CSE 360 Open-Source Journey

Introduction

Software engineering is the science of developing the softwares. This is one f the classic cources in the computer science field that, it is being instructed in amost all universities. The software engineering is closely related to the software making industry which always change its practices to drive itself to the effiiency in making softwares. But the software engineering cources fails to embrace thses changes in the same pace as the industry does. For instance, when the world is moving more into agile, scrum and open development and all new bleeding edge techniques in software making, most of the software engineering cources in undergradute degrees are more concentrated on the waterfall and other practices, which usually stays in the text. We observed that most of these models doesn't give much experience on software making process to the students. This was the main reason why we wanted to update the course structure and incorporate more practical aspect to the course.

From the previous works[1], we have learned that most of the leading software makers in the industry encourages the use of existing softwares for rapidly scaling the architecture. The paper(Wei-Tek Tsai et al, 2014[1]) shows that the industry embraces the use of well nurtured open-source softwares. This lead us to reconstructing the entire course with prime focus on open-source software development. We created a series of lectures and assignments that included both theorectical aspects and industry oriented practical tasks on software engineering.

We implemented this reconstructed course plan at software engineering cource of fall 2014 at Arizona State University, Tempe, USA. The chapters that follows tells the journey that we had during the software engineering course of Fall 2014.

OSS in Software engineering

In the current software industry open source is a huge part of the engineering philosophy. Most of the leading software developers and service providers use, maintain, and contribute to the open-source softwares. This helps the companies to meet their scalablility, reliability, cost effective goals without much overhead of devloping or maintaining these softwares. This change in phylosophy has dramatically changed the way we think or build the software thesedays. For example to create higly scalable web service with some key business goals, the developers can make use open-source databases, web application frameworks or load balacers and concentrate more on the web application logic and business aspects.

In the reconstructed course pan for software engineering, we decided make the open-source development to be the philosophy in focus. The key goals for the whole course reconstruction was these

- To introduce students to the open-source development

Assignment 1

The objective of this assignment was to introduce the students to the OSS environment and software development. In the initial classes of this course, we gave presentations and materials to the students on how the open-source-software developemnt works and the importance of the OSS in the current software industry. Soon we realized the fact that there is no better way to introduce OSS to students than ask them to contribute something to an active OSS community.

In the first assignment, we asked the students to pick an OSS software that they were passionate about. Their challenge in this assignment was to contribute some work back to that community. We gave them proper guidelines on how to get introduced to an OSS community and the ettiquetts to be followed. This included things like contacting community members through mailing lists, IRC channels, reading the code base, fixing bugs and writing a patch or documentation. We gave them three and half weeks to get to know the community and to make the contribution, at the end of which they had to submit a report on all the interactions happened with the community and the experience from their point of view, with a breifing of their contribution to the OSS community.

Most of the students didn't have much trouble finiding an OSS that they were impressed with. The list was dominated by the daily used doftwares like Mozilla Firefox, Wordpress, Notepad ++, Twitter Bootstrap. This pattern stresses over the important role of OSS in the current daily used softwares. At the end of the assignment, most of the students were successful in making a contribution to the community. A few went over the open source code and wrote new functionalities, some fixed bugs from bug tracker lists and the rest did documentation related contributions to the community.

The assignment was perfect introduction to OSS devlopment and software engineering. Not only the student understood how the OSS communities work, they got a glimpse of team work and procedures in the making of software and engineering behind it.

Assignment 2

In the first assignment we aimed at introducing the students to the way OSS are made. The next step was to introduce them to them to latest trends and practices happening in the OSS space and its impact on software development industry. The second assignment was tailor made with that objective in mind.

The assignment instructed the students to research the open internet and come up with a latest trend in software engineering or industry that has some influence or assosiation with open-source-software development. Based on the theme they picked for the assignment, they had to make a wiki page explaining all their findings and analysis. Later we asked students to make a short presentation on their analysis of the findindings and present it. This was a short assignment compared to the first assignment. We received wide veriety of topics from stdents ranging from open-source Version Controlling, Github, Continuous Integration frameworks, Scalability with open source softwares, Cloud solutions with open-source-softwares, testing with open-source-softwares and requirement analysis of OSS etc.

We provided infrastructure for the students to build their wiki page at course's wiki space. They created the wiki page filled the findings respective to their topic and the analysis or conclusion of the specific trend in the software making process.

Thethird assignment was the core of the course.

REFERENCES

[1] Peng, R., Sun, D., & Tsai, W. (2014). *Understanding Requirements Driven Architecture Evolution in Social Networking SaaS: An Industrial Case Study* (p. 234). IEEE 8th International Symposium on Service Oriented System Engineering.