ADIKAVI NANNAYA UNIVERSITY :: RAJAMAHENDRAVARAM

III Year B.C.A – VI Sem.

OPEN SOURCE SOFTWARE

UNIT I: INTRODUCTION:

Introduction to Open sources – Need of Open Sources – Advantages of Open Sources – Application of Open Sources.

UNIT II: Open source operating systems: LINUX:

Introduction – General Overview – Kernel Mode and user mode. Process – Advanced Concepts – Scheduling – Personalities – Cloning – Signals.

UNIT III : OPEN SOURCE DATABASE:

MySQL: Introduction – Setting up account – Starting, terminating and writing your own SQL programs – Record selection Technology – Working with strings – Date and Time – Sorting Query Results

UNIT IV: OPEN SOURCE PROGRAMMING LANGUAGES:

PHP: Introduction – Programming in web environment – variables – constants – data types – operators – Statements – Functions – Arrays – OOP – String Manipulation and regular expression .

UNIT V: PERL

Perl backgrounder – Perl overview – Perl parsing rules – Variables and Data – Statements and Control structures – Subroutines, Packages, and Modules- Working with Files –Data Manipulation.

Text Books:

1. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003

2. Steve Suchring, "MySQL Bible", John Wiley, 2002

References:

1. Rasmus Lerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002

2. Wesley J. Chun, "Core Phython-Programming", Prentice Hall, 2001

3. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

4. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

5. Vikram Vaswani, "MYSQL: The Complete Reference", 2nd Edition, Tata McGraw -Hill Publishing Company Limited, Indian Reprint 2009.

UNIT I

INTRODUCTION

Introduction to Open sources – Need of Open Sources – Advantages of Open Sources–Application of Open Sources.

INTRODUCTION TO OPEN SOURCES:

Most software that you buy or download only comes in the compiled ready-to-run version. Compiled means that the actual program code that the developer created, known as the source code, has run through a special program called a compiler that translates the source code into a form that the computer can understand.

Open Source is a certification mark owned by the Open Source Initiative (OSI). It refers to any program whose source code is made available for use or modification as users or other developers. Open source software (OSS) refers to software that is developed, tested, or improved through public collaboration and distributed with the idea that the must be shared with others, ensuring an open future collaboration. (OSS is computer software with its source code made available and licensed with a license in which the copyright holder provides the rights to study, change and distribute the software to anyone and for any purpose. Open-source software is very often developed in a public, collaborative manner.)

Definition of Open Source:

Open source refers to any program whose source code is made available for use or modification as users or other developers see fit. Open source software is usually developed as a public collaboration and made freely available.

Open source software refers to applications developed in which the user can access and alter the "source" code itself.

Open-source software is computer software whose source code is available under a license (or arrangement such as the public domain)It is defined set of requirements for open source software from the Open Source Initiative (OSI). The Open Source Definition (OSD) specifies (that permits users, to study, change, and improve the software) not only access to the source code, but also integrity of the code, its free redistribution, a technology-neutral provision, as well as specific anti-discrimination rules and to redistribute it in modified or modified form. Based on two principles we can call particular software as open source software.

Principle 1:

The software source code should be available with license and that license contain permissions they are

1) The user is able to study the code 2) The user able to change the code

3) The may able to improve the code

Principle 2:

The license should not have certain restrictions in terms of

1) Technology 2) Field 3) Hardware

Technology: Here Technology means operating system, in the computer science there are many different operating systems available, here the software must support all kinds of operating sytems such as windows, UNIX, Linux and Mac os.

Field: Now a days computer enter into many fields such as agriculture, medical and Biotechnology fields. here the software must supports or works in all fields

Hardware: In this context hardware means devices such as Nokia, Samsung and celkon. Here the software should work on or supports all kinds of devices.

Need of OPEN Sources:

Few reasons why you need an Open Source Strategy are:

Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

Integrity of the Author's Source Code

The license may restrict source-code from being distributed in modified form *only* if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

No Discrimination against Persons or Groups

The license must not discriminate against any person or group of persons.

No Discrimination against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

License Must Not Be Specific to a Product

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

License Must Not Restrict Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

License Must Be Technology-Neutral

No provision of the license may be predicated on any individual technology or style of interface.

Advantages of Open Sources:

Open source software can have a major impact on your entire organization. There are several advantages of using open source software. The following are a list of the advantages of opting for open source software.

Lesser hardware costs

Since Linux and open source solutions are easily portable and compressed, it takes lesser hardware power to carry out the same tasks when compared to the hardware power it takes on servers, such as, Solaris, Windows or workstations. With this less hardware power advantage, you can even use cheaper or older hardware and still get the desired results.

High-quality software

Open source software is mostly high-quality software. When you use the open source software, the source code is available. Most open source software are well-designed. Open source software can also be efficiently used in coding. These reasons make open source software an ideal choice for organizations.

No vendor lock-in

IT managers in organizations face constant frustration when dealing with vendor lock-ins'. Lack of portability, expensive license fees and inability to customize software are some of the other disadvantages. Using open source software gives you more freedom and you can effectively address all these disadvantages.

Integrated management

By using open source software, you can benefit from integrated management. Open source software uses technologies, such as, common information model (CIM) and web based enterprise management (WBEM). These high-end technologies enable you to integrate and combine server, application, service and workstation management. This integration would result in efficient administration.

Simple license management

When you use open source software, you would no longer need to worry about licenses. Open source software enables you to install it several times and also use it from any location. You will be free from monitoring, tracking or counting license compliance.

Lower software costs

Using open source software can help you minimize your expenses. You can save on licensing fees and maintenance fees. The only expenses that you would encounter would be expenditure for documentation, media and support.

Abundant support

You will get ample support when you use open source software. Open source support is mostly freely available and can be easily accessed through online communities. There are also many software companies that provide free online help and also varied levels of paid support. Most organization who create open source software solutions also provide maintenance and support.

Scaling and consolidating

Linux and open source software can be easily scaled. With varied options for clustering, load balancing and open source applications, such as email and database, you can enable your organization to either scale up and achieve higher growth or consolidate and achieve more with less.

Evolving software

As mentioned, some Open Source software projects can have huge communities of programmers involved, allowing for the rapid implementation of new features and security fixes. The communities of users and programmers are also invaluable resources for asking questions relating to troubleshooting and suggesting enhancements.

Rapid debugging, rapid further development:

Because the source code is open, the developer/producer does not just receive feedback on any errors or problems, or proposals for new functions, but feedback reports that can specify down to the code level what should be done – it is therefore far simpler for the producer to implement changes on the basis of feedback reports since these often say precisely what program changes must be made and also any errors in the original source code may be corrected by the person who detects the error without having to wait for the original programmer.

Avoiding lock-in to one supplier: It is obviously great to have one software supplier to turn to – perhaps to provide services connected with the software, such as installation assistance, courses, operation, support and more, and you have someone to ring if you need help or information concerning the software.

Easy integration and interaction

Open Source code means that it is relatively simple to adapt programs so that they can work with each other because you can see from the source codes how a program "thinks" and how you should approach it to share or exchange data.

Disadvantages of using Open Source

There's a flip side to everything, and in the case of Open Source software it all boils down to the old saying of "there's no such thing as a free lunch". Most of the disadvantages only apply if you're not somewhat code-savvy and willing to get your hands dirty:

1. Mostly used commercial applications.
2. Projects can die

3. Support issues

Application of Open Sources:

Open source technology makes a real business sense. It is free and of very high quality, also it is often more effective than most of the products available commercially and non-commercial.

Some applications listed below:

1. Accounting
2. Content Management Systems
3. CRM (Customer Relationship Management)
4. Desktop Environments/ Shell replacements
5. Email Clients
6. Encoding, Conversion & Ripping Tools
7. ERP - Enterpreneur ReSource plan
8. Filesharing & FTP
9. Graphics-Design & Modeling Tools
10. Messengers & Communication Clients
11. Project Management
12. Reporting Tools
13. RSS
14. Web Browser

Table-List of Commercial Open Source Applications with tools

S.No	Application	Open Source Tools
1	Cloud management	Abiquo
2	Ecommerce	Avactis
3	Reporting Tools	Actuate
4	Enterprise Content Management, Web Content Management	Alfresco
5	Data Backup / Recovery	Bacula
6	ERP and CRM	Compiere
7	Office Productivity	Lotus Symphony
8	RDBMS	Ingres Database
9	Software Development Tools for C, C++	Sun Studio
10	Server and client Linux distribution	Ubuntu