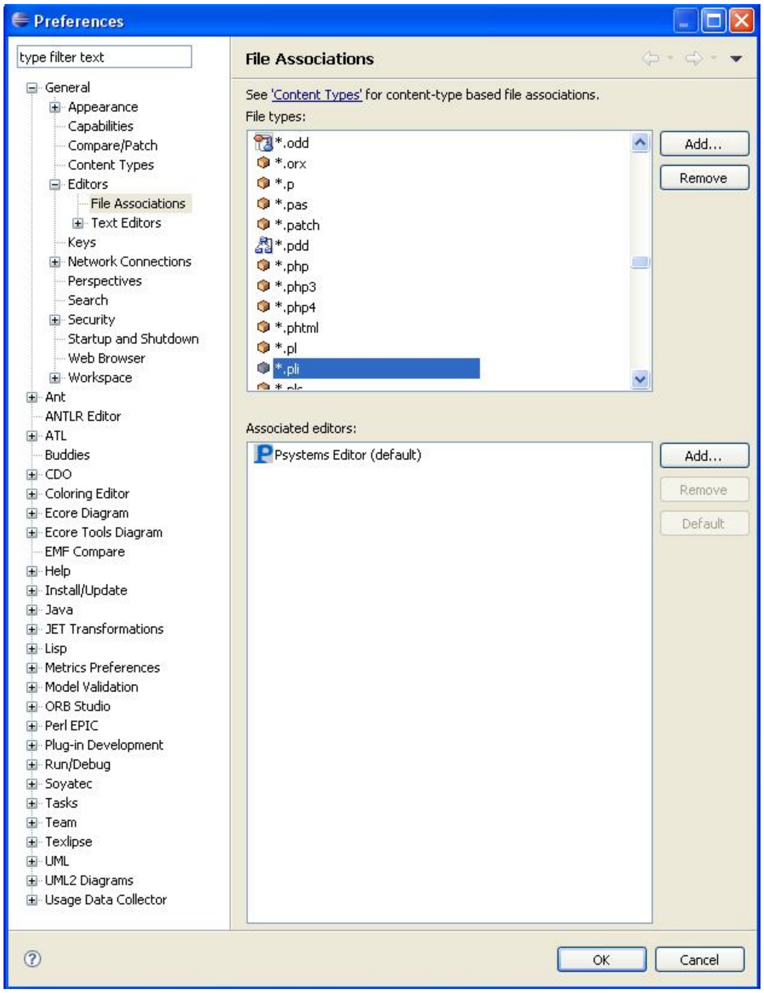
Add File Type

Define a New File Type

Enter file type to add: (*.doc or report.doc for example)

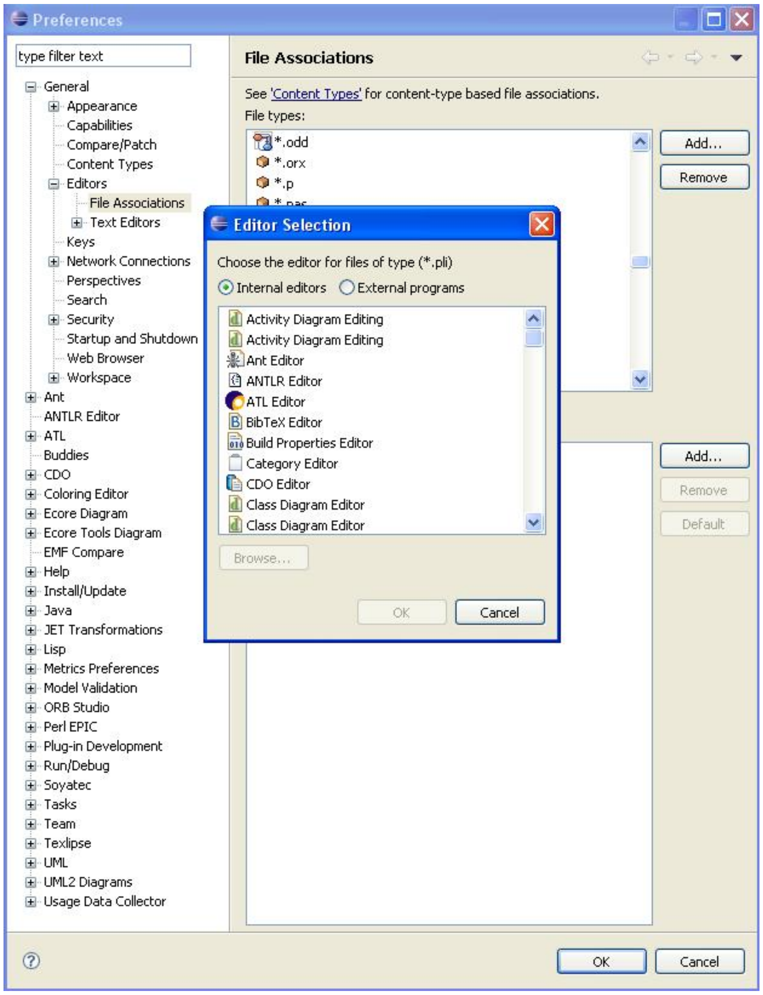
File type: *.pli

8. Left-click on the extension **.pli* on the list which appears on the top right part of the window.



9. Left-click on the button *Add...* on the bottom right part of the window. A new window is displayed.

10. Left-click on the option *Internal Editors* on the top of the new window.



Preferences

File Associations

See 'Content Types' for content-type based file associations.

File types:

*.odd
*.orx
*.p
*.pas

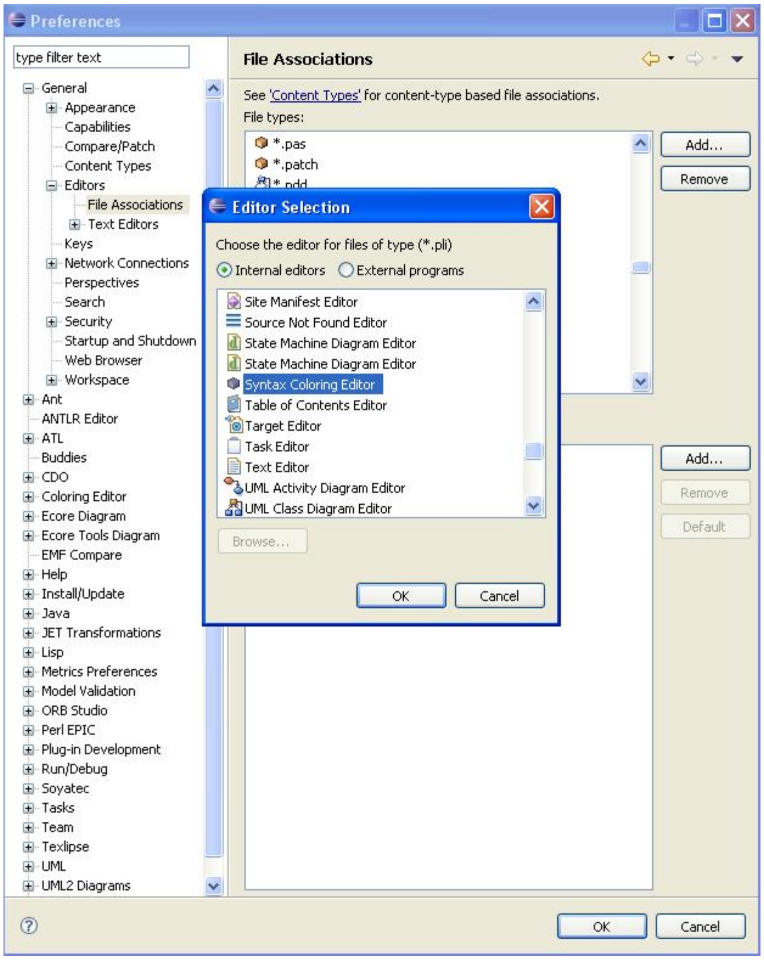
Editor Selection

Choose the editor for files of type (*.pli)

● Internal editors ○ External programs

Activity Diagram Editing
Activity Diagram Editing
Ant Editor
ANTLR Editor
ATL Editor
BibTeX Editor
Build Properties Editor
Category Editor
CDO Editor
Class Diagram Editor
Class Diagram Editor

11. Left-click on the option *Syntax Coloring Editor* on the menu on the bottom of the window.



File Associations

See 'Content Types' for content-type based file associations.

File types:

Editor Selection

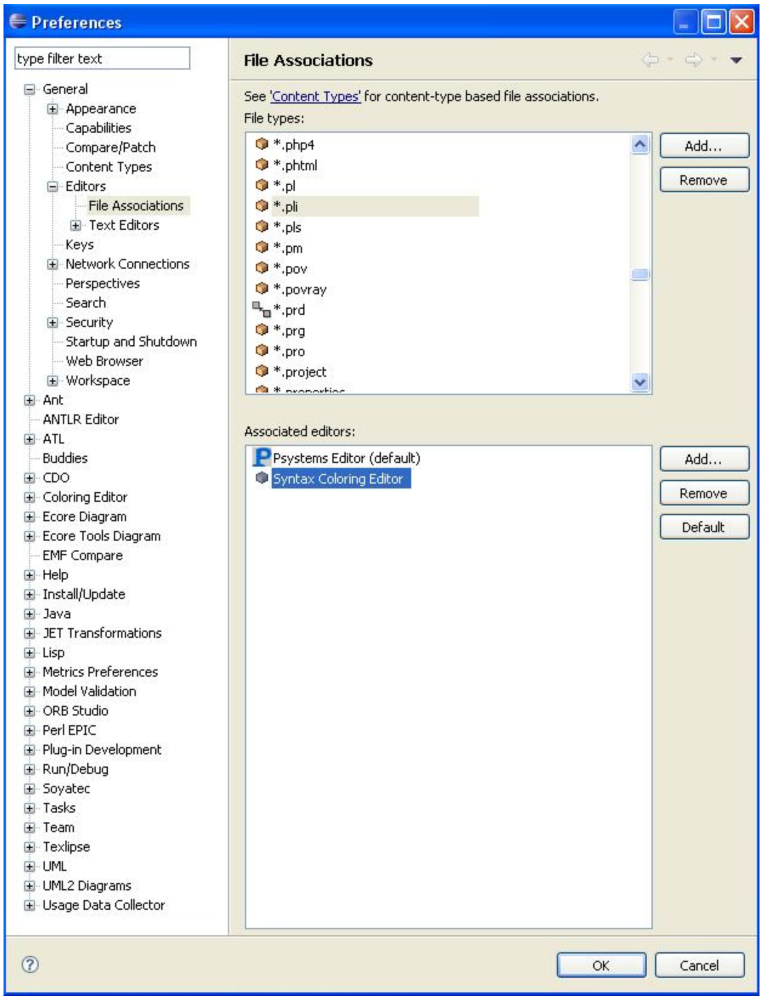
Choose the editor for files of type (*.pli)

● Internal editors ○ External programs

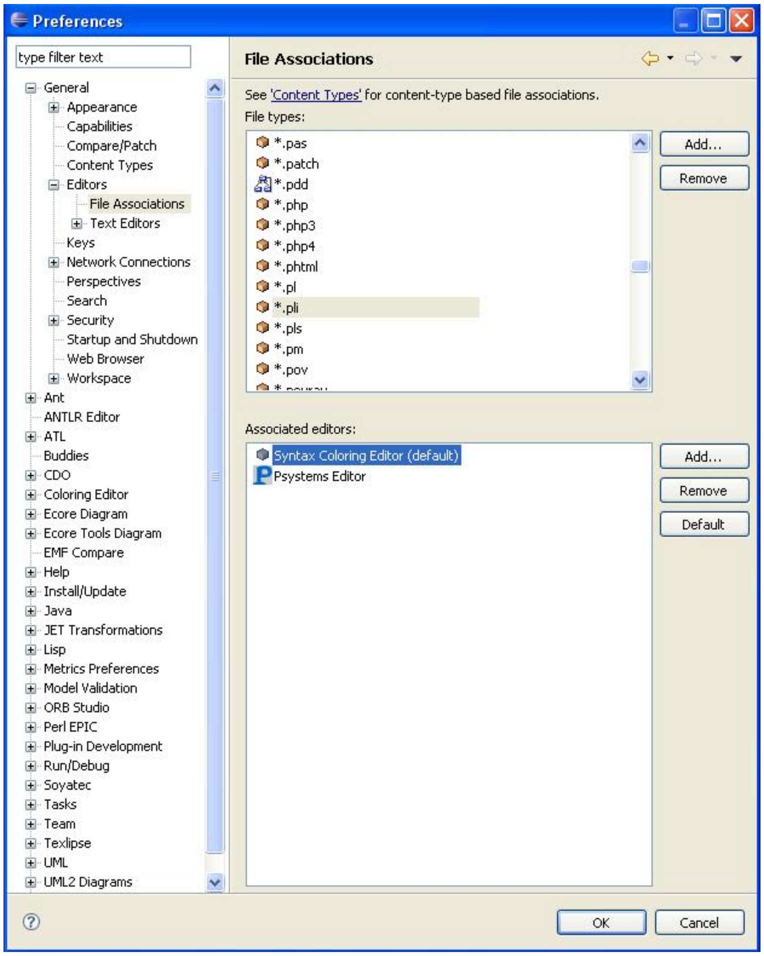
Syntax Coloring Editor

12. Left-click on the button *OK*. After doing so, the current window is closed.

13. Left-click on the option *Syntax Coloring Editor* on the menu which is on the bottom part of the window.



14. Left-click on the button *Default* on the right part of the window.



File Associations

See 'Content Types' for content-type based file associations.

File types:

*.pas
*.patch
*.pdd
*.php
*.php3
*.php4
*.phtml
*.pl
*.pli
*.pls
*.pm
*.pov

Associated editors:

Syntax Coloring Editor (default)
Psystems Editor

15. Left-click on the button *OK*.

Once the steps listed above have been followed, the computer is ready to execute *pLinguaPlugin*©.

Part II

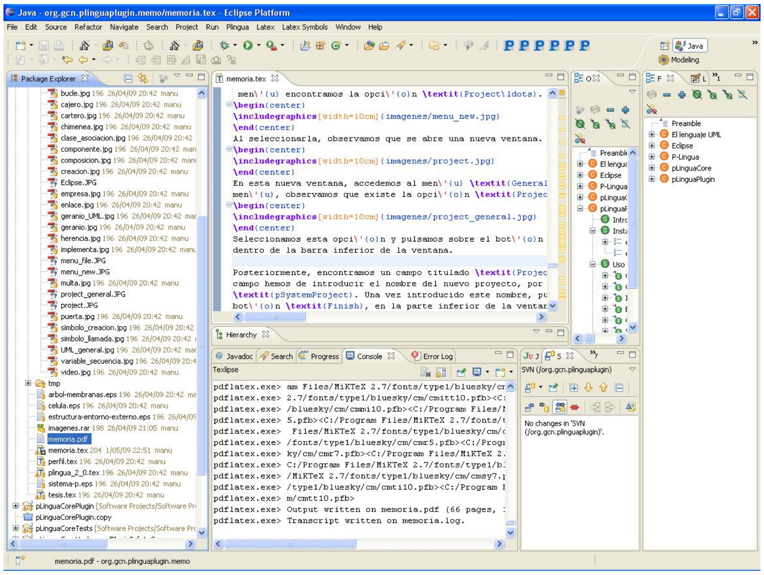
Use of pLinguaPlugin

pLinguaPlugin© offers several services to the user, such as compiling o simulating P systems. Next, each one of the services is described, as well as the way to access them.

Chapter 1

Project creation

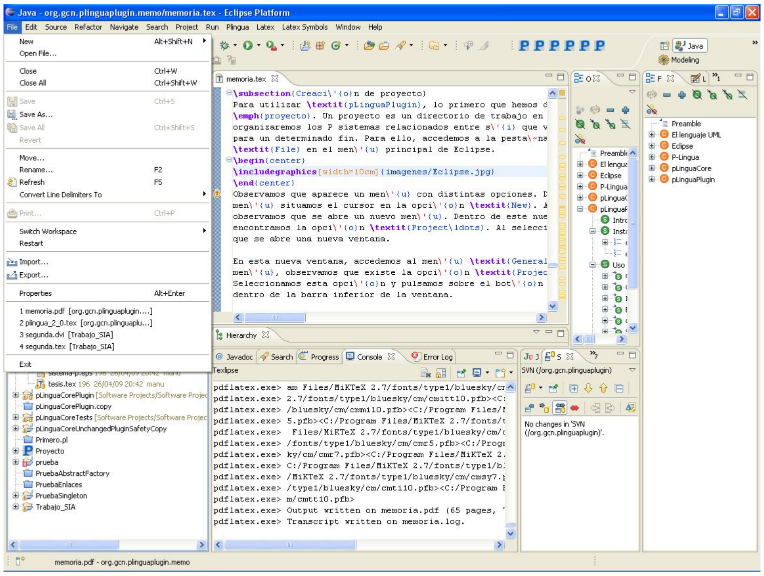
For using *pLinguaPlugin*©, the first thing to do is to create a *project*. A project is a work directory on which P systems related among each other which will be used for an specific purpose will be organized. To do so, left-click on the option **File** on the main menu of Eclipse.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run Plingua Latex Latex Symbols Window Help
Package Explorer
memoria.tex
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
Java
Modeling
memoria.pdf - org.gcn.plinguaplugin.memo

```
 men\'{u} encontramos la opci\'{o}n \textit{Project\ldots}.
\begin{center}
\includegraphics[width=10cm]{imagenes/menu_new.jpg}
\end{center}
Al seleccionarla, observamos que se abre una nueva ventana.
\begin{center}
\includegraphics[width=10cm]{imagenes/project.jpg}
\end{center}
En esta nueva ventana, accedemos al men\'{u} \textit{General
men\'{u}, observamos que existe la opci\'{o}n \textit{Projec
\begin{center}
\includegraphics[width=10cm]{imagenes/project_general.jpg}
\end{center}
Seleccionamos esta opci\'{o}n y pulsamos sobre el bot\'{o}n
dentro de la barra inferior de la ventana.

Posteriormente, encontramos un campo titulado \textit{Projec
campo hemos de introducir el nombre del nuevo proyecto, por
\textit{pSystemProject}. Una vez introducido este nombre, pu
bot\'{o}n \textit{Finish}, en la parte inferior de la ventar
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/I
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (66 pages, 1
pdflatex.exe> Transcript written on memoria.log.
```

Then, a menu with several options appears.

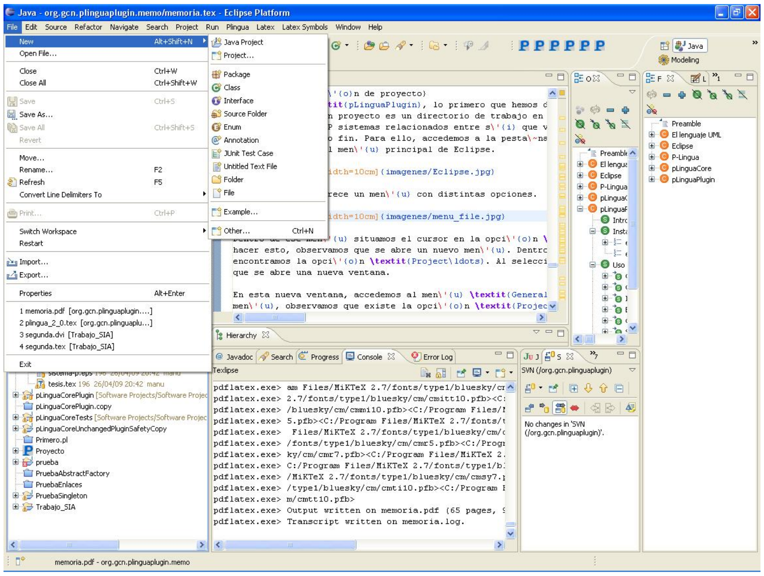

Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run Plingua Latex Latex Symbols Window Help
New Alt+Shift+N
Open File...
Close Ctrl+W
Close All Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Switch Workspace
Restart
Import...
Export...
Properties Alt+Enter
1 memoria.pdf [org.gcn.plinguaplugin....]
2 plingua_2_0.tex [org.gcn.plinguaplu...]
3 segunda.dvi [Trabajo_SIA]
4 segunda.tex [Trabajo_SIA]
Exit
memoria.tex
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Java
Modeling
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
tesis.tex 196 26/04/09 20:42 manu
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
Proyecto
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
Trabajo_SIA
memoria.pdf - org.gcn.plinguaplugin.memo

```
\subsection{Creaci\'{o}n de proyecto}
Para utilizar \textit{pLinguaPlugin}, lo primero que hemos d
\emph{proyecto}. Un proyecto es un directorio de trabajo en
organizaremos los P sistemas relacionados entre s\'{i} que v
para un determinado fin. Para ello, accedemos a la pesta\~na
\textit{File} en el men\'{u} principal de Eclipse.
\begin{center}
\includegraphics[width=10cm]{imagenes/Eclipse.jpg}
\end{center}
Observamos que aparece un men\'{u} con distintas opciones. D
men\'{u} situamos el cursor en la opci\'{o}n \textit{New}. A
observamos que se abre un nuevo men\'{u}. Dentro de este nue
encontramos la opci\'{o}n \textit{Project\ldots}. Al selecci
que se abre una nueva ventana.

En esta nueva ventana, accedemos al men\'{u} \textit{General
men\'{u}, observamos que existe la opci\'{o}n \textit{Projec
Seleccionamos esta opci\'{o}n y pulsamos sobre el bot\'{o}n
dentro de la barra inferior de la ventana.
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (65 pages, 
pdflatex.exe> Transcript written on memoria.log.
```

Inside this menu, roll over the option **New**.

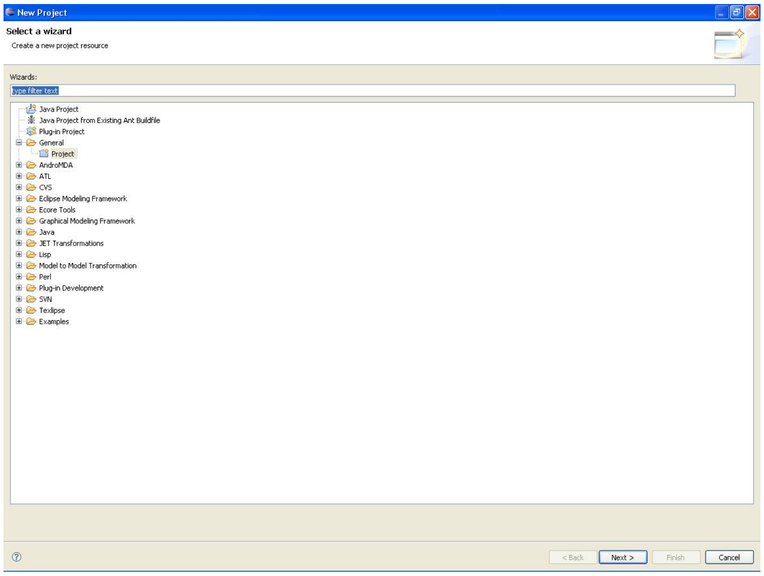
After doing so, a new menu appears. Inside this menu there is an option called **Project. . .** .


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run Plingua Latex Latex Symbols Window Help
New Alt+Shift+N
Open File...
Close Ctrl+W
Close All Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Switch Workspace
Restart
Import...
Export...
Properties Alt+Enter
1 memoria.pdf [org.gcn.plinguaplugin....]
2 plingua_2_0.tex [org.gcn.plinguaplu...]
3 segunda.dvi [Trabajo_SIA]
4 segunda.tex [Trabajo_SIA]
Exit
Java Project
Project...
Package
Class
Interface
Source Folder
Enum
Annotation
JUnit Test Case
Untitled Text File
Folder
File
Example...
Other... Ctrl+N
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Java
Modeling
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
tesis.tex 196 26/04/09 20:42 manu
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
Proyecto
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
Trabajo_SIA
memoria.pdf - org.gcn.plinguaplugin.memo

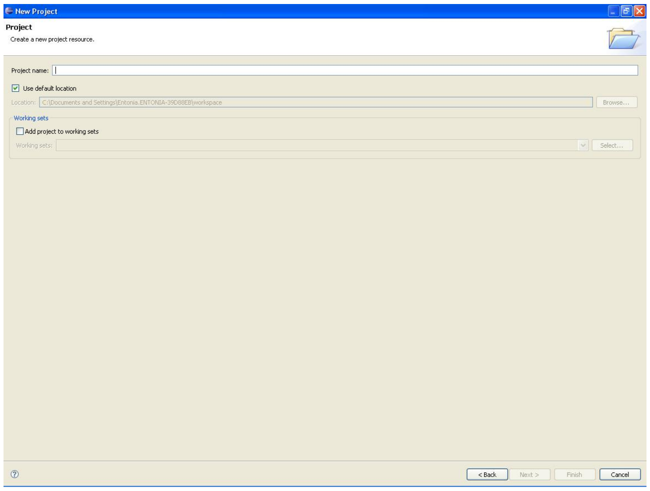
```
\'{o}n de proyecto}
tit{pLinguaPlugin}, lo primero que hemos d
n proyecto es un directorio de trabajo en
P sistemas relacionados entre s\'{i} que v
o fin. Para ello, accedemos a la pesta\~na
l men\'{u} principal de Eclipse.

idth=10cm]{imagenes/Eclipse.jpg}

rece un men\'{u} con distintas opciones.

idth=10cm]{imagenes/menu_file.jpg}

{u} situamos el cursor en la opci\'{o}n \
hacer esto, observamos que se abre un nuevo men\'{u}. Dentro
encontramos la opci\'{o}n \textit{Project\ldots}. Al selecci
que se abre una nueva ventana.

En esta nueva ventana, accedemos al men\'{u} \textit{General
men\'{u}, observamos que existe la opci\'{o}n \textit{Projec
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (65 pages, 
pdflatex.exe> Transcript written on memoria.log.
```

Left-click on it. Then, a new window appears.



Inside this new window, roll over the menu **General**. Inside this menu, there is an option called **Project**. Left-click on this option and, then, left-click on the button **Next**, which is on the bottom bar of the window.



Project name:

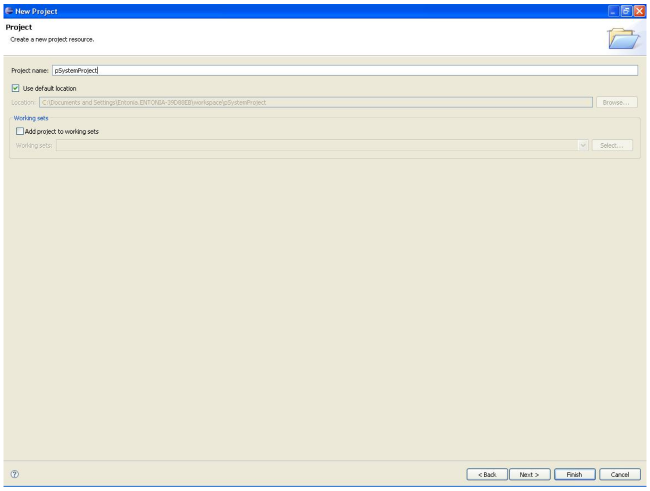
☑ Use default location

Location: C:\Documents and Settings\Entonia.ENTONIA-39D88EB\workspace

□ Add project to working sets

Working sets:

Then, a new window appears. Inside this window, there is a field called **Project name**. On this text field, introduce the name of the new project, for instance, **pSystemProject**.



New Project

Project

Create a new project resource.

Project name: pSystemProject

☑ Use default location

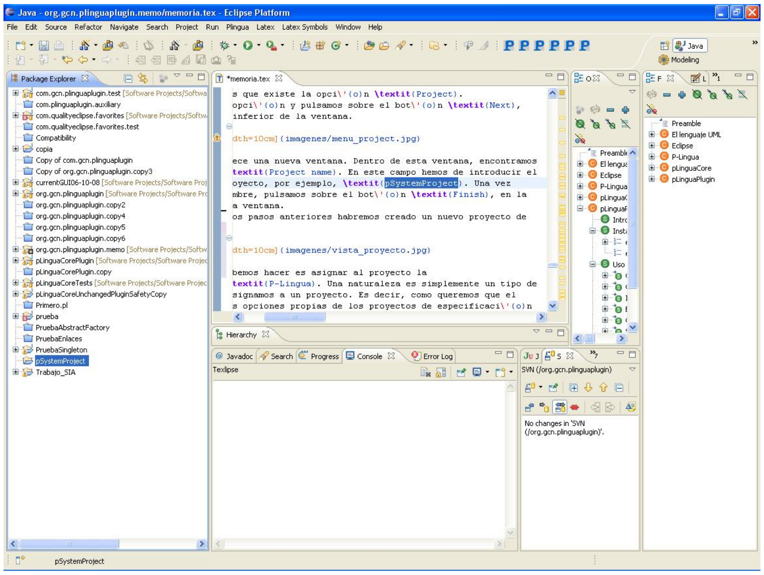
Location: C:\Documents and Settings\Entonia.ENTONIA-39D88EB\workspace\pSystemProject

Working sets

☐ Add project to working sets

Working sets:

Once this name has been introduced, left-click on the button **Finish**, which is on the bottom part of the window. Once the steps listed above have been followed, a new Eclipse project is created.



Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform

Package Explorer

- com.gcn.plinguaplugin.test [Software Projects/Softwa
- com.plinguaplugin.auxiliary
- com.qualityeclipse.favorites [Software Projects/Softw
- com.qualityeclipse.favorites.test
- Compatibility
- copia
- Copy of com.gcn.plinguaplugin
- Copy of org.gcn.plinguaplugin.copy3
- currentGUI06-10-08 [Software Projects/Software Proj
- org.gcn.plinguaplugin [Software Projects/Software Pro
- org.gcn.plinguaplugin.copy2
- org.gcn.plinguaplugin.copy4
- org.gcn.plinguaplugin.copy5
- org.gcn.plinguaplugin.copy6
- org.gcn.plinguaplugin.memo [Software Projects/Softw
- pLinguaCorePlugin [Software Projects/Software Projec
- pLinguaCorePlugin.copy
- pLinguaCoreTests [Software Projects/Software Projec
- pLinguaCoreUnchangedPluginSafetyCopy
- Primero.pl
- prueba
- PruebaAbstractFactory
- PruebaEnlaces
- PruebaSingleton
- pSystemProject
- Trabajo_SIA

*memoria.tex

```
s que existe la opci\'{o}n \textit{Project}.
opci\'{o}n y pulsamos sobre el bot\'{o}n \textit{Next},
inferior de la ventana.

dth=10cm]{imagenes/menu_project.jpg}

ece una nueva ventana. Dentro de esta ventana, encontramos
textit{Project name}. En este campo hemos de introducir el
oyecto, por ejemplo, \textit{pSystemProject}. Una vez
mbre, pulsamos sobre el bot\'{o}n \textit{Finish}, en la
a ventana.
os pasos anteriores habremos creado un nuevo proyecto de


dth=10cm]{imagenes/vista_proyecto.jpg}

bemos hacer es asignar al proyecto la
textit{P-Lingua}. Una naturaleza es simplemente un tipo de
signamos a un proyecto. Es decir, como queremos que el
s opciones propias de los proyectos de especificaci\'{o}n
```

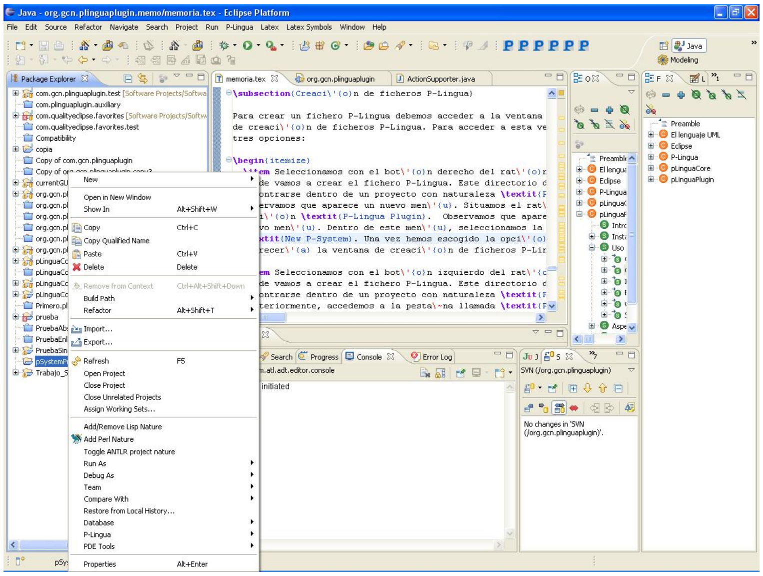
Texlipse

SVN (/org.gcn.plinguaplugin)

No changes in 'SVN (/org.gcn.plinguaplugin)'.

The next thing to do is to assign a *P-Lingua nature* to the project. A nature is merely a kind of behavior which is assigned to a project. Hence, as the project has to perform the proper actions of the P systems specification projects, it should be assigned that nature. In order to do so, there are two ways to assign a *P-Lingua* nature to a project.

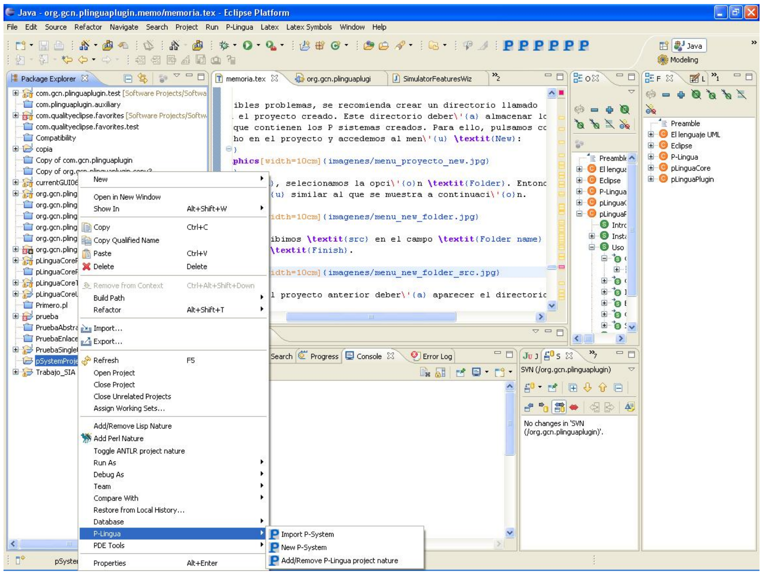
- Right-click on the project which is going to be assigned a P-Lingua nature. Then, a new menu appears.



```
\subsection{Creaci\'{o}n de ficheros P-Lingua}

Para crear un fichero P-Lingua debemos acceder a la ventana
de creaci\'{o}n de ficheros P-Lingua. Para acceder a esta ve
tres opciones:

\begin{itemize}
  \item Seleccionamos con el bot\'{o}n derecho del rat\'{o}n
de vamos a crear el fichero P-Lingua. Este directorio d
ontrarse dentro de un proyecto con naturaleza \textit{P
ervamos que aparece un nuevo men\'{u}. Situamos el rat\
i\'{o}n \textit{P-Lingua Plugin}.  Observamos que apare
vo men\'{u}. Dentro de este men\'{u}, seleccionamos la
xtit{New P-System}. Una vez hemos escogido la opci\'{o}
recer\'{a} la ventana de creaci\'{o}n de ficheros P-Lin

em Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
de vamos a crear el fichero P-Lingua. Este directorio d
ontrarse dentro de un proyecto con naturaleza \textit{P
teriormente, accedemos a la pesta\~na llamada \textit{P
```

```
m.atl.adt.editor.console
initiated
```

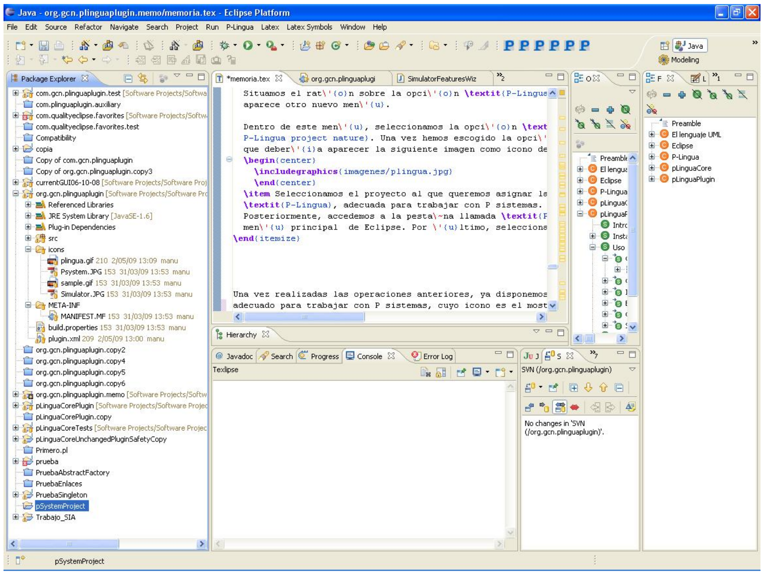
Roll over the option **P-Lingua**. Then, a new window appears.



```
ibles problemas, se recomienda crear un directorio llamado
. el proyecto creado. Este directorio deber\'{a} almacenar lc
que contienen los P sistemas creados. Para ello, pulsamos cc
ho en el proyecto y accedemos al men\'{u} \textit{New}:
}
phics[width=10cm]{imagenes/menu_proyecto_new.jpg}

}, selecionamos la opci\'{o}n \textit{Folder}. Entonc
{u} similar al que se muestra a continuaci\'{o}n.

idth=10cm]{imagenes/menu_new_folder.jpg}

ibimos \textit{src} en el campo \textit{Folder name}
\textit{Finish}.

idth=10cm]{imagenes/menu_new_folder_src.jpg}

l proyecto anterior deber\'{a} aparecer el directoric
```

Inside this menu, left-click on the option **Add/Remove P-Lingua project nature**. Once this action has been executed, press *F5* on the keyboard. Then, the projects acquires the following icon as its image:

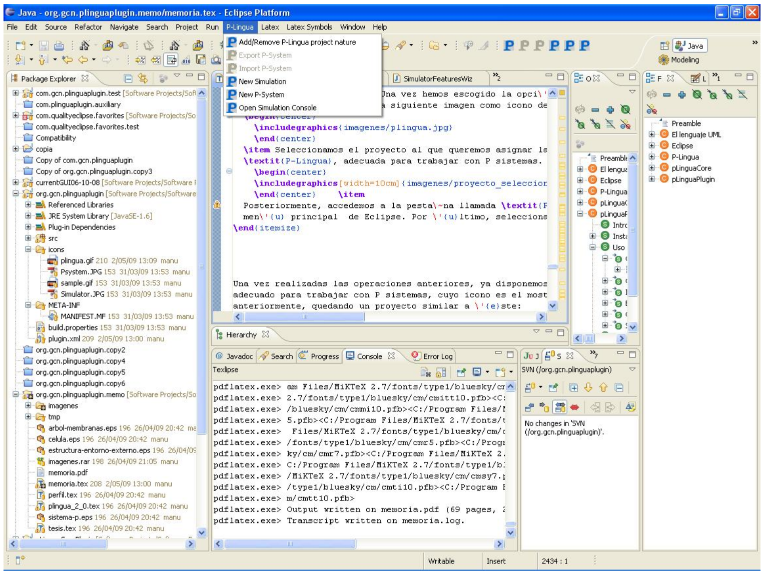
- Left-click on the project which is going to be assigned a *P-Lingua* nature, suitable to work with P systems.



```
  Situamos el rat\'{o}n sobre la opci\'{o}n \textit{P-Lingue
  aparece otro nuevo men\'{u}.

  Dentro de este men\'{u}, seleccionamos la opci\'{o}n \text
  P-Lingua project nature}. Una vez hemos escogido la opci\'
  que deber\'{i}a aparecer la siguiente imagen como icono de
  \begin{center}
    \includegraphics{imagenes/plingua.jpg}
    \end{center}
  \item Seleccionamos el proyecto al que queremos asignar la
  \textit{P-Lingua}, adecuada para trabajar con P sistemas.
  Posteriormente, accedemos a la pesta\~na llamada \textit{F
  men\'{u} principal  de Eclipse. Por \'{u}ltimo, selecciona
\end{itemize}



Una vez realizadas las operaciones anteriores, ya disponemos
adecuado para trabajar con P sistemas, cuyo icono es el most
```

Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Package Explorer
*memoria.tex
org.gcn.plinguaplugi
SimulatorFeaturesWiz
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
pSystemProject

Then, left-click on the tab **P-Lingua** on the main menu of Eclipse.



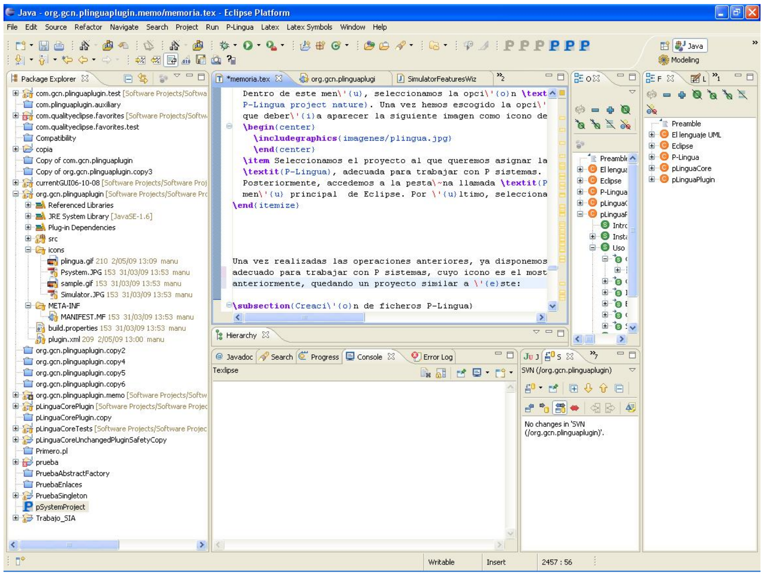
Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Add/Remove P-Lingua project nature
Export P-System
Import P-System
New Simulation
New P-System
Open Simulation Console
Package Explorer
SimulatorFeaturesWiz
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
Writable
Insert
2434 : 1

```
                                                  Una vez hemos escogido la opci\'
                                                  a siguiente imagen como icono de
    \includegraphics{imagenes/plingua.jpg}
    \end{center}
  \item Seleccionamos el proyecto al que queremos asignar la
  \textit{P-Lingua}, adecuada para trabajar con P sistemas.
    \begin{center}
    \includegraphics[width=10cm]{imagenes/proyecto_seleccion
    \end{center}     \item
  Posteriormente, accedemos a la pesta\~na llamada \textit{F
  men\'{u} principal  de Eclipse. Por \'{u}ltimo, selecciona
\end{itemize}



Una vez realizadas las operaciones anteriores, ya disponemos
adecuado para trabajar con P sistemas, cuyo icono es el most
anteriormente, quedando un proyecto similar a \'{e}ste:
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cm
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (69 pages, 2
pdflatex.exe> Transcript written on memoria.log.
```

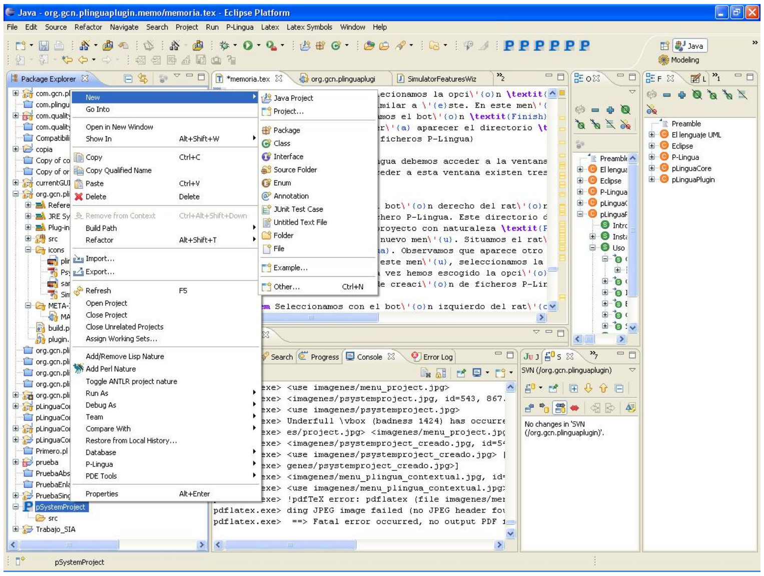
Finally, left-click on the option **Add/Remove P-Lingua project nature** on the menu above and press **F5**, just like the option described before.

Once the actions mentioned above have been performed, there is a suitable environment to work with P systems, whose icon is the one displayed before, and whose outlook is the following:


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Java
Modeling
Package Explorer
*memoria.tex
org.gcn.plinguaplugi
SimulatorFeaturesWiz
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
com.gcn.plinguaplugin.test [Software Projects/Softwa
com.plinguaplugin.auxiliary
com.qualityeclipse.favorites [Software Projects/Softw
com.qualityeclipse.favorites.test
Compatibility
copia
Copy of com.gcn.plinguaplugin
Copy of org.gcn.plinguaplugin.copy3
currentGUI06-10-08 [Software Projects/Software Proj
org.gcn.plinguaplugin [Software Projects/Software Pro
Referenced Libraries
JRE System Library [JavaSE-1.6]
Plug-in Dependencies
src
icons
plingua.gif 210 2/05/09 13:09 manu
Psystem.JPG 153 31/03/09 13:53 manu
sample.gif 153 31/03/09 13:53 manu
Simulator.JPG 153 31/03/09 13:53 manu
META-INF
MANIFEST.MF 153 31/03/09 13:53 manu
build.properties 153 31/03/09 13:53 manu
plugin.xml 209 2/05/09 13:00 manu
org.gcn.plinguaplugin.copy2
org.gcn.plinguaplugin.copy4
org.gcn.plinguaplugin.copy5
org.gcn.plinguaplugin.copy6
org.gcn.plinguaplugin.memo [Software Projects/Softw
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
pSystemProject
Trabajo_SIA
Writable
Insert
2457 : 56

```
  Dentro de este men\'{u}, seleccionamos la opci\'{o}n \text
  P-Lingua project nature}. Una vez hemos escogido la opci\'
  que deber\'{i}a aparecer la siguiente imagen como icono de
  \begin{center}
    \includegraphics{imagenes/plingua.jpg}
    \end{center}
  \item Seleccionamos el proyecto al que queremos asignar la
  \textit{P-Lingua}, adecuada para trabajar con P sistemas.
  Posteriormente, accedemos a la pesta\~na llamada \textit{P
  men\'{u} principal  de Eclipse. Por \'{u}ltimo, selecciona
\end{itemize}



Una vez realizadas las operaciones anteriores, ya disponemos
adecuado para trabajar con P sistemas, cuyo icono es el most
anteriormente, quedando un proyecto similar a \'{e}ste:

\subsection{Creaci\'{o}n de ficheros P-Lingua}
```

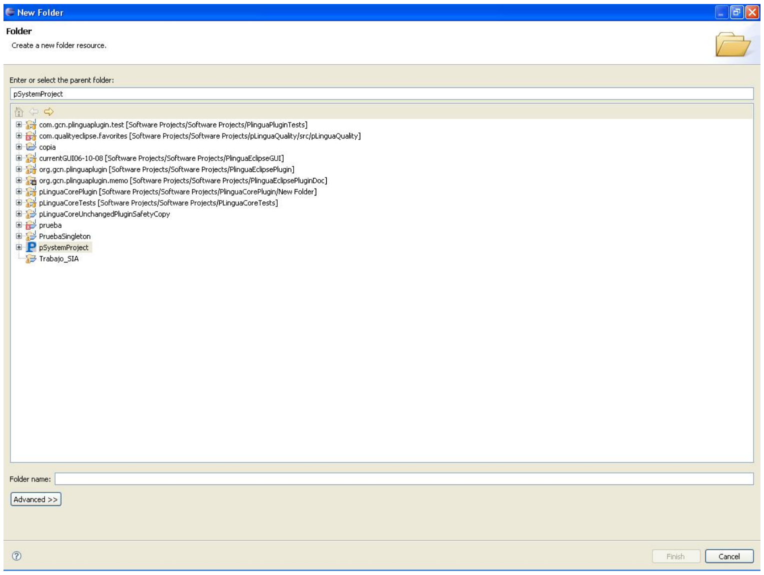
In order to avoid potential pitfalls, it is recommended to create a directory called **src** inside the project created. This directory will contain he files and subdirectories which contain the P system specifications. In order to do so, right-click on the project and access the menu called **New**:



```
ecionamos la opci\'{o}n \textit{
milar a \'{e}ste. En este men\'{
amos el bot\'{o}n \textit{Finish}
er\'{a} aparecer el directorio \t
ficheros P-Lingua}

ngua debemos acceder a la ventana
ceder a esta ventana existen tres

 bot\'{o}n derecho del rat\'{o}r
chero P-Lingua. Este directorio c
proyecto con naturaleza \textit{P
nuevo men\'{u}. Situamos el rat\
ua}. Observamos que aparece otro
este men\'{u}, seleccionamos la
 vez hemos escogido la opci\'{o}
de creaci\'{o}n de ficheros P-Lir

em Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
```

```
exe> <use imagenes/menu_project.jpg>
exe> <imagenes/psystemproject.jpg, id=543, 867.
exe> <use imagenes/psystemproject.jpg>
exe> Underfull \vbox (badness 1424) has occurre
exe> es/project.jpg> <imagenes/menu_project.jpg
exe> <imagenes/psystemproject_creado.jpg, id=54
exe> <use imagenes/psystemproject_creado.jpg> [
exe> genes/psystemproject_creado.jpg>]
exe> <imagenes/menu_plingua_contextual.jpg, id=
exe> <use imagenes/menu_plingua_contextual.jpg>
exe> !pdfTeX error: pdflatex (file imagenes/mer
pdflatex.exe> ding JPEG image failed (no JPEG header fou
pdflatex.exe>  ==> Fatal error occurred, no output PDF f
```

Inside this menu, left-click on the option **Folder**. Then, a menu appears, which is similar to that which is displayed next.



Create a new folder resource.

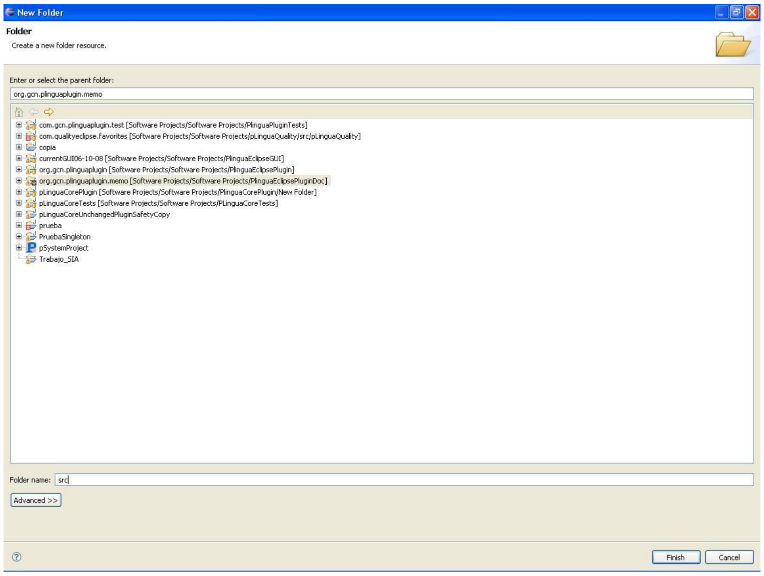
Enter or select the parent folder:

pSystemProject

```
com.gcn.plinguaplugin.test [Software Projects/Software Projects/PlinguaPluginTests]
com.qualityeclipse.favorites [Software Projects/Software Projects/pLinguaQuality/src/pLinguaQuality]
copia
currentGUI06-10-08 [Software Projects/Software Projects/PlinguaEclipseGUI]
org.gcn.plinguaplugin [Software Projects/Software Projects/PlinguaEclipsePlugin]
org.gcn.plinguaplugin.memo [Software Projects/Software Projects/PlinguaEclipsePluginDoc]
pLinguaCorePlugin [Software Projects/Software Projects/PlinguaCorePlugin/New Folder]
pLinguaCoreTests [Software Projects/Software Projects/PLinguaCoreTests]
pLinguaCoreUnchangedPluginSafetyCopy
prueba
PruebaSingleton
pSystemProject
Trabajo_SIA
```

Folder name:

On this menu, select a project with a *P-Lingua* nature associated, write **src** on the field **Folder name** and left-click on the button **Finish**.



Create a new folder resource.

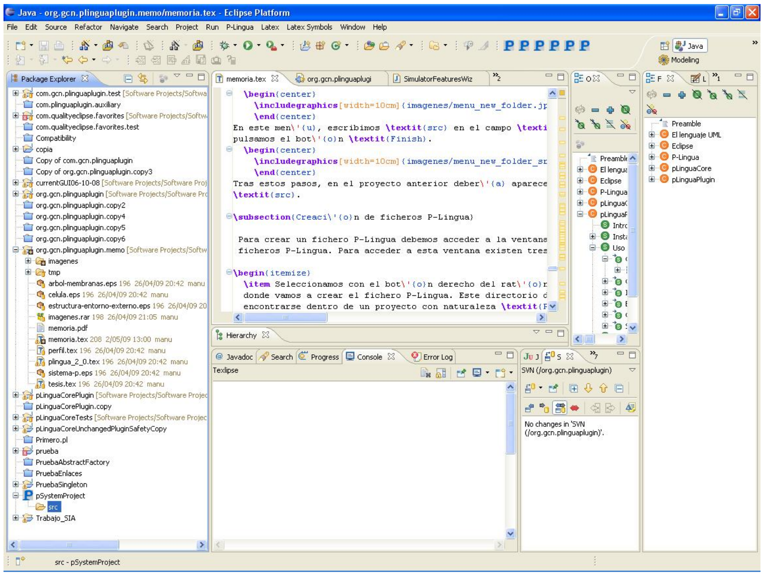
Enter or select the parent folder:

org.gcn.plinguaplugin.memo

```
com.gcn.plinguaplugin.test [Software Projects/Software Projects/PlinguaPluginTests]
com.qualityeclipse.favorites [Software Projects/Software Projects/pLinguaQuality/src/pLinguaQuality]
copia
currentGUI06-10-08 [Software Projects/Software Projects/PlinguaEclipseGUI]
org.gcn.plinguaplugin [Software Projects/Software Projects/PlinguaEclipsePlugin]
org.gcn.plinguaplugin.memo [Software Projects/Software Projects/PlinguaEclipsePluginDoc]
pLinguaCorePlugin [Software Projects/Software Projects/PlinguaCorePlugin/New Folder]
pLinguaCoreTests [Software Projects/Software Projects/PLinguaCoreTests]
pLinguaCoreUnchangedPluginSafetyCopy
prueba
PruebaSingleton
pSystemProject
Trabajo_SIA
```

Folder name: src

After following those steps, the directory *src* should appear on the project.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Java
Modeling
Package Explorer
com.gcn.plinguaplugin.test [Software Projects/Softwa
com.plinguaplugin.auxiliary
com.qualityeclipse.favorites [Software Projects/Softw
com.qualityeclipse.favorites.test
Compatibility
copia
Copy of com.gcn.plinguaplugin
Copy of org.gcn.plinguaplugin.copy3
currentGUI06-10-08 [Software Projects/Software Proj
org.gcn.plinguaplugin [Software Projects/Software Pro
org.gcn.plinguaplugin.copy2
org.gcn.plinguaplugin.copy4
org.gcn.plinguaplugin.copy5
org.gcn.plinguaplugin.copy6
org.gcn.plinguaplugin.memo [Software Projects/Softw
imagenes
tmp
arbol-membranas.eps 196 26/04/09 20:42 manu
celula.eps 196 26/04/09 20:42 manu
estructura-entorno-externo.eps 196 26/04/09 20
imagenes.rar 198 26/04/09 21:05 manu
memoria.pdf
memoria.tex 208 2/05/09 13:00 manu
perfil.tex 196 26/04/09 20:42 manu
plingua_2_0.tex 196 26/04/09 20:42 manu
sistema-p.eps 196 26/04/09 20:42 manu
tesis.tex 196 26/04/09 20:42 manu
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
pSystemProject
src
Trabajo_SIA
memoria.tex
org.gcn.plinguaplugi
SimulatorFeaturesWiz
Preamble
El lengua
Eclipse
P-Lingua
pLinguaC
pLinguaP
Intro
Insta
Uso
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
src - pSystemProject

```
  \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_new_folder.jp
    \end{center}
En este men\'{u}, escribimos \textit{src} en el campo \texti
pulsamos el bot\'{o}n \textit{Finish}.
  \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_new_folder_sr
    \end{center}
Tras estos pasos, en el proyecto anterior deber\'{a} aparece
\textit{src}.

\subsection{Creaci\'{o}n de ficheros P-Lingua}

 Para crear un fichero P-Lingua debemos acceder a la ventana
 ficheros P-Lingua. Para acceder a esta ventana existen tres

\begin{itemize}
  \item Seleccionamos con el bot\'{o}n derecho del rat\'{o}n
  donde vamos a crear el fichero P-Lingua. Este directorio d
  encontrarse dentro de un proyecto con naturaleza \textit{P
```

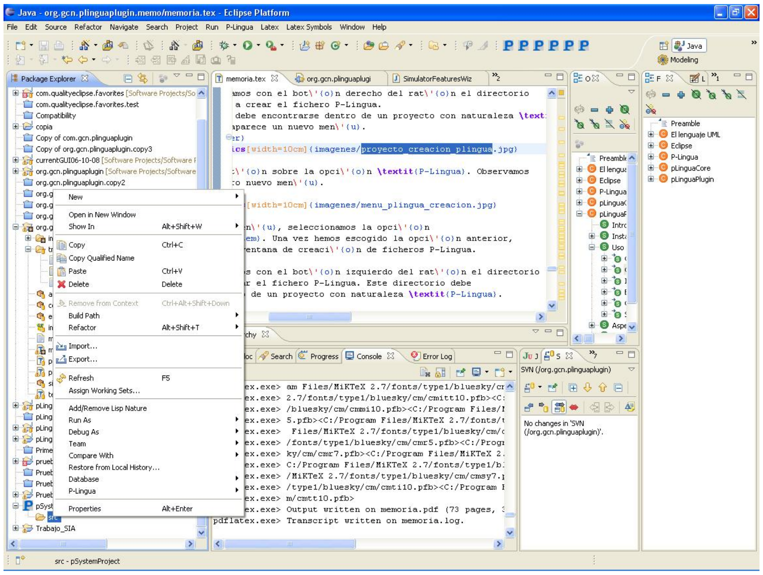
No changes in 'SVN (/org.gcn.plinguaplugin)'.

Chapter 2

P-Lingua file creation

For creating a P-Lingua file, the P-Lingua files creation window needs to be accessed. For accessing this window, there are three different options:

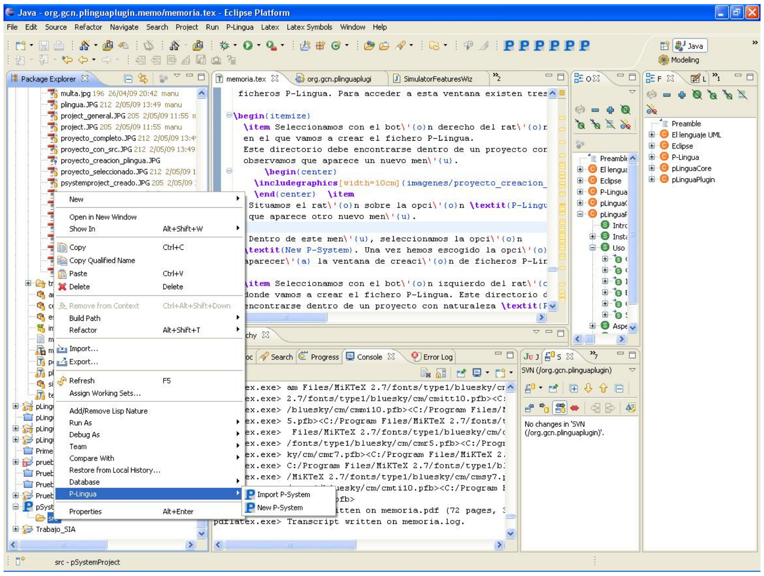
- Right-click on the directory where the P-Lingua file is going to be created. This directory has to be inside a project with a *P-Lingua* nature assigned. Then, a new menu appears.



```
amos con el bot\'{o}n derecho del rat\'{o}n el directorio
 a crear el fichero P-Lingua.
 debe encontrarse dentro de un proyecto con naturaleza \text
aparece un nuevo men\'{u}.
er}
ics[width=10cm]{imagenes/proyecto_creacion_plingua.jpg}

:\'{o}n sobre la opci\'{o}n \textit{P-Lingua}. Observamos
:o nuevo men\'{u}.

[width=10cm]{imagenes/menu_plingua_creacion.jpg}

n\'{u}, seleccionamos la opci\'{o}n
em}. Una vez hemos escogido la opci\'{o}n anterior,
entana de creaci\'{o}n de ficheros P-Lingua.

s con el bot\'{o}n izquierdo del rat\'{o}n el directorio
r el fichero P-Lingua. Este directorio debe
 de un proyecto con naturaleza \textit{P-Lingua}.
```

```
ex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
ex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
ex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/I
ex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
ex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
ex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
ex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
ex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
ex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
ex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
ex.exe> m/cmtt10.pfb>
ex.exe> Output written on memoria.pdf (73 pages, 3
pdflatex.exe> Transcript written on memoria.log.
```

Roll over the option **P-Lingua**. Then, a new menu appears.

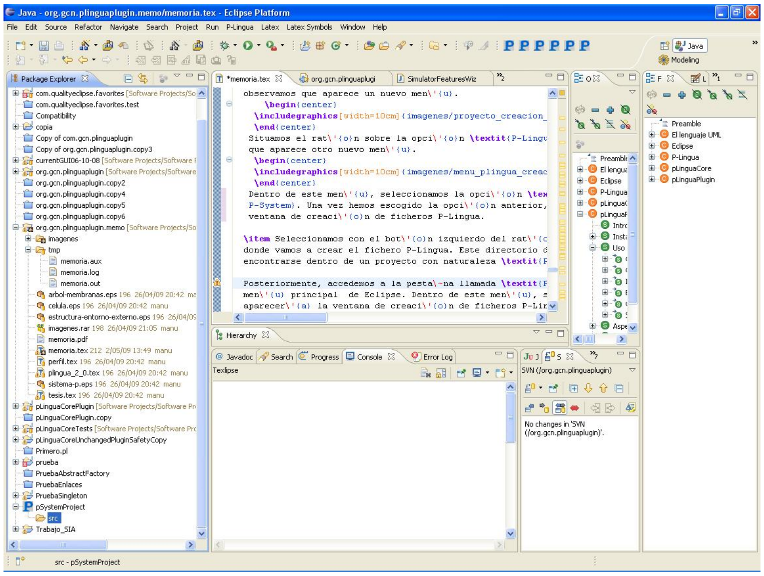


```
 ficheros P-Lingua. Para acceder a esta ventana existen tres

\begin{itemize}
  \item Seleccionamos con el bot\'{o}n derecho del rat\'{o}n
  en el que vamos a crear el fichero P-Lingua.
  Este directorio debe encontrarse dentro de un proyecto con
  observamos que aparece un nuevo men\'{u}.
      \begin{center}
    \includegraphics[width=10cm]{imagenes/proyecto_creacion_
    \end{center}  \item
   Situamos el rat\'{o}n sobre la opci\'{o}n \textit{P-Lingu
   que aparece otro nuevo men\'{u}.

   Dentro de este men\'{u}, seleccionamos la opci\'{o}n
  \textit{New P-System}. Una vez hemos escogido la opci\'{o}
  aparecer\'{a} la ventana de creaci\'{o}n de ficheros P-Lin

  \item Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
  donde vamos a crear el fichero P-Lingua. Este directorio d
  encontrarse dentro de un proyecto con naturaleza \textit{P
```

```
ex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
ex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
ex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
ex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
ex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
ex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
ex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
ex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
ex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
        uesky/cm/cmti10.pfb><C:/Program F
        pfb>
        itten on memoria.pdf (72 pages, 3
pdflatex.exe> Transcript written on memoria.log.
```

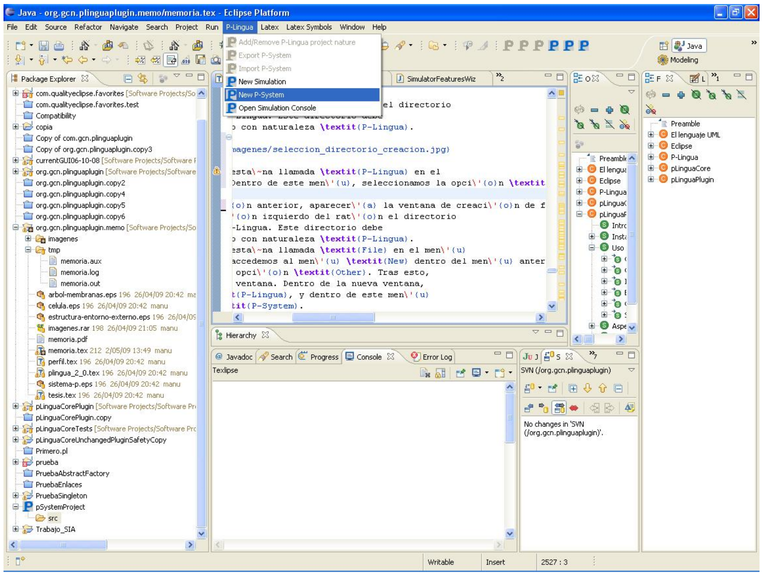
Inside this menu, left-click on the option **New P-System**. Once the former option has been chosen, the P-Lingua files creation window appears.

- Left-click on the directory where the P-Lingua file is going to be created. This directory should be located inside a project with a *P-Lingua* nature assigned.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Package Explorer
com.qualityeclipse.favorites
com.qualityeclipse.favorites.test
Compatibility
copia
Copy of com.gcn.plinguaplugin
Copy of org.gcn.plinguaplugin.copy3
currentGUI06-10-08
org.gcn.plinguaplugin
org.gcn.plinguaplugin.copy2
org.gcn.plinguaplugin.copy4
org.gcn.plinguaplugin.copy5
org.gcn.plinguaplugin.copy6
org.gcn.plinguaplugin.memo
imagenes
tmp
memoria.aux
memoria.log
memoria.out
arbol-membranas.eps
celula.eps
estructura-entorno-externo.eps
imagenes.rar
memoria.pdf
memoria.tex
perfil.tex
plingua_2_0.tex
sistema-p.eps
tesis.tex
pLinguaCorePlugin
pLinguaCorePlugin.copy
pLinguaCoreTests
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
pSystemProject
src
Trabajo_SIA
*memoria.tex
org.gcn.plinguaplugi
SimulatorFeaturesWiz
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
src - pSystemProject

```
  observamos que aparece un nuevo men\'{u}.
      \begin{center}
    \includegraphics[width=10cm]{imagenes/proyecto_creacion_
    \end{center}
   Situamos el rat\'{o}n sobre la opci\'{o}n \textit{P-Lingu
   que aparece otro nuevo men\'{u}.
    \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_plingua_creac
    \end{center}
   Dentro de este men\'{u}, seleccionamos la opci\'{o}n \tex
   P-System}. Una vez hemos escogido la opci\'{o}n anterior,
   ventana de creaci\'{o}n de ficheros P-Lingua.

  \item Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
  donde vamos a crear el fichero P-Lingua. Este directorio d
  encontrarse dentro de un proyecto con naturaleza \textit{P

  Posteriormente, accedemos a la pesta\~na llamada \textit{P
  men\'{u} principal  de Eclipse. Dentro de este men\'{u}, s
  aparecer\'{a} la ventana de creaci\'{o}n de ficheros P-Lin
```

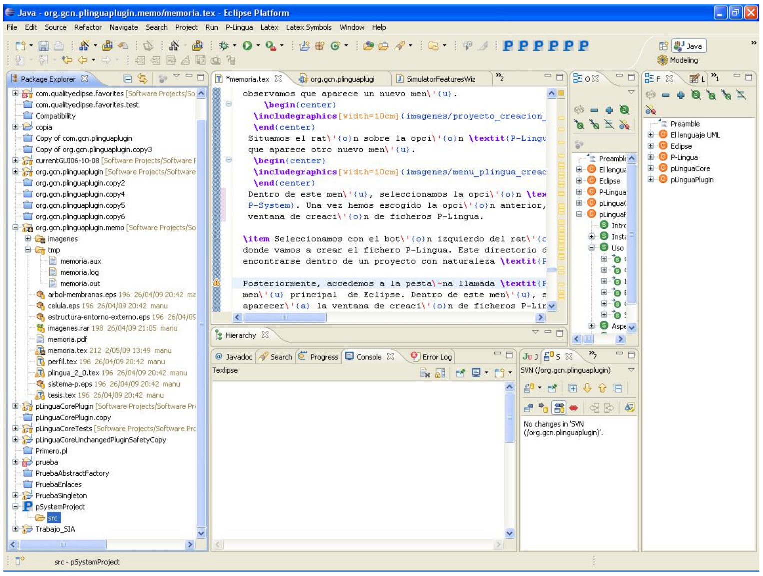
Then, left-click on the tab called **P-Lingua** on the main menu of Eclipse. Inside this menu, left-click on the option *New P-System*.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Add/Remove P-Lingua project nature
Export P-System
Import P-System
New Simulation
New P-System
Open Simulation Console
Package Explorer
SimulatorFeaturesWiz
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Writable Insert 2527 : 3

```
el directorio
o con naturaleza \textit{P-Lingua}.

magenes/seleccion_directorio_creacion.jpg}

esta\~na llamada \textit{P-Lingua} en el
Dentro de este men\'{u}, seleccionamos la opci\'{o}n \textit

{o}n anterior, aparecer\'{a} la ventana de creaci\'{o}n de f
'{o}n izquierdo del rat\'{o}n el directorio
-Lingua. Este directorio debe
o con naturaleza \textit{P-Lingua}.
esta\~na llamada \textit{File} en el men\'{u}
accedemos al men\'{u} \textit{New} dentro del men\'{u} anter
 opci\'{o}n \textit{Other}. Tras esto,
 ventana. Dentro de la nueva ventana,
t{P-Lingua}, y dentro de este men\'{u}
tit{P-System}.
```

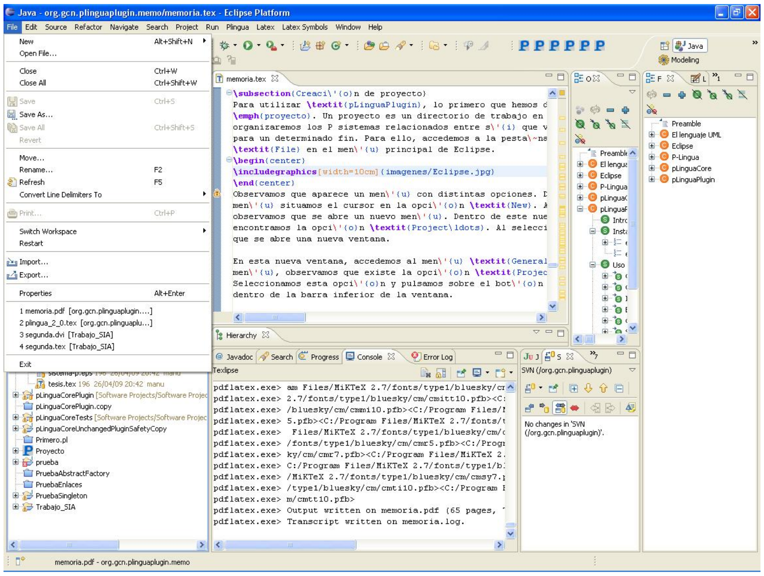
Once the option above has been chosen, a P-Lingua file creation window will appear.

- Left-click on the directory where the P-Lingua file is going to be created. This directory should be located inside a project with a *P-Lingua* nature assigned.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Package Explorer
pSystemProject
src
*memoria.tex
org.gcn.plinguaplugi
SimulatorFeaturesWiz
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
src - pSystemProject

```
observamos que aparece un nuevo men\'{u}.
    \begin{center}
  \includegraphics[width=10cm]{imagenes/proyecto_creacion_
  \end{center}
 Situamos el rat\'{o}n sobre la opci\'{o}n \textit{P-Lingu
 que aparece otro nuevo men\'{u}.
  \begin{center}
  \includegraphics[width=10cm]{imagenes/menu_plingua_creac
  \end{center}
 Dentro de este men\'{u}, seleccionamos la opci\'{o}n \tex
 P-System}. Una vez hemos escogido la opci\'{o}n anterior,
 ventana de creaci\'{o}n de ficheros P-Lingua.

\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
donde vamos a crear el fichero P-Lingua. Este directorio d
encontrarse dentro de un proyecto con naturaleza \textit{P

Posteriormente, accedemos a la pesta\~na llamada \textit{F
men\'{u} principal  de Eclipse. Dentro de este men\'{u}, s
aparecer\'{a} la ventana de creaci\'{o}n de ficheros P-Lin
```

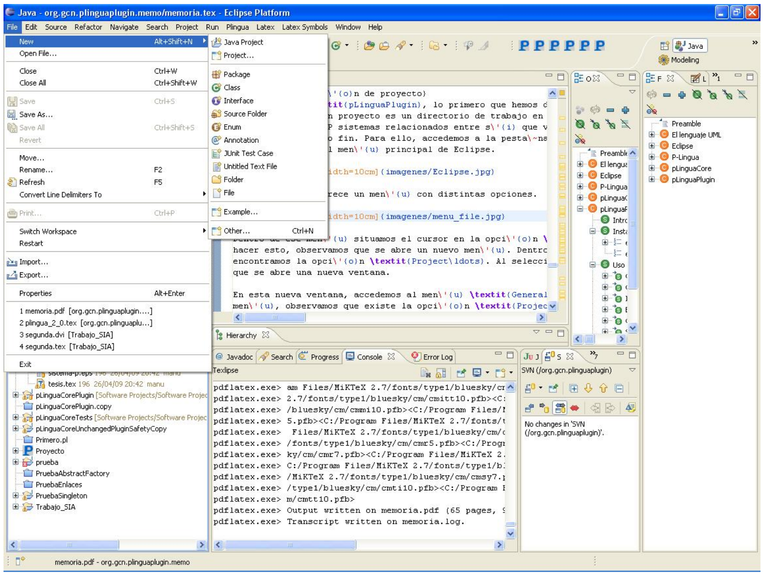
Then, left-click on the tab called **File** on the main menu of Eclipse.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run Plingua Latex Latex Symbols Window Help
New Alt+Shift+N
Open File...
Close Ctrl+W
Close All Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Switch Workspace
Restart
Import...
Export...
Properties Alt+Enter
1 memoria.pdf [org.gcn.plinguaplugin....]
2 plingua_2_0.tex [org.gcn.plinguaplu...]
3 segunda.dvi [Trabajo_SIA]
4 segunda.tex [Trabajo_SIA]
Exit
tesis.tex 196 26/04/09 20:42 manu
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
Proyecto
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
Trabajo_SIA
memoria.tex
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Java
Modeling
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
memoria.pdf - org.gcn.plinguaplugin.memo

```
\subsection{Creaci\'{o}n de proyecto}
Para utilizar \textit{pLinguaPlugin}, lo primero que hemos d
\emph{proyecto}. Un proyecto es un directorio de trabajo en
organizaremos los P sistemas relacionados entre s\'{i} que v
para un determinado fin. Para ello, accedemos a la pesta\~na
\textit{File} en el men\'{u} principal de Eclipse.
\begin{center}
\includegraphics[width=10cm]{imagenes/Eclipse.jpg}
\end{center}
Observamos que aparece un men\'{u} con distintas opciones. D
men\'{u} situamos el cursor en la opci\'{o}n \textit{New}. A
observamos que se abre un nuevo men\'{u}. Dentro de este nue
encontramos la opci\'{o}n \textit{Project\ldots}. Al selecci
que se abre una nueva ventana.

En esta nueva ventana, accedemos al men\'{u} \textit{General
men\'{u}, observamos que existe la opci\'{o}n \textit{Projec
Seleccionamos esta opci\'{o}n y pulsamos sobre el bot\'{o}n
dentro de la barra inferior de la ventana.
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (65 pages, 
pdflatex.exe> Transcript written on memoria.log.
```

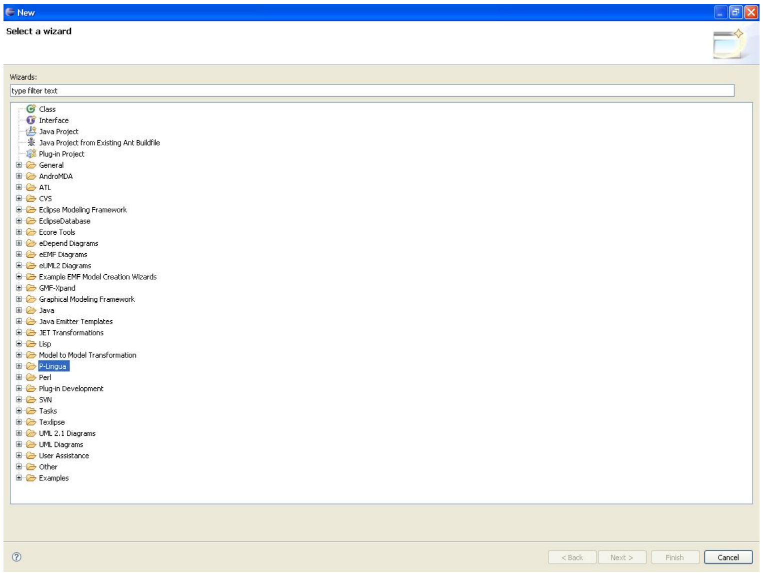
Then, left-click on the menu called **New** inside the menu mentioned above. Then, a new menu appears.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run Plingua Latex Latex Symbols Window Help
New Alt+Shift+N
Open File...
Close Ctrl+W
Close All Ctrl+Shift+W
Save Ctrl+S
Save As...
Save All Ctrl+Shift+S
Revert
Move...
Rename... F2
Refresh F5
Convert Line Delimiters To
Print... Ctrl+P
Switch Workspace
Restart
Import...
Export...
Properties Alt+Enter
1 memoria.pdf [org.gcn.plinguaplugin....]
2 plingua_2_0.tex [org.gcn.plinguaplu...]
3 segunda.dvi [Trabajo_SIA]
4 segunda.tex [Trabajo_SIA]
Exit
Java Project
Project...
Package
Class
Interface
Source Folder
Enum
Annotation
JUnit Test Case
Untitled Text File
Folder
File
Example...
Other... Ctrl+N
tesis.tex 196 26/04/09 20:42 manu
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
Proyecto
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
Trabajo_SIA
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Java
Modeling
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
memoria.pdf - org.gcn.plinguaplugin.memo

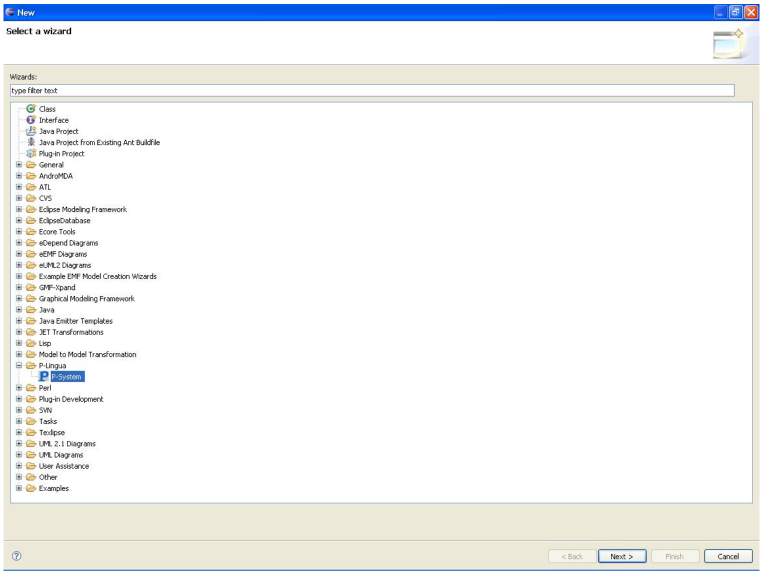
```
\'{o}n de proyecto}
tit{pLinguaPlugin}, lo primero que hemos d
n proyecto es un directorio de trabajo en
P sistemas relacionados entre s\'{i} que v
o fin. Para ello, accedemos a la pesta\~na
l men\'{u} principal de Eclipse.

idth=10cm]{imagenes/Eclipse.jpg}

rece un men\'{u} con distintas opciones.

idth=10cm]{imagenes/menu_file.jpg}

'{u} situamos el cursor en la opci\'{o}n \
hacer esto, observamos que se abre un nuevo men\'{u}. Dentro
encontramos la opci\'{o}n \textit{Project\ldots}. Al selecci
que se abre una nueva ventana.

En esta nueva ventana, accedemos al men\'{u} \textit{General
men\'{u}, observamos que existe la opci\'{o}n \textit{Projec
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (65 pages, 
pdflatex.exe> Transcript written on memoria.log.
```

Inside this new menu, left-click on the option **Other**. Immediately, a new window appears.

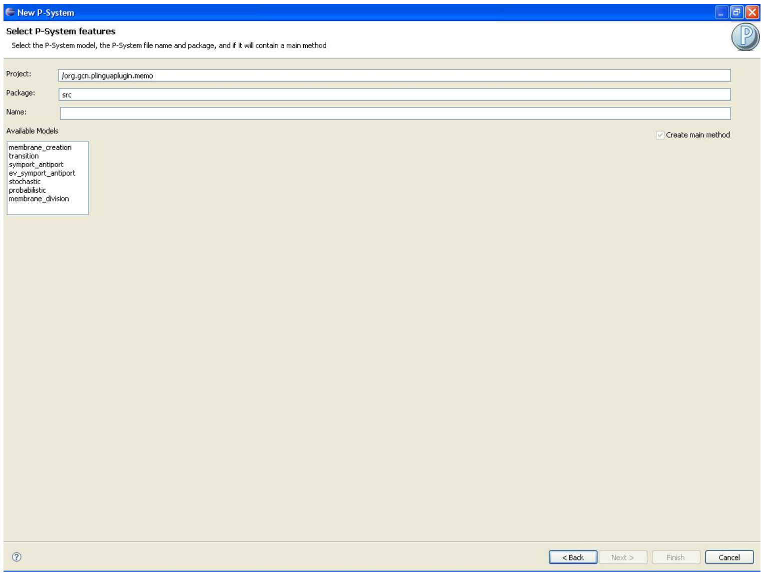


Inside this new window, left-click on the menu **P-Lingua** and, inside this menu, left-click on the option **P-System**.



In order to end, left-click on the button *Next >*.

Once the steps of any of the options above have been followed, the P-Lingua files creation window appears.



New P-System

Select P-System features

Select the P-System model, the P-System file name and package, and if it will contain a main method

Project: /org.gcn.plinguaplugin.memo

Package: src

Name:

Available Models

membrane_creation
transition
symport_antiport
ev_symport_antiport
stochastic
probabilistic
membrane_division

☑ Create main method

Inside this window there are several fields:

Project: This field indicates the project where the new P-Lingua file will be created.

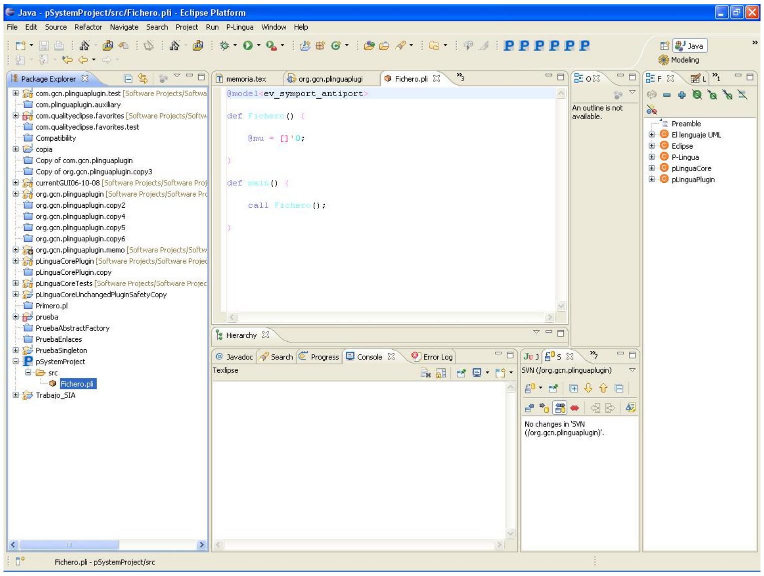
Package: This field indicates the *package* or directory where the new file will be created, inside the project mentioned above.

Name: This field indicates the name of the P-Lingua file which will be created.

Available Models: This field indicates the models recognized by *pLinguaCore*© so that the user can select, from them, the model of the P system specified by the file which will be created.

Create main method: This option is not available yet, since it would only be useful in the case that P-Lingua admits the inclusion of modules defined on other files. Nevertheless, it is provided due to tha fact that maybe future versions of P-Lingua allow to include modules from different files.

Once the options of the file to create have been selected, right-click on the button **Finish**. After that, the P-Lingua file will be displayed.


Java - pSystemProject/src/Fichero.pli - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Window Help
P P P P P P
Java
Modeling
Package Explorer
com.gcn.plinguaplugin.test [Software Projects/Softwa
com.plinguaplugin.auxiliary
com.qualityeclipse.favorites [Software Projects/Softw
com.qualityeclipse.favorites.test
Compatibility
copia
Copy of com.gcn.plinguaplugin
Copy of org.gcn.plinguaplugin.copy3
currentGUI06-10-08 [Software Projects/Software Proj
org.gcn.plinguaplugin [Software Projects/Software Pro
org.gcn.plinguaplugin.copy2
org.gcn.plinguaplugin.copy4
org.gcn.plinguaplugin.copy5
org.gcn.plinguaplugin.copy6
org.gcn.plinguaplugin.memo [Software Projects/Softw
pLinguaCorePlugin [Software Projects/Software Projec
pLinguaCorePlugin.copy
pLinguaCoreTests [Software Projects/Software Projec
pLinguaCoreUnchangedPluginSafetyCopy
Primero.pl
prueba
PruebaAbstractFactory
PruebaEnlaces
PruebaSingleton
pSystemProject
src
Fichero.pli
Trabajo_SIA
memoria.tex
org.gcn.plinguaplugi
Fichero.pli
»3
O
F
L
»1
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
J
S
»7
SVN (/org.gcn.plinguaplugin)
Fichero.pli - pSystemProject/src

```
@model<ev_symport_antiport>

def Fichero() {

    @mu = []'0;

}

def main() {

    call Fichero();

}
```

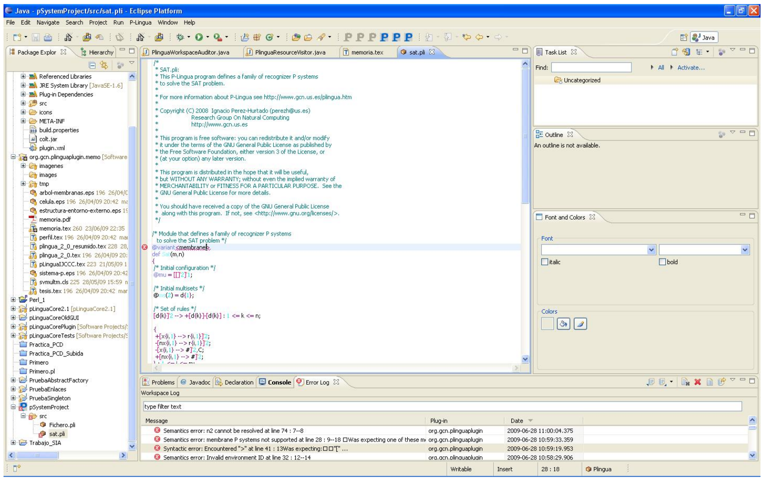
An outline is not available.

No changes in 'SVN (/org.gcn.plinguaplugin)'.

Chapter 3

File editing

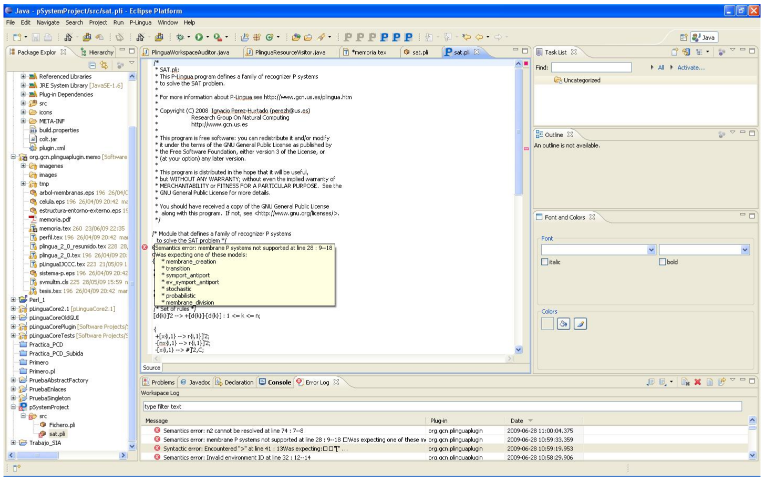
Once a file which specifies a P system on P-Lingua format has been created or imported, the existing errors on the specification can be checked. This way, if the specification contains errors, these will appear underlined, indicating their location.



```
/*
 * SAT.pli:
 * This P-Lingua program defines a family of recognizer P systems
 * to solve the SAT problem.
 *
 * For more information about P-Lingua see http://www.gcn.us.es/plingua.htm
 *
 * Copyright (C) 2008  Ignacio Perez-Hurtado (perezh@us.es)
 *                     Research Group On Natural Computing
 *                     http://www.gcn.us.es
 *
 * This program is free software: you can redistribute it and/or modify
 * it under the terms of the GNU General Public License as published by
 * the Free Software Foundation, either version 3 of the License, or
 * (at your option) any later version.
 *
 * This program is distributed in the hope that it will be useful,
 * but WITHOUT ANY WARRANTY; without even the implied warranty of
 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
 * GNU General Public License for more details.
 *
 * You should have received a copy of the GNU General Public License
 *  along with this program.  If not, see <http://www.gnu.org/licenses/>.
 */

/* Module that defines a family of recognizer P systems
  to solve the SAT problem */
@variant<membrane>
def Sat(m,n)
{
 /* Initial configuration */
 @mu = [[]'2]'1;

 /* Initial multisets */
 @ms(2) = d{1};

 /* Set of rules */
 [d{k}]'2 --> +[d{k}]-[d{k}] : 1 <= k <= n;

 {
  +[x{i,1} --> r{i,1}]'2;
  -[nx{i,1} --> r{i,1}]'2;
  -[x{i,1} --> #]'2,C;
  +[nx{i,1} --> #]'2;
```

```
Message                                                                                   Plug-in                 Date
Semantics error: n2 cannot be resolved at line 74 : 7--8                                  org.gcn.plinguaplugin   2009-06-28 11:00:04.375
Semantics error: membrane P systems not supported at line 28 : 9--18 □Was expecting one of these m org.gcn.plinguaplugin   2009-06-28 10:59:33.359
Syntactic error: Encountered ">" at line 41 : 13Was expecting:□□"[" ...                   org.gcn.plinguaplugin   2009-06-28 10:59:19.953
Semantics error: Invalid environment ID at line 32 : 12--14                               org.gcn.plinguaplugin   2009-06-28 10:58:29.906
```

If you use the editor included in *pLinguaPlugin* and roll over the error mark, you will see a message describing the cause of the error.



```
/*
 * SAT.pli:
 * This P-Lingua program defines a family of recognizer P systems
 * to solve the SAT problem.
 *
 * For more information about P-Lingua see http://www.gcn.us.es/plingua.htm
 *
 * Copyright (C) 2008  Ignacio Perez-Hurtado (perezh@us.es)
 *                     Research Group On Natural Computing
 *                     http://www.gcn.us.es
 *
 * This program is free software: you can redistribute it and/or modify
 * it under the terms of the GNU General Public License as published by
 * the Free Software Foundation, either version 3 of the License, or
 * (at your option) any later version.
 *
 * This program is distributed in the hope that it will be useful,
 * but WITHOUT ANY WARRANTY; without even the implied warranty of
 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
 * GNU General Public License for more details.
 *
 * You should have received a copy of the GNU General Public License
 *  along with this program.  If not, see <http://www.gnu.org/licenses/>.
 */

/* Module that defines a family of recognizer P systems
  to solve the SAT problem */
```

```
Semantics error: membrane P systems not supported at line 28 : 9--18
Was expecting one of these models:
  * membrane_creation
  * transition
  * symport_antiport
  * ev_symport_antiport
  * stochastic
  * probabilistic
  * membrane_division
```

```
/* Set of rules */
[d{k}]'2 --> +[d{k}]-[d{k}] : 1 <= k <= n;

{
 +[x{i,1} --> r{i,1}]'2;
 -[nx{i,1} --> r{i,1}]'2;
 -[x{i,1} --> #]'2,C;
```

Message	Plug-in	Date
Semantics error: n2 cannot be resolved at line 74 : 7--8	org.gcn.plinguaplugin	2009-06-28 11:00:04.375
Semantics error: membrane P systems not supported at line 28 : 9--18 □Was expecting one of these m	org.gcn.plinguaplugin	2009-06-28 10:59:33.359
Syntactic error: Encountered ">" at line 41 : 13Was expecting:□□"[" ...	org.gcn.plinguaplugin	2009-06-28 10:59:19.953
Semantics error: Invalid environment ID at line 32 : 12--14	org.gcn.plinguaplugin	2009-06-28 10:58:29.906

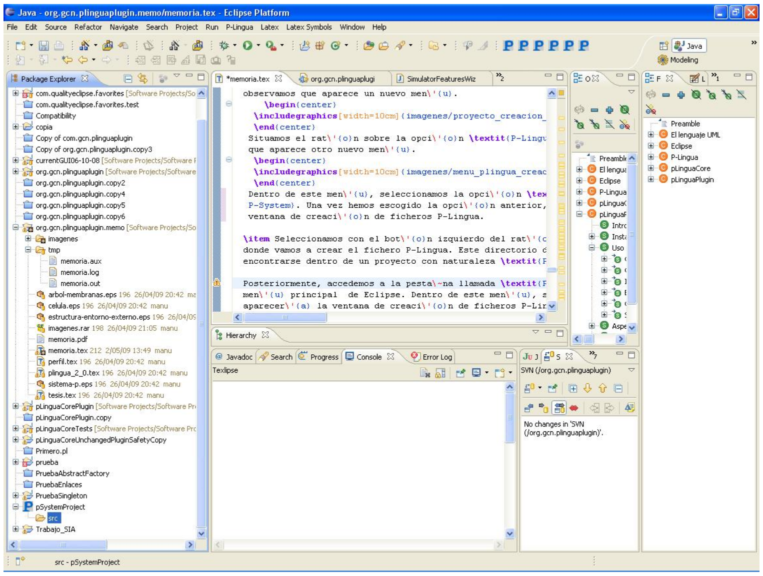
This mark will only appear until you have already saved the file with errors in the hard disk.

Chapter 4

File import

For modifying the format of a file which encodes a P system and include it into a previously existent project, the import P system files window needs to be accessed. For accessing this window, there are two different options:

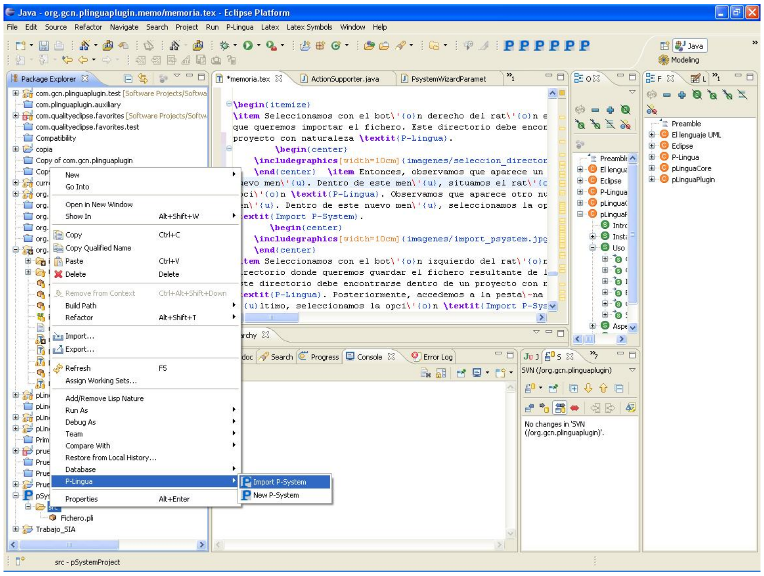
- Right-click on the directory where you want to import the file. This directory should be inside a project with a *P-Lingua* nature assigned.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Package Explorer
*memoria.tex
org.gcn.plinguaplugi
SimulatorFeaturesWiz
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
pSystemProject
src
src - pSystemProject

```
observamos que aparece un nuevo men\'{u}.
    \begin{center}
  \includegraphics[width=10cm]{imagenes/proyecto_creacion_
  \end{center}
 Situamos el rat\'{o}n sobre la opci\'{o}n \textit{P-Lingu
 que aparece otro nuevo men\'{u}.
  \begin{center}
  \includegraphics[width=10cm]{imagenes/menu_plingua_creac
  \end{center}
 Dentro de este men\'{u}, seleccionamos la opci\'{o}n \tex
 P-System}. Una vez hemos escogido la opci\'{o}n anterior,
 ventana de creaci\'{o}n de ficheros P-Lingua.

\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
donde vamos a crear el fichero P-Lingua. Este directorio c
encontrarse dentro de un proyecto con naturaleza \textit{F

Posteriormente, accedemos a la pesta\~na llamada \textit{F
men\'{u} principal  de Eclipse. Dentro de este men\'{u}, s
aparecer\'{a} la ventana de creaci\'{o}n de ficheros P-Lir
```

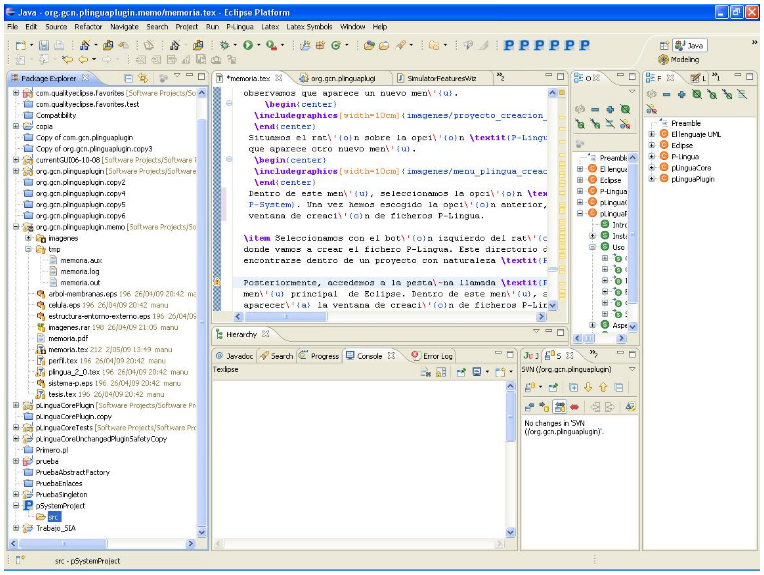
No changes in 'SVN (/org.gcn.plinguaplugin)'.

Then, a new menu appears. Inside this menu, roll over the option **P-Lingua**. Immediately, a new menu appears. Inside this new menu, left-click on the option **Import P-System**.



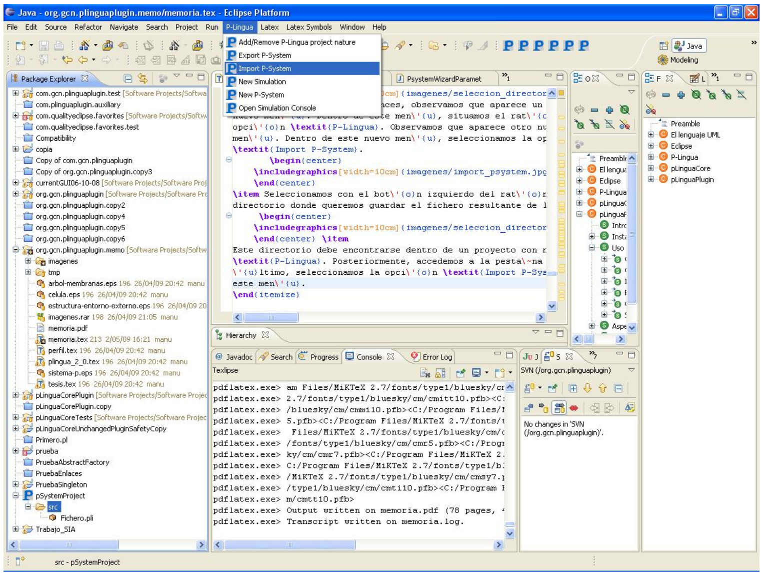
```
\begin{itemize}
\item Seleccionamos con el bot\'{o}n derecho del rat\'{o}n e
que queremos importar el fichero. Este directorio debe encon
proyecto con naturaleza \textit{P-Lingua}.
        \begin{center}
    \includegraphics[width=10cm]{imagenes/seleccion_director
    \end{center}  \item Entonces, observamos que aparece un
uevo men\'{u}. Dentro de este men\'{u}, situamos el rat\'{c
pci\'{o}n \textit{P-Lingua}. Observamos que aparece otro nu
en\'{u}. Dentro de este nuevo men\'{u}, seleccionamos la op
extit{Import P-System}.
       \begin{center}
    \includegraphics[width=10cm]{imagenes/import_psystem.jpc
    \end{center}
tem Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}n
rectorio donde queremos guardar el fichero resultante de l
te directorio debe encontrarse dentro de un proyecto con r
extit{P-Lingua}. Posteriormente, accedemos a la pesta\~na
{u}ltimo, seleccionamos la opci\'{o}n \textit{Import P-Sys
```

- Left-click on the directory where you want to save the file which resulted from the import.



```
  observamos que aparece un nuevo men\'{u}.
      \begin{center}
    \includegraphics[width=10cm]{imagenes/proyecto_creacion_
    \end{center}
   Situamos el rat\'{o}n sobre la opci\'{o}n \textit{P-Lingu
   que aparece otro nuevo men\'{u}.
    \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_plingua_creac
    \end{center}
   Dentro de este men\'{u}, seleccionamos la opci\'{o}n \tex
   P-System}. Una vez hemos escogido la opci\'{o}n anterior,
   ventana de creaci\'{o}n de ficheros P-Lingua.

  \item Seleccionamos con el bot\'{o}n izquierdo del rat\'{c
  donde vamos a crear el fichero P-Lingua. Este directorio c
  encontrarse dentro de un proyecto con naturaleza \textit{F

  Posteriormente, accedemos a la pesta\~na llamada \textit{F
  men\'{u} principal  de Eclipse. Dentro de este men\'{u}, s
  aparecer\'{a} la ventana de creaci\'{o}n de ficheros P-Lir
```

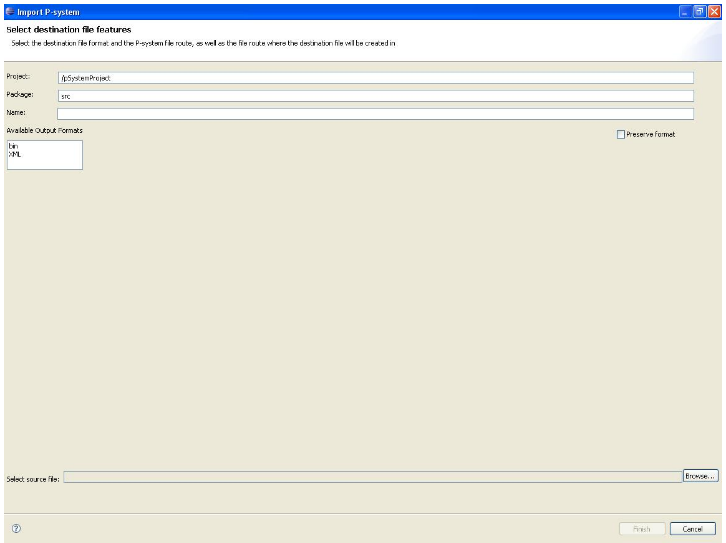
This directory should be inside a project with a *P-Lingua* nature assigned. Then, left-click on the tab called **P-Lingua** on the main menu of Eclipse. Finally, left-click on the option **Import P-System**, inside this menu.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Add/Remove P-Lingua project nature
Export P-System
Import P-System
New Simulation
New P-System
Open Simulation Console
Package Explorer
PsystemWizardParamet
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
src - pSystemProject

```
opci\'{o}n \textit{P-Lingua}. Observamos que aparece otro nu
men\'{u}. Dentro de este nuevo men\'{u}, seleccionamos la op
\textit{Import P-System}.
        \begin{center}
    \includegraphics[width=10cm]{imagenes/import_psystem.jpg
    \end{center}
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}n
directorio donde queremos guardar el fichero resultante de l
      \begin{center}
    \includegraphics[width=10cm]{imagenes/seleccion_director
    \end{center} \item
Este directorio debe encontrarse dentro de un proyecto con n
\textit{P-Lingua}. Posteriormente, accedemos a la pesta\~na
\'{u}ltimo, seleccionamos la opci\'{o}n \textit{Import P-Sys
este men\'{u}.
\end{itemize}
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (78 pages,
pdflatex.exe> Transcript written on memoria.log.
```

Once the steps of any of the options listed above have been taken, the import P system window appears.



Select destination file features

Select the destination file format and the P-system file route, as well as the file route where the destination file will be created in

Project: /pSystemProject

Package: src

Name:

Available Output Formats

bin
XML

□ Preserve format

Select source file:

Inside this window there are several fields and options, whose purpose is described below:

Project: This field indicates the project where the file resulting from the import of the original one will be created.

Package: This field indicates the *package* or directory in which the file resulting from the import will be created, inside the project above.

Name: This field indicates the name of the P-Lingua file which will be created as a result of the import.

Available Output Formats: This field lists the output formats recognized by *pLinguaCore*© so that the user can select, from them, the file format in which the P system will be imported, inside the previously selected directory.

Preserve Format: This option indicates whether the format of the file created as a result of the import will be the the same as the original format or not. In such a case, the format selected in *Available Formats* will not have any effect.

Select source file: This field indicates the route of the original file from where the import will be performed. This file should be encoded on an input or output format recognized by *pLinguaCore*©.

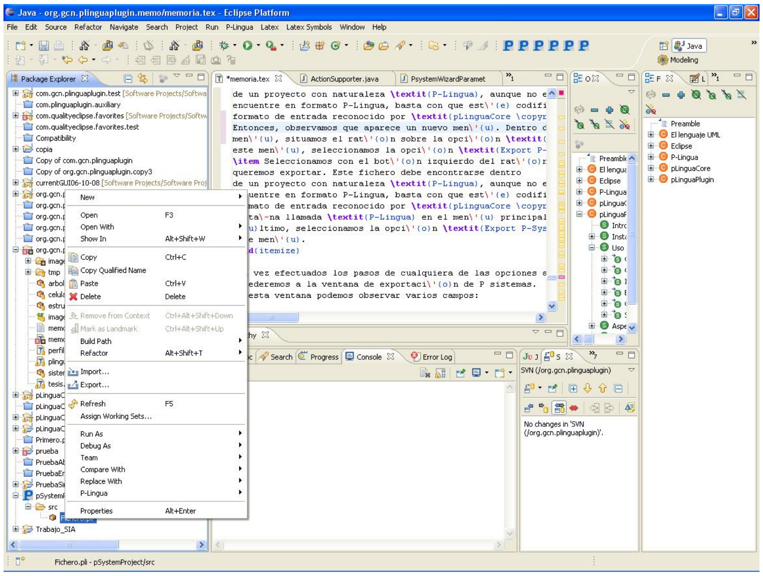
Once the parameters of the file to create have been selected, left-click on the button **Finish**. After executing this action, the file resulting from the import of the original one will be created and displayed inside the specified directory.

Chapter 5

File export

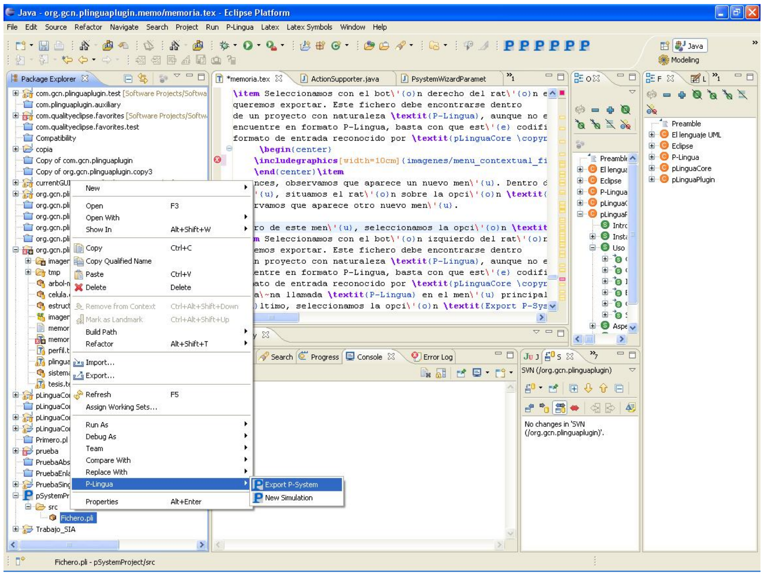
For modifying the format of a file which encodes a P system and store the resulting file in another different file, there are two different options:

- Right-click on the file that you want to export. This file should be inside a project with a *P-Lingua* nature assigned, though it does not have to be necessarily encoded on P-Lingua format. Instead, it is enough for it to be encoded on any input or output format recognized by *pLinguaCore*©.



```
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada reconocido por \textit{pLinguaCore \copyr
Entonces, observamos que aparece un nuevo men\'{u}. Dentro d
men\'{u}, situamos el rat\'{o}n sobre la opci\'{o}n \textit{
este men\'{u}, seleccionamos la opci\'{o}n \textit{Export P-
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}n
queremos exportar. Este fichero debe encontrarse dentro
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
uentre en formato P-Lingua, basta con que est\'{e} codifi
mato de entrada reconocido por \textit{pLinguaCore \copyr
ta\~na llamada \textit{P-Lingua} en el men\'{u} principal
u}ltimo, seleccionamos la opci\'{o}n \textit{Export P-Sys
e men\'{u}.
d{itemize}

 vez efectuados los pasos de cualquiera de las opciones s
ederemos a la ventana de exportaci\'{o}n de P sistemas.
esta ventana podemos observar varios campos:
```

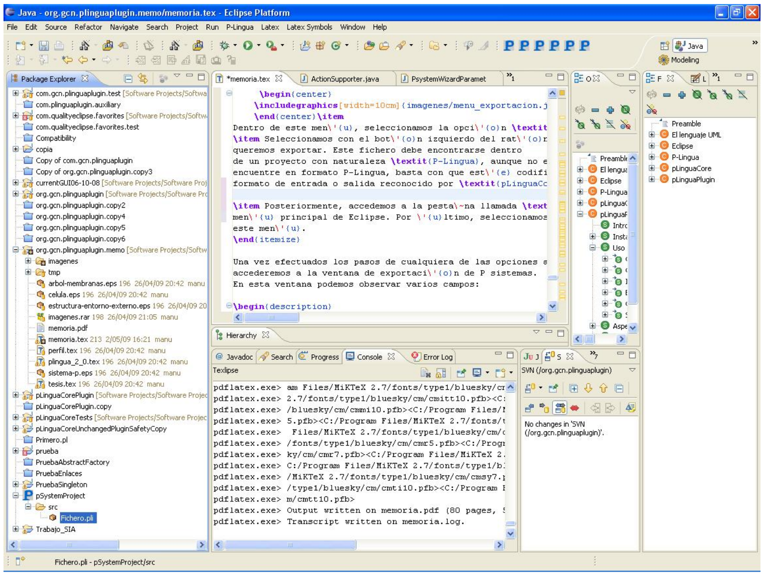
Then, a new menu appears. Inside this menu, roll over the option *P-Lingua*. Immediately, a new menu appears.



```
\item Seleccionamos con el bot\'{o}n derecho del rat\'{o}n e
queremos exportar. Este fichero debe encontrarse dentro
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada reconocido por \textit{pLinguaCore \copyr
     \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_contextual_fi
    \end{center}\item
nces, observamos que aparece un nuevo men\'{u}. Dentro d
'{u}, situamos el rat\'{o}n sobre la opci\'{o}n \textit{
rvamos que aparece otro nuevo men\'{u}.

ro de este men\'{u}, seleccionamos la opci\'{o}n \textit
m Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}n
emos exportar. Este fichero debe encontrarse dentro
n proyecto con naturaleza \textit{P-Lingua}, aunque no e
entre en formato P-Lingua, basta con que est\'{e} codifi
ato de entrada reconocido por \textit{pLinguaCore \copyr
a\~na llamada \textit{P-Lingua} en el men\'{u} principal
}ltimo, seleccionamos la opci\'{o}n \textit{Export P-Sys
```

Inside this menu, left-click on the option **Export P-System**.

- Left-click on the file that you want to export. This file should be located inside a project with a *P-Lingua* nature assigned, though it does not have to be necessarily encoded on P-Lingua format. Instead, it is enough for it to be encoded on any input or output format recognized by *pLinguaCore*©.

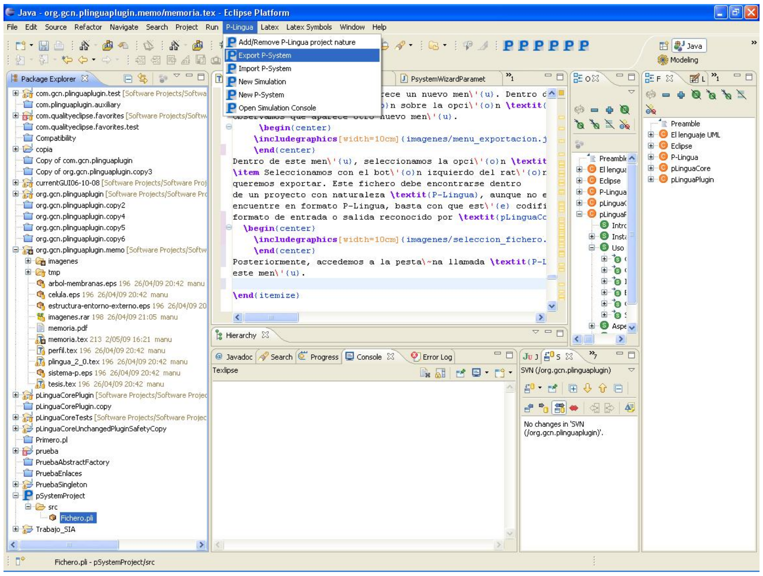

Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Package Explorer
*memoria.tex
ActionSupporter.java
PsystemWizardParamet
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
Fichero.pli
Fichero.pli - pSystemProject/src

```
     \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_exportacion.j
    \end{center}\item
Dentro de este men\'{u}, seleccionamos la opci\'{o}n \textit
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}n
queremos exportar. Este fichero debe encontrarse dentro
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada o salida reconocido por \textit{pLinguaCo

\item Posteriormente, accedemos a la pesta\~na llamada \text
men\'{u} principal de Eclipse. Por \'{u}ltimo, seleccionamos
este men\'{u}.
\end{itemize}

Una vez efectuados los pasos de cualquiera de las opciones s
accederemos a la ventana de exportaci\'{o}n de P sistemas.
En esta ventana podemos observar varios campos:

\begin{description}
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/I
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (80 pages, 5
pdflatex.exe> Transcript written on memoria.log.
```

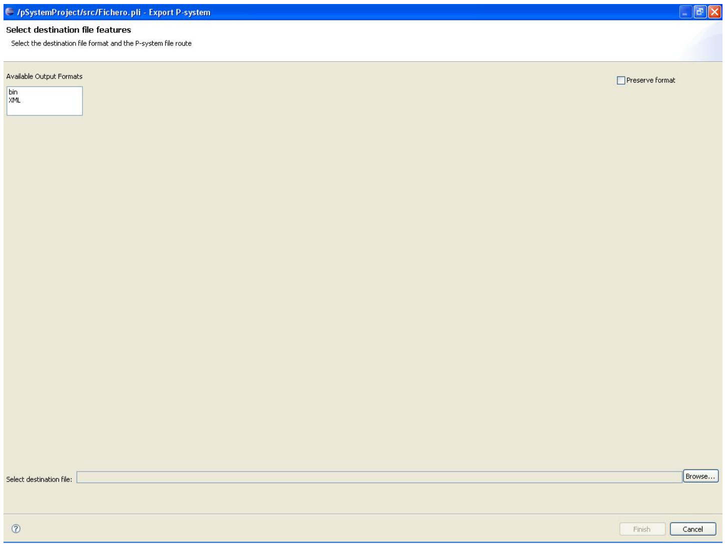
Then, left-click on the tab called **P-Lingua**, inside the main menu of

Eclipse. Finally, left-click on the option *Export P-System*, inside this menu.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Add/Remove P-Lingua project nature
Export P-System
Import P-System
New Simulation
New P-System
Open Simulation Console
Package Explorer
PsystemWizardParamet
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
Java
Modeling
Fichero.pli - pSystemProject/src

```
ece un nuevo men\'{u}. Dentro d
)n sobre la opci\'{o}n \textit{
nuevo men\'{u}.
     \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_exportacion.j
    \end{center}
Dentro de este men\'{u}, seleccionamos la opci\'{o}n \textit
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}n
queremos exportar. Este fichero debe encontrarse dentro
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada o salida reconocido por \textit{pLinguaCo
  \begin{center}
    \includegraphics[width=10cm]{imagenes/seleccion_fichero.
    \end{center}
Posteriormente, accedemos a la pesta\~na llamada \textit{P-L
este men\'{u}.

\end{itemize}
```

Once the steps of any op the options mentioned above have been followed, the P system files export window appears.



Select destination file features

Select the destination file format and the P-system file route

Available Output Formats

bin
XML

□ Preserve format

Select destination file:

Inside this window there are several fields and options, which are described below:

Available Output Formats: This field lists the different output formats recognized by *pLinguaCore*© so that the user selects, from them, the format on which the exported file will be encoded.

Preserve Format: This option indicates whether the format of the file create as a result of the export will be the same as the original one or not. In such a case, the format selected on *Available Formats* will have no effect.

Select destination file: This field indicates the route of the file where the result of the file export will be encoded.

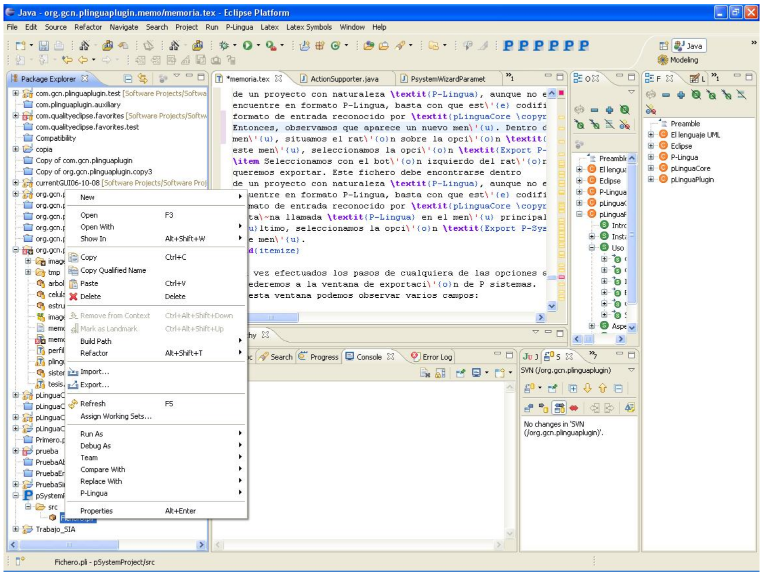
Once the paramters of the file to export have been selected, left-click on the button **Finish**. Then, the file resulting of the export of the original file will be created on the route specified on the P system file export window.

Chapter 6

Simulation creation

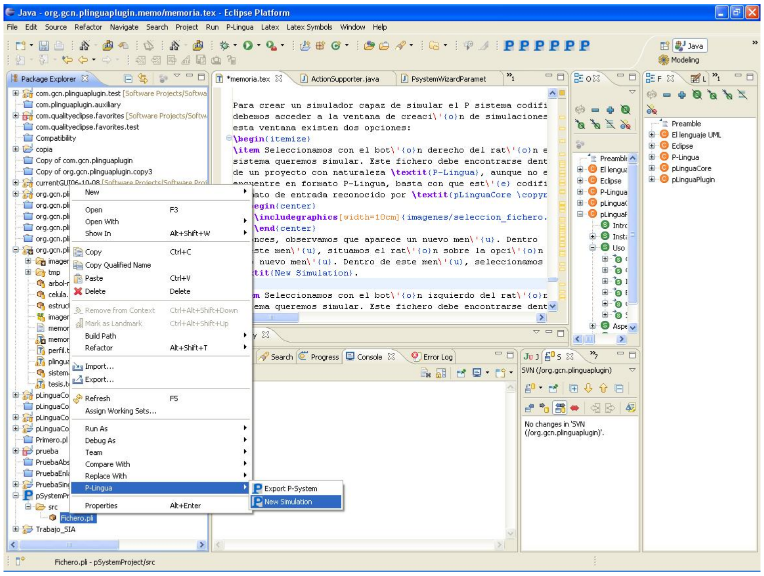
For creating a simulation capable of simulating a P system encoded on a file, The simulation creation window has to be accessed. There are two options to access this window:

- Right-click on the file whose P system is going to be simulated. This file has to be inside a project with a *P-Lingua* nature assigned, though it does not have to be encoded on P-Lingua format necessarily. Instead, it is enough for it to be encoded on any input format recognized by *pLinguaCore*©.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Java
Modeling
Package Explorer
com.gcn.plinguaplugin.test [Software Projects/Softwa
com.plinguaplugin.auxiliary
com.qualityeclipse.favorites [Software Projects/Softw
com.qualityeclipse.favorites.test
Compatibility
copia
Copy of com.gcn.plinguaplugin
Copy of org.gcn.plinguaplugin.copy3
currentGUI06-10-08 [Software Projects/Software Proj
org.gcn.p
image
tmp
arbol
celula
estru
perfil
plingu
sister
tesis.
pLinguaC
Primero.p
prueba
PruebaAt
PruebaEr
PruebaSi
pSystemP
src
Fichero.pli
Trabajo_SIA
New
Open F3
Open With
Show In Alt+Shift+W
Copy Ctrl+C
Copy Qualified Name
Paste Ctrl+V
Delete Delete
Remove from Context Ctrl+Alt+Shift+Down
Mark as Landmark Ctrl+Alt+Shift+Up
Build Path
Refactor Alt+Shift+T
Import...
Export...
Refresh F5
Assign Working Sets...
Run As
Debug As
Team
Compare With
Replace With
P-Lingua
Properties Alt+Enter
*memoria.tex
ActionSupporter.java
PsystemWizardParamet
Search
Progress
Console
Error Log
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Preamble
El lenguaje UML
Eclipse
P-Lingua
pLinguaCore
pLinguaPlugin
Intro
Insta
Uso
Fichero.pli - pSystemProject/src

```
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada reconocido por \textit{pLinguaCore \copyr
Entonces, observamos que aparece un nuevo men\'{u}. Dentro d
men\'{u}, situamos el rat\'{o}n sobre la opci\'{o}n \textit{
este men\'{u}, seleccionamos la opci\'{o}n \textit{Export P-
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}r
queremos exportar. Este fichero debe encontrarse dentro
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
uentre en formato P-Lingua, basta con que est\'{e} codifi
mato de entrada reconocido por \textit{pLinguaCore \copyr
ta\~na llamada \textit{P-Lingua} en el men\'{u} principal
u}ltimo, seleccionamos la opci\'{o}n \textit{Export P-Sys
e men\'{u}.
d{itemize}

 vez efectuados los pasos de cualquiera de las opciones e
ederemos a la ventana de exportaci\'{o}n de P sistemas.
esta ventana podemos observar varios campos:
```

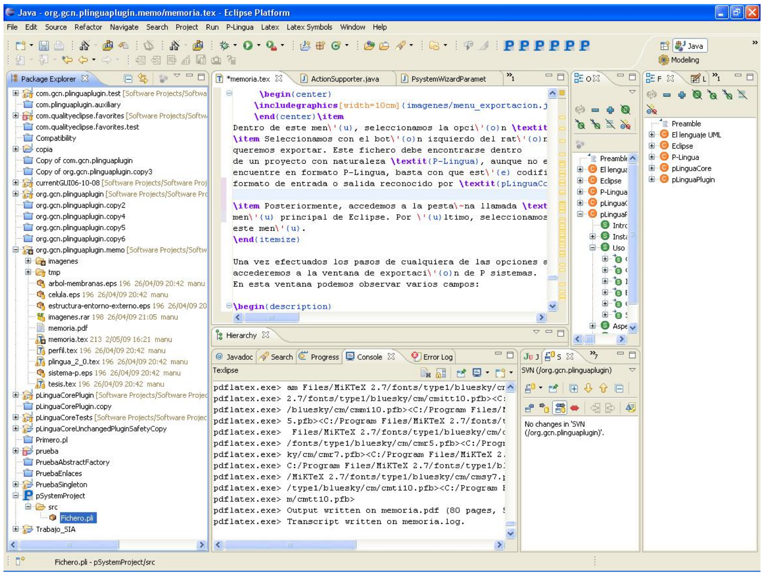
Then, a new menu appears. Inside this menu, roll over the option called **P-Lingua**. Then, a new menu appears. Inside this menu, left-click on the option called *New Simulation*.



```
Para crear un simulador capaz de simular el P sistema codifi
debemos acceder a la ventana de creaci\'{o}n de simulaciones
esta ventana existen dos opciones:
\begin{itemize}
\item Seleccionamos con el bot\'{o}n derecho del rat\'{o}n e
sistema queremos simular. Este fichero debe encontrarse dent
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
 ato de entrada reconocido por \textit{pLinguaCore \copyr
 egin{center}
  \includegraphics[width=10cm]{imagenes/seleccion_fichero.
  \end{center}
 nces, observamos que aparece un nuevo men\'{u}. Dentro
 ste men\'{u}, situamos el rat\'{o}n sobre la opci\'{o}n
  nuevo men\'{u}. Dentro de este men\'{u}, seleccionamos
 tit{New Simulation}.

 m Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}r
 ema queremos simular. Este fichero debe encontrarse dent
```

No changes in 'SVN (/org.gcn.plinguaplugin)'.

- Left-click on the file whose P system you want to simulate. This file should be inside a project with a *P-Lingua* nature assigned, though it does not have to be necessarily encoded on P-Lingua format. Instead, it is enough for it to be encoded on any input format recognized by *pLinguaCore*©.

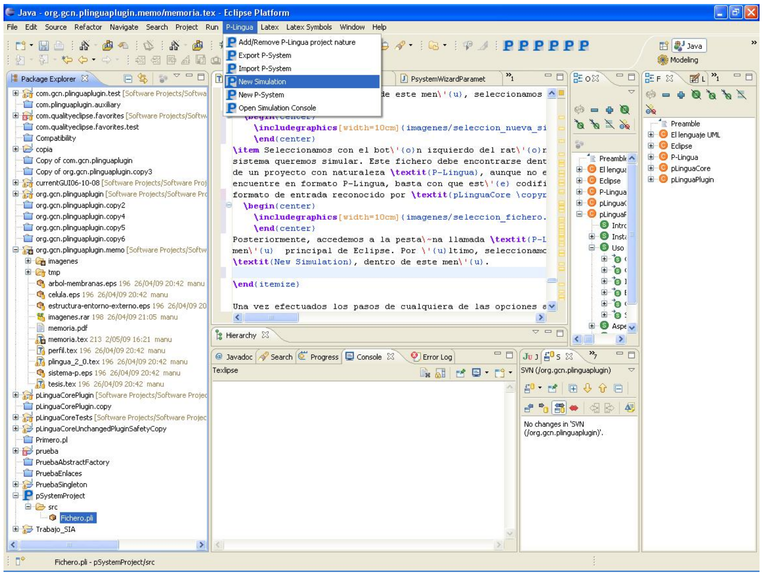

Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Package Explorer
*memoria.tex
ActionSupporter.java
PsystemWizardParamet
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
Fichero.pli
Fichero.pli - pSystemProject/src

```
     \begin{center}
    \includegraphics[width=10cm]{imagenes/menu_exportacion.j
    \end{center}\item
Dentro de este men\'{u}, seleccionamos la opci\'{o}n \textit
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}r
queremos exportar. Este fichero debe encontrarse dentro
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada o salida reconocido por \textit{pLinguaCc

\item Posteriormente, accedemos a la pesta\~na llamada \text
men\'{u} principal de Eclipse. Por \'{u}ltimo, seleccionamos
este men\'{u}.
\end{itemize}

Una vez efectuados los pasos de cualquiera de las opciones s
accederemos a la ventana de exportaci\'{o}n de P sistemas.
En esta ventana podemos observar varios campos:

\begin{description}
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/I
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (80 pages, 5
pdflatex.exe> Transcript written on memoria.log.
```

No changes in 'SVN (/org.gcn.plinguaplugin)'.

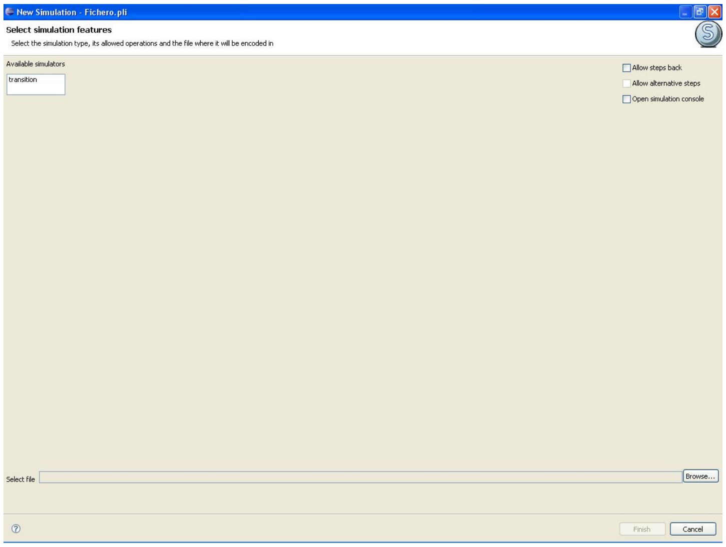
Then, left-click on the tab called **P-Lingua** on the main menu of Eclipse. Finally, left-click on the option called **New Simulation**, which is inside this menu.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Add/Remove P-Lingua project nature
Export P-System
Import P-System
New Simulation
New P-System
Open Simulation Console
Package Explorer
PsystemWizardParamet
Hierarchy
Javadoc
Search
Progress
Console
Error Log
Texlipse
pSystemProject
src
Fichero.pli
Fichero.pli - pSystemProject/src

```
de este men\'{u}, seleccionamos
      \includegraphics[width=10cm]{imagenes/seleccion_nueva_si
      \end{center}
\item Seleccionamos con el bot\'{o}n izquierdo del rat\'{o}r
sistema queremos simular. Este fichero debe encontrarse dent
de un proyecto con naturaleza \textit{P-Lingua}, aunque no e
encuentre en formato P-Lingua, basta con que est\'{e} codifi
formato de entrada reconocido por \textit{pLinguaCore \copyr
    \begin{center}
      \includegraphics[width=10cm]{imagenes/seleccion_fichero.
      \end{center}
Posteriormente, accedemos a la pesta\~na llamada \textit{P-L
men\'{u}  principal de Eclipse. Por \'{u}ltimo, seleccionamc
\textit{New Simulation}, dentro de este men\'{u}.

\end{itemize}

Una vez efectuados los pasos de cualquiera de las opciones s
```

No changes in 'SVN (/org.gcn.plinguaplugin)'.

Once the steps of any of the options above have been followed, the simulation creation window appears.



Select simulation features

Select the simulation type, its allowed operations and the file where it will be encoded in

Available simulators

transition

☐ Allow steps back

Allow alternative steps

☐ Open simulation console

Select file

Inside this window there are several fields and options:

Available simulators: This field lists the different simulators recognized by *pLinguaCore*© which are suitable for the model of the P system to simulate so that the user selects, from them, the specific simulator for the simulation to create.

Allow steps back: This field indicates whether the simulation to create will be able to execute steps back or not.

Allow alternative steps: This field indicates whether the simulation to create will be able to execute alternative steps or not. This option is only available on those simulators which allow to take alternative steps.

Open simulation console: This option indicates whether the simulation console will be displayed after creating the simulation, so as to execute the simulation created.

Select file: This field indicates the route of the file in which the simulation of the P system will be created.

Once the creation parameters for the simulation of the P system have been selected, left-click on the button **Finish**. Then, the simulation according to the parameters previously set will be created on the specified route.

In fact, two files are created: a file (whose extension is *.sim*) on which the parameters of the simulation are encoded, for instance, whether steps back and/or alternative steps are allowed or not, and another one (whose extension is *XML*) which is the file resulting of the export on XML format of the P system to simulate. For the right performance of the simulation, it is necessary for both files to be located on the same directory.

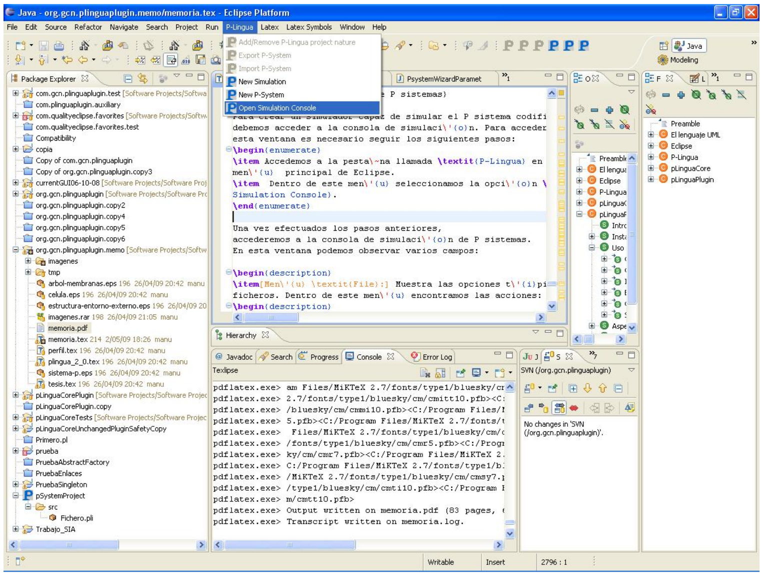
Chapter 7

P system simulation

For executing a simulation if a P system encoded on a file, the simulation console should be accessed. For accessing this console, it is necessary to follow the following steps:

1. Left-click on the tab called **P-Lingua** on the main menu of Eclipse.

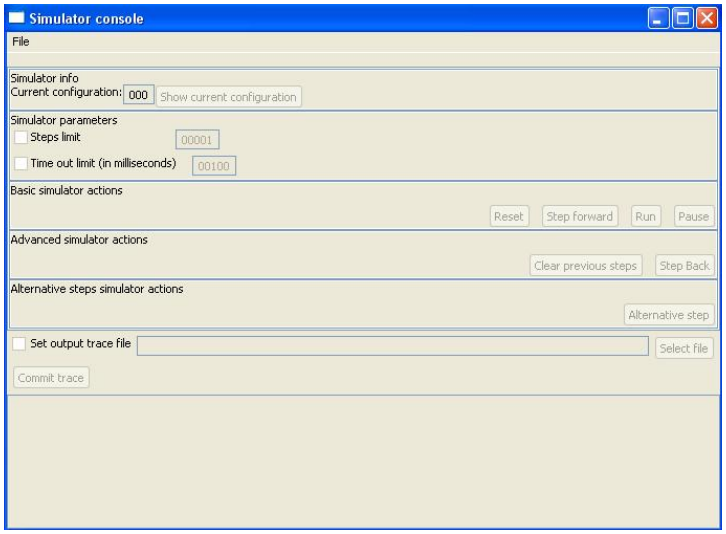
2. Inside this menu, left-click on the option called **Open Simulation Console**.


Java - org.gcn.plinguaplugin.memo/memoria.tex - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run P-Lingua Latex Latex Symbols Window Help
Add/Remove P-Lingua project nature
Export P-System
Import P-System
New Simulation
New P-System
Open Simulation Console
Package Explorer
PsystemWizardParamet
Hierarchy
Javadoc Search Progress Console Error Log
Texlipse
SVN (/org.gcn.plinguaplugin)
No changes in 'SVN (/org.gcn.plinguaplugin)'.
Writable Insert 2796 : 1

```
e P sistemas}

Para crear un simulador capaz de simular el P sistema codifi
debemos acceder a la consola de simulaci\'{o}n. Para acceder
esta ventana es necesario seguir los siguientes pasos:
\begin{enumerate}
\item Accedemos a la pesta\~na llamada \textit{P-Lingua} en
men\'{u}  principal de Eclipse.
\item  Dentro de este men\'{u} seleccionamos la opci\'{o}n \
Simulation Console}.
\end{enumerate}

Una vez efectuados los pasos anteriores,
accederemos a la consola de simulaci\'{o}n de P sistemas.
En esta ventana podemos observar varios campos:

\begin{description}
\item[Men\'{u} \textit{File}:] Muestra las opciones t\'{i}pi
ficheros. Dentro de este men\'{u} encontramos las acciones:
\begin{description}
```

```
pdflatex.exe> am Files/MiKTeX 2.7/fonts/type1/bluesky/cr
pdflatex.exe> 2.7/fonts/type1/bluesky/cm/cmitt10.pfb><C:
pdflatex.exe> /bluesky/cm/cmmi10.pfb><C:/Program Files/M
pdflatex.exe> 5.pfb><C:/Program Files/MiKTeX 2.7/fonts/t
pdflatex.exe>  Files/MiKTeX 2.7/fonts/type1/bluesky/cm/c
pdflatex.exe> /fonts/type1/bluesky/cm/cmr5.pfb><C:/Progr
pdflatex.exe> ky/cm/cmr7.pfb><C:/Program Files/MiKTeX 2.
pdflatex.exe> C:/Program Files/MiKTeX 2.7/fonts/type1/bl
pdflatex.exe> /MiKTeX 2.7/fonts/type1/bluesky/cm/cmsy7.p
pdflatex.exe> /type1/bluesky/cm/cmti10.pfb><C:/Program F
pdflatex.exe> m/cmtt10.pfb>
pdflatex.exe> Output written on memoria.pdf (83 pages, 
pdflatex.exe> Transcript written on memoria.log.
```

Once the steps listed above have been taken, the P system simulation console will be displayed.



Current configuration: 000 Show current configuration

□ Steps limit 00001

□ Time out limit (in milliseconds) 00100

□ Set output trace file

This window contains several fields, options and buttons:

***File*: menu** This field contains the typical actions for handling files. Inside this menu, there are different buttons:

Open file. . . : This button opens a file which contains a simulation and loads it on the simulation console, so that the simulation can be executed. The P system simulation files have the file extension *.sim*. For properly loading a simulation it is necessary that the file which encodes the P system to simulate (on XML format) is on the same directory than the simulation file.

Save: This button saves the current simulation on the file specified by the last route for the simulation file selected by the user.

Save As: This button saves the current simulation on the file specified by the new file route selected by the user, along with the simulated P system on XML format.

Current configuration: This field indicates the number of the current configuration of the simulation.

Show current configuration: This field displays a graphical representation of the current configuration of the simulation.

Steps limit: In the case that this option is enabled, this field indicates the maximum number of steps that the simulation can take before stopping or reaching a halting configuration.

Time out limit (in milliseconds): In the case that this option is enabled, this field indicates the maximum time (in milliseconds) that the simulation can take before stopping or reaching a halting configuration.

Reset: This button resets the current simulation to the initial configuration of the simulated P system.

Step forward: This button causes the current simulation to take a step forward.

Run: This button causes the current simulation to take steps forward until reaching a halting configuration.

Pause: This button causes the current simulation to stop. It only can be executed in the case that the previously clicked button is **run**, not **Step forward**, though future versions might not have this limitation.

Set output trace file: This option indicates whether the computation of the current simulation is being saved on a trace file or not.

Select file: This button selects the trace file where the computation of the current simulation is being saved, in the case that the option above is set.

Commit trace: This button commits the save of the computation of the current simulation on the trace file, in the case that the option above is set. Note that, if this button is not left-clicked after the last steps taken, the trace file might contain part of (or all) the information of the last steps taken. However, in the case that the button is left-clicked, the trace file will contain all the information of the last steps taken.

In the case that the specific simulation can take steps back, the following actions can be executed:

Clear previous steps: This button erases the steps taken by the simulation which were previously stored, so the current simulation cannot take steps back unless it takes at least a step forward.

Step Back: This button causes the current simulation to take a step back.

In the case that the specific simulation can take steps back, the next action can be executed:

Alternate Step: This button takes an alternative step. This action has not been implemented yet, as it has not been defined precisely the external interface of the simulators capable of performing alternative steps in P-Lingua.

7.1 Configuration display

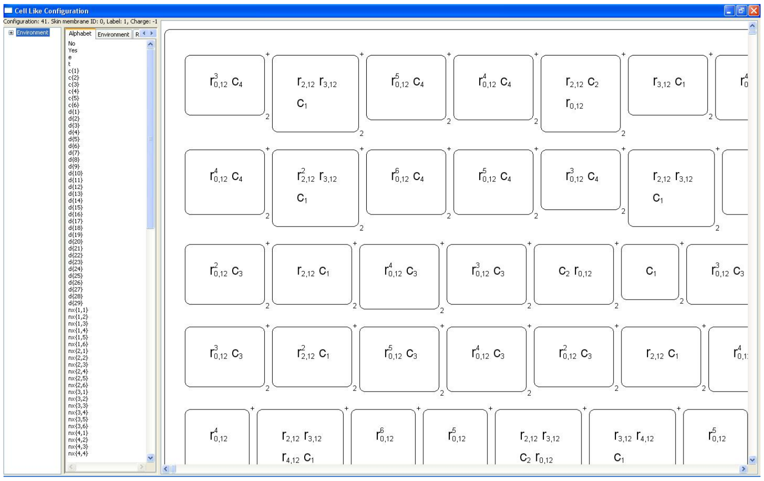
Starting from the simulation console, it is possible to visualize the current configuration of the simulation which is been currently executed. For doing so, left-click on the button *Show current configuration* inside the simulation console. Then, a new window will be displayed. This window displays graphically the current configuration, including the membranes which compose it, their labels, their polarizations and their associated multisets, as well as the rules of the P system which is currently being simulated. This window is composed of four different parts:

Top bar

Left bar

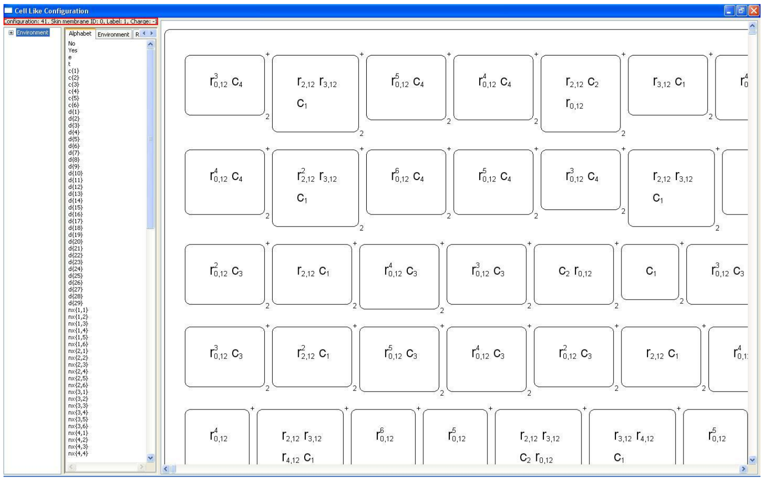
Middle bar

Right panel



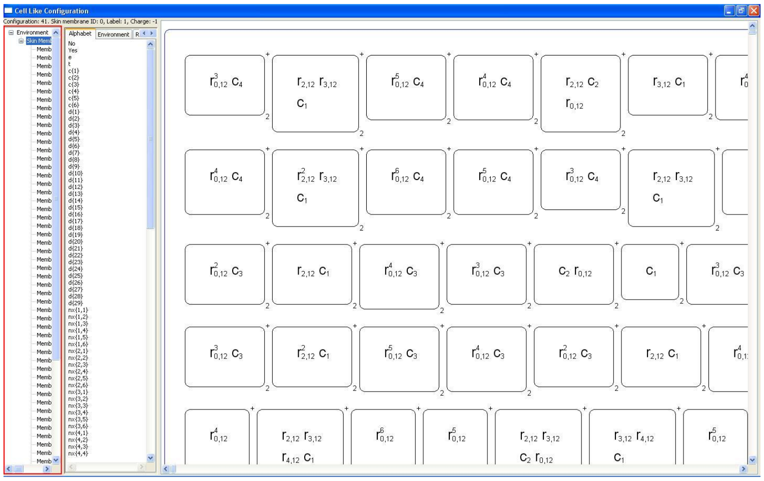
Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

The top bar displays general information about the current configuration, including its number, as well as information about the skin membrane, such as its identifier (a number to identify membranes univocally), its label and its polarization.



Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

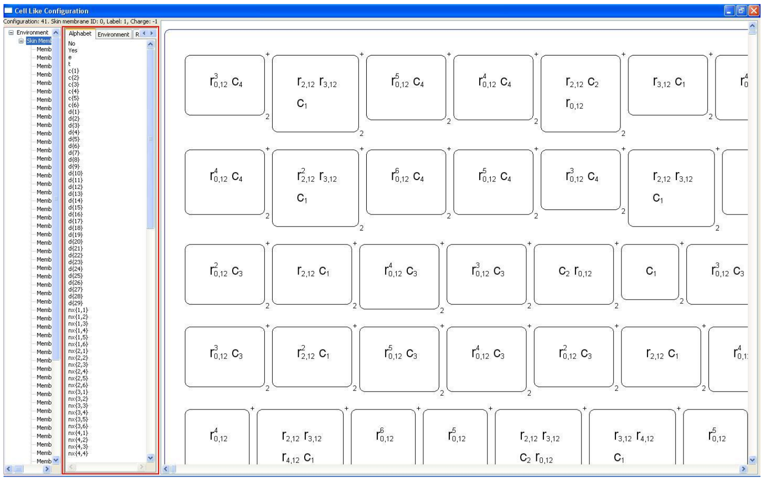
The left bar displays a membrane tree which represents the current configuration. This way, the children of a node of the tree represent the child membranes of its associated membrane. With regard to the information displayed on the tree, for each membrane it is displayed its identifier, its label and its polarization.



Cell Like Configuration

Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

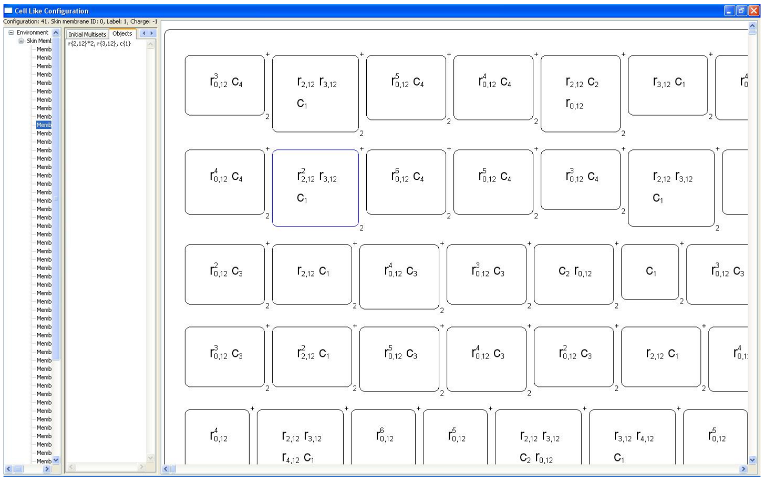
On the middle bar there are different tabs. Among them, there are tabs which display the set of rules of the P system simulated, its alphabet, its starting multisets and the environment of the current configuration.



Cell Like Configuration

Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

Besides, if an element of the right panel is selected, the objects of the multiset associated to its corresponding membrane are displayed on the multisets tab of the middle bar.

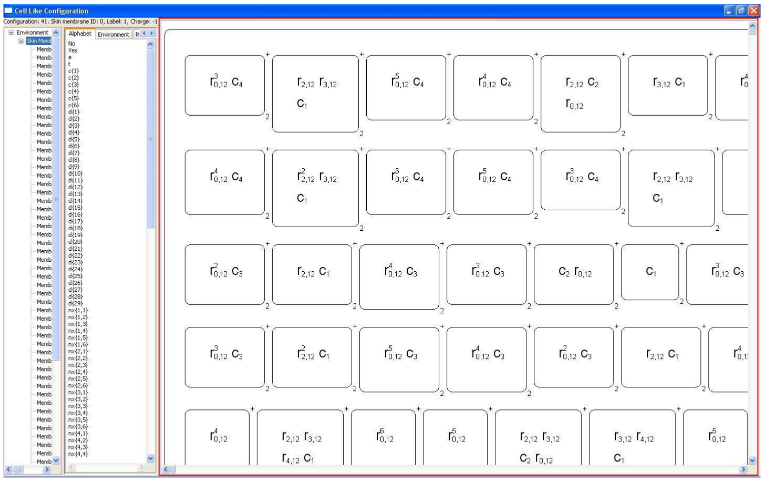


Cell Like Configuration

Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

Objects: r{2,12}*2, r{3,12}, c{1}

The right panel displays information about the membranes which compose the current configuration. This way, for each membrane it is displayed its identifier, its label, the objects of its associated multiset and its child membranes.



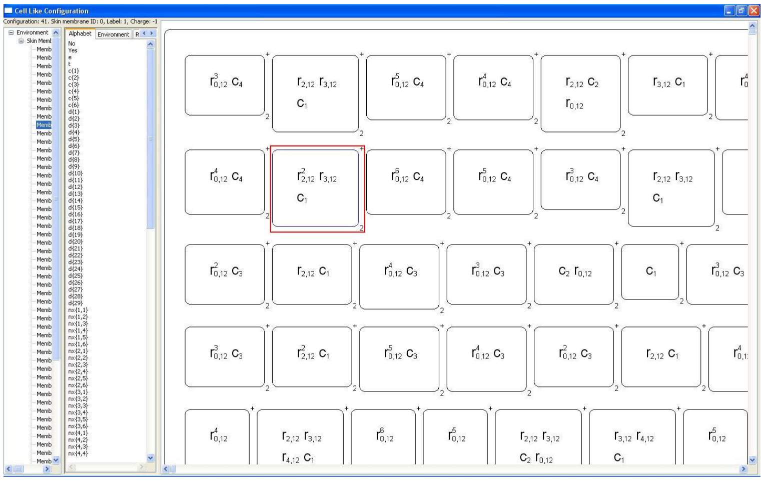
Cell Like Configuration

Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

Alphabet:

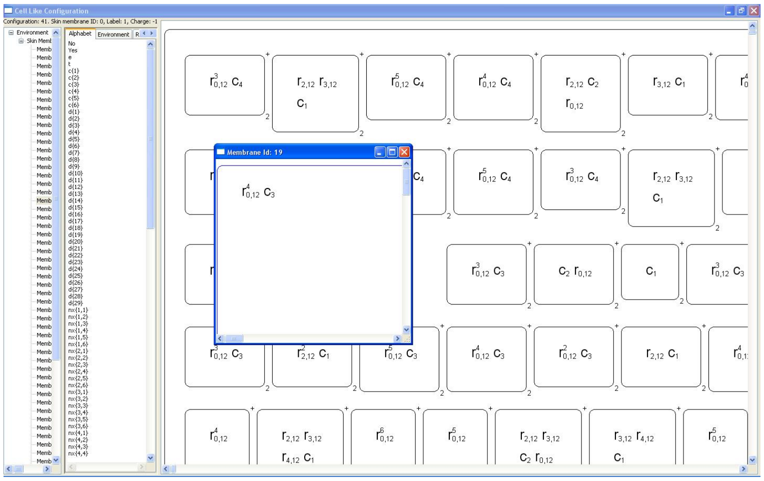
```
No
Yes
e
t
c{1}
c{2}
c{3}
c{4}
c{5}
c{6}
d{1}
d{2}
d{3}
d{4}
d{5}
d{6}
d{7}
d{8}
d{9}
d{10}
d{11}
d{12}
d{13}
d{14}
d{15}
d{16}
d{17}
d{18}
d{19}
d{20}
d{21}
d{22}
d{23}
d{24}
d{25}
d{26}
d{27}
d{28}
d{29}
nx{1,1}
nx{1,2}
nx{1,3}
nx{1,4}
nx{1,5}
nx{1,6}
nx{2,1}
nx{2,2}
nx{2,3}
nx{2,4}
nx{2,5}
nx{2,6}
nx{3,1}
nx{3,2}
nx{3,3}
nx{3,4}
nx{3,5}
nx{3,6}
nx{4,1}
nx{4,2}
nx{4,3}
nx{4,4}
```

When a node on the left bar tree is selected, its corresponding membrane is highlighted in blue on the right panel. This way, if a membrane is selected on the right panel, its corresponding element will be selected on the left tree.



Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

By double-clicking on a membrane on the right panel a detached view of such a membrane is obtained in a different window. This way, the user can focus on a specific membrane in order to explore the objects of its associated multiset as well as its children membrane in an easier way.



Configuration: 41. Skin membrane ID: 0, Label: 1, Charge: -1

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