Linux Privacy, Security, Self-Hosting, and Open-Source Contribution Report

Project Report Submission using LaTeX

Submitted To:

Dr. Arunekumar Bala

Open Source Engineering (HTE)

K L University

Submitted By:

Mulla Arsiya Tasleem

B.Tech - CSE (Honors Through Experiential Learning)

Contents

Chapter 1

Linux Distribution Used

1.1 Introduction

The Linux distribution used for this project is **Ubuntu**, one of the most popular and user-friendly Linux operating systems. Ubuntu is based on Debian and provides a stable, secure, and regularly updated environment.

1.2 Features

- GNOME desktop environment
- APT package manager
- Large software repository
- Regular security updates
- Built-in encryption support

1.3 System Requirements

- 2 GB RAM (4 GB recommended)
- 20 GB storage
- Dual-core processor

1.4 Installation Process

1. Download Ubuntu ISO.

2. Create bootable USB.
3. Boot and install Ubuntu.
4. Update system: `sudo apt update` & `sudo apt upgrade`

1.5 Why I Chose Ubuntu

- Stable and secure
- Beginner friendly
- Best for GPG, encryption, privacy tools

Chapter 2

Encryption and GPG

2.1 Introduction

Encryption converts readable data (plaintext) into unreadable ciphertext to protect it from unauthorized access.

2.2 Types of Encryption

1. **Symmetric –** same key for encrypt/decrypt.
2. **Asymmetric –** public and private keys.

2.3 What is GPG?

GPG (GNU Privacy Guard) implements OpenPGP and provides:

- Encryption of files/messages
- Digital signatures
- Secure key management

2.4 Generate GPG Key

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

2.5 Encrypt a file

```
gpg --encrypt --recipient user@example.com file.txt
```

2.6 Decrypt a file

```
gpg --decrypt file.txt.gpg
```

Chapter 3

Sending Encrypted Email

3.1 Introduction

GPG email encryption ensures only the recipient can read your email.

3.2 Steps

1. Export your public key
2. Import recipient's public key
3. Encrypt message
4. Paste encrypted text in email

3.3 Encrypt Email

```
gpg --encrypt --armor --recipient user@example.com message.txt
```

3.4 Decrypt Email

```
gpg --decrypt message.txt.asc
```

Chapter 4

Self-Hosted Server - About, Installation, Telugu, Poster

4.1 About Self-Hosted Server

A self-hosted server is a server you run on your own system, rather than relying on cloud providers. It gives complete control over data, security, customization, and privacy.

4.2 Benefits

- Full control over data
- Zero cloud hosting fees
- High security and privacy
- Customizable environment
- Offline functionality
- Great for learning backend, DevOps
- Suitable for personal, academic, or small-team projects

4.3 Installation Steps

1. **Prepare your system:** Ensure you have a Linux environment (Ubuntu recommended) with administrative access.
2. **Install essential software:**
    - `Python 3.x` – for backend scripts

- `Node.js` – for frontend or server-side JS
- `Git` – for cloning repositories
- `MySQL/PostgreSQL` – optional, for database support

3. **Clone your project repository:**

```
git clone <repo-url>
cd <project-folder>
```

4. **Install project dependencies:**
   - Python dependencies: `pip install -r requirements.txt`
   - Node.js dependencies: `npm install`
5. **Configure environment variables (if required):** Create a `.env` file in your project folder with necessary credentials, ports, or API keys.
6. **Start the server:**
   - Python-based server: `python app.py`
   - Node.js server: `npm start` or `node server.js`
7. **Access the server:** Open your browser and navigate to: `http://localhost:8000` (or the port configured in your project)

4.4 Use Cases

- Hosting personal applications
- Git or code servers
- Nextcloud, WingFit, or custom apps
- College labs or small LAN deployments

4.5 Localized Telugu Section

సెల్ఫ్-హోస్టెడ్ సర్వర్ అంటే మనం మన సిస్టమ్‌లోనే సర్వర్‌ను రన్ చేయడం. దీనివల్ల డేటాపై 100% నియంత్రణ మన చేతుల్లో ఉంటుంది. క్లౌడ్ ప్రొవైడర్లపై ఆధారపడాల్సిన అవసరం ఉండదు. ఇది విద్యార్థులు, డెవలపర్లు మరియు చిన్న టీమ్‌లకు చాలా ఉపయోగకరంగా ఉంటుంది.

Chapter 5

Poster

5.1 Poster Content

WingFit – Self-Hosted Server

Secure • Fast • Local • Private

5.2 Poster Image

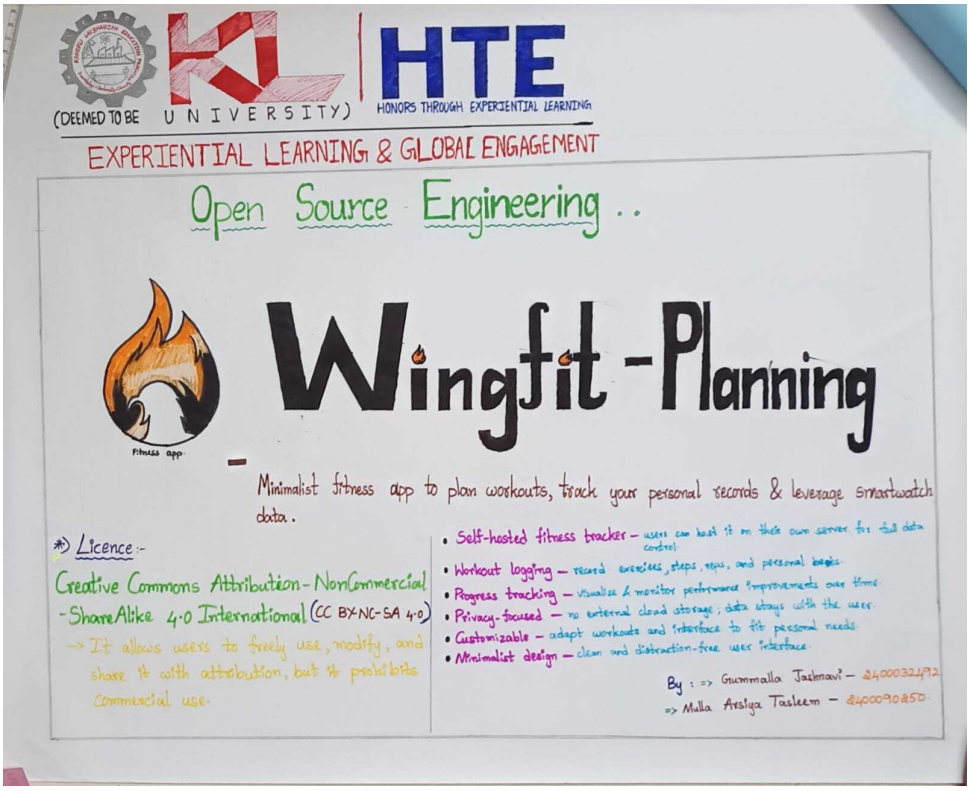

Figure 5.1: WingFit Poster

5.3 Points

- 100% Data Privacy
- Full Control Over Server
- Zero Cloud Hosting Fees
- Customizable Setup
- Offline Development Support
- Learn Backend and Deployment

Chapter 6

Open Source Contributions

During Hacktoberfest 2025, I actively participated in Open-Source projects by raising Pull Requests (PRs) to various repositories.

6.1 Contribution Summary

- Total Pull Requests Raised: 6
- Pull Requests Merged: 1
- Pull Requests Open / Pending: 5
- Number of repositories contributed to: 6

6.2 PR Status Table

PR No.	Repository	Status
1	firstcontributions/first-contributions	Merged
2	DhanushNehru/Hacktoberfest2025	Open
3	KLGUG/Y24OpenSourceEngineering	Open
4	fineanmol/Hacktoberfest2025	Open
5	kamranahmedse/developer-roadmap	Open
6	Gaurang2908/HacktoberFest2022 -Open-source	Open

6.3 Pull Request Details

PR #1 – Add name to Contributors list

Repository: firstcontributions/first-contributions

Status: Merged

Description: Added name entry to Contributors.md.

Changes Done:

1. Edited Contributors.md

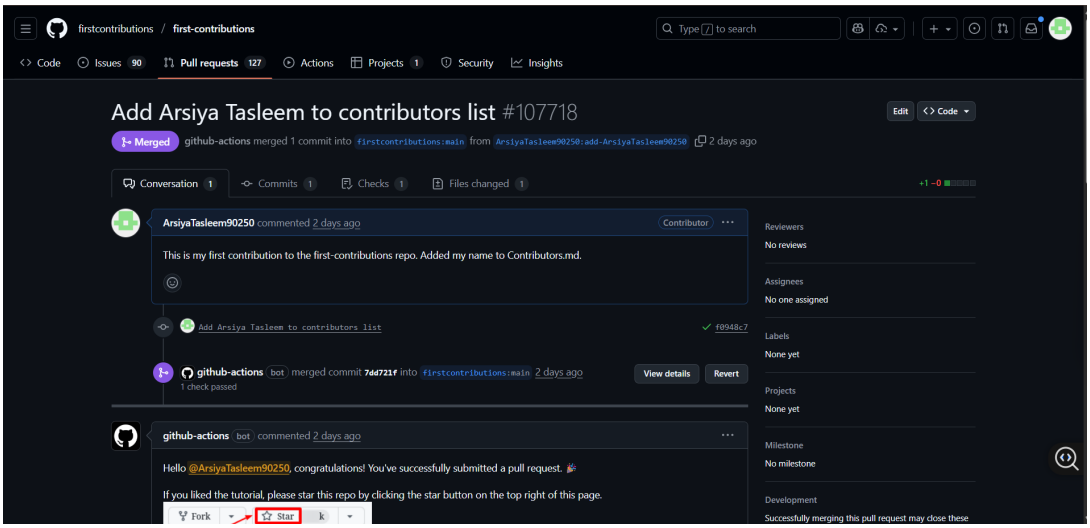

Figure 6.1: Merged PR-1

PR #2 – Added String Search method

Repository: DhanushNehru/Hacktoberfest2025

Status: Open

Description: Implemented a new String Searching method and improved the overall logic for efficient searching.

Changes Done:

1. Added String Searching method.
2. Solved searching method.
3. Updated Logic implementation.

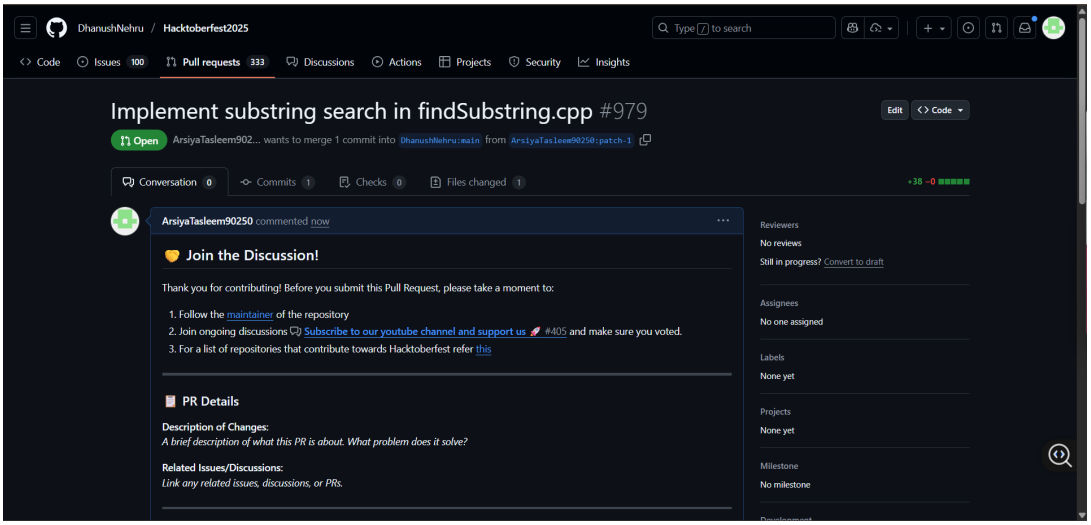

Figure 6.2: Merged PR-2

PR #3 – Wingfit Self-Hosting Documentation

Repository: KLGUG/Y24OpenSourceEngineering
Status: Open

Description: Added WingFit documentation and installation guide.
Changes Done:

1. Added guide document.
2. Added setup instructions.
3. Added LinkedIn post reference.

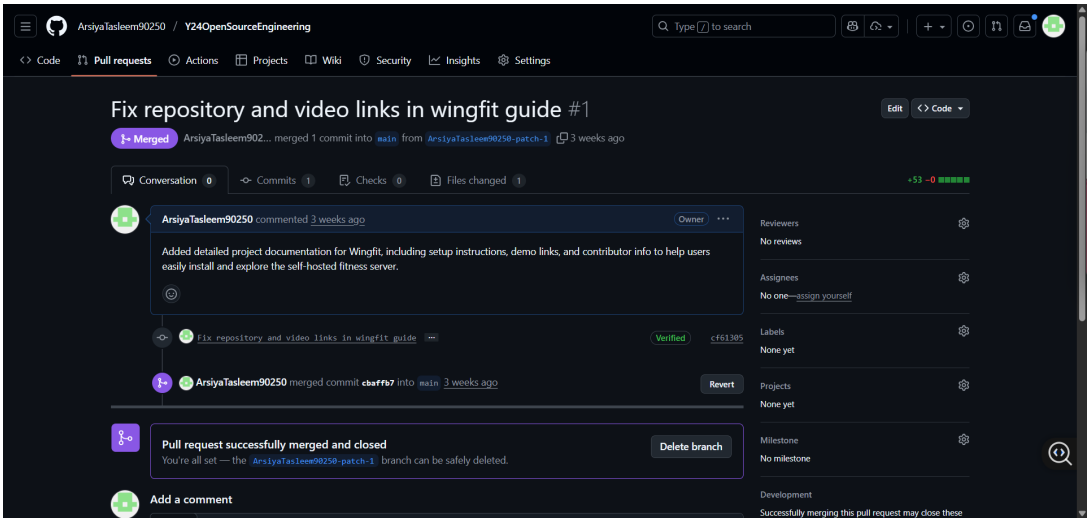

Figure 6.3: Merged PR-3

PR #4 – Added Calculator method

Repository: fineanmol/Hacktoberfest2025

Status: Open

Description: Added Calculator method

Changes Done:

1. Added Calculator method.

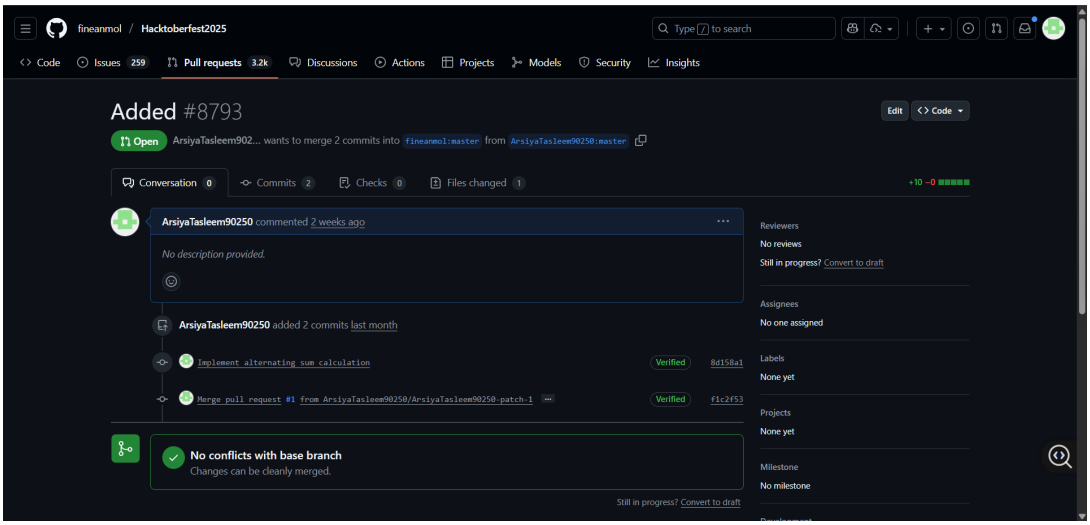

Figure 6.4: Merged PR-4

PR #5 – Updated content & structure improvements

Repository: kamranahmedse/developer-roadmap

Status: Open

Description: Improved documentation by fixing grammar, restructuring sentences, and enhancing clarity in the C# Developer Roadmap content.

Changes Done:

1. Fixed grammar and sentence flow.
2. Improved readability and formatting.
3. Updated sections for clarity.
4. Refined explanations to make content more user-friendly.

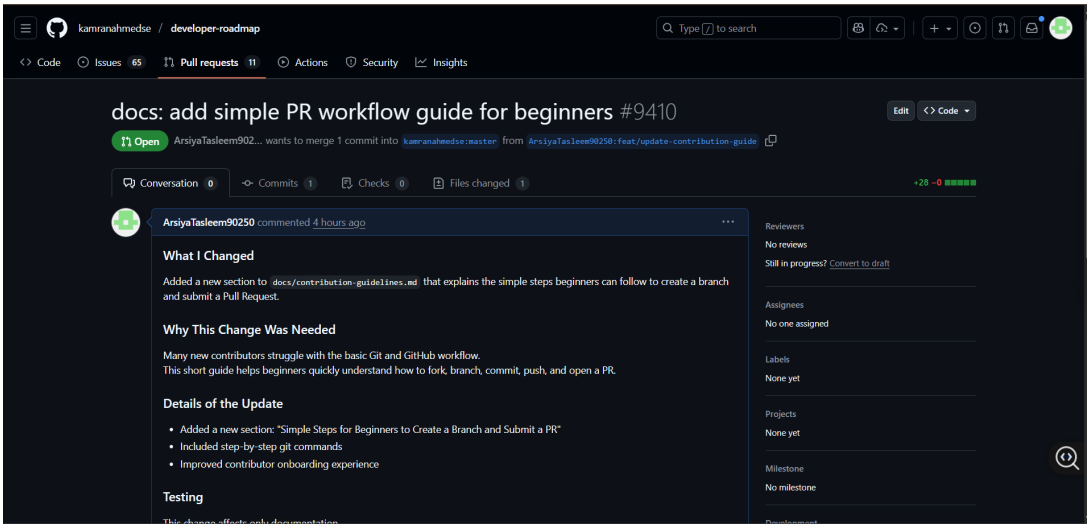

Figure 6.5: Merged PR-5

PR #6 – Contribution Guide Update & Formatting Fixes

Repository: Gaurang2908/HacktoberFest2022

Status: Open

Description: Added a Java program that calculates the sum of the largest prime numbers, enhancing the collection of algorithmic problems in the repository.

Changes Done:

1. Added a new Java file implementing the “Sum of Largest Primes” logic .
2. Implemented prime-checking and summation algorithm.
3. Ensured clean, readable, and optimized code.
4. Included sample input–output handling for clarity.

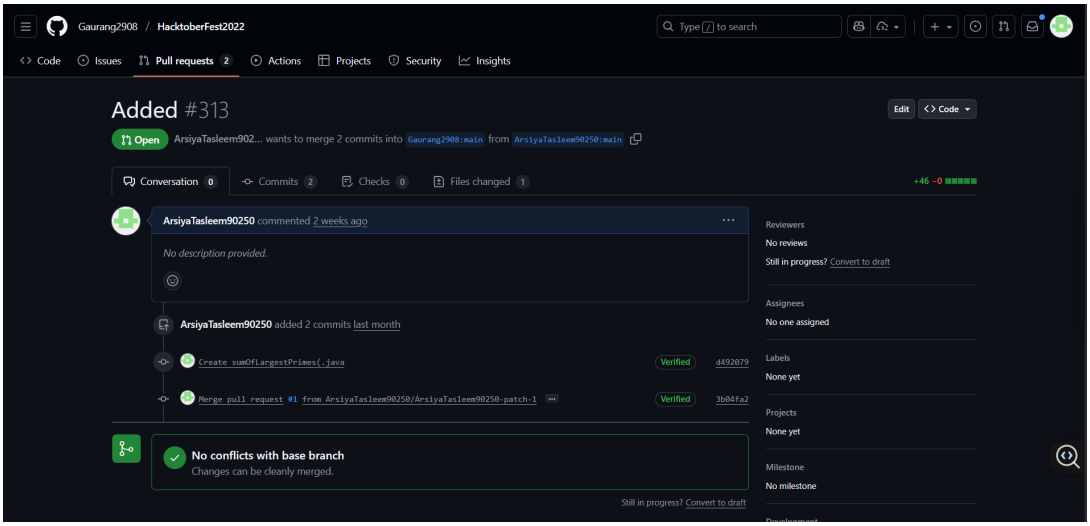

Figure 6.6: Merged PR-6

Chapter 7

Social Media Publications

Below are the public posts I made related to the project, self–hosting, and open source contributions.

7.1 LinkedIn Posts

1. **Self Hosting Experience Post**
   Link:
   https://www.linkedin.com/posts/mulla-arsiya-tasleem-434835345_opensource-kluniversity-foss-activity-7390418839869485057-ysxy?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFZxRygBhmFUnJAfIwUvQ7Ma0t8GDVbEKjw

2. **PR Merge and Contribution Post**
   Link:
   https://www.linkedin.com/posts/mulla-arsiya-tasleem-434835345_klu-hte-opensourceengineering-activity-7398717116620623872-VFLD?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFZxRygBhmFUnJAfIwUvQ7Ma0t8GDVbEKjw

3. **Blog Article Post**
   Link:
   https://www.linkedin.com/pulse/my-journey-through-linux-self-hosting-open-source-tasleem-ye1ne