

(SKILL ENHANCEMENT COURSE- THEORY)

COURSE CODE: 1CAPSE0401

COURSE TITLE: OPEN SOURCE SOFTWARE

*(Syllabus wise Topic Description)*

**UNIT-5: OPEN SOURCE SOFTWARE ORGANIZATIONS**

**Open source software organizations**

The following are notable organizations devoted to the advocacy, legal aid, financial aid, technical aid, governance, etc. of free and open-source software (FOSS) as a whole, or of one or more specific FOSS projects. For projects that have their own foundation or are part of an umbrella organization, the primary goal is often to provide a mechanism for funding development of the software.

For the most part, these organizations are structured as nonprofit/charity organizations.

There are quite a number of not-for-profit and charitable organizations supporting the open source software movement.

***These are some you should know about:***

**1. Apache Software Foundation**

The Apache Software Foundation provides organizational, legal, and financial support for a broad range of open source software projects. The foundation provides an established framework for intellectual property and financial contributions that simultaneously limits contributors' potential legal exposure.

**2. Cloud Native Computing Foundation**

The Cloud Native Computing Foundation's (CNCF) mission is to promote adoption of distributed computing and "cloud-native" systems, which it defines as being container packaged, dynamically managed, and micro services oriented. A project of the Linux Foundation, CNCF hosts the Kubernetes cloud orchestration system and other cloud-native open source projects.

**3. Digital Freedom Foundation**

Digital Freedom Foundation sponsors annual events to promote free software, hardware, and content. Its events are Software Freedom Day, Document Freedom Day, Hardware Freedom Day, and Education Freedom Day.

#### **4. The Document Foundation**

The Document Foundation is the home of the Libre Office free and open source office suite. It is an independent, self-governing, meritocratic entity, created by former leaders of the OpenOffice.org Community, in the form of a charitable foundation under German law

#### **5. Eclipse Foundation**

The Eclipse Foundation hosts a large community with hundreds of open source projects, nearly 1,400 committers as members, and eight collaborative working groups, including Internet of Things, LocationTech, and Science. The foundation provides a set of services and best practices to enable vendor-neutral collaboration on open source technology.

#### **6. Free Software Foundation**

The Free Software Foundation's (FSF) mission is to defend computer users' freedom and rights. It promotes the "development and use of free (as in freedom) software and documentation" and campaigns against digital rights management, software patents, and other threats to computer user freedom.

#### **7. GNOME Foundation**

The GNOME Foundation is a nonprofit organization that supports the GNOME project and its contributors. The foundation provides resources and infrastructure, steers releases, determines what software is part of the project, and acts as the project's public face and voice.

#### **8. Linux Professional Institute**

Founded in 1999, Linux Professional Institute (LPI) is a Canadian nonprofit organization that advocates for and assists in the professional use of Linux, open source, and free software. Its purpose is to "enable economic and creative opportunities for everybody by making open source knowledge and skills certification universally accessible."

#### **9. Mozilla Foundation**

The Mozilla Foundation is dedicated to the idea that the internet must always remain an open and accessible global public resource for everyone. Operating as a social enterprise, the foundation is the sole shareholder in the Mozilla Corporation, which makes the Firefox browser software and other open source tools.

#### **10. Open Bioinformatics Foundation**

The Open Bioinformatics Foundation advocates for open source software within the biological research community. Among its activities, it supports conferences, runs hackathons, and participates in the Google Summer of Code.

### **11. Open Education Consortium**

The Open Education Consortium is a worldwide community of hundreds of universities and associated organizations that advocates for the free and open digital publication of high quality university level educational materials to improve educational access and effectiveness.

### **12. Open Source Automation Development Lab**

The Open Source Automation Development Lab (OSADL) is a Germany-based worldwide organization that supports open source software in the machine, machine tool, and automation industries. OSADL coordinates the development and financing of open source industrial projects on behalf of its member organizations.

### **13. Open Source Geospatial Foundation**

The Open Source Geospatial Foundation (OSGeo) supports collaborative development of open source geospatial software. Major GIS-related software projects are involved in the organization; furthermore it provides financial, organizational, and legal support to the open source GIS community.

### **14. Open Source for America**

Open Source for America (OSFA) seeks to educate decision makers in the U.S. federal government about the benefits of free and open source software. OSFA encourages government use of open source software and serve as a voice for the open source community to the federal government.

### **15. Software Freedom Conservancy**

The Software Freedom Conservancy is a nonprofit organization that promotes, improves, develops, and defends free, libre, and open source software (FLOSS) projects. By providing infrastructure and non-development support services, the organization enables FLOSS developers to focus on their projects.

### **16. Software Freedom Law Center**

The Software Freedom Law Center provides free legal services to free and open source projects, including licensing, copyrights, patents, trademarks, and nonprofit governance, as well as education, consulting, and training.

## 17. Software in the Public Interest

Software in the Public Interest (SPI) is a nonprofit organization that handles non-technical administrative tasks for select open source projects so their developers can focus on developing and distributing open hardware and software.

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### Apache Open Office

Apache OpenOffice is the leading **open-source office software suite** for **word processing, spreadsheets, presentations, graphics, databases** and more. It is available in **many languages** and works on all **common computers**. It stores all your data in an **international open standard format** and can also read and write files from other common office software packages. It can be downloaded and used completely **free of charge** for **any purpose**.

1. **Great software:** A completely open development process means that anyone can report bugs, request new features, or enhance the software. The result: Apache Open Office does everything you want your office software to do, the way you want it to.
2. **Easy to use:** Apache Open Office is easy to learn.
3. **It's free:** *Apache Open Office* can be downloaded and used entirely **free** of any license fees. Like all Apache Software Foundation software, Apache Open Office is free to use. Apache Open Office is released under the Apache 2.0 License. This means you may use it for any purpose - domestic, commercial, educational, public administration. You may install it on as many computers as you like.

### Data recovery

In computing, data recovery is a process of salvaging (retrieving) inaccessible, lost, corrupted, damaged or formatted data from secondary storage, removable media or files, when the data stored in them cannot be accessed in a normal way. The data is most often salvaged from storage media such as internal or external hard disk drives (HDDs), solid-state drives (SSDs), USB flash drives, magnetic tapes, CDs, DVDs, RAID subsystems, and other electronic devices. Recovery may be required due to physical damage to the storage devices or logical damage to the file system that prevents it from being mounted by the host operating system (OS). The most common data recovery scenario involves an operating system failure, malfunction of a storage device, logical failure of storage devices, accidental damage or deletion, etc. (typically, on a single-drive, single-partition, single-OS system), in which case the ultimate goal is simply to copy all important files from the damaged media to another new drive. This can be easily accomplished using a Live

CD or DVD by booting directly from a ROM instead of the corrupted drive in question. Many Live CDs or DVDs provide a means to mount the system drive and backup drives or removable media, and to move the files from the system drive to the backup media with a file manager or optical disc authoring software. Such cases can often be mitigated by disk partitioning and consistently storing valuable data files (or copies of them) on a different partition from the replaceable OS system files.

## **Data Recovery Software**

Data recovery software is a type of software that enables the recovery of corrupted, deleted or inaccessible data from a storage device.

This software reviews, scans, identifies, extracts and copies data from deleted, corrupted and formatted sectors or in a user-defined location within the storage device. Data recovery software is a type of software that enables the recovery of corrupted, deleted or inaccessible data from a storage device. This software reviews, scans, identifies, extracts and copies data from deleted, corrupted and formatted sectors or in a user-defined location within the storage device.

### **FREE Data Recovery Softwares:**

These programs can retrieve just about anything from a hard drive, disk, flash drive, or any other storage device even if you have 0 clue what you're doing.

1. **Stellar Data Recovery**, the absolute best software for recovering lost files or precious data. Whether you're an individual or a business, we've all experienced some sort of panic when it comes to potentially losing crucial files.

Stellar Data Recovery is built for personal or enterprise needs. Available for Mac and Windows, Stellar Data Recovery

Stellar Data Recovery is amazing software for data recovery. Still, Stellar Data Recovery's FREE version allows users to fix up to 1GB without needing to pay. That's a lot of data, or PDF documents perhaps, that you could possibly recover for no cost.

Repair video or photo files with Stellar Data Recovery, or even use their BitRaser for File feature to remove unwanted data from your internet browsing or folders on your hard drive.

*Well, these following features of course:*

1. **Email Repair:** includes Exchange Toolkit and an Auditor & Reporter

2. **Email Converter:** converts Windows Live Emails (EML) files and exports mailbox data into other formats.
3. **File Repair:** Repair QuickBooks, PowerPoint's and even back-up files while restoring complete data.
4. **Data Recovery & Erasure:** use Virtual Machine Recovery to recover data from any virtual machine or permanently erase file and drive data from your device.

## 2. Power Data Recovery -The Runner Up

MiniTool Power Recovery is a close runner-up on this list of 5 free file recovery software. Install, scan, and recover any lost file, FAST, and with no fuss during installation advice and simple searchable scans.

Select the location, scan it, and select the items you want to restore and it instantly saves them in a safe place. The scans are extremely fast and the results are easy to read.

## 3. Disk Drill

Disk Drill pops up on just about every software recovery list for good reason: It's powerful. User love the simple and straightforward interface. Just scan a drive and you'll be presented with recoverable options (for FREE). That way, you scan images or files and preview them to make sure you're recovering the right file. They even give you a nice tutorial in the beginning.

It's just as good as MiniTool but only gives you 500MB free

## 4. Recuva – Recover Anything From Anywhere

It's the super flexible, ultra deep scanning, do-it-all recovery tool that can recover anything from anywhere. The detailed interface is easy to use thanks to the recovery wizard. The deep scan takes you deep beneath the waves, trawling the depths of your lost data ocean and exposing you to rare and exotic species of data you had no idea existed.

## 5. UnDeleteMyFiles Pro

This is actually one of the true FREE programs on the list.

It has a lot of features like:

1. **Snapshot:** Take a "snapshot" of your drive and retrieve files at your leisure.
2. **Secure file deletion:** Delete files forever so nobody can recover them.
3. **Email recovery:** Did you delete that email? Time to bring back!

## **Apache Web server**

Apache HTTP Server is a free and open-source web server that delivers web content through the internet. It is commonly referred to as Apache and after development, it quickly became the most popular HTTP client on the web. It was revealed that the name originated from the respect of the Native American tribe for its resiliency and durability.

Apache is the most widely used web server software. Developed and maintained by Apache Software Foundation, Apache is an open source software available for free. It runs on 67% of all web servers in the world. It is fast, reliable, and secure. It can be highly customized to meet the needs of many different environments by using extensions and modules. Most Word Press hosting providers use Apache as their web server software. However, Word Press can run on other web server software as well.

- **Web Application Architecture**

Apache is just one component that is needed in a web application stack to deliver web content. One of the most common web application stacks involves LAMP, or Linux, Apache, MySQL, and PHP.

Linux is the operating system that handles the operations of the application. Apache is the web server that processes requests and serves web assets and content via HTTP. MySQL is the database that stores all your information in an easily queried format. PHP is the programming language that works with apache to help create dynamic web content.

- **Why Apache?**

Apache is considered open source software, which means the original source code is freely available for viewing and collaboration. Being open source has made Apache very popular with developers who have built and configured their own modules to apply specific functionality and improve on its core features. Apache has been around since 1995 and is responsible as a core technology that helped spur the initial growth of the internet in its infancy.

One of the pros of Apache is its ability to handle large amounts of traffic with minimal configuration. It scales with ease and with its modular functionality at its core. You can also remove unwanted modules to make Apache more lightweight and efficient.

Some of the most popular modules that can be added are SSL, Server Side Programming Support (PHP), and Load Balancing configs to handle large amounts of traffic. Apache can also be deployed on Linux, MacOS, and Windows. If you learn how to configure Apache on Linux, you can administer Apache on Windows and Mac.

- **Web Server**

The web server checks for the web page you have requested and fetches it for your viewing pleasure. However, A web server is not just your host but also your server. Once it has found the web page you requested, it also serves you the web page. So basically a web server is the software that receives your request to access a web page. It runs a few security checks on your HTTP request and takes you to the web page. Depending on the page you have requested, the page may ask the server to run a few extra modules while generating the document to serve you. It then serves you the document you requested.

## The Apache Installation

### Manual Installation

Apache can be installed anywhere on your system, but you will need to change the configuration file paths accordingly...

- **Configure Apache**

Apache is configured with the text file **confhttpd.conf** contained in the Apache folder. Note that all file path settings use a '/' forward-slash rather than the Windows backslash. If you installed Apache anywhere other than C:Apache2, now is a good time to search and replace all references to "c:/Apache2".

- **Change the web page root (optional)**

By default, Apache return files found in its htdocs folder. I would recommend using a folder on another drive or partition to make backups and re-installation easier. For the purposes of this example, we will create a folder called D: WebPages and change httpd.conf accordingly:

```
"D:/WebPages"
```

- **Test your installation**

Your Apache configuration can now be tested. Open a command box (Start > Run > cmd) and enter:

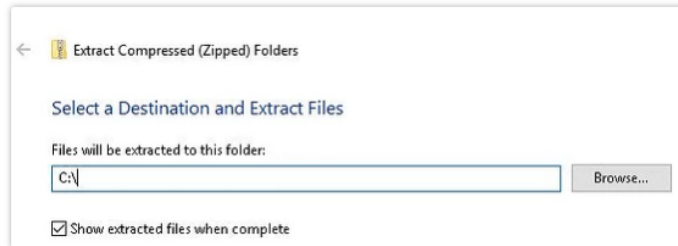
```
cd Apache2bin
```

```
httpd -t
```



## Apache Installation

1. Extract the compressed Apache download. While you can extract it to any directory it is the best practice to extract it to the root directory of the drive it is located on (our example folder is located in **C:\Apache24**). This is the location we will be using for these instructions. Please note that once installed you can see Apache's base path by opening the configuration file and checking the "**ServerRoot**" directive).



2. Open an "**Administrator**" command prompt. (Click the Windows "**Start**" icon, then type "**cmd**". Right-click the "**Command Prompt**" item which appears, and select "**Run As Administrator.**")
3. Change to the installation directory (For our purposes **C:\Apache24\bin**).
4. Run the program **httpd.exe**.
5. You will likely notice a dialogue box from the Windows Firewall noting that some features are being blocked. If this appears, place a checkmark in "**Private Networks...**" as well as "**Public Networks...**", and then click "**Allow access.**"
6. Now test your installation by opening up your Web Browser and typing in the address: <http://localhost>

If everything is working properly, you should see the ApacheHaus' test page.



To shut down the new Apache server instance, you can go back to the Command Prompt and press "**Control-C**".

7. Now that you have confirmed the Apache server is working and shut it down, you are ready to install Apache as a system service.
8. In your Command Prompt window, enter (or paste) the following command:

```
httpd.exe -k install -n "Apache HTTP Server"
```

**Output:**

```
Installing the 'Apache HTTP Server' service  
The 'Apache HTTP Server' service is successfully installed.
```

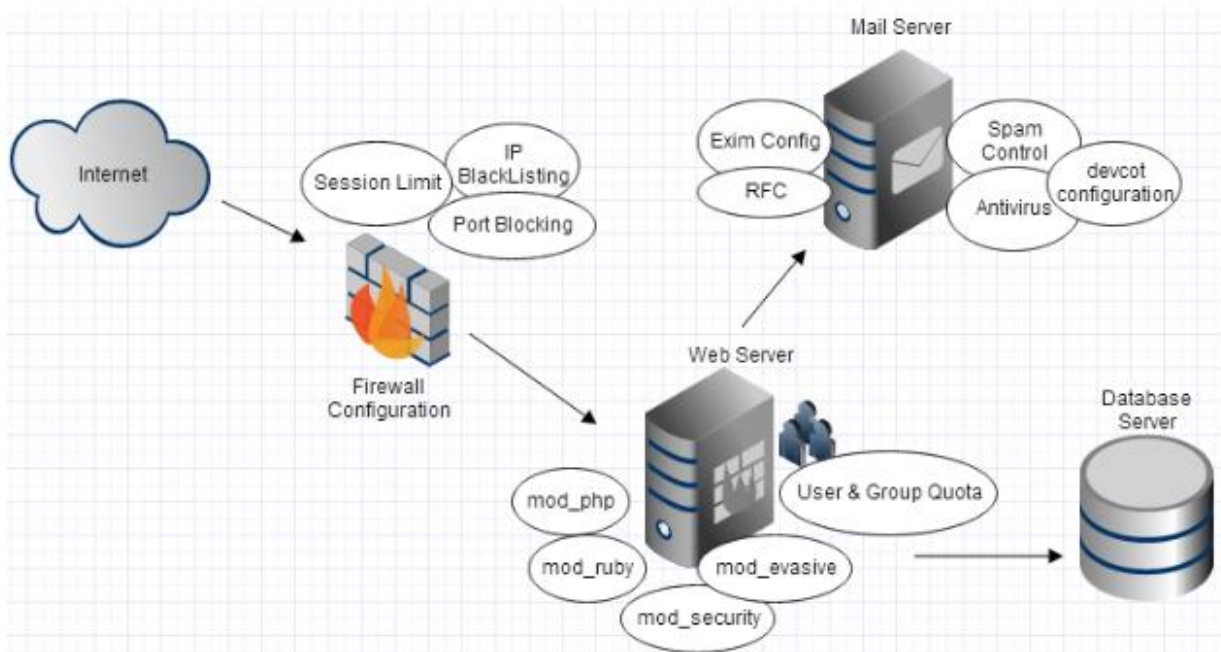
Errors reported here must be corrected before the service can be started.

9. From your Command Prompt window enter the following command and press 'Enter.'  
`services.msc`
10. Restart your server and open a web browser once you are logged back in. Go to this page in the browser's URL bar: `http://localhost/`

## DEPLOY AN APACHE WEB SERVER CONTAINER

### Configure your very first Production Web Server

1. In order to have a running production web server, you need a dedicated **node** (Physical/Virtual or cloud instance) running Linux/Unix, Windows, MacOS etc.
2. The Web Server must have a **direct network connection** and a **static IP address** configured on it.
3. It needs to have all the **modules** required for running web pages. If a web server processes PHP pages, it needs to have PHP module enabled.



4. It also needs to have a good **Antivirus** application configured and running for securing the Web Server from Malware or Virus attacks. You also need mechanism to **update** the configured antivirus/anti malware application on regular basis without any manual intervention in order to get maximum benefit from them.

5. If you have hundreds of domains to be hosted on your web server, you must have to implement **limitations on file system quota for each domain, number of databases each domain can create, number of email accounts per domain etc.**
6. If your web server has been setup for **shared hosting services, users on your web server needs to be restricted.** A shared hosting user should have least user privilege so that he does not damage important files & break the entire server. Apache does not provide any such functionality and needs different third party applications, customization of OS to achieve this.
7. If you are adding a **new domain** on your web server, it needs editing hundreds of configuration file to enable all features for the added domain.
8. If one of the hosted domains requires **different PHP setting** than rest of the domains, implementing this in core Apache web server is very complex and needs customization of your web server in great extent.
9. A production web server needs a **firewall** to block unwanted traffic that could cause high load on your server. Implementing **IPTABLE** rules with command line is very complex. It needs expertise of core Linux/Unix environment to write effective firewall rules for blocking unwanted traffic. **IPTABLE** is based on netfilter module; it is an OS level firewall that allows an administrator to create rules for incoming/outgoing traffic on the server.
10. A production web server requires several different applications like **Email, FTP** for file upload, **Domain Name System** for parked domains. Managing all these applications on a core Linux/Unix system requires expertise on the respective technologies.