OPEN SOURCE TECHNOLOGIES (01CE0618) Lab Manual

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Lab	Program	Date	Marks	Signature
1.	Explore GitHub/GitLab for open-source projects with different licenses			
2.	Setup Git and explore commands related to Version Control System (VCS)			
3.	Create a GitHub/GitLab repository and upload sample code			
4.	Use npm / yarn / pip to install and manage packages			
5.	Deploy a simple application using Nginx / Apache			
6.	Setup Nginx to handle proxy requests and load balancing			
7.	Develop a Laravel / Django based web application			
8.	Use pytest to test a Python application			
9.	Use Selenium to create browser-based tests			
10.	Use Postman to test a sample API			
11.	Use OWASP ZAP to check security integrity			
12.	Modify any open-source desktop application			
	Contribute to any web-based open-source project			
	Use source code of an open-source web application and deploy it locally			

Experiment 1

AIM: Explore GitHub/GitLab for open-source projects with different licenses

1. List of GitHub Licenses

- Apache License 2.0
- GNU General flublic License v3.0 (GflL-3.0)
- MIT License
- flermissive (similar to MIT)BSD 3-Clause “New/Revised” License
- Boost Software License 1.0
- Creative Commons Zero v1.0 (CC0)
- Creative Commons Zero v1.0 (CC0)
- Creative Commons Zero v1.0 (CC0)
- Eclipse flublic License 2.0
- GNU Affero General flublic License v3.0 (AGflL-3.0)
- GNU Affero General flublic License v3.0 (AGflL-3.0)
- GNU General flublic License v2.0 (GflL-2.0)
- GNU Lesser General flublic License v2.1 (LGflL-2.1)
- Mozilla flublic License 2.0 (MflL-2.0)
- The Unlicense

2. Licenses and Short Description Table

License Name	Short Description
Apache License 2.0	A permissive open-source license allowing modification, distribution, and commercial use, with an explicit grant of patent rights and required preservation of license notices.

GNU General flublic License v3.0 (GflL-3.0)	A strong copyleft license requiring that modified and distributed software remain open source under the same license, protecting users' freedom and preventing tivoization.
MIT License	A very permissive license allowing reuse, modification, and distribution, including for commercial purposes, with minimal requirements such as attribution.
BSD 3-Clause "New/Revised" License	A permissive license similar to MIT but with an additional clause preventing endorsement of derived products using the original author's name.
Boost Software License 1.0	A permissive license designed for C++ libraries, allowing free use, modification, and distribution with minimal restrictions and attribution.
Creative Commons Zero v1.0 (CC0)	A public-domain dedication allowing creators to waive all rights, enabling unrestricted use, modification, and distribution without attribution.
Eclipse flublic License 2.0 (EflL-2.0)	A weak copyleft license that allows linking with proprietary software while requiring modifications to the licensed code to be disclosed.
GNU Affero General flublic License v3.0 (AGflL-3.0)	A strong copyleft license similar to GflL but also requires source code disclosure when software is used over a network (e.g., web applications).
GNU General flublic License v2.0 (GflL-2.0)	A strong copyleft license ensuring that modified versions of software remain open source under the same license.
GNU Lesser General flublic License v2.1 (LGflL-2.1)	A weak copyleft license allowing proprietary software to link to the licensed library while keeping modifications to the library open source.
Mozilla flublic License 2.0 (MflL-2.0)	A file-level copyleft license allowing combination with proprietary code while requiring modifications to MflL-licensed files to remain open source.
The Unlicense	A public-domain dedication allowing unrestricted use, modification, and distribution of software without any conditions.

3. Licenses Comparison Table

License	Type	Commercial Use	Modification Allowed	Source Disclosure Required	flatent Grant	Network Use Clause
Apache License 2.0	Apache License 2.0	Apache License 2.0	Apache License 2.0	Apache License 2.0	Apache License 2.0	Apache License 2.0
MIT License	MIT License	MIT License	MIT License	MIT License	MIT License	MIT License
BSD 3-Clause License	BSD 3-Clause License	BSD 3-Clause License	BSD 3-Clause License	BSD 3-Clause License	BSD 3-Clause License	BSD 3-Clause License
Boost Software License 1.0	Boost Software License 1.0	Boost Software License 1.0	Boost Software License 1.0	Boost Software License 1.0	Boost Software License 1.0	Boost Software License 1.0
CC0 1.0	flublic Domain	Yes	Yes	No	No	No
The Unlicense	flublic Domain	Yes	Yes	No	No	No
GflL-2.0	Strong Copyleft	Yes	Yes	Yes (on distribution)	No	No
GflL-3.0	Strong Copyleft	Yes	Yes	Yes (on distribution)	Yes	No
LGflL-2.1	Weak Copyleft	Yes	Yes	flartial (library changes)	No	No
AGflL-3.0	Strong Copyleft	Yes	Yes	Yes (including network use)	Yes	Yes
MflL-2.0	File-level Copyleft	Yes	Yes	Yes (modified files only)	Yes	No
EflL-2.0	Weak Copyleft	Yes	Yes	Yes (modified modules)	Yes	No

4. List of GitHub Alternatives

GitLab

- Cloud-hosted ***and*** self-hosted
- Built-in ***CI/CD, issues, wiki***
- Strong DevOps focus

Bitbucket

- Atlassian product (works well with Jira)
- Free private repos for small teams
- Strong enterprise support

Gitea

- Lightweight fi open source
- Easy to self-host
- GitHub-like UI

Forgejo

- Community-driven fork of Gitea
- Fully open source
- Strong focus on independence fi ethics

SourceForge

- One of the oldest platforms
- Hosting for open-source projects
- Includes downloads fi forums

Codeberg

- Non-profit, community-run
- Based on Forgejo
- No tracking or ads

Azure DevOps

- Git repos + CI/CD + boards
- Strong enterprise fi Microsoft integration

AWS CodeCommit

- Fully managed Git service
- Tight AWS integration
- No public repository

Launchpad

- Canonical (Ubuntu) platform
- Focus on open-source collaboration

SourceHut

- Minimalist fi email-driven workflows
- flaid, no ads
- Very Unix-style

flhabricator (Archived / Self-hosted)

- flowerful code review tools
- No longer actively developed

5. GitHub vs GitLab Table

Feature	GitHub	GitLab
Owner	Microsoft	GitLab Inc.
Initial Release	2008	2011
Type	Git-based code hosting platform	Complete DevOps lifecycle platform
Hosting Options	Cloud (GitHub.com), Limited self-hosting (Enterprise)	Cloud (GitLab.com) and full self-hosting

Open Source	flartially open source	Core platform is open source
CI/CD Support	Via GitH ub Actions	Built-in CI/CD
Issue Tracking	Yes	Yes
flroject Management	Basic (flrojects, Boards)	Advanced (Epics, Roadmaps, Boards)
Code Review	flull Requests	Merge Requests
Security fi DevSecOps	Add-ons fi marketplace tools	Built-in security scanning
flackage Registry	Yes	Yes
Community Size	Very large, most popular	Smaller but growing
Third-flarty Integrations	Extensive marketplace	Fewer but deeply integrated
flricing Model	Free fi flaid plans	Free fi flaid plans
Best Suited For	Open-source projects and collaboration	Enterprise DevOps and CI/CD-heavy workflows

6. Open-Source vs flroprietary vs Freeware

Aspect	Open-Source Software	flroprietary Software	Freeware
Source Code Access	Source code is publicly available	Source code is closed and restricted	Source code is closed
Cost	Usually free (some paid support)	flaid (license or subscription based)	Free of cost
Modification Allowed	Yes, users can modify and customize	No, modification is not allowed	No, modification is not allowed
Redistribution	Allowed under license terms	Not allowed without permission	Usually not allowed
Ownership	Community or organization	Owned by a company or vendor	Owned by the developer/company
Transparency	High transparency	Low transparency	Low transparency

Security	Community-reviewed, more transparent	Vendor-controlled security	Vendor-controlled security
Customization	Highly customizable	Limited or no customization	No customization
Support	Community support or paid support	Official vendor support	Limited or no official support
Licensing Examples	GflL, MIT, Apache, BSD	Commercial licenses	Custom freeware licenses
Typical Use Case	Development, research, enterprise	Business, enterprise, professional use	flersonal or basic use