

Introduction to Free Software

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Introduction

"Anyone who hears this, if he can sing, may add and change at pleasure. Let it go from hand to hand: let those who request it have it. As a ball among young women, catch it if you can.

Since this is of 'Good Love', lend it out gladly: do not make a mockery of its name by keeping it in reserve; nor exchange it for money by selling or renting it; for 'Good Love' when bought, loses its charm."

Juan Ruiz, Archpriest of Hita. *The Book of Good Love* (14th century, original in Ancient Spanish)

The first version of these notes was written by Jesús M. González-Barahona, Joaquín Seoane Pascual and Gregorio Robles between April and September 2003. Although we had been discussing for a while preparing a document of this type for the Free Software course that Joaquín and Jesús teach as part of the PhD programs of their respective departments, it was the initiative of the Open University of Catalonia (UOC) that commissioned us to prepare material to introduce the free software masters course, which finally encouraged us to get started. The involvement of Jordi Mas, the academic coordinator of the masters course, in this task was crucial, in that he proposed us for the job and put us in contact with the UOC, additionally supporting our relations with the UOC throughout the project's duration.

Shortly after handing in the first edition, the authors started retouching the material as part of an ongoing process, although with varying degrees of activity, until this second edition was completed in May 2007. During this time, the first edition was extensively used in the free software masters of the UOC and in various other postgraduate courses in Spain and America. The experience with the UOC has been followed with particular interest by Gregorio Robles, who has participated in it, and has therefore obtained feedback that has proven extremely valuable for improving the content. The three of us (Joaquín, Jesús, and since 2006, Gregorio) have also continued with the postgraduate software course at the UPM (Polytechnic University of Madrid) and at the URJC (Rey Juan Carlos University), taking advantage of it in order to test the material.

Once again, the UOC has been the catalyser of this second edition, charging us with a commission that we have taken too long to complete. The work of Jordi Mas and David Megías (of the UOC) has been fundamental, and has provided vital critical support for pushing forward this new edition. The work of José Ignacio Fernández Villamor and Boni García Gutiérrez, pupils of Joaquín Seoane, who have collaborated in reviewing the materials for this second edition, has also been essential.

Previous materials

Some of the texts in these notes are based on previous material, usually belonging to the authors themselves, and in some cases to third parties (used with permission when not completely redrafted). Among them, we would like to mention the following (at the risk of omitting anyone important):

- There are some fragments (especially on the chapters of history and the economy) inspired by the document "Free Software / Open Source: Information Society Opportunities for Europe?" [132], which Jesús González-Barahona co-edited for the European Commission. However, the fragments in question have been extended, retouched and updated to such an extent that in many cases they may be difficult to recognise.
- The section on monopolies and free software (section 5.4) has been based on the paper "Software libre, monopolios y otras yerbas" ("Free software, monopolies and other herbes") [84], by Jesús M. González-Barahona.
- The sections on legislative initiatives and public administration initiatives in relation to free software are partly based on "Iniciativas de las administraciones públicas en relación al Software Libre" ("Initiatives of public administrations related to free software") [103] (thanks to Pedro de las Heras for allowing us to use this material, which he co-authored).
- Part of the section on motives for using free software in the public administrations (Section 6.2) is based on the paper [85], by Jesús M. González-Barahona.
- The chapter on free software engineering is an adaptation of the paper on the state of the art of software engineering applied to free software by Jesús M. González-Barahona and Gregorio Robles for the magazines *Novática* (Spanish version) and *Upgrade* (English version).
- In the chapter on case studies, the part regarding the development of Linux is based on a presentation made by Juan-Mariano de Goyeneche during the postgraduate course "Free Programs" of the Polytechnic University of Madrid during academic year 2002-03.
- The historical part of the detailed study of GNOME has been taken from the historical introduction included in the book on "Applications development in GNOME2" prepared by GNOME Hispano and written by one of the authors of this book.
- The FreeBSD case study is partly based on the presentation given by Jesús Rodríguez at the III HispaLinux Conference held in Madrid in the year 2000.

- The Debian and Red Hat case studies are based on the previous work of González-Barahona et al. who have reflected the results of the quantitative analysis of these two distributions in various papers.
- Various materials, especially updates and new material in the chapter on case studies, were prepared by José Ignacio Fernández Villamor and Boni García Gutiérrez towards the beginning of 2007 on a specific branch for modifications made in the context of that year's edition of the postgraduate subject of Joaquín Seoane at the UPM. A large proportion of those materials was included in time for the second edition.

Contents

Module 1

Free Software

Jesús M. González-Barahona, Joaquín Seoane Pascual and Gregorio Robles

1. Introduction
2. A bit of history
3. Legal aspects
4. Developers and their motivations
5. Economy
6. Free software and public administrations
7. Free software engineering
8. Development environments and technologies
9. Case studies
10. Other free resources

Module 2

Appendixes

Jesús M. González Barahona, Joaquín Seoane Pascual and Gregorio Robles

1. Appendix A. Learning guide
2. Appendix B. Key dates in the history of free software
3. Appendix C. GNU Public License
4. Appendix D. Texts of some legislative proposals and related documents
5. Appendix E. Creative Commons' Attribution-ShareAlike
6. Appendix F. GNU Free Documentation License

Glossary

ACM Association for Computing Machinery

AFPL Aladdin Free Public License

ALSA Advanced Linux Sound Architecture

AOL America Online

API Application program interface

ARM Advanced RISC machines

ASCII American standard code for information interchange

AT&T American Telephone & Telegraph

AITC Agency of Information Technologies and Communication

ATK Accessibility Toolkit

BIND Berkeley Internet Name Domain

BIRT Business Intelligence and Reporting Tools

BITNET Because It's There Network

BSA Business Software Alliance

BSD Berkeley Software Distribution

BSDI Berkeley Software Design Incorporated

BSI Bundesamt für Sicherheit in der Informationstechnik

CDDL Common Development and Distribution License

CD-ROM Compact disc read-only memory

CEPS Cisco Enterprise Print System

CERN Conseil Européen pour la Recherche Nucléaire

CGI Common Gateway Interface

COCOMO Cost construction model

CORBA Common object request broker architecture

CPL Common Public License

CSRG Computer Systems Research Group

CSS Cascading style sheet

CVS Control version system

DARPA Defense Advanced Research Projects Agency

DBUS Desktop Bus

DCOP Desktop communication protocol

DEC Digital Equipment Corporation

DECUS Digital Equipment Computer User Society

DFSG Debian Free Software Guidelines

DRM Digital rights management

DSDP Device Software Development Platform

DTD Document type definition

DTP Data tools platform

DVD Digital video disk

ECTS European credit transfer scheme

EMP Eclipse Modeling Project

EPL Eclipse Public License

HCEST Higher College of Experimental Sciences and Technology

ETP Eclipse Tools Project

FAQ Frequently asked questions

FDL Free Documentation License

FIC First International Computer

FSF Free Software Foundation

FTP File transfer protocol

FUD Fear, uncertainty, doubt

GCC GNU C Compiler

GDB GNU Debugger

GNUFDL GNU Free Documentation License

GIMP GNU Image Manipulation Program

GNAT GNU Ada Translator

GNATS GNU Bug Tracking System

GNU GNU's Not Unix

GPL General Public License

GTK GIMP Toolkit

GUADEC GNOME User and Developer European Conference

HIRD HURD of Interfaces Representing Depth

HTML Hypertext markup language

HTTP Hypertext transfer protocol

HURD HIRD of Unix-Replacing Daemons

R&D Research and development

IBM International Business Machines Corporation

IDE Integrated development environment

IEC International Electrotechnical Commission

IETF Internet Engineering Task Force

INRIA Institut National de Recherche en Informatique et en Automatique

IP Internet protocol

IRC Internet Relay Chat

ISO International Standards Organization

ITU International Telecommunications Union

JDK Java Developer Kit

JPEG Joint Photographic Experts Group

JRE Java Runtime Environment

JVM Java Virtual Machine

KBSt Koordinierungs- und Beratungsstelle der Bundesregierung für Informationstechnik in der Bundesverwaltung

KDE K Desktop Environment

LGPL Lesser General Public License

LISP List processing language

LLC Limited Liability Company

IPA Intellectual Property Act

LTS Long term support

MCC Manchester City Council

MIT Massachusetts Institute of Technology

MPEG Moving Picture Experts Group

MPL Mozilla Public License

MTIC Mission Interministerielle de Soutin Technique pour le Developpe-
ment des technologies de l'Information et de la Communication dans
l'Administration

NASA National Aeronautics and Space Administration

NCSA National Center for Supercomputing Applications

NPL Netscape Public License

NSFNet National Science Foundation Network

NUMA Non-uniform memory access

NYU New York University

OASIS Organization for the Advancement of Structured Information Stan-
dards

ODF Open document format

ODP Open Directory Project

OHGPL OpenIPCore Hardware General Public License

OLPC One Laptop Per Children

WTO World Trade Organisation

WIPO World Intellectual Property Organisation

ORB Object request broker

OSDN Open Software Development Network

OSGi Open Services Gateway Initiative

OSI Open Source Initiative

GDD Gross Domestic Product

PDA Portable digital assistant

PDF Portable document format

PDP Programmed data processor

PHP PHP hypertext preprocessor

PLOS Public Library of Science

PNG Portable network graphics

FAQ Frequently asked questions

QPL Qt Public License

RCP Rich client platform

RDF Resource description framework

RFC Request for comments

RFP Request for proposal

RHAD Red Hat Advanced Development

RPM Red Hat Package Manager

RTF Rich text format

SCO Santa Cruz Operation

SPE Secretariat of Public Education

SGI Silicon Graphics Incorporated

SGML Standard generalised markup language

SISSL Sun Industry Standards Source License

SLS Softlanding Linux System

SOA Service oriented architecture

SPARC Scalable processor architecture

SPICE Simulation program with integrated circuits emphasis

SSL Secure socket layer

TAMU Texas A&M University

TCP Transport control protocol

TEI Text Encoding Initiative

TPTP Test and Performance Tools Project

- TRIPS** Trade-related intellectual property rights
- UMTS** Universal mobile telecommunications system
- UOC** Open University of Catalonia
- USA** United States of America
- USD** United States dollar
- USENET** User network
- USENIX** Unix Users Group
- USL** Unix System Laboratories
- UUCP** UNIX to UNIX copy protocol
- VHDL** Very high speed integrated circuit hardware description language
- W3C** World Wide Web Consortium
- WIPO** World Intellectual Property Organisation
- WTO** World Trade Organisation
- WTP** Web Tools Project
- WWW** World Wide Web
- WYSIWYG** What you see is what you get
- XCF** Experimental computing facility format
- XML** Extensible markup language