



ESCUELA SUPERIOR DE INGENIERÍA

INGENIERÍA TÉCNICA EN INFORMÁTICA DE SISTEMAS

PLANTILLA PARA PROYECTO DE EJEMPLO

Pablo Recio Quijano

16 de junio de 2010



ESCUELA SUPERIOR DE INGENIERÍA

INGENIERO TÉCNICO EN INFORMÁTICA DE SISTEMAS

PLANTILLA PARA PROYECTO DE EJEMPLO

- Departamento: Lenguajes y sistemas informáticos
- Director del proyecto: Manuel Palomo Duarte
- Autor del proyecto: Pablo Recio Quijano

Cádiz, 16 de junio de 2010

Fdo: Pablo Recio Quijano

Agradecimientos

Me gustaria agradecer y/o dedicar este texto a ...

Licencia

Este documento ha sido liberado bajo Licencia GFDL 1.3 (GNU Free Documentation License). Se incluyen los términos de la licencia en inglés al final del mismo.

Copyright (c) 2009 Pablo Recio Quijano.

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.3 or any later version published by the Free Software Foundation; with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts. A copy of the license is included in the section entitled "GNU Free Documentation License".

Notación y formato

Aquí incluiremos los aspectos relevantes a la notación y el formato a lo largo del documento. Para simplificar podemos generar comandos nuevos que nos ayuden a ello, ver `comandos.sty` para más información.

Cuando nos refiramos a un programa en concreto, utilizaremos la notación:
emacs.

Cuando nos refiramos a un comando, o función de un lenguaje, usaremos la notación:
`quicksort`.

Índice general

1. Motivación y contexto del proyecto	1
1.1. Introducción	1
2. Desarrollo del proyecto	3
2.1. Organización temporal	3
2.2. Análisis del sistema	3
2.3. Base de Datos	4
2.4. Código fuente	5
2.4.1. Entorno Verbatim	5
2.4.2. Entorno listing	6
Bibliografía y referencias	9
Software usado	9
Instalación de L^AT_EX	12
GNU Free Documentation License	17
1. APPLICABILITY AND DEFINITIONS	17
2. VERBATIM COPYING	18
3. COPYING IN QUANTITY	18
4. MODIFICATIONS	19
5. COMBINING DOCUMENTS	20
6. COLLECTIONS OF DOCUMENTS	21
7. AGGREGATION WITH INDEPENDENT WORKS	21
8. TRANSLATION	21
9. TERMINATION	21
10. FUTURE REVISIONS OF THIS LICENSE	22
11. RELICENSING	22
ADDENDUM: How to use this License for your documents	22

Indice de figuras

1.1. Calimero versión libre	1
2.1. Diagrama de Gantt. Desarrollo del proyecto	3
2.2. UML de ejemplo con Umbrello	4
2.3. Diagrama ERe de ejemplo	5
2.4. Emacs + AucTeX	13
2.5. Interfaz de Dia	14

Indice de tablas

1.1. Grupos significativos en el Rock, Heavy y Metal	2
--	---

Capítulo 1

Motivación y contexto del proyecto

1.1. Introducción

En este apartado, hay que hacer una pequeña definición del proyecto, de que se pretende con él, y que motivaciones nos han llevado a realizar este proyecto.

Vamos a aprovechar para introducir los elementos tipo `float`. Estos son elementos como imágenes o tablas, que queremos independizar un poco del resto del documento, además de añadirle una referencia propia, una pequeña descripción, o una numeración para que se muestre en los índices.

A continuación se muestran dos imágenes iguales, una colocada directamente con el comando que vimos antes `\includegraphics`, y la siguiente con el entorno apropiado:



Ahora como se debe hacer:



Figura 1.1: Calimero versión libre

Además de que el resultado es igual, ahora podemos referenciar la imagen, usando la referencia definida en el entorno `figure`, de forma `??`.

Si observamos que en **Índice de figuras**, se ha incluido la imagen. Por tanto, a partir de ahora usaremos este entorno.

De forma similar, podemos hacer tablas. Recordemos la tabla del ejemplo básico:

Nombre del grupo	Vocalista	Guitarra	Bajo	Bateria
Metallica	James Hetfield	Kirk Hammet	Robert Trujillo	Lars Ulrich
Guns N' Roses	Axl Rose	Robin Finck	Tommy Stinson	Brian Mantia
Queen	Freddie Mercury (RIP)	Brian May	John Deacon	Roger Taylor
AC/DC	Brian Johnson	Angus y Malcolm Young	Cliff Williams	Phil Rudd
Black Label Society	Zakk Wylde	Zakk Wylde y Nick Catanese	John DeServio	Craig Nunenmacher

Tabla 1.1: Grupos significativos en el Rock, Heavy y Metal

El resultado de la tabla `??` es idéntico. Además como podemos ver, al usar otro entorno, se nos genera en el otro índice, numerándose de forma independiente. Una de las grandes versatilidades de \LaTeX

Capítulo 2

Desarrollo del proyecto

2.1. Organización temporal

En este apartado podemos añadir un diagrama de Gannt, con la planificación temporal que se realizó del proyecto. Para ello podemos usar algún programa libre como por ejemplo *Planner*:

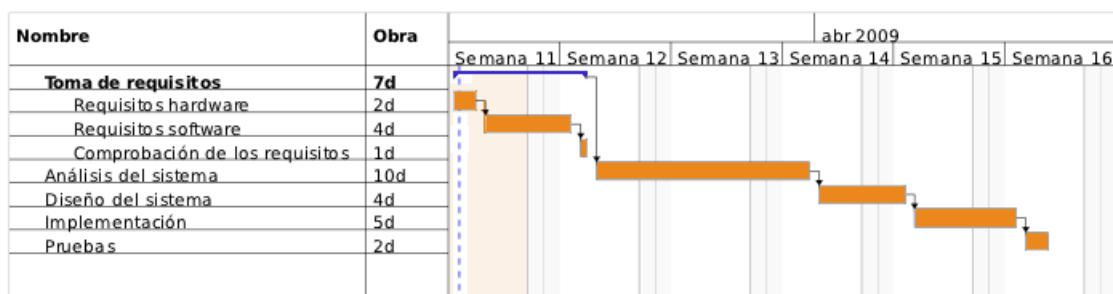


Figura 2.1: Diagrama de Gannt. Desarrollo del proyecto

Observad el código, notareis algo distinto con respecto a las imágenes del capítulo anterior. En este caso utilizo un comando personalizado en `comandos.sty`, donde simplifiqué la creación de una figura, como en la figura 2.1.

2.2. Análisis del sistema

Si el proyecto se refiere a un sistema software, normalmente procederemos a un análisis y a un diseño del sistema usando notación UML, para organizar correctamente dicho sistema.

L^AT_EX no trae soporte nativo para hacer este tipo de diagramas, y aunque se pueden utilizar paquetes que lo hagan. Sin embargo lo más cómodo es que utilizemos herramientas CASE para ayudarnos a dicha tarea, como pueden ser *Dia* o *Umbrello*, como podemos ver en la figura 2.2.

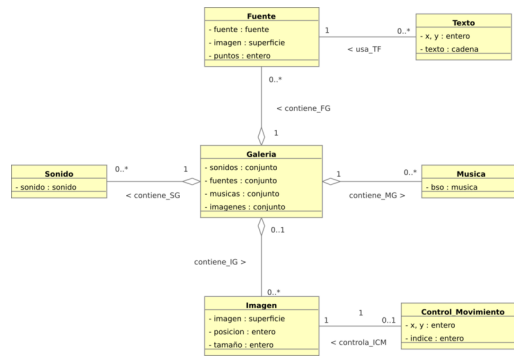


Figura 2.2: UML de ejemplo con Umbrello

Ya que no es el objetivo de este documento trabajar con dichas herramientas, aprovecharé este apartado para mostrar algunas cosas más de las que podemos dotar a nuestro documento \LaTeX .

Sabemos que tenemos un fichero `bibliografia.bib`, para que la herramienta $\text{Bib}\text{\TeX}$ nos genere las referencias bibliográficas. Sin embargo a priori no se mostrarán hasta que nos las referenciemos.

Teniendo en cuenta que todo esto lo tomamos desde la “biblia” de \LaTeX , podemos hacer una referencia a ella [5]. También hay que saber que una guía de referencia online muy buena es la página en wikibooks de \LaTeX [4].

2.3. Base de Datos

Supongamos que en este apartado, queremos incluir un **diagrama Entidad-Relación Extendido**, que modele la base de datos que vamos a utilizar en nuestro proyecto. Una posible herramienta para dibujarla es *Dia*, una herramienta pra gráficos vectoriales bastante completa. Una vez hemos hecho el diagrama, podemos importarlo a una imagen en multitud de formatos, o también podemos a código `.tex`.

¿Qué utilidad tiene esto? Pues basicamente lo podremos modificar para refinarlo un poco, añadirle fórmulas matemáticas si quisieramos, o diversas cosas. Además de comprimir bastante en espacio respecto a una imagen. El diagrama ??, está realizado con Dia importándolo a \LaTeX :

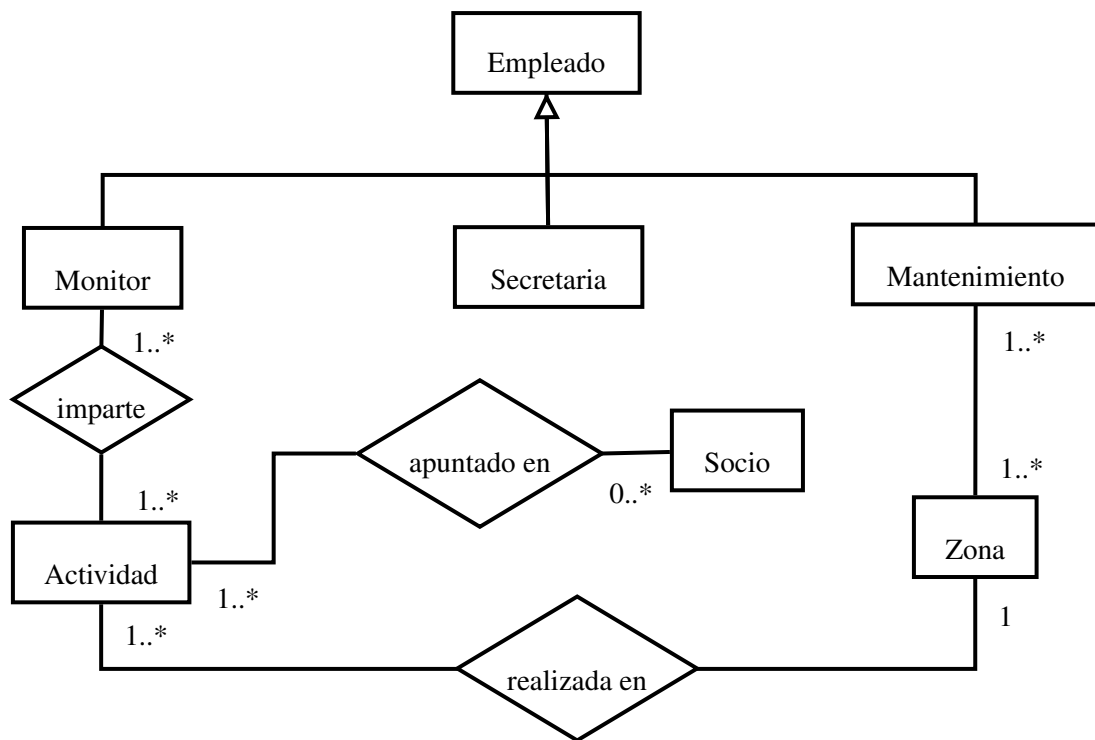


Figura 2.3: Diagrama ERe de ejemplo

2.4. Código fuente

En \LaTeX tenemos varias maneras de colocar nuestro código fuente, pero vamos a mostrar dos básicas.

2.4.1. Entorno `Verbatim`

Este entorno, nos permite incluir dentro de él **cualquier** código, y nos respetará espacios, saltos de líneas, tabuladores... es decir, el compilador de \LaTeX no procesará ese entorno y lo dejará tal cual está. Veamos un ejemplo con el clásico programa *Hola mundo* en C++:

```

/*Clásico programa en su versión C++*/

#include <iostream>

using namespace std;

int main()
{
    cout << "¡Hola, mundo!" << endl;
    return 0; //No hace falta, pero en fin
}

```

Vemos, que queda un poco “soso”: no remarca palabras del lenguaje, le da igual lo que es comentario y lo que es texto, y claro, a la hora de tener un código relativamente amplio, pues es incomodo verlo tan plano. Hay alternativas como `fncyverbatim`, en la cual podemos formatearlo algo, añadiendo

números de líneas, remarcando palabras del lenguaje y más opciones, pero quizás la siguiente opción sea más completa:

2.4.2. Entorno `listing`

Si vemos en el fichero `comandos.sty`, podemos ver varios estilos definidos para este entorno. ¿En qué consiste? Pues realmente este entorno, sabiendo de que lenguaje le estamos pasando el código (admitiendo gran variedad como C, C++, Java, \TeX , SQL, ADA, Python y muchísimos más), y ciertas opciones, podemos formatear el código.

Este entorno podemos llamarlo de dos formas distintas, la primera es utilizando un entorno propiamente dicho, con sus `\begin` y `\end` dentro del cual copiamos el código, y otra usando el comando `\lstinputlisting`, pasándole de parámetro el propio fichero. Veamos de las dos formas:

```
1  /*Clasico programa en su version C++*/
2
3  #include <iostream>
4
5  using namespace std;
6
7  int main()
8  {
9      cout << "Hola, mundo!" << endl;
10     return 0; //No hace falta, pero en fin
11 }
```

O de la segunda forma:

```
1  /*
2   * This program is free software: you can redistribute it and/or modify
3   * it under the terms of the GNU General Public License as published by
4   * the Free Software Foundation, either version 3 of the License, or
5   * any later version.
6
7   * This program is distributed in the hope that it will be useful,
8   * but WITHOUT ANY WARRANTY; without even the implied warranty of
9   * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
10   * GNU General Public License for more details.
11
12   * You should have received a copy of the GNU General Public License
13   * along with this program. If not, see <http://www.gnu.org/licenses/>.
14
15   * Copyright (C) 2009 Pablo Recio Quijano - pablo.recioquijano@alum.uca.es
16  */
17
18  /*Clasico programa en su version C++*/
19
20  #include <iostream>
21
22  using namespace std;
23
24  int main()
25  {
26      cout << "Hola, mundo!" << endl;
```

```
27     return 0; //No hace falta, pero en fin
28 }
```

Notar que uso el estilo C++ porque ya lo tengo definido en el fichero mencionado anteriormente, pero se pueden añadir varios más, modificando los colores, si queremos o no número de líneas, o por ejemplo comandos de consola:

```
g++ hola_mundo.cpp -o hola_mundo
```

Desde luego, es bastante más agradable para la vista, lo cual facilita si lectura. Sin embargo, si usamos esta última opción probablemente tengamos problemas con los caracteres españoles, acentos y demás, debido a las diferencias de codificación entre ISO Latin-1 y UTF8. Hay que tener cuidado en tenerlo todo en UTF8 para que el compilador “entienda” los caracteres.

Bibliografía

- [1] Dimitri Van Heesch. Pagina oficial de Doxygen. <http://www.doxygen.org>.
- [2] Gerardo Aburrizaga García. Make. Un programa para controlar la recompilación. <http://www.uca.es/softwarelibre/publicaciones/make.pdf>.
- [3] Joaquín Ataz López. Creación de ficheros \LaTeX con GNU Emacs. <ftp://ftp.dante.de/tex-archive/info/spanish/guia-atx/guia-atx.pdf>.
- [4] Wikibooks. The Book of LaTeX. <http://en.wikibooks.org/wiki/LaTeX>.
- [5] Frank Mittelbach y Michel Goossens. *The LaTeX Companion*. Addison-Wesley, 2004.

Software utilizado

Es usual en un PFC referenciar que software has usado para la realización del mismo. Aprovecharé este apartado para que conozcas alguna herramienta que puede serte de ayuda para realizar tus documentos en \LaTeX

Emacs + AucTeX

Emacs es uno de los programas de edición más usados por desarrolladores de software, ya que es bastante versátil admitiendo gran cantidad de “plugins” o extensiones que permiten ampliar aun más sus funcionalidades.

Uno de estos plugins es AucTeX[3], el cual incluye rutas para ciertos comandos, resaltado de sintaxis, previsualización del documento, menú matemático en el cual podemos acceder e insertar la gran mayoría de los símbolos matemáticos, para no tener que memorizarlos. Podemos ver un ejemplo de Emacs + AucTeX en la figura 2.4

Por ejemplo, para cerrar un entorno `\begin()`, con su respectivo `\end()`, utilizaremos el atajo `C-c M-]`, para añadir un `\item`, tenemos el atajo `C-c C-j`, y así unos cuantos, que una vez que nos habituamos a ellos, son bastante cómodos.

Además, es bastante configurable, con indentado automático, corrector ortográfico y demás. El fichero adjunto a este documento, *conf_emacs* incluye una configuración con varias de estas opciones.

Doxygen

Realmente, *Doxygen* [1] no es una herramienta que vayamos a utilizar para realizar documentos \LaTeX directamente. Sin embargo, para la documentación de código si es bastante útil.

Esta herramienta realiza una documentación automática de código fuente. Es decir, para nuestro PFC, podemos utilizar para generar la documentación de las APIs de nuestras librerías y demás. Puede generar esta documentación en varios formatos, y entre ellos, \LaTeX , de forma que podemos utilizar ese código generado en nuestra memoria de forma automática.

GNU Make

GNU Make es el programa de recompilación y de control de dependencias por excelencia. Se puede utilizar para compilar proyectos software en diversos códigos, o como en el caso de este documento, para compilar documentos \LaTeX con diversas opciones.

Para más información [2]

Dia

Dia es un editor de gráficos vectoriales el cual incluye distintas plantillas para distintos tipos de gráficos, como pueden ser UML, ERe, diagramas de flujo, esquemas Cisco de red y un larguísimo etcétera. Podemos ver el interfaz en la figura [2.5](#)

Estos diagramas podemos exportarlos a diversos formatos de imagen (.png, .eps, ...) o a formato .tex, como vimos anteriormente.

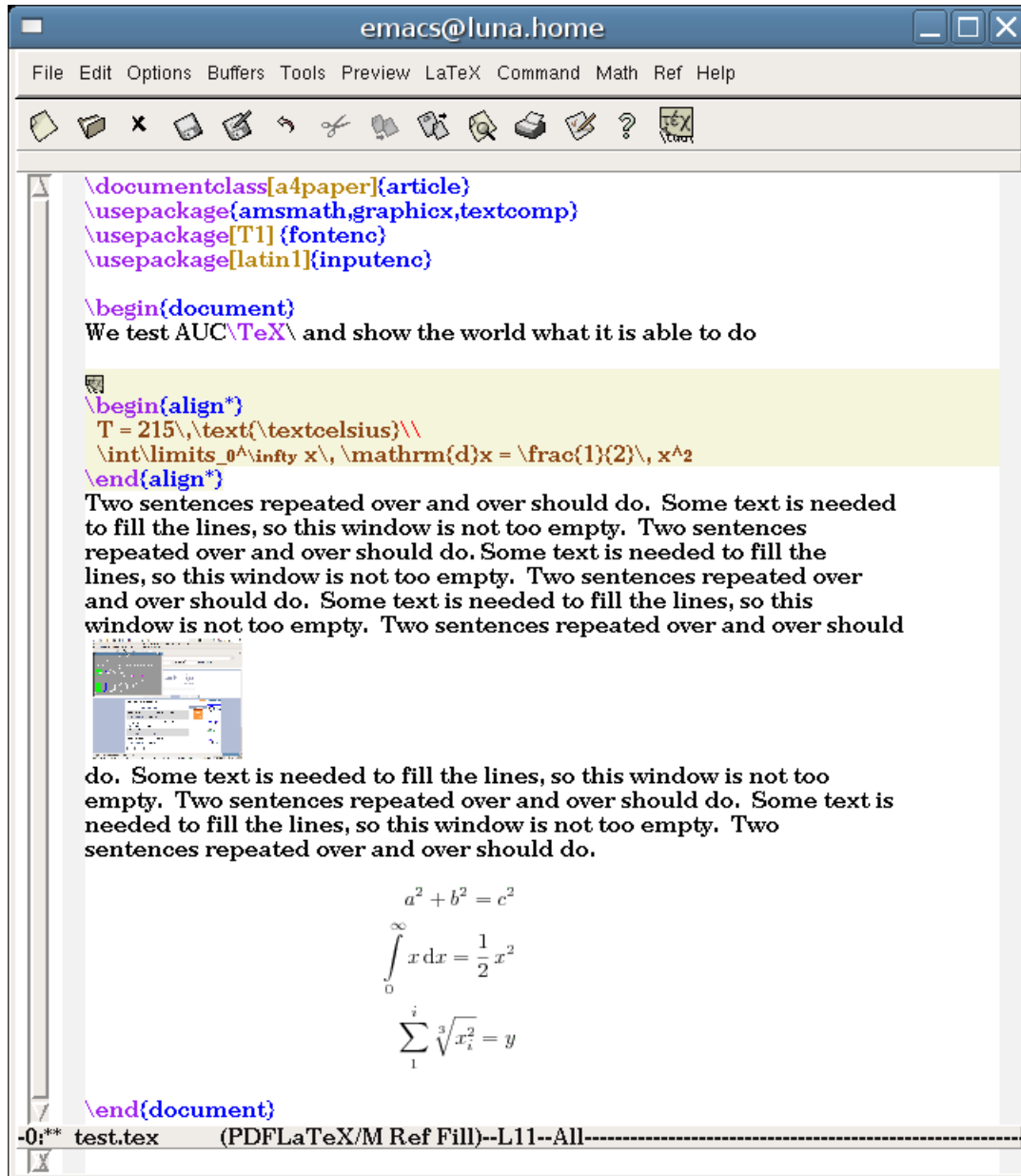


Figura 2.4: Emacs + AucTeX

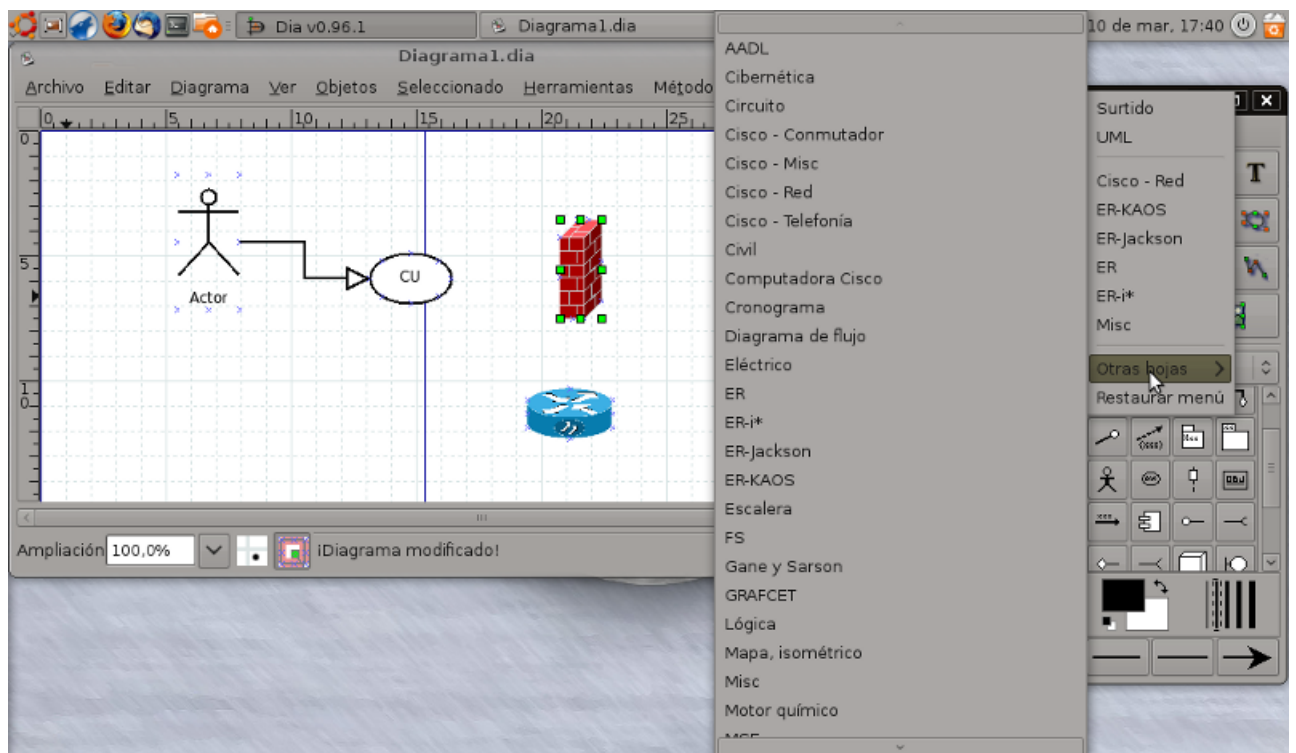


Figura 2.5: Interfaz de Dia

Instalación de L^AT_EX

Veamos que tenemos que hacer para instalar L^AT_EX con todas sus capacidades en un sistema basado en Debian, como Ubuntu. Primero hay que tener en cuenta que L^AT_EX es relativamente pesado con respecto a otros compiladores.

Nosotros vamos a utilizar la distribución de L^AT_EX incluida en los repositorios de Ubuntu llamada *texlive*. Si la buscas en tu gestor de paquetes, encontrarás infinidad de paquetes aparte del principal. Existen otras distribuciones como Te_X

Si instalas solo los básicos, es decir instalas *texlive* y los programas necesarios para él, no podrás compilar este documento, ya que faltarían paquetes tales como *supertabular* y varios. Por eso, si no tienes problema de espacio en el disco duro te recomiendo que instales el paquete *texlive-full*, que instala **todos** los paquetes de *texlive*, incluyendo documentación en todos los idiomas disponibles. Si buscas no tener problemas de dependencias, este es tu método.

```
sudo apt-get install texlive-full
```

En caso de querer ser un poco más concreto, en principio puedes trabajar con la más básica (*texlive* y sus dependencias) y en función de los paquetes que te vayan faltando, los instalas.

GNU Free Documentation License

Version 1.3, 3 November 2008

Copyright © 2000, 2001, 2002, 2007, 2008 Free Software Foundation, Inc.

<<http://fsf.org/>>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The purpose of this License is to make a manual, textbook, or other functional and useful document “free” in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or noncommercially. Secondly, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of “copyleft”, which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License in order to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The “**Document**”, below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as “**you**”. You accept the license if you copy, modify or distribute the work in a way requiring permission under copyright law.

A “**Modified Version**” of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A “**Secondary Section**” is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document’s overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The “**Invariant Sections**” are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The “**Cover Texts**” are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A “**Transparent**” copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not “Transparent” is called “**Opaque**”.

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML, PostScript or PDF designed for human modification. Examples of transparent image formats include PNG, XCF and JPG. Opaque formats include proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML, PostScript or PDF produced by some word processors for output purposes only.

The “**Title Page**” means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, “Title Page” means the text near the most prominent appearance of the work’s title, preceding the beginning of the body of the text.

The “**publisher**” means any person or entity that distributes copies of the Document to the public.

A section “**Entitled XYZ**” means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in another language. (Here XYZ stands for a specific section name mentioned below, such as “**Acknowledgements**”, “**Dedications**”, “**Endorsements**”, or “**History**”.) To “**Preserve the Title**” of such a section when you modify the Document means that it remains a section “Entitled XYZ” according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or noncommercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

- A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.
- B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.
- C. State on the Title page the name of the publisher of the Modified Version, as the publisher.
- D. Preserve all the copyright notices of the Document.
- E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.
- F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.
- G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.

- H. Include an unaltered copy of this License.
- I. Preserve the section Entitled “History”, Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section Entitled “History” in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.
- J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the “History” section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.
- K. For any section Entitled “Acknowledgements” or “Dedications”, Preserve the Title of the section, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.
- L. Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.
- M. Delete any section Entitled “Endorsements”. Such a section may not be included in the Modified Version.
- N. Do not retitle any existing section to be Entitled “Endorsements” or to conflict in title with any Invariant Section.
- O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version’s license notice. These titles must be distinct from any other section titles.

You may add a section Entitled “Endorsements”, provided it contains nothing but endorsements of your Modified Version by various parties—for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

5. COMBINING DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled “History” in the various original documents, forming one section Entitled “History”; likewise combine any sections Entitled “Acknowledgements”, and any sections Entitled “Dedications”. You must delete all sections Entitled “Endorsements”.

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, is called an “aggregate” if the copyright resulting from the compilation is not used to limit the legal rights of the compilation’s users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document’s Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled “Acknowledgements”, “Dedications”, or “History”, the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, or distribute it is void, and will automatically terminate your rights under this License.

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, receipt of a copy of some or all of the same material does not give you any rights to use it.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See <http://www.gnu.org/copyleft/>.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License “or any later version” applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation. If the Document specifies that a proxy can decide which future versions of this License can be used, that proxy’s public statement of acceptance of a version permanently authorizes you to choose that version for the Document.

11. RELICENSING

“Massive Multiauthor Collaboration Site” (or “MMC Site”) means any World Wide Web server that publishes copyrightable works and also provides prominent facilities for anybody to edit those works. A public wiki that anybody can edit is an example of such a server. A “Massive Multiauthor Collaboration” (or “MMC”) contained in the site means any set of copyrightable works thus published on the MMC site.

“CC-BY-SA” means the Creative Commons Attribution-Share Alike 3.0 license published by Creative Commons Corporation, a not-for-profit corporation with a principal place of business in San Francisco, California, as well as future copyleft versions of that license published by that same organization.

“Incorporate” means to publish or republish a Document, in whole or in part, as part of another Document.

An MMC is “eligible for relicensing” if it is licensed under this License, and if all works that were first published under this License somewhere other than this MMC, and subsequently incorporated in whole or in part into the MMC, (1) had no cover texts or invariant sections, and (2) were thus incorporated prior to November 1, 2008.

The operator of an MMC Site may republish an MMC contained in the site under CC-BY-SA on the same site at any time before August 1, 2009, provided the MMC is eligible for relicensing.

ADDENDUM: How to use this License for your documents

To use this License in a document you have written, include a copy of the License in the document and put the following copyright and license notices just after the title page:

Copyright © YEAR YOUR NAME. Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.3 or any later version published by the Free Software Foundation; with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts. A copy of the license is included in the section entitled “GNU Free Documentation License”.

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts, replace the “with . . . Texts.” line with this:

with the Invariant Sections being LIST THEIR TITLES, with the Front-Cover Texts being LIST, and with the Back-Cover Texts being LIST.

If you have Invariant Sections without Cover Texts, or some other combination of the three, merge those two alternatives to suit the situation.

If your document contains nontrivial examples of program code, we recommend releasing these examples in parallel under your choice of free software license, such as the GNU General Public License, to permit their use in free software.