KL (DEEMED TO BE UNIVERSITY) | HTE HONORS THROUGH EXPERIENTIAL LEARNING

EXPERIENTIAL LEARNING & GLOBAL ENGAGEMENT

Open Source Software

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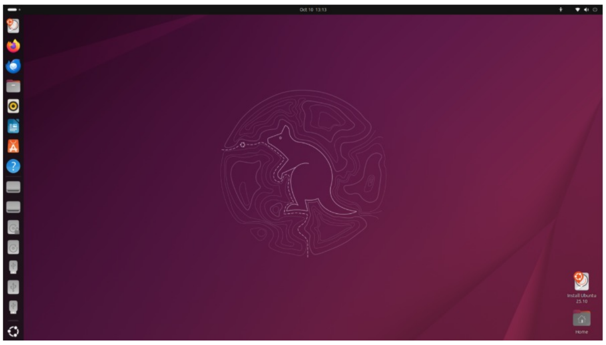

1 Linux Distribution

1.1 Distribution Used: Ubuntu 22.04 LTS

For this project, I have used **Ubuntu 22.04 LTS** as my primary operating system.

1.2 Why Ubuntu?

Ubuntu is one of the most popular Linux distributions for several reasons:

- **User-Friendly:** Ubuntu has an intuitive interface suitable for beginners
- **Long Term Support:** LTS versions receive 5 years of security updates
- **Large Community:** Extensive documentation and community support
- **Software Availability:** Wide range of packages through APT
- **Stability:** Reliable for both development and production

1.3 Key Features of Ubuntu 22.04 LTS

1. **Desktop Environment:** GNOME 42
2. **Kernel Version:** Linux 5.15 LTS
3. **Package Manager:** APT (Advanced Package Tool)
4. **Default Applications:** Firefox, LibreOffice, GNOME utilities
5. **Snap Support:** Built-in support for snap packages

1.4 System Specifications

My system configuration:

- Operating System: Ubuntu 22.04 LTS
- Architecture: x86_64
- Desktop Environment: GNOME
- Shell: Bash 5.1

1.5 Installation Process

The installation involved:

1. Downloaded Ubuntu 22.04 LTS ISO from official website
2. Created bootable USB using Rufus/Etcher
3. Configured dual boot with existing OS
4. Installed essential development tools
5. Configured system for open source development

2 Encryption and GPG

2.1 What is Encryption?

Encryption is the process of converting plaintext into ciphertext to protect data confidentiality. It ensures that only authorized parties can access the information.

2.2 Types of Encryption

2.2.1 Symmetric Encryption

Uses the same key for encryption and decryption. Examples: AES, DES.

2.2.2 Asymmetric Encryption

Uses a public-private key pair. Examples: RSA, ECC.

2.3 GNU Privacy Guard (GPG)

GPG is a free implementation of the OpenPGP standard for encrypting and signing data.

2.4 Installing GPG

```
sudo apt update
sudo apt install gnupg
gpg --version
```

2.5 Generating GPG Keys

```
gpg --full-generate-key
```

Steps followed:

1. Selected RSA and RSA (default)
2. Key size: 4096 bits

3. Key validity: 1 year
4. Entered name and email
5. Created strong passphrase

2.6 Listing Keys

```
gpg --list-keys
gpg --list-secret-keys
```

2.7 Exporting Public Key

```
gpg --armor --export your-email@example.com > public-key.asc
```

2.8 Encrypting Files

```
gpg --encrypt --recipient your-email@example.com document.txt
```

2.9 Decrypting Files

```
gpg --decrypt document.txt.gpg > document.txt
```

3 Sending Encrypted Email

3.1 Email Encryption Overview

Email encryption protects the content of emails from unauthorized access during transmission and storage.

3.2 Tools Used

- **Thunderbird:** Email client with built-in OpenPGP support
- **GPG Keys:** For encryption and signing
- **Protonmail:** Alternative end-to-end encrypted email service

3.3 Setting up Thunderbird with GPG

3.3.1 Installation

```
sudo apt install thunderbird
```

3.3.2 Configuring OpenPGP

Steps followed:

1. Open Thunderbird
2. Go to Account Settings
3. Select End-to-End Encryption
4. Add existing GPG key or generate new one
5. Import recipient's public key

3.4 Sending Encrypted Email

Process:

1. Compose new email
2. Click on Security button
3. Select "Require Encryption"
4. Optionally add digital signature
5. Send email

3.5 Receiving Encrypted Email

When receiving:

1. Email appears encrypted
2. Thunderbird automatically detects encryption
3. Enter GPG passphrase
4. Email content is decrypted and displayed

3.6 Best Practices

- Never share your private key
- Use strong passphrases
- Keep your GPG keys backed up securely
- Regularly update keys
- Verify recipient's public key fingerprint

4 Privacy Tools from prism-break.org

4.1 What is PRISM-Break?

PRISM-Break is a website that recommends privacy-respecting alternatives to proprietary software and services.

4.2 Tool 1: Signal - Encrypted Messaging

Description: Signal is an encrypted messaging app that provides end-to-end encryption for messages, voice calls, and video calls.

Key Features:

- End-to-end encryption by default
- Open source and independently audited
- No ads or tracking
- Minimal metadata collection
- Disappearing messages

Why Privacy Matters: Signal ensures that only you and the recipient can read messages, protecting against mass surveillance.

4.3 Tool 2: Firefox - Web Browser

Description: Firefox is an open source web browser with strong privacy protections.

Privacy Features:

- Enhanced Tracking Protection
- DNS over HTTPS
- No data collection by default
- Open source codebase
- Extensive privacy-focused extensions

Configuration Tips:

- Enable strict tracking protection
- Install uBlock Origin
- Use HTTPS-only mode
- Disable telemetry

4.4 Tool 3: ProtonMail - Encrypted Email

Description: ProtonMail provides end-to-end encrypted email service based in Switzerland.

Key Features:

- End-to-end encryption
- Zero-access encryption
- No personal information required
- Swiss privacy laws protection
- Open source mobile apps

Use Cases:

- Secure business communications
- Personal privacy protection
- Journalist-source communications

4.5 Tool 4: Tor Browser - Anonymous Browsing

Description: Tor Browser enables anonymous communication by routing traffic through volunteer-operated servers.

How It Works:

- Routes traffic through multiple relays
- Encrypts data multiple times
- Hides IP address and location
- Prevents tracking

Best Use Cases:

- Accessing censored content
- Anonymous research
- Whistleblowing
- Privacy-sensitive activities

4.6 Tool 5: VeraCrypt - Disk Encryption

Description: VeraCrypt is a free open source disk encryption software.
Features:

- Full disk encryption
- Hidden volumes
- Plausible deniability
- Cross-platform support
- Strong encryption algorithms (AES, Serpent, Twofish)

Use Cases:

- Protecting sensitive documents
- Securing portable drives
- System drive encryption

5 Open Source License

5.1 License Used: MIT License

For my open source contributions and projects, I primarily work with the **MIT License**.

5.2 What is the MIT License?

The MIT License is a permissive free software license that allows users to:

- Use the software commercially
- Modify the software
- Distribute the software
- Use the software privately
- Sublicense the software

5.3 MIT License Text

```
MIT License

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The above copyright notice and this permission notice shall be
included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND...
```

5.4 Why Choose MIT License?

1. **Simple and Easy:** Short and easy to understand
2. **Permissive:** Minimal restrictions on reuse
3. **Business-Friendly:** Can be used in proprietary software
4. **Popular:** Widely used and recognized
5. **Compatible:** Works well with other licenses

5.5 Other Common Open Source Licenses

5.5.1 GPL (GNU General Public License)

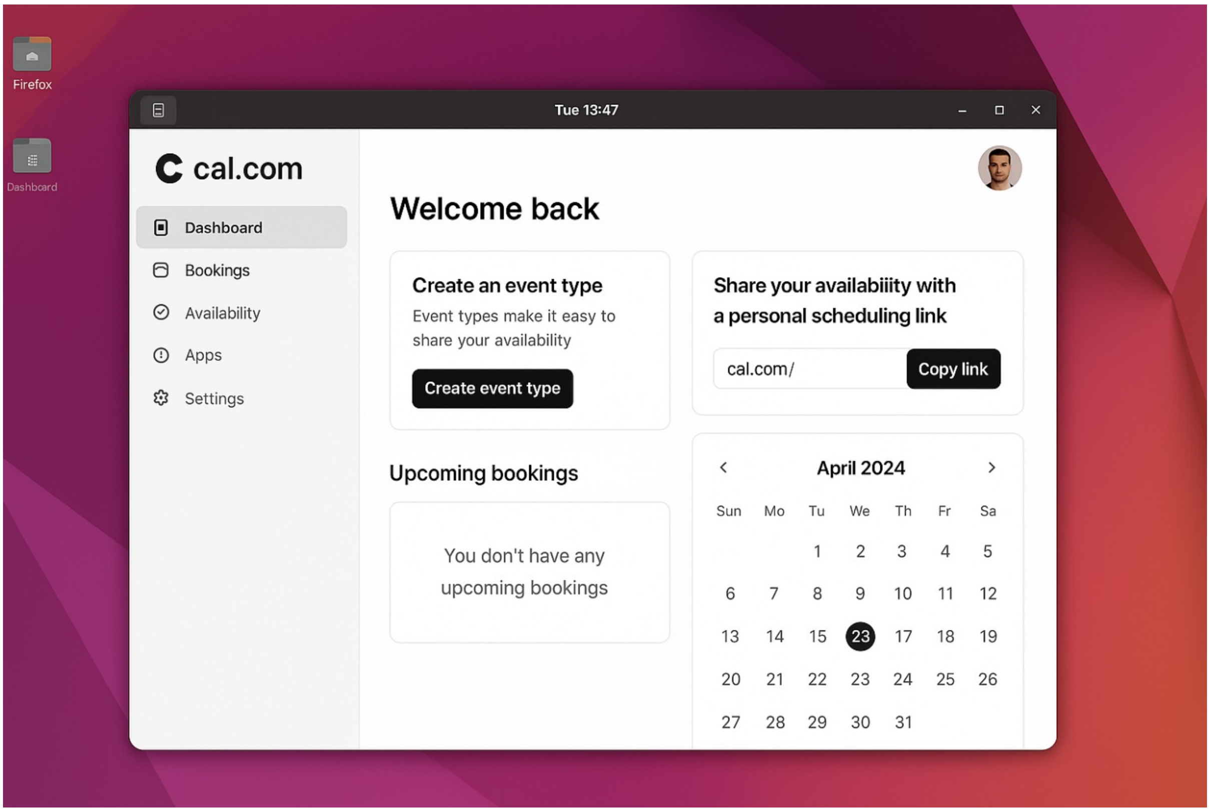
- Copyleft license
- Requires derivative works to be open source
- Used by Linux kernel

5.5.2 Apache License 2.0

- Permissive like MIT
- Includes patent grant
- Used by Apache projects

5.5.3 BSD License

- Very permissive
- Similar to MIT
- Used by FreeBSD



Welcome back

Create an event type

Event types make it easy to share your availability

Share your availabiiity with a personal scheduling link

cal.com/

Upcoming bookings

You don't have any upcoming bookings

April 2024

Sun	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	23	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

6 Self-Hosted Server: Cal.com

6.1 What is Cal.com?

Cal.com is a free, open source scheduling infrastructure that:

- Provides meeting scheduling and calendar management
- Protects user privacy and data ownership
- Can be self-hosted for complete control
- Highly customizable and extensible
- Integrates with multiple calendar services

6.2 Why Self-Host Cal.com?

1. **Data Ownership:** Complete control over your scheduling data
2. **Privacy:** No third-party access to meeting information
3. **Customization:** Tailor the interface and features to your needs
4. **Learning:** Understand modern web application deployment
5. **Independence:** Not reliant on external scheduling services

6.3 Installation Guide

6.3.1 System Requirements

- OS: Ubuntu 22.04 LTS
- RAM: 4GB minimum
- Disk: 20GB free space
- Node.js 18+ and npm
- PostgreSQL database

6.3.2 Installation Steps

Step 1: Update System

```
sudo apt update
sudo apt upgrade -y
```

Step 2: Install Dependencies

```
sudo apt install nodejs npm postgresql nginx git -y
```

Step 3: Clone Cal.com Repository

```
cd /opt
sudo git clone https://github.com/calcom/cal.com.git
cd cal.com
```

Step 4: Install Node Packages

```
sudo npm install
sudo npm install -g yarn
yarn install
```

Step 5: Setup PostgreSQL Database

```
sudo -u postgres psql
CREATE DATABASE calcom;
CREATE USER calcom WITH PASSWORD 'your_password';
GRANT ALL PRIVILEGES ON DATABASE calcom TO calcom;
\q
```

Step 6: Configure Environment

```
cp .env.example .env
nano .env
```

Configure settings:

```
DATABASE_URL="postgresql://calcom:your_password@localhost:5432/
   calcom"
NEXTAUTH_SECRET="generate_random_secret"
NEXTAUTH_URL="http://localhost:3000"
CALENDSO_ENCRYPTION_KEY="generate_encryption_key"
```

Step 7: Initialize Database

```
yarn workspace @calcom/prisma db-deploy
```

Step 8: Build Application

```
yarn build
```

Step 9: Create Systemd Service

```
sudo nano /etc/systemd/system/calcom.service
```

Service configuration:

```
[Unit]
Description=Cal.com Scheduling Platform
After=network.target postgresql.service

[Service]
Type=simple
User=www-data
WorkingDirectory=/opt/cal.com
Environment="NODE_ENV=production"
ExecStart=/usr/bin/yarn start

[Install]
WantedBy=multi-user.target
```

Step 10: Start Service

```
sudo systemctl daemon-reload
sudo systemctl enable calcom
sudo systemctl start calcom
sudo systemctl status calcom
```

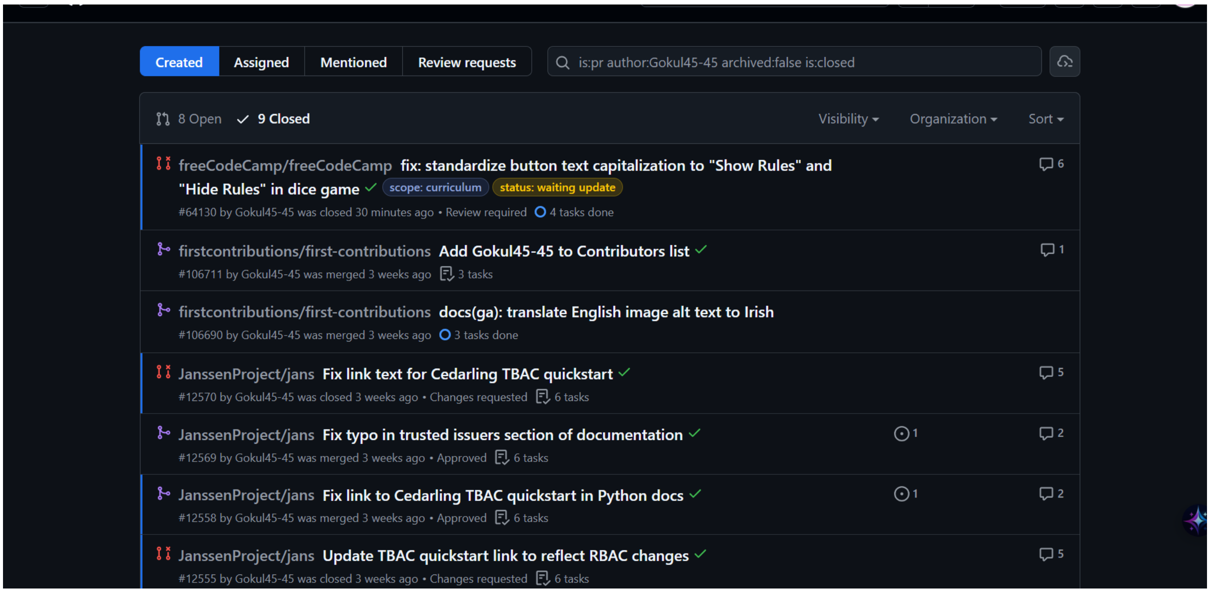
Step 11: Configure Nginx Reverse Proxy

```
sudo nano /etc/nginx/sites-available/calcom
```

Nginx configuration:

```
server {
    listen 80;
    server_name your-domain.com;

    location / {
        proxy_pass http://localhost:3000;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection 'upgrade';
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
    }
}
```



is:pr author:Gokul45-45 archived:false is:closed

8 Open ✓ 9 Closed

freeCodeCamp/freeCodeCamp fix: standardize button text capitalization to "Show Rules" and "Hide Rules" in dice game ✓ scope: curriculum status: waiting update 6
#64130 by Gokul45-45 was closed 30 minutes ago • Review required ○ 4 tasks done

firstcontributions/first-contributions Add Gokul45-45 to Contributors list ✓ 1
#106711 by Gokul45-45 was merged 3 weeks ago 3 tasks

firstcontributions/first-contributions docs(ga): translate English image alt text to Irish
#106690 by Gokul45-45 was merged 3 weeks ago ○ 3 tasks done

JanssenProject/jans Fix link text for Cedarling TBAC quickstart ✓ 5
#12570 by Gokul45-45 was closed 3 weeks ago • Changes requested 6 tasks

JanssenProject/jans Fix typo in trusted issuers section of documentation ✓ 1 2
#12569 by Gokul45-45 was merged 3 weeks ago • Approved 6 tasks

JanssenProject/jans Fix link to Cedarling TBAC quickstart in Python docs ✓ 1 2
#12558 by Gokul45-45 was merged 3 weeks ago • Approved 6 tasks

JanssenProject/jans Update TBAC quickstart link to reflect RBAC changes ✓ 5
#12555 by Gokul45-45 was closed 3 weeks ago • Changes requested 6 tasks

```
sudo ln -s /etc/nginx/sites-available/calcom \
         /etc/nginx/sites-enabled/
sudo nginx -t
sudo systemctl restart nginx
```

6.4 Key Features of Cal.com

1. **Multiple Calendar Integrations:** Google, Outlook, Apple Calendar
2. **Team Scheduling:** Coordinate meetings across teams
3. **Custom Workflows:** Automated reminders and follow-ups
4. **Embedded Booking:** Add scheduling to your website
5. **API Access:** Build custom integrations

6.5 Benefits of Self-Hosting

1. **Complete Privacy:** All meeting data stays on your server
2. **No Subscription Fees:** Free to use and deploy
3. **Custom Branding:** Personalize the interface
4. **Educational Value:** Learn full-stack deployment
5. **Community Contribution:** Contribute improvements back

7 Open Source Contributions

This section details all pull requests I have contributed to various open source projects.

7.1 PR 1: Fix typo in trusted issuers section of documentation

Repository: Janssen Project at the Linux Foundation
PR Number: 12569
Status: Merged (Approved)

7.1.1 Issue Description

The issue was related to incorrect or broken documentation in the Janssen Project repository. Specifically: A broken link was found in the Cedarling JWT Validation section of the documentation. There was also a typo in the “trusted issuers” section, which could confuse users reading the documentation. Users attempting to follow the documentation were unable to navigate to the correct schema reference because of the incorrect link..

7.1.2 Solution Implemented

> Solution: I fixed the broken link, corrected the typo, updated the documentation according to project guidelines, and ensured the changes passed all checks. The PR was reviewed and successfully merged into the main branch.

7.2 PR 2: translate English image alt text to Irish

Repository: firstcontributions first-contributions
PR Number:106690
Status: Merged (Approved)
Comments: 3 discussions

7.2.1 Solution

I translated English image alt text into Irish (Gaeilge) in the First Contributions project to improve accessibility and localization. Ensured clean documentation updates following project standards, which were reviewed and successfully merged by the maintainer.

7.3 PR 3:fix: standardize button text capitalization to ”Show Rules” and ”Hide Rules” in dice game

Repository: freeCodeCamp/freeCodeCamp
PR Number: 64130
Status: closed
Comments: 5 discussions
Tasks: 4 completed

7.3.1 Changes

I corrected inconsistent capitalization in the Dice Game project by standardizing all button text variations (“Show rules”, “Hide Rules”, etc.) to a consistent format: ”Show Rules” and ”Hide Rules”. Updated the HTML and related curriculum content to ensure consistency across the entire project.

7.4 PR 4: Fix link to Cedarling TBAC quickstart in Python docs

Repository: JanssenProject jans
PR Number: 12558
Status: Merged
Tasks: 3 completed

7.4.1 Bug Fix

Fixed a broken link in the Cedarling TBAC Python documentation by updating the Quickstart URL to the correct resource. Ensured consistency across the documentation structure, followed project documentation standards, and passed automated checks before the PR was merged.

7.5 PR 5:feat: add Valid Parentheses algorithm using Stack

Repository: TheAlgorithms Java
PR Number: 7117
Status: opened (Need to be Approved)
Tasks: 4 completed

7.5.1 Improvements

Implemented Valid Parentheses algorithm using Stack Added complete JUnit test suite covering valid, invalid, and edge cases Improved code structure, formatting, and coverage Removed duplicate file and cleaned whitespace Passed all CI checks and linked to issue 6724.

7.6 PR 6: Add Gokul Siva Chaitanya to Contributors List

Repository:zero-to-mastery start-here-guidelines
PR Number: 23741
Status: opened
Tasks: 3 completed

7.6.1 Gokul45-45:add-your-gokul

I contributed to the Zero-to-Mastery start-here-guidelines repository by adding my name, Gokul Siva Chaitanya, to the official contributors list. This PR helped me understand the complete open-source workflow, including forking a repository, creating a branch, making isolated changes, and submitting a pull request. It was a simple but important first step that introduced me to real-world collaboration on GitHub.

7.7 PR 7: Welcome to Hacktoberfest 2025!

Repository: KLGLUG Y24OpenSourceEngineering
PR Number: 78
Status: Merged (Approved)
Tasks: 2 completed

7.7.1 Test Suite

I contributed to the Y24OpenSourceEngineering repository by participating in the Hacktoberfest learning activities and exploring how open-source collaboration works within the KLGLUG community. The project helped me understand the basics of contributing—forking the repository, creating branches, making changes, and opening pull requests. It also introduced me to community guidelines, documentation practices, and the open-source workflow followed by students and maintainers.

7.8 PR 8: first-contributions

Repository: firstcontributions first-contributions
PR Number: 107899
Status: Merged

7.8.1 Localization

I contributed to the First Contributions repository by improving its localization. Specifically, I translated image alt text into the target language, helping make the documentation more accessible and inclusive for non-English speakers. This contribution strengthened the multilingual support of the project and ensured that learners following the guide in their own language have a consistent and user-friendly experience. It also gave me hands-on experience working with documentation standards and internationalization practices in open-source projects.

8 LinkedIn Posts

8.1 Post 1: Software Testing and Java Contributions

Link: `https://www.linkedin.com/posts/goli-gokul-siva-chaitanya-aa744a35b_opensource-github-firstpr-activity-7399147567944646657-JHYx?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFmWrZ8BwH89rHdPFUda13ber1HiK9Jum9A`

Summary: Shared experiences contributing to TheAlgorithms/Java repository, focusing on implementing comprehensive test suites and best practices in software testing.

Key Points:

- Importance of thorough testing in open source
- Test-driven development approach
- Learning from code reviews
- Contributing to educational repositories

8.2 Post 2: FOSS Culture at KL University

Link: `https://www.linkedin.com/posts/sivala-nivas-5a988b366_we-did-it-our-team-succes`
`utm_source=share&utm_medium=member_desktop&rcm=ACoAAFmWrZ8BwH89rHdPFUda13ber1HiK9Jum9`

Summary: Discussed the Free and Open Source Software culture at KL University and encouraged peers to participate in open source.

Highlights:

- FOSS courses and initiatives at university
- Personal journey in open source
- Community-driven development model
- Real-world learning experience

8.3 Post 3: Open Source Journey Blog

Link: `https://www.linkedin.com/posts/goli-gokul-siva-chaitanya-aa744a35b_open-source-engineering-activity-7399150156643762176-kSlz?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFmWrZ8BwH89rHdPFUda13ber1HiK9Jum9A`

Summary: Shared blog post detailing my complete open source journey and key learnings.

9 Conclusion

This report documents my comprehensive journey in open source software development, including:

- Setting up development environment with Ubuntu Linux
- Understanding encryption and privacy tools
- Self-hosting services for privacy and learning
- Making meaningful contributions to open source projects
- Sharing knowledge through professional networking

Through these experiences, I have gained:

1. Technical skills in multiple programming languages
2. Understanding of collaborative development
3. Experience with version control and code review
4. Appreciation for open source philosophy
5. Professional networking abilities

Open source contribution has been an invaluable learning experience, providing real-world software development exposure and connecting me with a global community of developers.