

Open Source & Self-Hosting Report

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1 About the Linux Distribution Used

For this project, I used the **Ubuntu** Linux distribution, one of the most popular and beginner-friendly open-source operating systems. Ubuntu is built on the Linux kernel and provides a stable, secure, and customizable environment suitable for development, server deployment, and daily computing tasks. Its strong package management system (APT), large community support, and frequent security updates make it a reliable choice for open-source learning and practical implementation. Ubuntu also includes essential tools and libraries out-of-the-box, making it convenient for tasks like encryption, server hosting, and software experimentation.

System Information

The following commands were executed to gather system details:

```
cat /etc/os-release  
uname -r  
lsb_release -a
```

Added screenshot here:

```
Nov 24 21:06
savithru@savithru-HP-Pavilion-15-Laptop-PC-754P3PA-AC2: ~
savithru@savithru-HP-Pavilion-15-Laptop-PC-754P3PA-AC2: ~$ cat /etc/os-release
uname -r
lib_release -a
PRETTY_NAME="Ubuntu 24.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.3 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
6.14.0-33-generic
No LSB modules are available.
Distributor ID: Ubuntu
Description: Ubuntu 24.04.3 LTS
Release: 24.04
Codename: noble
savithru@savithru-HP-Pavilion-15-Laptop-PC-754P3PA-AC2: ~$
```

Figure 1.1: Linux system information

2 Encryption and GPG

GNU Privacy Guard (GPG) is a free and open-source tool for encryption, decryption, and digital signatures. It implements the OpenPGP standard and provides both symmetric and asymmetric cryptography.

Generating Keys

```
gpg --full-generate-key  
gpg --list-keys  
gpg --export -a "<your-email>" > publickey.asc
```

Screenshot

Figure 2.1: GPG Key Generation

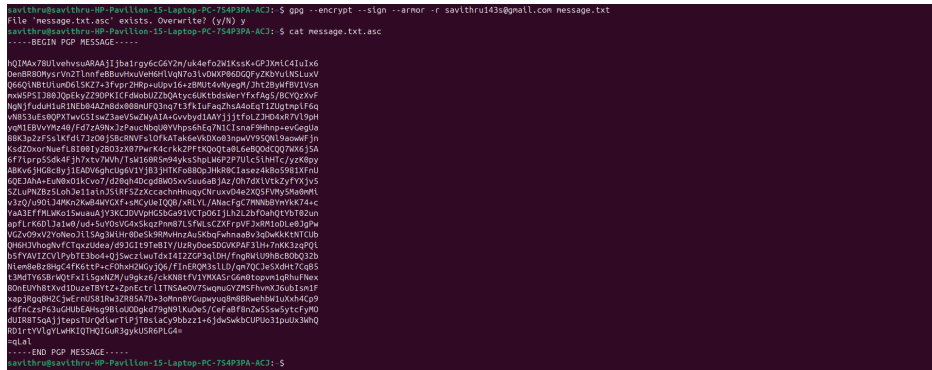
3 Sending Encrypted Email

To ensure privacy and secure communication, I used **GPG encryption** to send an encrypted email. The message was first written in a text file and then encrypted using the recipient's public key. This process ensures that only the intended receiver can decrypt and read the contents. The encrypted output was then copied and sent through my email client safely.

Command Used

```
gpg --encrypt --sign --armor -r <receiver-email> message
.txt
```

Screenshot



```
savthru@savthru-HP-Pavilion-15-Laptop-PC-754P3PA-ACI: $ gpg --encrypt --sign --armor -r savthruid@gmail.com message.txt
File 'message.txt.asc' exists. Overwrite? (y/N) y
savthru@savthru-HP-Pavilion-15-Laptop-PC-754P3PA-ACI: $ cat message.txt.asc
-----BEGIN PGP MESSAGE-----
HQAIX7BUlvehvsuARAAJ1jba1rpy6cGy2n/uk4efo2W1Ksok-GP3M1C4iU16
QwdbB0MyrsVn21lnfEdBvhuuvenHlVq7031V0uM96GQcyZ2bYvNSLuv
Q6GQUNBUUmd0LSKZ7+3Fupr2Rp+u0p16+2B0Urt4WyeqR/jht2BmFbV1Vsn
mxSPST3B83QpkyZ290PKICFdbobuZ2bQAtyc6UKtbdswenFFtAg5/BCYQ2xvF
qgV1fudHfzR2NEB0KZ2bde088uFQ3nqT3H1tFad2h4Mdeq1Z2gmpfF6q
VNB3Ue80PKTvwG51sw23aeV5wDwyA1A+Gvvbyd1AAV1jJtfolZ3H04R7V19pH
yqM1EBUVVpZ40/Fd7zA9MxJ2PaucN0q8VYVpsd8Eq7N1C1snF9dhnps+evGeplo
uB3D2125s1Vf6L7208358CBWV1s1QFAKt4k4yK0d02n0wP95Q9L5mewfJh
Ksd2DxorNuefLB1001y2B032X07PurK4ckk2PFtKQ0t4bL6W0Q0CQ7W06J5A
4771prp55d4fJh7xv7MWh/Tsk16885m4yK5hplWp2P7ULc5LHtC/jyK8py
HkvwJHdcbyJ1E20vqgicgV11J83JhTF080q2HkH8K1+e+4n0s081fnd
qQe3AN4+Eu0x01Kvo7/d28q4dcg880SvSuu4abJAZ/0h70X1VtK2yFYXJvS
Z2LUPNZB25l0hJx11aIn3518F5Z2KccachmHwuyCnruv04e2XG5fVMy5ShawHl
Z2Q2uP0L3Kk3w44K0C4f4Kc4y1Q08/KALV1/ANedPCTFNN8BYWKK44c
Yaa3EFFMLwo15wuuA3Y3K3D0VvphK5Gca91VCTp061JLh2L2b0hQ1YbT02un
apfLrK6DLJa1w0/ud+5uY0SvG4K5kzPm07L5Mk5CZXFpPF3xM1oL4b3pW
YC209x2Z0w02115q2H4w4b0S458Hmz4u3u0pwhmb4b3q4w4KtN1C1b
QhM3Vh0gWfCTqx2Udea/d9JG11974b1Y/UzRy0oe5D0VPAF31H7nK32qPQl
55FYAU12CV1PybTE3b04+Q5wclw0Tdx1412ZG3qLDH/fhgRLU9HGB0hQ32b
NtemB8d8gC44Kc18P+cf0h02W4g30v/1EzRQ93sLD/fhgPCAS0KtC4B5
13M1V658BwQfX115gMZN/u9kz6/cK0N8FV1YVXASrC6nd0pm1qRhufHex
80nEUvH8Xvd1duzeTBYEZ+2pnEctr11TNS4e0V75wmuGZNSFhvx36ub1snfP
wsp3qgHtC3wC4R08Jh02B85A703pwnWd0puyqnd8B8wH41uK4Kp9
dfnczP63uG4ubEAnsgB1eu0Dgk479gW91ku0wS/cef4bF8nz55w5yctfYH0
4UIRBT5q4JJtapsTurdLwT1P3T8sLacY9bzz1+6Jdw5wbCUP031pu0X3WQ
HDI1V1V1gY1wK1Q1HQ1u03yK5SRPL6+
-----END PGP MESSAGE-----
savthru@savthru-HP-Pavilion-15-Laptop-PC-754P3PA-ACI: $
```

Figure 3.1: Encrypted Email Output

4 Five Privacy Tools from PRISM-Break

Below are five privacy-respecting tools selected from `prism-break.org`.

4.1 Privacy Tools From Prism Break

1. Tor Browser (Web Browsers / Anonymizing Networks)

- **What it is:** A web browser built on Firefox that routes your internet traffic through the Tor network, a volunteer-operated network of relays.
- **Privacy Focus:** Provides **strong anonymity** by obscuring your IP address and location from the websites you visit. It also includes anti-fingerprinting measures.
- **PRISM Break Note:** PRISM Break strongly recommends using Tor Browser for all web surfing when maximum anonymity is required.

2. Debian (Operating Systems)

- **What it is:** A popular and highly ethical GNU/Linux distribution known for its strict adherence to Free Software principles and ethical manifesto.
- **Privacy Focus:** Unlike proprietary operating systems like Windows and macOS (which PRISM Break generally avoids), Debian is fully open-source, allowing for audits. It has a long tradition of software freedom and transparency.

- **PRISM Break Note:** It's recommended as a top GNU/Linux choice for users transitioning from proprietary systems, highlighting its commitment to free software and its stable nature.

3. Thunderbird (Email Clients)

- **What it is:** A free, open-source, and cross-platform email client developed by Mozilla.
- **Privacy Focus:** Thunderbird is the top choice for desktop email due to its open-source nature and its long-standing **native support for OpenPGP** (GPG) encryption and digital signatures. This allows users to easily encrypt and authenticate their emails end-to-end.
- **PRISM Break Note:** It is highly recommended for securely managing email with built-in PGP features.

4. KeePassXC (Password Managers)

- **What it is:** A free, open-source, and cross-platform password manager.
- **Privacy Focus:** It stores all your passwords in a single, highly encrypted database file that is stored **locally** on your device, giving you total control over your sensitive data. It does not rely on a cloud service.
- **PRISM Break Note:** It is preferred for its strong encryption, open-source license, and local-only storage, minimizing exposure to third-party services.

5. Firefox (Web Browsers)

What it is: A fast, flexible, and secure web browser developed by the non-profit Mozilla Foundation.

Privacy Focus: Firefox is open-source and provides extensive privacy controls, including enhanced tracking protection (ETP), container technology, and a robust add-on ecosystem for further hardening security (like uBlock Origin).

PRISM Break Note: While Tor Browser is for anonymity, Firefox is the recommended alternative for general web use when a site doesn't work well with Tor, provided the user configures its settings and replaces the default search engine with a privacy-focused one.

5 Open Source License Used

I used the **GNU GENERAL PUBLIC LICENSE** license for my project.

Why This License?

- Allows anyone to use, modify, and distribute.
- Encourages open collaboration.
- Compatible with open-source communities.

License Text

Open Source License Certainly. Here is the information about the **GNU General Public License (GPL)** organized into clear, descriptive headings, strictly maintaining a paragraph-only format within each section.

5.0.1 The Core Purpose and Classification

The GNU General Public License (GPL), developed by the Free Software Foundation (FSF) under the leadership of Richard Stallman, is one of the most influential and widely used open-source licenses in the world. The core purpose of the GPL is to guarantee end-users the essential software freedoms: the freedom to run, study, share, and modify the software. It is formally classified as a **strong copyleft license**, meaning any distributed derivative work must also be licensed under the GPL. This copyleft mechanism ensures that improvements and modifications remain free for all users, preserving the long-term openness and accessibility of the software ecosystem.

5.0.2 Granted Rights and Permissions

The GPL grants users comprehensive rights to copy, modify, distribute, and run the software for any purpose, without restriction. Users can access and change the source code, integrate it into their own projects, and even distribute modified versions, provided they comply with the copyleft rules. These permissions promote collaborative improvement and foster a global community dedicated to maintaining free and open software. Unlike permissive licenses, however, the GPL ensures that any redistributed work that incorporates GPL code must also remain open-source, maintaining an unbroken chain of software freedom.

5.0.3 The Conditions and Copyleft Requirements

The GPL introduces more rigorous conditions than permissive licenses, designed to uphold its philosophy of software freedom. The most important condition is the requirement that any derivative or redistributed version of GPL-licensed software must also be licensed under the **same GPL license**, including the obligation to release the complete corresponding source code. When distributing binaries or modified versions, distributors must make the source code available in an accessible form. Additionally, the license text and original copyright notice must be included with every distribution. These copyleft conditions ensure that all improvements remain free and that no one can take GPL-licensed software and turn it into proprietary software.

5.0.4 Disclaimer of Warranty and Liability

Like most open-source licenses, the GPL includes a strong disclaimer of warranty to protect authors from legal liability. The software is provided “**AS IS**”, without any express or implied warranties, including merchantability, fitness for a particular purpose, or non-infringement. The license clarifies that the authors and copyright holders cannot be held responsible for damages, losses, or legal claims arising from the use, modification, or distribution of the software. This places the responsibility of use entirely on the recipient, ensuring that developers can contribute freely without fear of legal repercussions.

6 Self-Hosted Server

I self-hosted the service: **My Tiny To-do**.

About the Service

MyTinyTodo is a simple, open-source, self-hosted to-do list and task management application. It allows users to create, organize, and track tasks from a clean web-based interface. Because it is lightweight and built using PHP and MySQL/sqlite, it can run on almost any server with minimal setup.

It supports features like multiple task lists, tags, due dates, priority levels, and AJAX-based quick editing. Users can also enable public sharing of lists, integrate with mobile browsers, and customize themes. Since it is self-hosted, users have full control over their data and can modify the source code as needed. MyTinyTodo is often used for personal productivity, small teams, and simple project/task management due to its simplicity and flexibility.

Installation Commands

```
sudo apt update && sudo apt upgrade -y
sudo apt install apache2 -y
sudo systemctl enable apache2 && sudo systemctl start
  apache2
sudo apt install php php-mbstring php-mysql php-json php
  -curl php-gd php-xml unzip -y
sudo systemctl restart apache2
sudo apt install mysql-server -y
sudo systemctl enable mysql && sudo systemctl start
  mysql
```

```
sudo mysql -e "CREATE DATABASE mytinytodo;"
sudo mysql -e "CREATE USER 'mttuser'@'localhost'
    IDENTIFIED BY 'StrongPassword123!';"
sudo mysql -e "GRANT ALL PRIVILEGES ON mytinytodo.* TO '
    mttuser'@'localhost';"
sudo mysql -e "FLUSH PRIVILEGES;"
cd /var/www/html
sudo wget https://www.mytinytodo.net/download/mytinytodo
    -latest.zip -O mytinytodo.zip
sudo unzip mytinytodo.zip
sudo rm mytinytodo.zip
sudo mv mytinytodo*/ mytinytodo
sudo chown -R www-data:www-data /var/www/html/mytinytodo
sudo chmod -R 755 /var/www/html/mytinytodo
cd /var/www/html/mytinytodo
sudo cp config.php.example config.php
sudo sed -i "s/'user' => ''/'user' => 'mttuser'/'g"
    config.php
sudo sed -i "s/'pass' => ''/'pass' => 'StrongPassword123
    !'/'g" config.php
sudo sed -i "s/'name' => ''/'name' => 'mytinytodo'/'g"
    config.php
sudo sed -i "s/'type' => 'sqlite'/'type' => 'mysql'/'g"
    config.php
sudo a2enmod rewrite
sudo systemctl restart apache2
```

Screenshot

Localized Document (Translated)

Self Hosting Localized document: Self Hosting

Poster

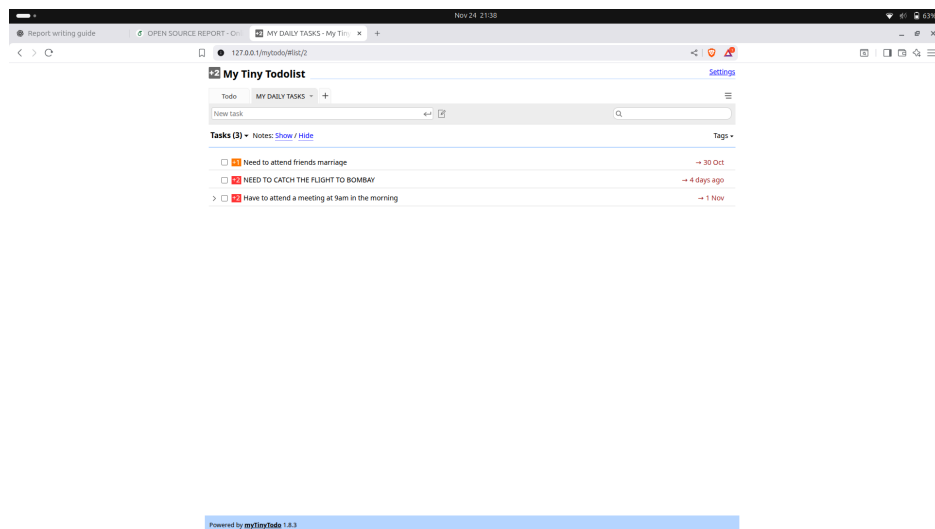


Figure 6.1: Self Hosted Server Running

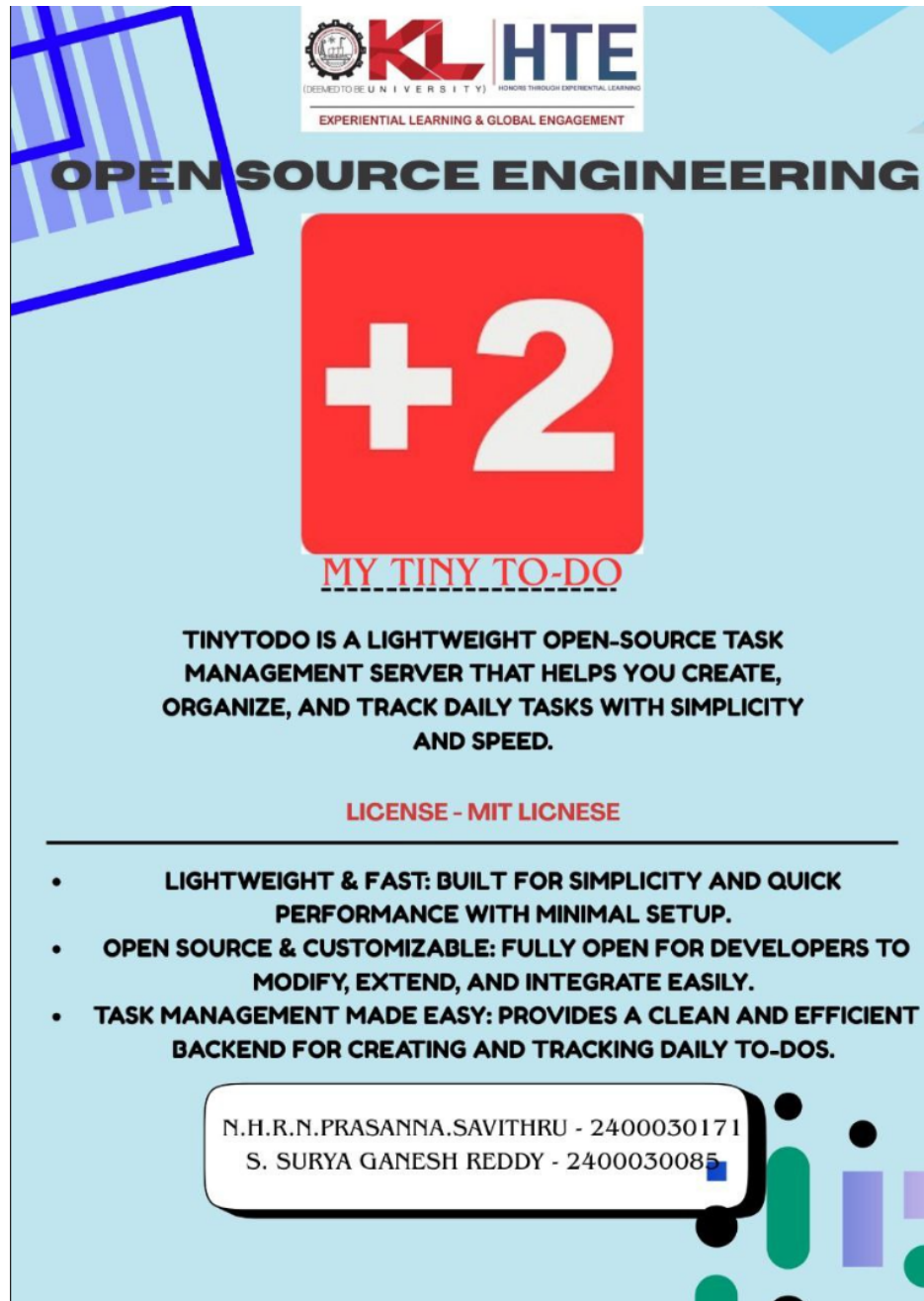


Figure 6.2: Poster

7 Open Source Contributions (PRs)

Below are the open-source contributions I made.

PR 1

Issue Solved: Required to convert the alt text from English to Egyptian Spanish . **Fix Made:** Changed the text in README.md file. **Status:** Merged

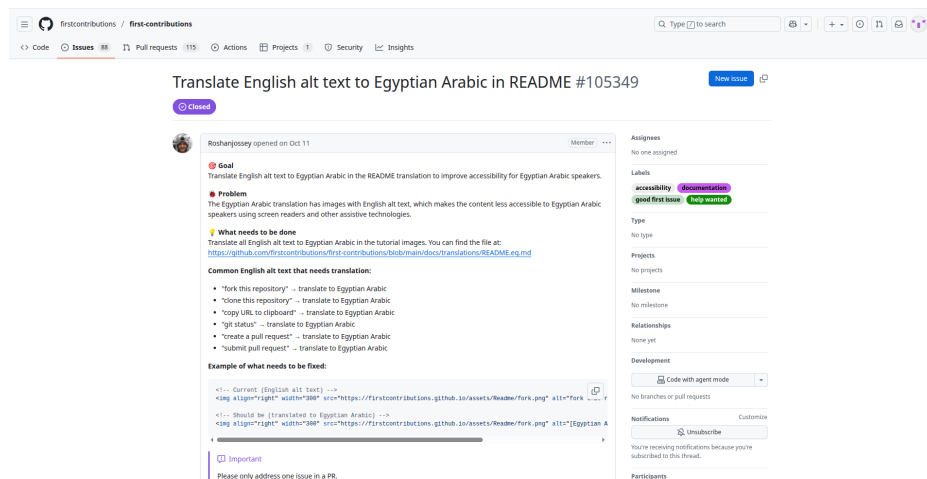


Figure 7.1: Issue for PR1

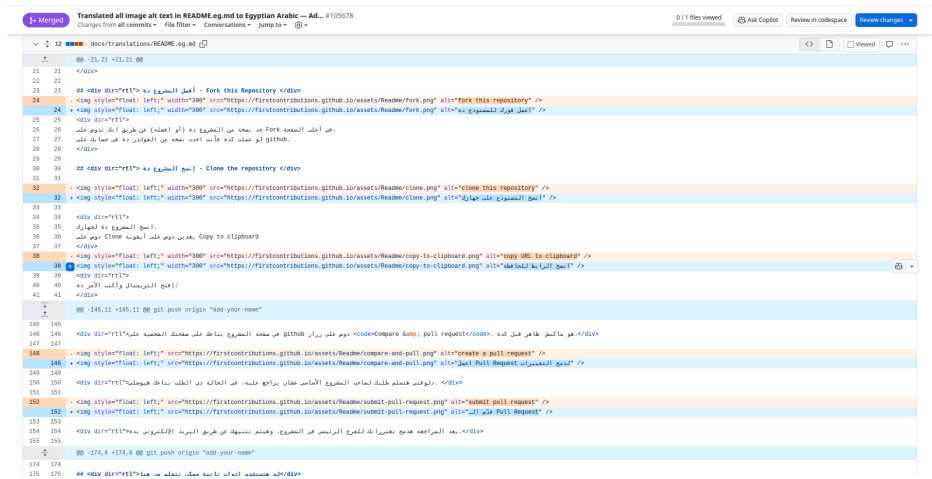


Figure 7.2: Code Changes for PR1

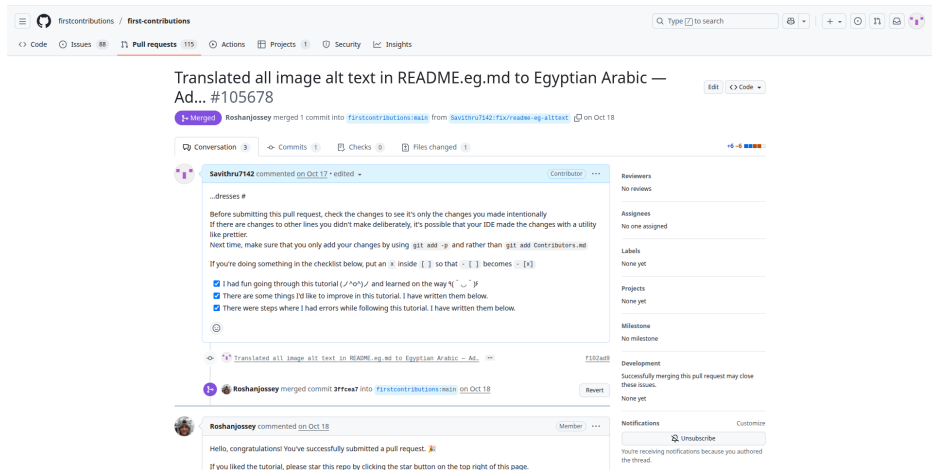


Figure 7.3: PR1 Merge Status

PR 2

Issue Solved: Required to update phrasing based on review. **Fix Made:** updated phrasing based on review. **Status:** Merged

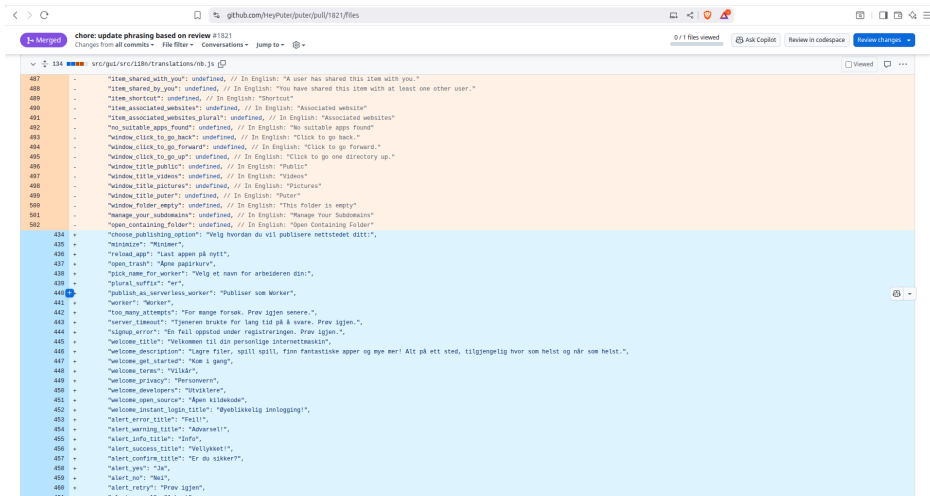


Figure 7.4: Code Changes for PR2

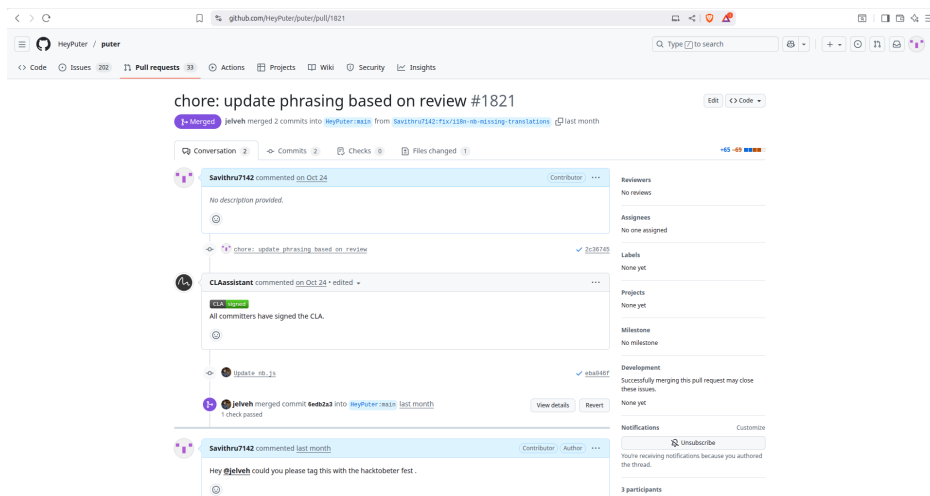


Figure 7.5: PR2 Merge Status

PR 3

Issue Solved: Required to Add MIT license badge to README. **Fix Made:** Added MIT license badge to README. **Status:** Merged

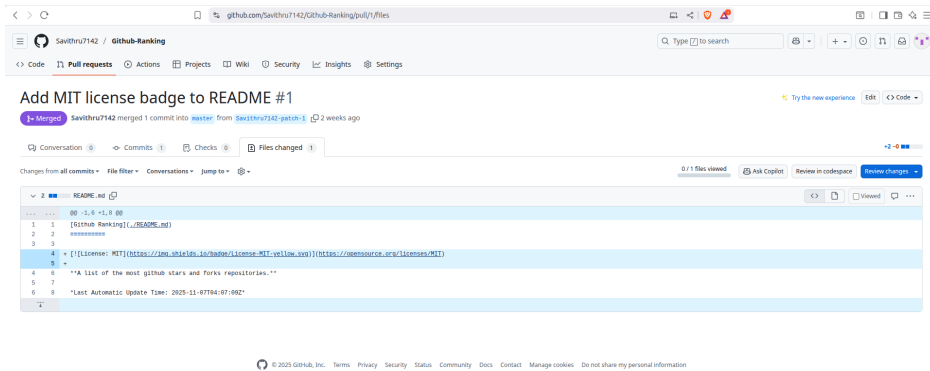


Figure 7.6: Code Changes for PR3

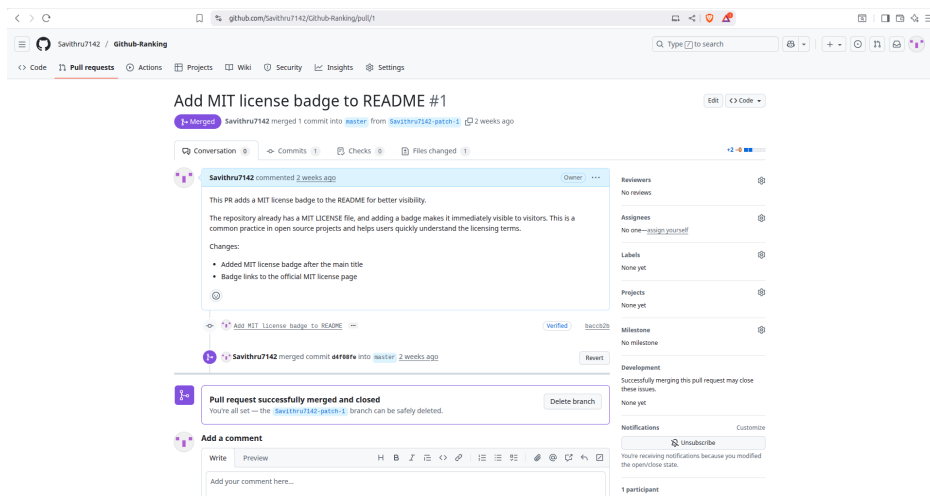


Figure 7.7: PR3 Merge Status

PR 4

Issue Solved: Required to Fix typo in README - change 'expreience' to 'experience'. **Fix Made:** Fixed typo in README - change 'expreience' to 'experience'. **Status:** Merged

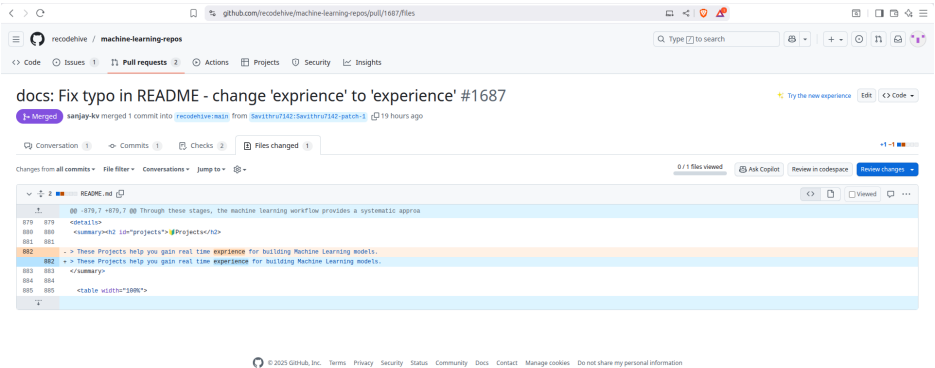


Figure 7.8: Code Changes for PR4

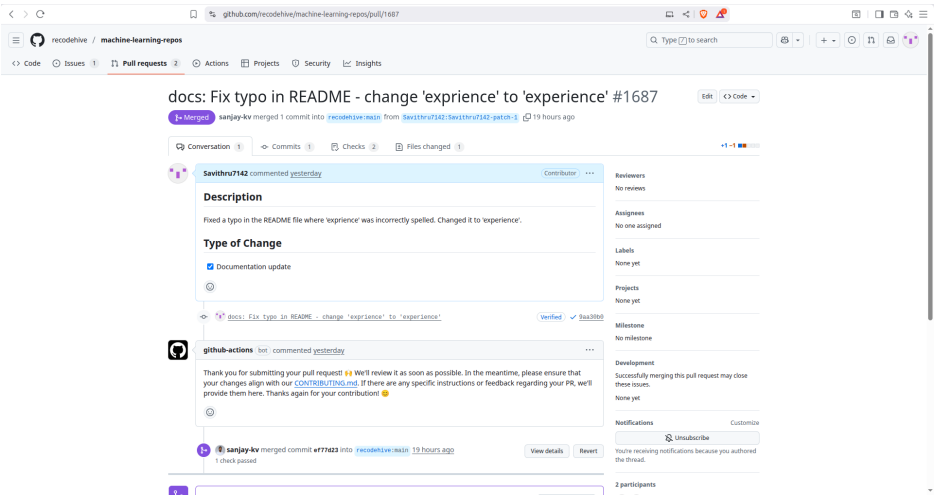


Figure 7.9: PR4 Merge Status

8 LinkedIn Posts

Below are the links to the required posts:

- **Self Hosting Post:** [Click Here](#)
- **PR Merge Post:** [Click Here](#)
- **Blog Post:** [Click Here](#)

