

(SKILL ENHANCEMENT COURSE- THEORY)

COURSE CODE: 1CAPSE0401

COURSE TITLE: OPEN SOURCE SOFTWARE

*(Syllabus wise Topic Description)*

### **UNIT-3: Salient Features of Open Source Software**

#### **Salient Features of Open Source Software**

Open source software may not be big on monetization, but it is still considered highly valuable. These are features that go beyond monetization, and often beyond the scope of proprietary software. These features are:

1. **Freedom:** The “free” in “free and open source software” means more than just a lack of a price tag. Open source software offers users the freedom to use the software as they please. They can run the software anywhere be it on the cloud or in an on-site data center, for absolutely any purpose that serves them. They’re free to modify and adapt the software to their own specific requirements, and are also free in a sense that they are not locked to a particular vendor or that vendor’s system.
2. **Innovation:** With the freedom that comes with open source comes the boundless freedom of the community to collaborate, innovate and diversify. This brings about software innovation at a speed, scale and diversity that no proprietary software could ever match. Communities are not only allowed but encouraged to expand and refine current open source software, making new, better and more precise software solutions.
3. **Integration:** Easy integration with existing infrastructure is a significant consideration when it comes to selecting software, and in this area open source software excels. Many enterprises agree that this feature often trumps low cost and even performance speed.
4. **Continuity:** It’s become the best option for enterprises seeking to keep up or stay ahead of their competition, and it continues to grow and improve. With the freedom to fork and develop open source projects to unique needs, there’s also some assurance that no matter what, the software you need will always be available to you.

Although being “free” or at a lower cost is a great incentive, those who know open source know that that is not what really makes open source software special and valuable.

➤ **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.

1. **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.
2. **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 is well-designed. Open source software can also be efficiently used in coding. These reasons make open source software an ideal choice for organizations.
3. **No vendor lock-in:** IT managers in organizations face constant frustration when dealing with vendor lock-ins'. Using open source software gives you more freedom and you can effectively address all these disadvantages.
4. **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, and service and workstation management. This integration would result in efficient administration.
5. **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.
6. **Lower software costs:** Using open source software can help you minimize your expenses. You can save on licensing fees and maintenance fees.
7. **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 that creates open source software solutions also provides maintenance and support.

8. **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.

## **Open Office**

OpenOffice.org (OOo), commonly known as Open Office, is a discontinued open-source office suite. It was an open-sourced version of the earlier Star Office, which Sun Microsystems acquired in 1999 for internal use. Open Office included a word processor (Writer), a spreadsheet (Calc), a presentation application (Impress), a drawing application (Draw), a formula editor (Math), and a database management application (Base).[9] Its default file format was the Open Document Format (ODF), an ISO/IEC standard, which originated with OpenOffice.org. It could also read a wide variety of other file formats, with particular attention to those from Microsoft Office. Sun open-sourced the OpenOffice suite in July 2000 as a competitor to Microsoft Office,[10][11] releasing version 1.0 on 1 May 2002.

OpenOffice.org 1.1 is an open, feature-rich multi-platform office productivity suite. The user interface and the functionality is very similar to other products in the market like Microsoft Office or Lotus SmartSuite, but compared to these commercial products OpenOffice.org is absolutely free.

### **Features:**

The mission of OpenOffice.org is to create, as a community, the leading international office suite that will run on all major platforms and provide access to all functionality and data through open-component based APIs and an XML-based file format.

- OpenOffice.org Writer is a full-featured word processor. The powerful Navigator and Stylist tools make changing the formatting throughout a document a simple task.
- OpenOffice.org Calc provides full spreadsheet functionality incl. a huge number of statistical and scientific functions, pivot tables and charts.
- OpenOffice.org Impress is a full-featured presentation tool that allows creating and modifying diagrams and pictures right within the application.
- OpenOffice.org Draw is a drawing tool that supports both vector and bitmap images. The powerful Connectors allow to easily complex diagrams and org charts.
- With the database tools in OpenOffice.org users can easily access and analyze data, create complex reports or do a mail merge based on a customer database. Many open source and commercial database systems are supported.

- OpenOffice.org is able to read and write Microsoft Office files. This allows users to open and save Word, Excel and PowerPoint files on their preferred platform incl. Windows, Linux and Solaris.
- OpenOffice.org 1.1 introduces the one-click PDF export feature that enables you to easily create PDF files without the need for any additional third party software. This feature makes exchanging documents in a standard "read-only" file format a trivial task. The creation of PDF files normally requires relatively expensive third party add-on tools. With OpenOffice.org this feature comes for free.
- OpenOffice.org now can export presentations and drawings to the Macromedia Flash format (.swf). Thus, it's now possible to view presentations in a simple web browser that has the Flash plugin installed. Recipients and users of Flash presentations don't have to install a special viewer anymore in order to view a presentation.
- OpenOffice.org 1.1 can now be used by handicapped people - for example people with sight problems. OpenOffice.org 1.1 provides a high contrast mode, and together with additional tools it's even possible to use special entry devices.
- OpenOffice.org 1.1 introduces functionality like bi-directional and vertical writing that is required for many native languages. This allows OpenOffice.org 1.1 to be translated into Japanese, Hebrew and many other languages that have sophisticated text layout requirements. In addition the OpenOffice.org project has an increasing number of native-language projects where users can access OpenOffice.org information in their native language.
- The default file format in OpenOffice.org is an open XML file format defined in a 500-page specification document. Every OpenOffice.org file is a ZIP archive containing separate XML files for the content, styles, settings and meta data. OASIS is using the OpenOffice.org file format as the basis for the creation of a industry wide standard for an open office document file format. For ordinary end users this means that the content of documents can still be accessed and used even if OpenOffice.org would go away.
- OpenOffice.org now has support for MySQL databases, i.e. the open source database can be used for mail merge activities and the creation of reports. The combination of OpenOffice.org and MySQL (or another supported database) allows users to do tasks that many people used to solve by using products like Microsoft Access.



LOGO OF GAMBAS

## What Is GAMBAS?

**Gambas** is a full-featured object language and development environment built on a BASIC interpreter.

It is released under the GNU General Public License.

Its architecture is largely inspired by Java. So Gambas is made up of:

- A compiler.
- An interpreter.
- An arc hiver.
- A scripter.
- A development environment.
- Many extension components.

The compiler is a fast little executable written in C:

- It compiles about 500000 non-void lines in a second on my own Core2 Duo @2.33GHz. This speed allows a quick code/compile/test incremental development process.
- It does almost no optimization at all at the moment, relying on the interpreter to perform this task at runtime.
- It manages and compiles string translations by using the GNU `gettext` tools.
- It loads classes on demand, optimizing the byte code the first time it is run.
- Linking between classes is done entirely at runtime.

The main characteristics of the Gambas BASIC language are:

- About 250 keywords and native functions to manage almost everything: arithmetic, strings, input-outputs, files, time...
- Full error management.
- Full process control, with pseudo-terminal management.
- Full support for watching input-output file descriptors.
- Event loop support with timers.
- Full internationalization and translation support.
- Ability to call external functions in system shared libraries.

But Gambas is a true object-oriented language as well. With:

- Objects and classes.
- Properties, methods, constants and events.
- Public and private symbols.

- Polymorphism, i.e. virtual method dispatching.
- Single inheritance.
- Constructors and destructors.
- Array accessors, enumerators, sortable objects.

The Gambas inheritance mechanism is entirely dynamic, and allows you to:

- Create a more specialized version of an already existing class.
- Reimplement a class and extend it.
- Override some methods or properties of a class.

Any classes can be inherited, reimplemented or overridden, even the native ones written in C/C++.

## **Salient Features of GAMBAS:**

1. An Extensible Language: Components written in C/C++ are stored in shared libraries, and components written in Gambas are just Gambas projects like any other project. The core Gambas interpreter is a terminal-only program. All other features are provided by *components*, which are groups of classes written in C/C++, or written directly in Gambas.
2. A Scripting Language: Gambas can be used as a scripting language. This feature is provided by the scripter, a small Gambas executable that allows you to dump any Gambas code into a text file.
3. Database Independence: write programs that are independent of the underlying database system: every database system is accessed through the same API. For example, The database manager integrated in the IDE uses the same code to manage MySQL, PostgreSQL, SQLite or ODBC databases.
4. GUI Independence: write programs that are independent of the graphical toolkit: the QT4 component and the GTK+ component have the same interface.
5. Desktop Independence: The use of icon themes according to the current desktop environment (KDE, Gnome or XFCE).
6. The Development Environment: Gambas provides a full-featured IDE, which is itself written in Gambas. You can create forms, insert controls just by drawing them, edit your code, and do many other things similar to other rapid application development systems.

The Gambas development environment provides the following features:

- Syntax highlighting of Gambas code, HTML and CSS files.
- Automatic completion.
- GUI form editor.
- Integrated debugger.
- Icon editor.
- String translator.

# **GIMP SOFTWARE: KEY FEATURES**

Gimp software is a powerful freeware image editing application. GIMP is an acronym for GNU Image Manipulation Program. It is a freely distributed program for such tasks as photo retouching, image composition and image authoring.

It has many capabilities. It can be used as a simple paint program, an expert quality photo retouching program, an online batch processing system, a mass production image renderer, an image format converter, etc.

GIMP is expandable and extensible. It is designed to be augmented with plug-ins and extensions to do just about anything. The advanced scripting interface allows everything from the simplest task to the most complex image manipulation procedures to be easily scripted.

GIMP is written and developed under X11 on UNIX platforms. But basically the same code also runs on MS Windows and Mac OS X.

## **Features:**

### **1. Customizable User Interface**

The user interface is the way that you interact and control the software. The Gimp has a customizable interface, which makes it very easy to use. The software can be used for many different tasks. The working environment needs to be set up differently to make it easy to use. Gimp also features a helpful full screen editing mode. This makes it possible to easily edit very large photographs.

### **2. *Enhancing Photos***

Digital photos might be wonderful, but there are many imperfections which can affect them. Gimp features many enhancement tools which can be used to make the most out of your photographs. It's possible to remove barrel distortion and adjust color balance.

### **3. *Support***

Gimp supports a wide range of different hardware devices. It supports many input devices, including graphics tablets and scanners. It's also possible to adjust the controls of the application. This makes it possible to trigger certain events when you roll the mouse wheel.

### **4. *Formats***

Gimp supports many different formats of file types. These include TIFF, GIF, PNG and JPEG. There is also added support for icon files and many other file types that you wouldn't need to use very often.

There are also many plugins which can be used as a way to expand the file type support. It's also possible to save the files as a compressed format, such as ZIP or GZ, to save space on your hard drive. Gimp will seamlessly handle the compression of this without you needing to do anything.

## **5. *Painting***

- Full suite of painting tools including Brush, Pencil, Airbrush, Clone, etc.
- Sub-pixel sampling for all paint tools for high quality anti-aliasing
- Extremely powerful gradient editor and blend tool
- Supports custom brushes and patterns

## **6. *Advanced Manipulation***

- Full alpha channel support
- Layers and channels
- Multiple Undo/Redo (limited only by disk space)
- Editable text layers
- Transformation tools including rotate, scale, shear and flip
- Selection tools including rectangle, rounded rectangle, ellipse, free, fuzzy
- Foreground extraction tool
- Advanced path tool doing bezier and polygonal selections.
- Transformable paths, transformable selections.
- Quickmask to paint a selection.

## **7. *Animation***

- Load and save animations in a convenient frame-as-layer format
- MNG support
- Frame Navigator (in GAP, the GIMP Animation Package)
- Onion Skin (in GAP, the GIMP Animation Package)
- Bluebox (in GAP, the GIMP Animation Package)

## **8. *File Handling***

- File formats supported include bmp, gif, jpeg, mng, pcx, pdf, png, ps, psd, svg, tiff, tga, xpm, and many others
- Load, display, convert, save to many file formats
- SVG path import/export



# MySQL

**MySQL** is an open-source relational database management system (RDBMS). Its name is a combination of “My”, the name of co-founders Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010. MySQL is written in C and C++.

## MySQL Features

- **Relational Database Management System (RDBMS):** MySQL is a relational database management system.
- **Internals and Portability:** Written in C and C++. Tested with a broad range of different compilers.
- **Easy to use:** MySQL is easy to use. You have to get only the basic knowledge of SQL. You can build and interact with MySQL with only a few simple SQL statements.
- **It is secure:** MySQL consist of a solid data security layer that protects sensitive data from intruders. Passwords are encrypted in MySQL. A privilege and password system that is very flexible and secure, and that enables host-based verification.
- **Client/ Server Architecture:** MySQL follows a client /server architecture. There is a database server (MySQL) and arbitrarily many clients (application programs), which communicate with the server; that is, they query data, save changes, etc.
- **Connectivity:** Clients can connect to MySQL Server using several protocols. Clients can connect using TCP/IP sockets on any platform.
  - On Windows systems, clients can connect using named pipes if the server is started with the named\_pipe system variable enabled. Windows servers also support shared-memory connections if started with the shared\_memory system variable enabled. Clients can connect through shared memory by using the --protocol=memory option.
  - On UNIX systems, clients can connect using Unix domain socket files.
- **Free to download:** MySQL is free to use and you can download it from MySQL official website.
- **It is scalable:** MySQL can handle almost any amount of data, up to as much as 50 million rows or more. The default file size limit is about 4 GB. However, you can increase this number to a theoretical limit of 8 TB of data.

- **Scalability and Limits:** Support for large databases. We use MySQL Server with databases that contain 50 million records. We also know of users who use MySQL Server with 200,000 tables and about 5,000,000,000 rows.
- **Compatible on many operating systems:** MySQL is compatible to run on many operating systems, like Novell NetWare, Windows\* Linux\*, many varieties of UNIX\* (such as Sun\* Solaris\*, AIX, and DEC\* UNIX), OS/2, FreeBSD\*, and others. MySQL also provides a facility that the clients can run on the same computer as the server or on another computer (communication via a local network or the Internet).
- **Allows roll-back:** MySQL allows transactions to be rolled back, commit and crash recovery.
- **High Performance:** MySQL is faster, more reliable and cheaper because of its unique storage engine architecture.
- **High Flexibility:** MySQL supports a large number of embedded applications which makes MySQL very flexible.
- **High Productivity:** MySQL uses Triggers, Stored procedures and views which allows the developer to give a higher productivity.

### **Disadvantages / Drawback of MySQL:**

Following are the few disadvantages of MySQL:

- MySQL version less than 5.0 doesn't support ROLE, COMMIT and stored procedure.
- MySQL does not support a very large database size as efficiently.
- MySQL doesn't handle transactions very efficiently and it is prone to data corruption.
- MySQL is accused that it doesn't have a good developing and debugging tool compared to paid databases.