

Développeur technologie Java J2E / Ajax OS Debian  
Host company : Pentila Nero  
Jury members : Christophe Rippert and Véronique Dudley-Beguin

## Second year intern-ship

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Chambéry, the August 21, 2014

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# **Introduction**

Introduire le sujet et l'articulation du rapport (2-3 paragraphes)

I worked during six months with the company named Pentila Nero, located in Chambéry. During this internship I had many tasks to do for the company. In this report I will first present the company, then I will describe the three main tasks I had to do : Softwares intallation, testing and debugging.

# 1 Overview and context

Présenter le contexte dans lequel vous avez effectué votre stage : description de l'entreprise en lien avec le stage : organisation, enjeux pour l'entreprise, qui vous à encadré (une personne, une équipe, ...) (1 page maximum). Le «copier/coller» des sites web des entreprises est à proscrire !

Pentila is a small company with 4 employees. They develop an application which is an electronic schoolbag. It is already used in some schools, especially in Rhone Alpes.

This application called ENT Pentila Nero has several services individual and collectives. It allows the educationnal community to communicate easier, to oraganize easier sport activities , la gestion of schools restaurants... Parents can know their children's homeworks as well as their schedule. Students can hand in homework to their teachers directly on the website. It makes relation between school, parents and students easier.

They all work on MAC computer. I had a computer with only Windows install on it. That's why I had to install Debian OS, and all the tools to make the application work on my computer. I won't describe this task in details in my report.

## 2 Goals

Présenter les objectifs du stage afin que vos évaluateurs cernent bien la limite entre l'existant et votre contribution réelle : (environ 5 pages)

- le travail à réaliser ou le problème à résoudre
- l'état de l'art des solutions existantes et des contraintes fixées par l'entreprise
- votre solution motivée à partir de l'analyse ci dessus

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My tasks were related to different fields such as installing new software for the team of developers, finding new bugs and reporting them into an application then fixing bugs. In this part I will present these tasks separately. For each of them, I will develop the demand the company, the limit they fix, and finally present my solution.

### 2.1 Redmine installation

They are a team of 4 employees but they didn't have a tool for project management. They wanted a software that allow them to report bugs and keep a track of their work. I had to install a software called Redmine.

Redmine is a software for project management and bug-tracking. I had to install this application in order to allow the team to track bugs in their app. It was very useful for them to have an access into Redmine directly from their IDE (Eclipse).

It has several useful plugins available. My task were to find some plugins that fit the developers demands. Redmine is a open source software and is easy to install and use. First I installed Redmine into a web page. Then I did some research about all the plugins in order to choose the most usefull, the goal was to make developers works faster. At last, I set up Redmine's environment to allow developers to us it as easyly as possible.

## 2.2 System testing

The application was almost fonctionnal but it had some small bugs. The company needed to test it over and over. For example, some services were totally fonctionnal on Firefox but didn't work so well on Internet Explorer. I had to test all the services of the website, to report the bugs.

The company had one document with the an acceptance test plan for some services of the application. First of all I did some acceptance testing in order to continue and finish to write de document. Then I did some regression testing.

I looked at the existing software for fonctionnal tests. One could be very useful for the company, it's called JMeter. The other stagiaire installed it and register some scenarios into it.

## 2.3 Bugs fixing

Once the bugs tracking done, I had to fix some bugs. The company gave me a document that explain how to install the source code on your OS.

I had to follow it in order to have access to all their codes and their classes. To do that, I decided to first understand how the application work exactly. So I made some researches about Tomcat, Liferay, Solr and ldap and then install everything.

I had to correct some bugs very differents at each other. Some about Tomcat, some about ldap but most of them was Javascript, Html or Css. That's why I followed some tutorials about all of these web programming languages. I looked at the navigator debuggers for js, html and css.

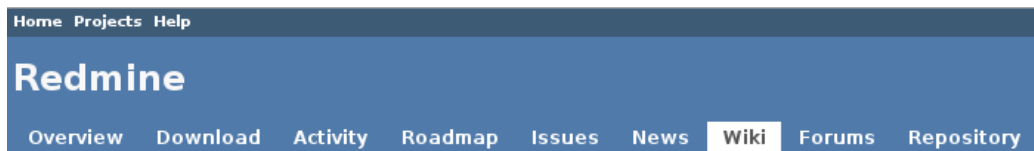
## 3 Softwares installation

Décrire votre travail (environ 6 pages)

- architecture de votre solution (vision haut niveau)
- implémentation de votre solution (détail technique) ou de la partie la plus intéressante si la place manque

In this part I will discuss the different softwares I have installed for the company. First of all I will focus on the research I have done. Then the details of the installation will be detailed.

### 3.1 Researches



I didn't know a lot about project managing so I had to look what was Redmine for and what this application will allow us to do.

Redmine is a powerful web based project managing which allow bugs tracking. It is possible to add a lot of functionalities to this application in installing some plugings into it.



I read about all the plugings for Redmine and finally chose some of them



Jenkins.

This application provides an easy to use continuous integration system. It is an application that monitors executions of repeated jobs such as bulding, testing a software project. It has 3 main features :

- It allows a team to share common information easily.
- It executes automatically compilation, testing without human intervention.
- It keeps a track of previous productions and allow us to see their development.



Mylin for eclipse connection.

Mylin is the task and application lifecycle management framework for Eclipse It allows to visualize tasks from Redmine repositorie and it has a connector to Jenkins.

It helps a developer to work efficiently with many different tasks (such as bugs, problem reports or new features). In a nutshell, it improves their productivity by reducing searching, scrolling, and navigation.



Ldap authentication.

Ldap is a protocol that allow us to access and maintain directory services. So we can access to some informations about the users of a network over TCP/IP protocol. With the ldap authentication into redmine, the users don't need to create a Redmine's account but they can directly access into their redmine's project by using their ldap password and login.

## 3.2 Implementation

I installed Redmine in ssh on an other machine. The installation was not very hard but allow me to know better the IT infrastructure. To have an access to Redmine we need to run a server. But it's a bit annoying to have to start the server every day or even more. That's why I searched how we can start a server automatically when we power up the computer. I add a daemon for the Redmine's server, and we can access to our Redmine instance directly.

Then I installed Jenkins plugin, meanwhile I learnt about SVN in order to add jobs into Redmine. SVN is a software versioning and revision control system, it allows Developers to maintain current and historical versions of files such as source code, web pages, and documentation.

The hardest part was to integrate Mylin into Eclipse. I needed a while to make it work but finally I just used the generic web connector of Eclipse.

The integration of ldap authentication into Redmine was straightforward. I just needed to configure the authentication mode with ldap data.

In a nutshell : Schema

## 3.3 Project creation

The last step was to create an instance for the project and look how to set up the environment in order to be nicest to use.

I wrote some wiki pages related to the project. I add a jenkins page into the project in order to have an access to Jenkins directly from their project. Finally I looked how to create new issues in order to be ready to report bugs into Redmine.

## 4 Software Testing

The goal of testing software is to provide informations about the quality of the product. It allows developers to know about potential bugs but it also allows the business to appreciate more the product. The testeur write a document with all the functionalities of the application and give it to the customers.

The company has a quite big application and the developers have some code that they didn't develop themself. They need to do a lot of software testing, in order to know about bugs in their application but also about not convenient functionalities. We distinguish two kind of testing issues such as bugs and evolutions.

This step of software development is essential and is quite long and boring. But thanks to this part, the customers will have a nice application, easy to use and without obvious bugs. My task was to do system testing. In order to accomplish it, I did black box testing. I didn't know anything about the internal stucture and implementation of the application and I tested functional parts of the website.

I had do to typical testing such as testing the functionalities on the website. But, I also had to test more complicated things such as the coherence between teacher, parents and students accounts. For example, in the homework notebook service, if a teacher add an homework for a class, all his sudents should see it as well as the sudent's parents.

But doing some tests without writing anything about them is not very useful for the future of the company. That's why my first task was to test all the services of the application and report all the functionalities of every services on a document test. I learnt how to write lisable tests documents with functionalities plan and it is not so obvious.

In this part of the report, I will describe my different tasks in software testing. I separate software testing in two sections that represent my work for the company: Acceptance testing and Resgression testing. So I will first descibe these two kind of testing and explain what I did exactly. In the last part I will focus on a software that I used a bit for testing : JMeter.

## 4.1 Acceptance testing

I named this section Acceptance testing but I will more talk about how to write a technical validation report than testing.

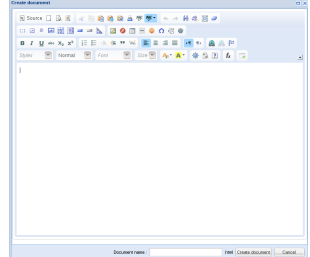
Individual software modules are combined and tested as a group. All the services can be test together, as it would be for the customers. The purpose of these tests is to "proove" that the application works fine and doesn't have big bugs. So it consists of verifying functional, performance and reliability requirements. In order to do that, the company first needed a document that explain the different functionalities of the website. This paper will be very useful for the future users of the application. My first task was to test all the functionalities of the application and report them all in a technical validation report. This document is a measuring tool which will be very useful to do regression tests. As the application is suposed to work in all web browser that the customers would be likely to use, I had to test the functionalities on these web browsers. I finally did some tests on three of them : Firefox, Google chrome and Internet Explorer.

The first step was to test the functionalities and write them all in a technical validation report. In order to do so, I looked in details every services of the application to understand well what they were supposed to do. As an example, the website had a school bag service and a pigeonhole service. In the school bag service you could add some documents, oranize all your papers in differents folders and so on. Then you could drop off some of them in the pigeonhole of an other user. All the services had some tricky functionalitie that I needed to know. Then I could write the technical report easier.

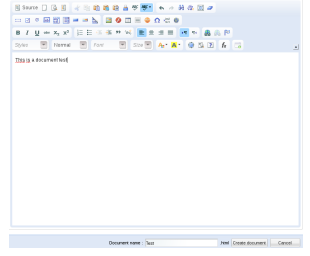
I will give you a detailed example that I wrote in this report. It is about the wysiwyg editor. It is used to create some web document. In this system in which the user can view something very similar to the end result while the document is being created.

b  
b  
b  
b  
b  
b

- Access to the service

| Name of the stage   | Description                   | Expected result  | Comments |
|---|-------------------------------|--|----------|
| Select Schoolbag service then the Create menu -> Document | Opening of the editor Wysiwyg |  |          |

- Create a document

| Name of the stage   | Description   | Expected result   | Comments |
|---|---|---|----------|
| <ol style="list-style-type: none"> <li>1. Fill a description of a document</li> <li>2. Choose a name : test</li> <li>3. Select create document</li> </ol> | Display of the new document in the list : test.html |  |          |

In the report I created one section for each service. Then I accompanied each functionality with a formal description of the actions to perform, the eventual input data and their expected output. In the comments column, I wrote when the functionality didn't work well or had a strange behaviour according to me. But then, if the comments was some kind of bugs or evolutions, I used Redmine to report them. My descriptions has to be as high level as possible in order to be understandable for the customers.

As a result of my work, the company had a useful document. It is now used to do regression testing as I will explain in the next part. And it could be used to do automated tests later, all the scenario to test are already written. And of course it would be given to the customers. It is quite easy to evaluate the quality of the document, it has to be easy to read for the regression tests that will consist in following all the steps detailed into it.

## 4.2 Regression testing

It is a kind of software testing that consists to uncover new softwares bugs or regression. These tests are done after each changes such as bugs fixing or new configurations settings made in the production instance. Indeed, we can manage to fix a bug but meanwhile a new bug can appear. So regression testing aim to discover these kind of new bugs, it helps to determine whether a change in one part of the software affects other parts of the software.

The tests I have done are called black box testing because I didn't know anything yet about the interior workings of the application, about the source code. The main advantage of this testing method is that it clearly separates user's perspective from the developer's perspective. My role was to be similar to the future users.

The following is an example of test I had to do, which one lead to a bug I have found : On the school bag service when we clicked on the new Folder button, then on the close button. Then we couldn't click again on the new Folder button. The button was still displayed but when we clicked on it nothing would happen.

Each time the team published changement in the production instance, I had to do some regression testing. In order to do these tests, I used the technical report that I wrote before. I run set of test-cases by folowing the steps discribed in the document. For each test, I compare the results obtained with the expected results. If there is a correct match for the test, no new bugs had appeared for this functionality. If not, I report the bug.

To report anything I notice about a step, I used Redmine and created an issue. In case of a correct match it can happen that the functionality tested is less convenient for the users than before. In this case I had to create an other kind of issue in Redmine, such as evolution issue. These issues are usually less urgent to do. In each issues (bugs and evolutions), I described with precision what I detected. It is very important to know in which environment the bug had been found such as windows or debian, Firefox, Google chrome or Internet Explorer as well as all the stages needed to reproduce the bug.

Here is an example of a creation of Redmine issue :

The screenshot shows a Redmine issue creation form. At the top, the 'Tracker' is set to 'Anomalie'. The 'Sujet' (Subject) is 'Schoolbag : Creation of Folders'. The 'Description' field contains the following text: 'Steps : -> Select schoolbag service -> Select Create -> Folder -> Click on the close button (X) -> Try to reopen a new folder by selecting Create -> Folder. After closing the new Folder Window, it is not possible anymore to reopen this window. If we click on new Folder button, nothing happen.' Below the description, there are several form fields: 'Statut' (Status) is 'Nouveau', 'Priorité' (Priority) is 'Normal', and 'Assigné à' (Assigned to) is empty. To the right, 'Tâche parente' (Parent task) is empty, 'Début' (Start) is '2014-08-18', 'Echéance' (Due date) is empty, 'Temps estimé' (Estimated time) is empty, and '% réalisé' (Percentage completed) is '0 %'. Below these, 'Version Impactée' (Impacted version) and 'Version de correction' (Correction version) are both empty. At the bottom left, 'Service/Portlet' is set to '--- Choisir ---', 'Environnement' (Environment) is 'UCL - www.kactab.lodessaxia.fr', and 'Fichiers' (Files) is empty with a 'Browse...' button. The 'Fichiers' section also shows 'No files selected.' and '(taille maximale: 5 Mo)'.

All the redmine issues was then assigned to one member of the team developers and fix by him. I will talk about this in the part called Bugfix.

### **4.3 JMeter and some tools**

Part about JConsole and JMeter (if enough space)



## 5 Bugfix

Expliquer les résultats obtenus et analyser leur cohérence (environ 2 pages)

- plateforme de test mise en place, quelles métriques pour évaluer l'efficacité de votre solution
- l'adéquation avec les attentes de l'entreprise
- les perspectives ouvertes

## 6 Conclusion

Faire un bilan personnel du stage : (1 page) Présenter les obstacles, points durs les plus importants et les moyens entrepris pour les résoudre ; les compétences interpersonnelles acquises en entreprise

Conclure en résumant ce qui a été effectué durant le stage (2-3 paragraphes)

## **7 Bibliographic reference**

Références bibliographiques le cas échéant ; une documentation technique déjà rédigée pourra être jointe en annexe.