**Third Year B. Tech., Sem VI 2021-22**

**Software Engineering & Tool Lab**

**Assignment 1**

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**Illustrate following points in your Assignment.**

1. **Introduction to FOSS**

* Free and open-source software (FOSS) is software that is both free software and open-source software where anyone is freely licensed to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software.
* The proprietary software, where the software is under restrictive copyright licensing and the source code is usually hidden from the users.
* Richard Stallman's Free Software Definition, adopted by the Free Software Foundation (FSF), defines free software as a matter of liberty not price and it upholds the Four Essential Freedoms.
* The freedom to run the program as you wish, for any purpose (freedom 0).
* The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
* The freedom to redistribute copies so you can help others (freedom 2).
* The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.

**2)Examples of FOSS**

* Linux
* Android
* MySQL
* Pearl
* PHP
* Python
* Open Office

**3)Benefits of FOSS**

* Advantages of community-based program development incorporate picking up knowledge into the social setting of an issue or issue, shared learning encounters among shoppers and suppliers, expanding comprehension of expert jobs and obligations inside the community, association with experts from different orders, and open doors for community-based participatory research projects.
* Increased maintainability is a favourable position in the community-based program structure.
* The program manageability is guaranteed by the ID of answers for issues dependent on existing assets open to all community individuals. Likewise, the contribution of neighbourhood community pioneers and nearby volunteers fortifies the supportability of the effect of the program.

**4) Drawbacks of FOSS**

* A few difficulties of community-based program configuration are the constrained accessibility of assets, affinity for elevated levels of staff turnover, the dependence upon unpaid volunteers, member maintenance, and the assessment of a unique undertaking environment.
* For similar reasons that manageability is a bit of leeway of this methodology, using restricted accessible assets is a test.
* In light of free-market principals and asset shortage, programs regularly work underneath Pareto efficiency.

**5)FOSS Quality Assurance**

* Open source depends on a sustainable community to develop code rapidly, debug code effectively, and build out new features. Because community involvement is voluntary, people's skills, levels of involvement, and time commitments can vary. Given the variable nature of these factors, along with the fact that open source often relies on a philosophy of "release early, release often," quality assurance can be become challenging.
* In order to maintain the quality of the projects, the community including the developers, quality engineers, and the users of the projects have to work together.

**There are 4 factors of open source quality assurance**

* Continuous integration tools ensure defects are identified earlier in the cycle
* Automated test frameworks encourage well-documented code and automated tests
* Test days are proposed and executed by developers
* Bug triage prioritizes issues and contributors / bug reporters submit use cases for future automation