Abstract: Internship of Biyalou-Sama Asbathou

My Internship is subscribed in the scope of the third year of Licence in Computer Science at University of Lille.
Computer Science is a very important domain. This domain is growing every time. And the amount of data which are treated by computer science is becoming more and more important. Every day computer scientists are dealing with informations, documents. These documents can be books, articles, research papers which have to be presented in different formats. For instance, people are often checking to have books published in pdf format, but also in html for their websites. On that way, “Pillar” have been designed by the “Pharo” community. “Pillar” is a tool used to generate documents in different formats pdf, html, epub … My internship is concerning “Pillar”. Improve things in that tool and extends it.

My Internship is done at INRIA (Institut National de Recherche en Informatique et en Automatique) Lille – Nord Europe in RMOD team. Inria is a French research laboratory with eight research centers dispatched in different cities of the country. The research center of Rocquencourt is the head office of Inria.
Inria Lille is located at Villleneuve d’Ascq, 40 avenue Halley at Parc Scientifique de la Haute Borne. This a highly technological zone with others research centers and firms. The scientific campus of University of Lille is also near. Inria Lille has been created at 2008. Now Inria Lille contains sixteen (16) research teams. Most of these teams are located in the two (2) buildings of Inria at Villeneuve d’Ascq. Isabelle Herlin is the head of Inria Lille since the 1st March 2017.
I am doing my internship in the Rmod team. The lead of the team is Stéphane Ducasse. The team is working on the evolution of object oriented applications. They designed languages, tools for analyzing those applications. Then the team is divided in two (2) parts. One part is specialized in analyzing code, getting metrics to improve applications. The other part of the team is working on the design of tools. Rmod team is actively maintaining Pharo, an object oriented language for designing applications.
Pillar has been designed by some pasts members of Rmod team. One of them is Damien Cassou, the principal maintainer of the project. Pillar is a markup syntax and associated tools to write and generate documentation, books and slide-based presentations. We can use Pillar to export documents in HTML, Latex, Makdown, AsciiDoc, ePub en Pillar itself. We also have DeckJS and Beamer for presentations. Documents exported in Latex and other documents have good presentation. But for HTML documents, the design is not very attractive. For instance there is not a menu for navigating in the document. All chapters of a

document are generated in the same file. Indeed it was very difficult to find some sections in this big file without a menu. The method of updating document was not so well designed. One modified chapter was including all chapters regenerated. Pillar is also used to generate static websites, but those sites don’t support blogging systems.

According to these mentioned problems, tasks have been affected to me. Then my principal tasks were to propose a better design for HTML documents, a new way of compilation and displaying errors. And after all, I have to propose a blogging plug-in for personal websites.

In Pillar, the design of documents are specified in mustache template files. Here they are organized as archetypes. This notion is close to the notion of themes. So, I have proposed a new archetype for HTML documents. This archetype contains a menu for navigating in the documents. For triggering this menu, I wrote a module in Pillar to extract titles in the document. These titles have been used to build a table of contents with hierarchy between them. With this module integrated in Pillar, the new archetype was completely in use. Therefore, We have tested it by exporting in HTML some existing (in pdf) books. We have also designed a system of automatic deploy of HTML documents on the web. This system allow to write their documents in Pillar and publish those pillar files on a platform. This platform is in charge of generating the document and publishing it on other sites. This solution have been done using Github hosting services and Travis continuous integration services.

The next steps of our internship are to design a better system of compilation, a better way of displaying warnings, a new archetype for personal websites and integrated blogging system.

The tasks which have been already completed, have been very constructive for me. It helps me revisit some essentials concepts of object oriented programming as design patterns. Indeed we have use the visitor pattern to design the table of contents module. I have also learn more about tools like Github and Travis ci. This internship is very helpful for me. I am in contact with people of different cultures and It helps me improve my relationships. And it is a good occasion to practice my English.