Report on

Open Source Engineering

24CS02EF

by

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Under the Guidance of

Dr. Sripath Roy Koganti

Contents

About the Linux Distro I Used — Ubuntu

I used Ubuntu, one of the most popular Linux distributions. It is beginner-friendly, stable, and has a clean user interface, which made it easier for me to adapt in the beginning. I installed it as a dual-boot along with Windows, and every time I selected Ubuntu from the boot menu, it felt exciting—like entering a different world of computing.
Ubuntu is based on Debian and uses the APT package manager, so installing and updating software is simple with commands like sudo apt install. It comes with strong community support, thousands of free packages, and great documentation.

What I liked most is:

- It was easy to navigate even as a beginner.
- Terminal commands helped me understand the system deeply.
- It is stable for long-term use.
- Perfect for learning open source tools, Git, servers, and development.

Encryption and GPG

GPG (GNU Privacy Guard) is an open-source tool that helped me understand how encryption works to protect communication. It uses the idea of public-key cryptography, where each person has two keys: a public key that can be shared with others and a private key that must be kept safe. When someone wants to send you a secure message, they use your public key to lock (encrypt) it, and only your private key can unlock (decrypt) it. This process ensures that even if someone intercepts the message, they cannot read it.

Why It Matters?
While learning GPG, I understood how encryption gives privacy, stops unauthorized access, and confirms whether a message is actually from the right person through digital signatures. It also made me realize how important encryption is in open-source systems and secure communication. Overall, using GPG helped me learn the basic principles behind data security, authenticity, and the protection of sensitive information.

Sending Encrypted Email

Learning how to send an encrypted email helped me understand the actual importance of secure communication. In this method, the sender encrypts the message using the receiver’s public key, which means only the receiver—with their private key—can open and read it. This adds a strong layer of protection because nobody in between, including email providers or attackers, can understand the message. Even if someone tries to intercept or access the email, all they would see is unreadable encrypted text.

During this task, I understood how encryption ensures privacy, maintains data integrity, and builds trust in communication. I learned how digital signatures help verify that the message truly came from the correct sender and was not changed along the way. This activity also showed me how real-world systems protect sensitive information such as passwords, personal details, and confidential data.

Overall, sending an encrypted email using these concepts gave me practical exposure to how cybersecurity works, and it helped me appreciate how important encryption is in both personal and professional communication.

Privacy and Open-Source Tools I Used

Throughout this course, I worked with several open-source tools that focus on user freedom, privacy, and transparency. Using these tools helped me understand how open-source software gives more control, avoids unnecessary data collection, and supports secure communication. Here are the five tools that I personally used and learned from during this journey.
The Five Tools I Worked With
1. **Debian** – A stable, privacy-respecting Linux distribution that follows strict open-source principles. Debian does not include unnecessary tracking or telemetry, and it gives full control to the user. It helped me understand how a secure and reliable operating system functions.
2. **gedit** – A simple and clean text editor available on most Linux systems. I used it to write notes, edit configuration files, and create small scripts. It is lightweight, completely open-source, and perfect for basic editing without any privacy concerns.
3. **Visual Studio Code** (Open-Source Version) – A powerful and flexible code editor. It supports extensions, multiple programming languages, and has features like debugging and version control. The open-source version respects user privacy and works extremely well for coding tasks.
4. **Mozilla Firefox** – A privacy-focused web browser. Firefox blocks trackers, fingerprinting, and unwanted scripts by default. While using it, I learned how important browser privacy settings are in protecting personal data online.

5. **Signal** – A messaging app designed with complete privacy in mind. It uses end-to-end encryption for all chats, calls, and media. Signal helped me understand the importance of encrypted communication and how modern apps maintain user confidentiality.

Working with these tools showed me how open-source software can be a safer and more transparent alternative to many closed platforms. Each tool—whether for browsing, messaging, editing, or system use—focused on giving control back to the user. This experience made me more aware of how privacy and security can be improved with the right software choices.

About the Open Source License I Used – Apache License

For my open-source work, I used the Apache License, which is one of the most popular and flexible open-source licenses. This license is known for giving users a lot of freedom while still protecting the original creators. The Apache License allows anyone to use, modify, distribute, and even commercially use the software, as long as proper credit is given to the original authors.

One important feature of the Apache License is that it provides a patent license, which means contributors cannot later claim patent rights against users of their code. This makes the software safer to use in real projects. Another important point is that it requires the copyright notice and the license text to be included whenever the project is shared, ensuring transparency.

Navidrome Self-Hosted Music Server

Navidrome is a lightweight, self-hosted music streaming server that lets you access your personal music collection from anywhere. It works similar to Spotify, but the major difference is that your music stays on your own server, giving you full privacy, control, and flexibility. Navidrome is fast, easy to deploy, and works even on low-resource systems.

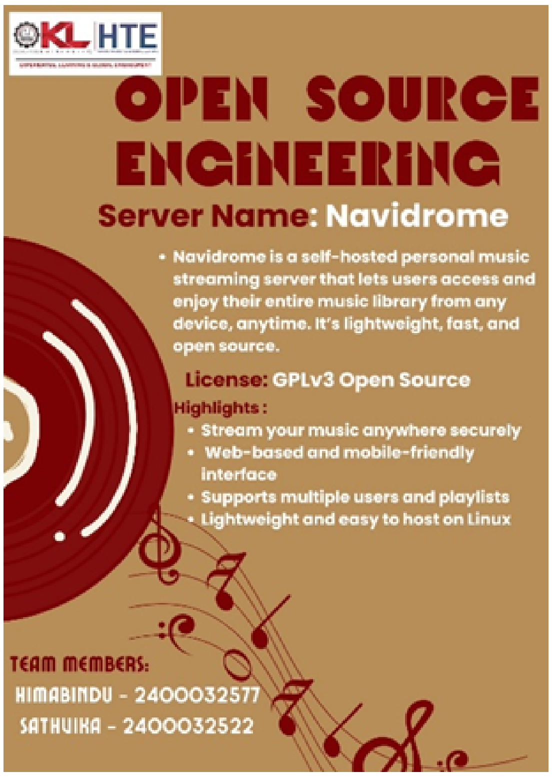
Key Features

- Stream your entire music library from any device.
- Clean, responsive, and modern web interface.
- Supports multiple users with individual playlists.
- Works with mobile apps that use the Subsonic API.
- Extremely lightweight and fast to set up.

Installation Steps (Using Docker)

Docker makes the installation simple and clean because everything runs inside a container.

1. Install Docker on your system.
2. Pull the official Navidrome Docker image.
3. Create two folders on your system: one for your music and one for Navidrome’s data.
4. Run the Navidrome container by mapping the ports and folders.
5. Open the browser and visit http://localhost:4533.
6. Create your admin account and start adding your music files.



OPEN SOURCE ENGINEERING

Server Name: Navidrome

- Navidrome is a self-hosted personal music streaming server that lets users access and enjoy their entire music library from any device, anytime. It's lightweight, fast, and open source.

License: GPLv3 Open Source

Highlights :

- Stream your music anywhere securely
- Web-based and mobile-friendly interface
- Supports multiple users and playlists
- Lightweight and easy to host on Linux

TEAM MEMBERS:

HIMABINDU - 2400032577

SATHVIKA - 2400032522

My Experience

Hosting the Navidrome music server was one of the most interesting and practical experiences for me. This was my first time using Docker, and I learned how containers work, how to create them, and how to map ports and directories properly. Seeing the server run successfully and being able to stream my own songs through the web interface felt very exciting.

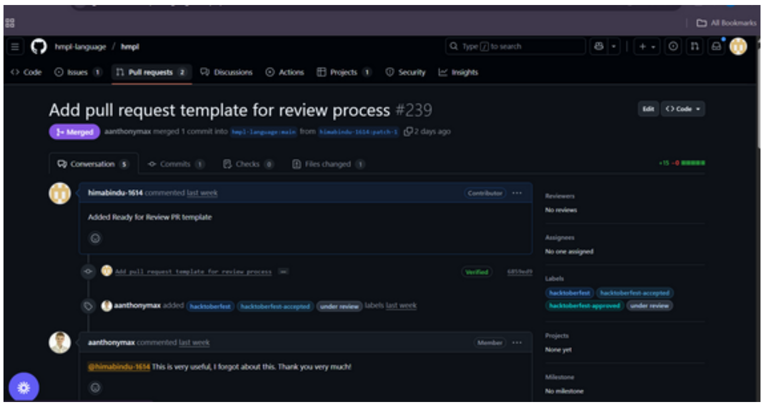
It gave me a Spotify-like experience, but the best part was knowing that everything was hosted on my own server, not a third-party platform. This project helped me understand self-hosting, basic networking concepts, and how open-source server tools function in real life. Overall, it turned out to be a valuable and satisfying hands-on learning experience.

Open Source Contributions (PRs) and Their Status

During this course, I contributed to open-source projects on GitHub and successfully got my pull requests merged. This experience helped me understand how real-world collaboration works in the open-source community.

- **HMPL Contribution (Merged)**

I contributed to the HMPL Language project by improving parts of their documentation that were unclear and needed better formatting. I rewrote sections to make them more readable and beginner-friendly. This pull request was reviewed by the maintainers and successfully merged, which gave me confidence in contributing to real open-source projects.



Add pull request template for review process #239

Merged aanthonymax merged 1 commit into hmpl-language:main from himabindu-1614:patch-1 2 days ago

himabindu-1614 commented last week — Contributor

Added Ready for Review PR template

Add pull request template for review process — Verified 6859ed9

aanthonymax added hacktoberfest hacktoberfest-accepted under review labels last week

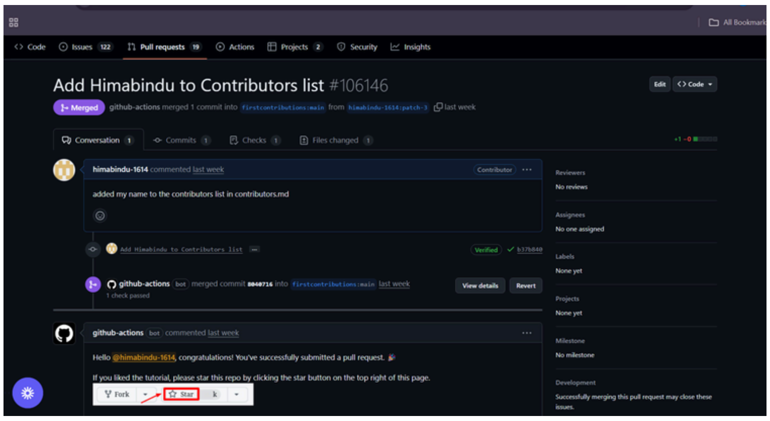
aanthonymax commented last week — Member

@himabindu-1614 This is very useful, I forgot about this. Thank you very much!

Reviewers: No reviews
Assignees: No one assigned
Labels: hacktoberfest, hacktoberfest-accepted, hacktoberfest-approved, under review
Projects: None yet
Milestone: No milestone

- **First Contributions (Merged)**

For the First Contributions repository, I added my name to the contributors list as part of their beginner-friendly workflow. Even though it was a simple change, it taught me how to fork, clone, create a branch, make edits, and submit a proper pull request. This PR was also merged, marking my first official step into the open-source community.


Add Himabindu to Contributors list #106146

Merged github-actions merged 1 commit into `firstcontributions:main` from `himabindu-1614:patch-3` last week

himabindu-1614 commented last week

added my name to the contributors list in contributors.md

Add Himabindu to Contributors list — Verified b37b840

github-actions bot merged commit 8040716 into `firstcontributions:main` last week
1 check passed

github-actions bot commented last week

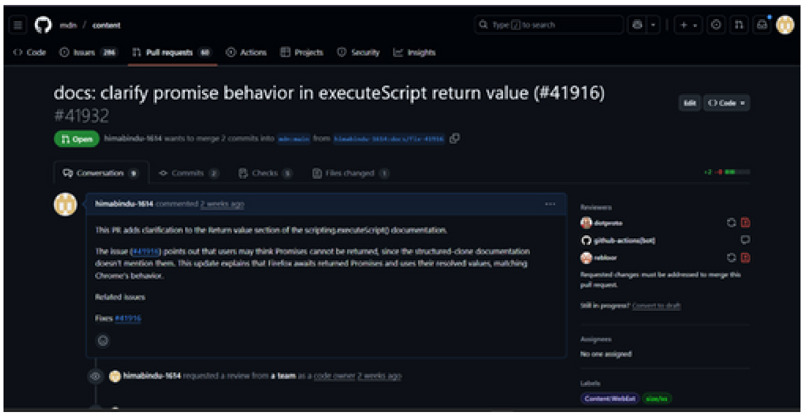
Hello @himabindu-1614, congratulations! You've successfully submitted a pull request. 🎉

If you liked the tutorial, please star this repo by clicking the star button on the top right of this page.

Reviewers: No reviews
Assignees: No one assigned
Labels: None yet
Projects: None yet
Milestone: No milestone
Development: Successfully merging this pull request may close these issues.

- ·**MDN Content Contribution (Open)**

I also contributed to the MDN Content repository by submitting a pull request to improve the documentation for one of their pages. The maintainers reviewed it, but it has not been merged yet. Even though the PR is still open and unmerged, the experience taught me how strict documentation standards are, how important clarity is, and how discussions happen in large open-source communities.


docs: clarify promise behavior in executeScript return value (#41916) #41932

Open himabindu-1614 wants to merge 2 commits into `mdn:main` from `himabindu-1614:docs/fix-41916`

himabindu-1614 commented 2 weeks ago

This PR adds clarification to the Return value section of the scripting.executeScript() documentation.

The issue (#41916) points out that users may think Promises cannot be returned, since the structured-clone documentation doesn't mention them. This update explains that Firefox awaits returned Promises and uses their resolved values, matching Chrome's behavior.

Related issues

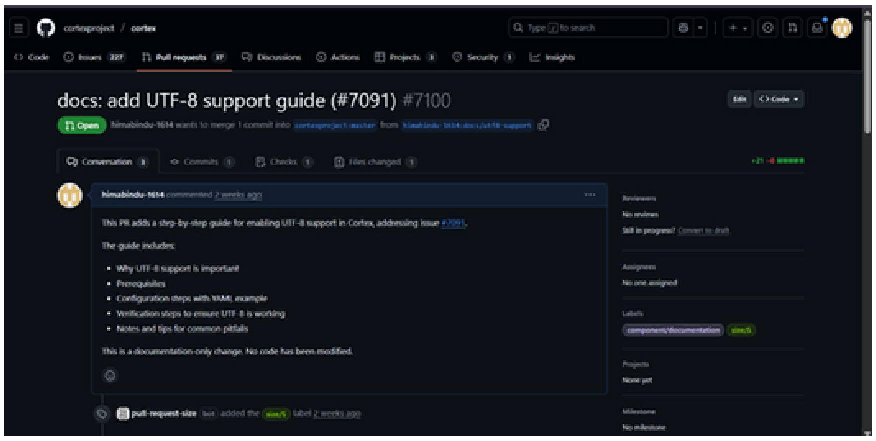
Fixes #41916

himabindu-1614 requested a review from a team as a code owner 2 weeks ago

Reviewers: dotproto, github-actions[bot], rebloor
Requested changes must be addressed to merge this pull request.
Still in progress? Convert to draft
Assignees: No one assigned
Labels: Content:WebExt, size/xs

- ·**Cortex Project Contribution (Open)**

I submitted a pull request to the Cortex project repository to add a guide for enabling UTF-8 support in their documentation. The PR includes a step-by-step walkthrough of why UTF-8 is important, prerequisites, configuration examples, and verification steps. A lthough it has not been merged yet, I went through the full contribution workflow—forking the repo, creating a branch, adhering to documentation standards, and responding to reviewer feedback. This experience helped me understand how large-scale open-source projects maintain quality control and why clear, precise documentation is crucial.



docs: add UTF-8 support guide (#7091) #7100

himabindu-1614 wants to merge 1 commit into cortexproject:master from himabindu-1614:docs/utf8-support

himabindu-1614 commented 2 weeks ago

This PR adds a step-by-step guide for enabling UTF-8 support in Cortex, addressing issue #7091.

The guide includes:

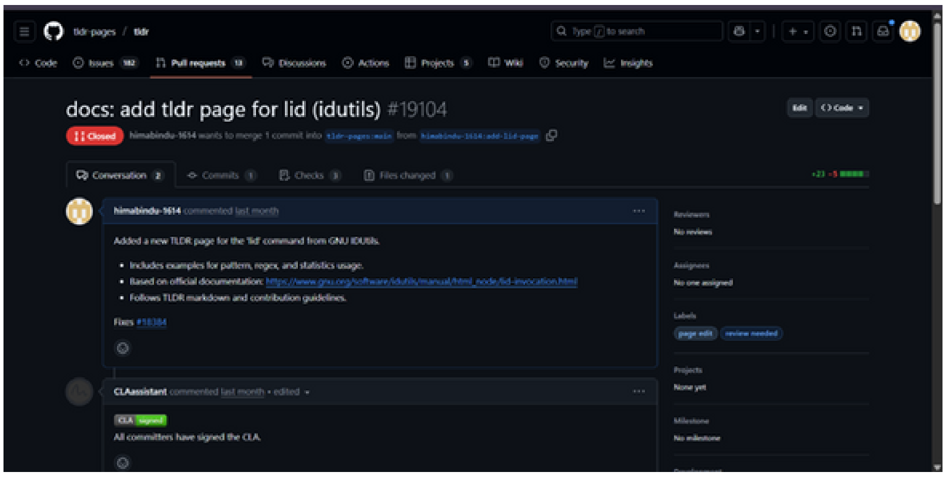
- Why UTF-8 support is important
- Prerequisites
- Configuration steps with YAML example
- Verification steps to ensure UTF-8 is working
- Notes and tips for common pitfalls

This is a documentation-only change. No code has been modified.

pull-request-size bot added the size/S label 2 weeks ago

- ·**tldr-pages Contribution (Closed)**

I made a contribution to the tldr-pages repository by submitting a pull request to add a new command example and improve the explanation for better clarity. However, this PR was eventually closed without being merged. Even though it wasn't accepted, the process helped me understand how strict and structured their guidelines are, especially for documentation-heavy projects. I learned how maintainers review wording, formatting, and consistency, and this experience helped me improve my writing and understand community expectations in open-source projects.



docs: add tldr page for lid (idutils) #19104

Closed himabindu-1614 wants to merge 1 commit into tldr-pages:main from himabindu-1614:add-lid-page

Conversation 2 · Commits 1 · Checks 3 · Files changed 1 · +21 -5

himabindu-1614 commented last month

Added a new TLDR page for the 'lid' command from GNU IDUtils.

- Includes examples for pattern, regex, and statistics usage.
- Based on official documentation: https://www.gnu.org/software/idutils/manual/html_node/lid-invocation.html
- Follows TLDR markdown and contribution guidelines.

Fixes #18384

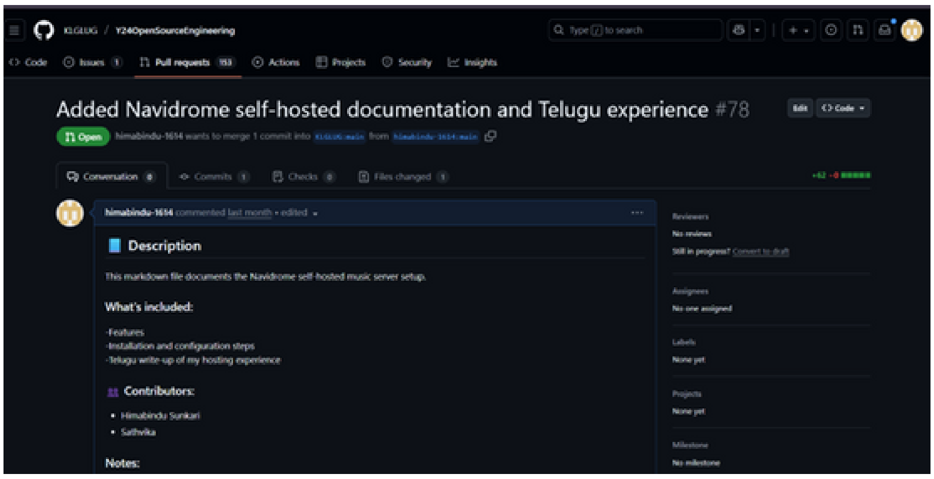
CLAassistant commented last month • edited

CLA signed
All committers have signed the CLA.

Reviewers: No reviews
Assignees: No one assigned
Labels: page edit, review needed
Projects: None yet
Milestone: No milestone

- **KLGLUG Y24 OSE Contribution (Open)**

In this contribution, I added a documentation file to the KLGLUG Y24OpenSourceEngineering repository based on my experience of hosting a self-hosted server. I wrote the document in my local language.
This PR was about sharing practical knowledge in a way that is accessible to others. Even though it was a simple contribution, it helped me understand how valuable localized documentation is in open-source projects and gave me confidence in contributing meaningful content to the community



Added Navidrome self-hosted documentation and Telugu experience #78

Open himabindu-1614 wants to merge 1 commit into KLGLUG:main from himabindu-1614:main

Conversation 0 · Commits 1 · Checks 0 · Files changed 1 · +62 -0

himabindu-1614 commented last month • edited

Description

This markdown file documents the Navidrome self-hosted music server setup.

What's included:

-Features
-Installation and configuration steps
-Telugu write-up of my hosting experience

Contributors:

- Himabindu Sunkari
- Sathvika

Notes:

Reviewers: No reviews
Still in progress? Convert to draft
Assignees: No one assigned
Labels: None yet
Projects: None yet
Milestone: No milestone

LinkedIn URL’s:

- **Self-Hosting Server**

https://www.linkedin.com/posts/himabindu-sunkari-3665b535a_opensource-kluniversity-foss-activity-7382296992141582336-GGbk?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFlu-r4BzxlTHbNw29Dt8vJWQpxTRcElZkk

- **PR Merge**

https://www.linkedin.com/posts/himabindu-sunkari-3665b535a_opensource-hacktoberfest-klu-activity-7390058822393868288-YG9E?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFlu-r4BzxlTHbNw29Dt8vJWQpxTRcElZkk

- **Blog**

https://www.linkedin.com/posts/himabindu-sunkari-3665b535a_a-short-reflection-on-how-i-learned-linux-activity-7398975006506098688-OtLV?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFlu-r4BzxlTHbNw29Dt8vJWQpxTRcElZkk