

UNIVERSITY OF BUEA, BACHELOR OF ENGINEERING PROGRAM

INTERNSHIP REPORT

Implementation of Modules/Features for Nukeboard.co

Author:
Alangi DERICK, (FE12A113),
alangiderick@gmail.com

Internship Supervisors:
Churchill Mambe Nanje and
William Mukete

PERFORMED AT NJORKU CAMEROON LTD

*A report submitted in partial fulfillment of the requirements of
Bachelor of Engineering degree programme in Computer Engineering*

Report of Internship from 1st September, 2015 to 31st January, 2016

February 29, 2016

Declaration of Authorship

I, Alangi DERICK, declare that this report titled, "Implementation of Modules/Features for Nukeboard.co" and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a bachelors degree at this University.
- Where any part of this report has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the report is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

Date:

“Thanks to my solid academic training, today I can write hundreds of words on project topic without much problems faced, in which i have gained a good training and reputation in the my domain of studies and in the industrial world.”

Alangi DERICK

UNIVERSITY OF BUEA, BACHELOR OF ENGINEERING PROGRAM

Abstract

Faculty of Engineering and Technology
Department of Computer Engineering

Bachelor of Engineering

Implementation of Modules/Features for Nukeboard.co

by Alangi DERICK

Faculty of Engineering and Technology places level 500 students on internship for a period of 6 months, in which I was included and did my internship at Njorku Cameroon Ltd. This company offers internship to engineering interns to work on real live project(which some are highly the business of the company) and follows an incremental engineering problem solving approach. During my 5 months of internship in the company, We worked on implementing modules for one the company's project called "nukeboard.co" in which we used to offer services to the clients and the market. The projects design and most of the engineering phase where already done so we where just there to implement. Nukeboard.co is an internet recruitment based solution which enables recruiters to easily post jobs, share job offers on social media, track and manage applications(job applications) across multiple devices while maintaining and growing a CV bank. Developing modules to this software was one of the key feature to the success of this application since it brought about ease in the manageability of activities to the end users. Various modules developed are; Employer Module, Job Seeker Module, Training Module, Sponsored Jobs Module and Blog module making a total of 5 modules(as at now). These modules where developed in a very modular approach in such a way that if one doesn't need a particular module which has to be removed entirely from the whole software, it will be a very easy process and this won't break other existing modules already available in the application. So this means it will be like singly removing a module and not touching the existing modules, making it easy for integration of other modules in future and making development to the software easy to understand. The above mentioned modules will be explained in detail in the body of this report.

Acknowledgements

I would like to express my deepest appreciation to all those who provided me the possibility to complete this report. A special gratitude I give to internship project manager, Mr. William Mukete, whose contributions in stimulating suggestions and encouragement, helped me to coordinate my project especially in writing this report.

Furthermore I would also like to acknowledge with much appreciation the crucial role of the staff of Faculty of Engineering and Technology, who gave the permission to use all required equipment and the necessary materials to complete the task "Implementation of Modules/Features for Nukeboard.co". A special thanks goes to my team mate, Fonji Fonkeng Rocard, with whom i worked in collaboration with on the project "Nukeboard". To continue, special thanks to all my friends and mostly my mentor from childhood Mr. Nkwa Walters Chuo who really helped me into the amazing world of IT. Last but not least, many thanks go to the head of the project, Mr. Churchill Mambe Nanje, who has invested his full effort in guiding the team in achieving the goal for this project. I have to appreciate the guidance given by other supervisor as well as the panels especially in our project presentation that has improved our presentation skills thanks to their comment and advices....

Contents

Declaration of Authorship	iii
Abstract	vii
Acknowledgements	ix
1 Introduction	1
1.1 What is Njorku?	1
1.2 History of Njorku	1
1.3 Company Structure of Njorku Ltd Cameroon	1
1.4 Njorku Ltd products	2
1.4.1 Njorku Search Engine(njorku.com)	2
1.4.2 Nukeboard(nukeboard.co)	2
1.5 What I did during the Internship period	2
1.5.1 Studied the Software's(nukeboard.co) codebase	2
1.5.2 Work I did on Nukeboard during internship	2
1.6 Why did I do the following task mentioned above?	3
1.6.1 Why Feature Development?	3
1.6.2 Why Quality Assurance(QA)?	3
2 Literature Review	5
2.1 Concepts and Technologies used by Nukeboard	5
2.2 Similarities with other system that exist	6
3 Improvements on the Existing System	7
3.1 Developing Modules for Nukeboard	7
3.1.1 What is a Module?	7
3.1.2 Modules for Nukeboard.co	7
Job Seeker Module	8
Employer Module	8
Blog Module	8
Training Module	9
Sponsored Jobs Module	9
3.2 Tasks I completed during my Internship period	9
3.2.1 Implemenation of EmployerSessionController.php Class	9
3.2.2 Implemenation of Permission in nukeboard core	10
3.2.3 Built Registration Wizard for Employer and Job Seeker Module	10
Registration Wizard for Employer Module	10
Registration Wizard for Job Seeker Module	12
3.2.4 Changes and Migration of Employer and Job Seeker Themes	12
3.2.5 Implentation of CV Search on Nukeboard(nukeboard.co)	13
General CV Search Approach	13
Specific CV Search Approach	14
3.2.6 Implentation of Sponsored Jobs Module Front-end(FE)	15

3.2.7	HTML Email support for Nukeboard(nukeboard.co)	16
3.2.8	Testing/Quality Assurance(QA) on Nukeboard(nukeboard.co)	16
	Statistics of the QA	17
	Explanation of text results	17
4	Discussion and Results Obtained	19
4.1	Discussion and Results Obtained	19
4.1.1	Discussions	19
	Hours spent at work everyday	19
	How was work carried out each day?	19
	Submission of task to be Intergrated to the main project	19
	General discussion about entire work done	19
4.1.2	Results Obtained	20
	Quality Assurance for Nukeboard	20
5	Conclusion and Recommendations	21
5.1	Evaluation of Internship Experience	21
5.1.1	Self Evaluation	21
5.1.2	Company Evaluation	21
5.2	General Conclusion	21
5.3	Recommendations	22
5.4	Furture Works on the project	22
5.5	Other projects and work done during internship	22
	Bibliography	25

List of Figures

1.1	Njorku Logo	1
1.2	Company Structure	2
1.3	Nukeboard Architecture Model	3
3.1	Nukeboard Modules	7
3.2	Employer Wizard	11
3.3	Employer Wizard Complete	11
3.4	Job Seeker Wizard	12
3.5	Employer Module Theme	13
3.6	General CV Search Approach	14
3.7	Specific CV Search Approach	15
3.8	Sponsored Jobs Front-end	15
3.9	HTML Email	16
4.1	Nukeboard Code Contributors	20

List of Abbreviations

CSS	C ascading S tyle S heet
DNS	D omain N ame S ystem
FTP	F ile T ransfer P rotocol
HTML	H yper T ext M arkup L anguage
HTTP	H yper T ext T ransfer P rotocol
JS	J ava S cript
JSON	J ava S cript O bject N otation
LaTeX	L amport T e X
MVC	M odel V iew C ontroller
ORM	O bject R elational M odel
OS	O perating S ystem
PHP	H ypertext P reprocessor
QA	Q uality A ssurance
SaaS	S oftware as a S ervice
SQL	S tructured Q query L anguage
SMTP	S imple M ail T ransfer P rotocol
URL	U niform R esource L ocator

*Dedicated to my mum, Mrs. Alangi Anastasia Wi and my brothers
and also to the Nkem Ngu's Family...*

Chapter 1

Introduction

1.1 What is Njorku?

Njorku is a technology based platform for career and recruitment services in Africa. It has product called Njorku which is an emerging job search engine for Africa, with thousands of unique visitors per month and growing steadily month-on-month. Njorku is localized in 9 African countries and counting.



FIGURE 1.1: The company's logo

1.2 History of Njorku

Njorku was launched in March, 2011 and has given job seekers free and unlimited access to hundreds of thousands of jobs from company websites and job boards across Africa. Njorku was founded by Mambe Churchill Nanje and has a very strong team of professionals around the world and has raised seed funding from a Canada-based technology company and a business angel in France. Njorku has offices in Buea, SWR Cameroon.

1.3 Company Structure of Njorku Ltd Cameroon

Above is the company structure of Njorku and the diagram is self explicit. It has 6 major sectors and all are depicted in the chart below.

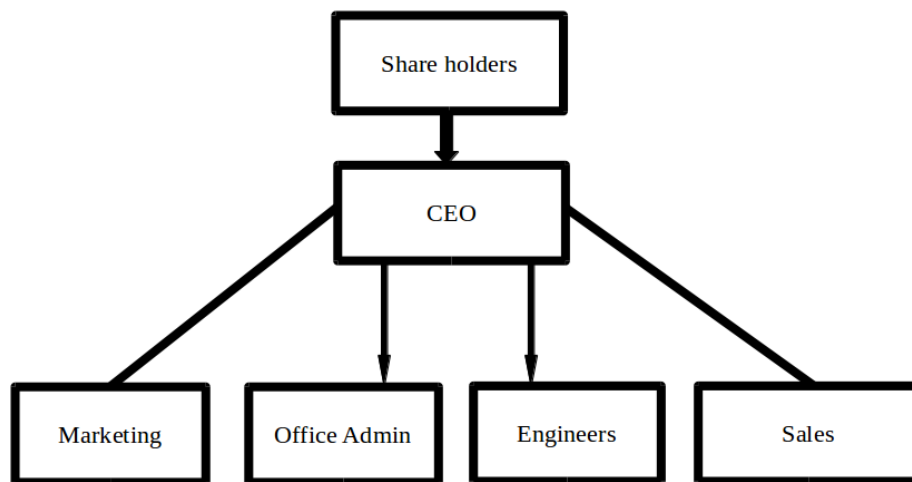


FIGURE 1.2: Njorku Ltd Company Structure

1.4 Njorku Ltd products

Njorku Ltd has 2 main products in the market running live and helping the community in various ways, the products are listed below as follows; Njorku Search Engine and Nukeboard.co

1.4.1 Njorku Search Engine(njorku.com)

Njorku is a job search engine where you can find thousands of jobs from all over Africa.

1.4.2 Nukeboard(nukeboard.co)

Nukeboard.co is an internet recruitment based solution which enables recruiters to easily post jobs, share job offers on social media, track and manage applications(job applications) across multiple devices while maintaining and growing a CV bank

1.5 What I did during the Internship period

1.5.1 Studied the Software's(nukeboard.co) codebase

Before coding on the software, I had to learn the coding style of the application, understand the work flow of the software in order to know what nukeboard.co actually does. This took me 2 days since the software was not very complex and I had all the skills necessary to start working on the platform. After these 2 days of extreme study, I immediately started writing codes for the software.

1.5.2 Work I did on Nukeboard during internship

During a period of 5 months internship at Njorku Ltd Buea, I was assigned the following task to work on which i did successfully and was evaluated on. The tasks are listed as follows:

- Developed Features(Modules) on Nukeboard.

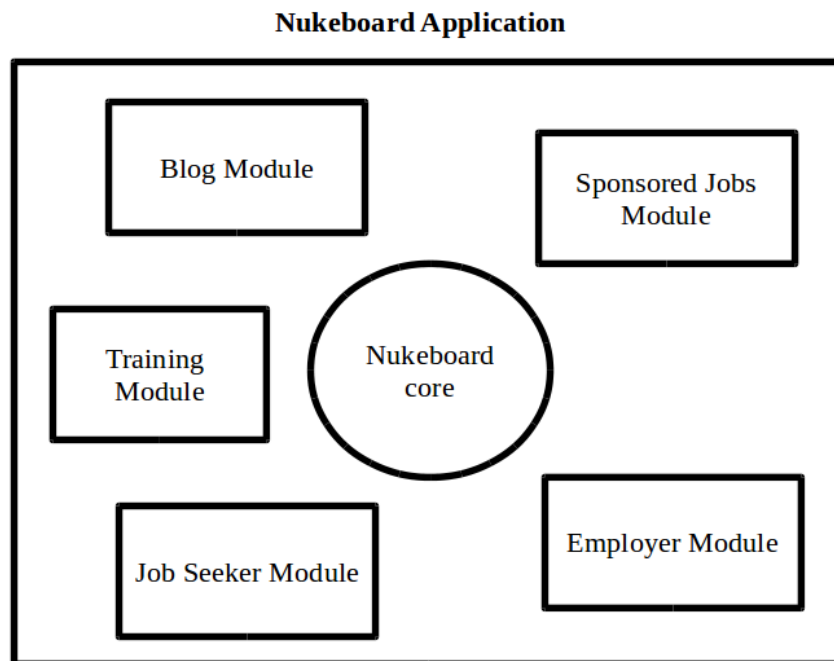


FIGURE 1.3: Architecture for Nukeboard.co

- Did Quality Assurance(QA) on the software.

1.6 Why did I do the following task mentioned above?

1.6.1 Why Feature Development?

I developed modules for nukeboard because the software was targetting users who are not very experienced with Computing and we had to build modules for the software to make the work or tasks very easy for the users to accomplish and also to make usability of the software easy to the end users. Modules were also build to make sure that more features where added to the software based on the users demands from the market.

1.6.2 Why Quality Assurance(QA)?

Quality Assurance was done to ensure that the software is properly build and we meet the purpose of the software. I carried out the task so that the team of programmers working on the software can know which part of the software needs improvement and changes. After this task was complete, I had done 53 test cases and details about this will be available below.

As mentioned above, I shall explain in detail all what I carried during my internship period and research done, other activities out of internship site and other projects done which where in one way or the other related to the internship. All these shall be explain in the body of this internship report.

Chapter 2

Literature Review

2.1 Concepts and Technologies used by Nukeboard

Nukeboard.co is a software that was build with a combination of many different technologies, these technologies span across web technologies, database programming and administration, server configuration and linux administration, MVC programming paradigm and Object oriented programming. I had the some skills already before working on the project and needed to do some background research on technologies I new nothing about before fully contributing to the project and doing my own internship task. The project was build using Object oriented PHP and MVC programming paradigm. Nukeboard run on the Laravel 4.2 framework which is a PHP web framework written on other framework.

Its a highly documented framework and its documentation can be found here: <https://laravel.com/docs/4.2>, the latest version of Laravel is 5.2. I needed to learn from the documentation anything i don't know how to use concerning the framework, in order to accomplish my intership project. In addition, I also did a background research on other technologies used in the project and I found out that Apache Tika which is an application used for Parsing PDF documents to extract the text from the PDF file and it uses Java to do its processing and the documentation can be found here: <https://tika.apache.org/0.5/documentation.html>, these parsing was done so that we can have a dump CV text so we can search for keywords concerning applicants for jobs in any job on nukeboard.co.

Sub-domains where highly used in nukeboard.co and it was a concept I did not really learn in school so had to do some research to understand how its implemented on servers using virtual machines and Laravel. Documenations I used to read about sub-domains can be found [1] and [3] and all these links and references will also be added to in the Reference section of these report.

A list of techonologies and tools used to accomplish the whole project are;

- PHP for backend programming and server side request handling,
- HTML for front-end content of the software,
- CSS and CSS 3 for presentation of HTML content,
- CDN technology to reference external styles and javascript from other servers,
- Apache Tika for parsing documents to extract text from them,
- Laravel 4.2 a php web framework,
- MVC for the programming paradigm,
- jQuery and JavaScript for interactivity of the software and web pages,
- MySQL for handling of database management request,
- phpMyAdmin which is a web client for accessing and carrying out database transaction using a web browser,
- DNS Masq for enabling and management of subdomains,

- SQL a declarative language for carrying out database transactions,
- Git and Github for code management and version control.

All these technologies was used for the success of these product and to be able to work on the project, I had to learn all these various technologies in order to stand a chance.

2.2 Similarities with other system that exist

There exist other systems that perform a similar goal like nukeboard.co like; <https://www.jobboard.io> which was built mostly to suite the needs of US and other non-African countries. The merit of <http://www.nukeboard.co> is mostly suiting the needs of the African citizens and is built to solve the local problems of job offers in our country, this is a big difference with this sytem and other system which exist performing the same goal.

Another advantage that nukeboard.co has is that if there is a problem, there is a possibility to even meet in person with the nukeboard or an assistant if your problem can't be solved remotely but for other system that exists, it will be costly travelling out of the country if need be. In addition to the above mentioned, the services of nukeboard.co is cheaper than that of other system that exist like <https://www.jobboard.io>. In terms of pricing, Basic plan for Job Board software is: 149 dollars / month while for Nukeboard, a basic plan is free.

Furthermore, there is also a disadvantage about nukeboard, its build using PHP which is a technology that does not support multi threading which mean if there is more than 1 million users on the site performing operations at the same time, the through put of the application will be very high making response time to be very high to and inconvinienicing the users. But Job Board was built with Multithreaded technologies that will improve on throughput and response time making the site faster to user and operations quicker.

Chapter 3

Improvements on the Existing System

3.1 Developing Modules for Nukeboard

3.1.1 What is a Module?

A *module* is a part of a software that performs a particular task. Modules consist of routines which talk together to perform the goal in which the module is built for. A module can also be termed a feature for a software. Modules make the development of a software easy to understand and if there is a problem in the software, trouble-shooting is very possible and the solution to the problem is easy to find.

3.1.2 Modules for Nukeboard.co

Nukeboard.co has a total of 5 modules and they are listed below as follows; - Job Seeker Module.

- Employer Module.
- Blog Module.
- Training Module.
- Sponsored Jobs Module.

modules			
you have 5 modules(s) enabled			
type	Status	disable	enable
Employer Modules	👍 ON	DISABLE	ENABLE
User Profiles	👍 ON	DISABLE	ENABLE
Training	👍 ON	DISABLE	ENABLE
Blog	👍 ON	DISABLE	ENABLE
Sponsored Jobs	👍 ON	DISABLE	ENABLE

FIGURE 3.1: Modules in nukeboard.co

The above listed modules were all developed during my Internship program by a team of engineering interns in which I was included. I will briefly describe the meaning

or goal of the modules and further more focus on the one is which I worked on during my internship period. Also, it should be noted that all the work done during my internship period where translateable from English to French and vise versa. But if there is something specific about the translation, I will do a quick mention.

Job Seeker Module

Job Seeker module is used by "job seekers"(applicants seeking for jobs) to apply for available jobs on nukeboard.co and with the Job seeker module, the application process for a job is really easy since most of the work is already done by the programmers and job seekers just need a few more steps to complete the process. When a job seeker has an account on a job board(if the module is activated on that job board), applications to jobs is really simple because he/she(applicant) just needs to click "Apply" and his application is sent to the job owner without filling forms because this is done when the job seeker is creating his/her profile. But if a job seeker who hasn't a job seeker account wants to apply for a job, he/she will need to fill a form(anonymously) for the application process.

Also, administrators of a job board where the "Job Seeker Module" is activated also do their task easily since applications are tracked and rendered to them in the backend of the job seeker module is a nicer and more presentable manner so that they can just read through the application an continue with the recrutement process easily.

Employer Module

This module handles the management of employers under a particular job board. A company can have a job board and wants the employer module to be activated. This enables employers to create accounts on the company's job board and also make job offers available to the public. Meanwhile job board owner can post jobs to thier job board, employers under that job board can also post jobs making the availability of jobs under that job board richer and more for the public. Job board owners can post jobs as employers if the employer has a job but not available to post the job at the moment.

Also, job board owners can manage the employers on their job board, suspend them in case of any suspicious action, view the jobs posted by the employers etc ... All these is done from the Employer module backend

Blog Module

Blog module enables owners of job board(if activated) to blog about jobs offers, opportunities and more... This module works exactly how Blogs work, applicants, anonymous users, registered users can blog about anything but this module is highly controlled by the admins of the job board because users can blog about irrelevant and indecent issues and if this is done, these blogs will be removed from the job board by the admins. Like other modules, this module has its own backend for managing blogs.

When a blog is posted, users can comment and say something about the blog, this is done so by the means of a Facebook Comment plugin which has been integrated in the blog module. And when this is done(commenting on a blog) you can access this blog from your Facebook page since its a Facebook plugin.

Training Module

It's a very important module that also solves a big problem in the society concerning job offers. If a particular job needs training before the job being done or there is a training offer that needs to be carried out in order for job seekers to acquire the necessary skills needed to perform or do a job, these offers are posted using the Training module. This is done for specificity not to mix training offers with job offers. Training module has a backend for the management of training, update of training, delete, and more...

Important parameters of a training offer can be the duration of the training, maximum number of students or applicants, price tag per duration and per student within the particular training duration, etc...

Sponsored Jobs Module

Sponsored Jobs is a module that increases the priority of a normal job offer, if owners of a job board or employers under a job board mark jobs as sponsored (if this module is activated for that job board), these jobs are posted at the top of the Jobs page and it makes the priority of the job high. This is a call for attention to job seekers making sure that they see the sponsored jobs first and apply for them. Jobs under this module are more lucrative.

This module also has a backend in which it is used to manage sponsored jobs posted on the job board, making it easy to track which jobs are sponsored and which ones are not.

Note: Any activity happening on a job board is not visible to another job board. This condition is carefully handled in order not to mix things up and lose tracking of activities across various job boards. It's a critical problem that is solved at the level of the Database design. Example; If job board A is carrying out activities, it's only shown in job board A and if another job board B is carrying its own activities, it's not shown in A. So if a module (Employer module) is activated in job board A, it does not show in B etc...

3.2 Tasks I completed during my Internship period

First of all, since I was working on developing modules, there is a constraint about these modules. It must be activated by the job board owner or job board admin before it's visible on the job board.

3.2.1 Implementation of EmployerSessionController.php Class

I wrote a class that was responsible for managing session activities in the employer module. The class was named `EmployerSessionController` which extended the Laravel's `BaseController` class and it was given a file named `EmployerSessionController.php`. A template code can be found below as regards the declaration of the class;

```
<?php
```

```
class EmployerSessionController extends BaseController
{
}
}
```

This class handled functionalities like; employer login, employer logout, employer recover password, employer create account(register). All these was done by routines that were called using the routes.php file when an employer wants to perform any of these actions. After working on these controller/class, the pages linked to it for example when a employer logs in, he/she has to be redirected to the employer backend home page if authentication was successful. So all the pages that are linked to this controller had to be translatable from English to French and vice versa. Note that, the translation we(development team for nukeboard) did was proof read by a professional translator hired by the owner of the project, if any mistakes, it will corrected to make sure that the French version of the software was perfect.

3.2.2 Implemenation of Permission in nukeboard core

Job board owners needed permission to control Employers and Job seeker accounts if in the case of any suspicious actions for example Scam. The admin of the job board needed this permission so that if a fraudulent action is detected, the user involed will be suspended from accessing the account till the problem is rectified and this part of my work was done in the nukeboard.co core itself. It was not a module in nukeboard.co.

The various permissions that were available to the job board admin was; - Approve.
- Suspend.

With this permissions available, I had to create an interface in which the job admin can view all users(both employer and job seeker) so that it will be easy to perform this operations.

3.2.3 Built Registration Wizard for Employer and Job Seeker Module

Both the Employer module and the Job seeker module needed wizards registration wizards to make sure that all the information about the users of these modules are completely collected. This was a serious improvement to the software since after this task was completed we never bordered to think about us not having the necessary information about the users of the module since we knew that all was collected following the wizard. Below is a description of what I implemented for each module.

Registration Wizard for Employer Module

After an employer finishes creating his/her account, he/she is registered to the nukeboard.co database with account status "pending" and asked to login to update his/her account. If the employer logs in, a wizard will start automatically enabling and guiding at each step telling the user to input the required information at each step. The first welcome window that the employer sees is:

Two sets of information are collected from the employer and saved in the nukebaord.co database which are the;

- Account Information and
- Company Information.

Account Information is the information partaining to the account created by the employer like; First Name, Last Name, Telephone Number etc... **Company Information** requires the employer to provide the information about the company he/she is working with. Information about the company like; Logo, Company name, Company Website (if

Miyatzuki Inc. - Employer Zone

alangiderick@gmail.com logout

Complete your account

Welcome **alangiderick@gmail.com**, Complete your account by following the steps. There are 2 steps and ***must*** be completed and account approved by board owner before you can have access to your account.

1. Update Account Information
2. Provide Your Company Information

Next →

english français español العربية português
thanks for using nukeboard.co powered by #teamnukeboard

FIGURE 3.2: Registration Wizard for the employer module Welcome page

any) etc. . . . When all these information is gotten by the wizard, the account creation is complete and a request is sent to the board owner to either approve or reject this employers account and if its approved, the employer can now have full access to his/her account and start posting job offers and managing the backend.

If in the process of submitting information entered at each step of the wizard and there is an error, the wizard redirects back to the previous step with the old data inputed so that the user will not need to enter the whole set of information again. After each step is successfully completed, the information is saved immediately in the database to prevent information and for the user start the process all over again in case of power outage or internet failure. Meaning that if any of these disasters happen, when the employer logs into his/her account, he/she will just continue with the process without starting all over.

Account registration complete but Suspended, board owner will approve your account soon!!

Login

Email

Password

Forgot Password Login

FIGURE 3.3: Completion of Employer Wizard

The entire employer wizard process is translatable meaning that it was both in English and French. This task was completed successfully and reviewed by the project lead and owner. It was a major improvement to the project and clients loved the purpose of it.

Registration Wizard for Job Seeker Module

When a job seeker creates an account under a particular job board, his/her information is added to the nukeboard database and when he/she tries logging into their accounts, a wizard starts up which is to collect their information to update their accounts and others. This time around, unlike the employer registration wizard, there is a slight difference with this one, after collecting the information pertaining to the account as for employer account, the next step is to collect information about the first job of the job seeker. This set of information will tell the recruiters how much experience the job seeker has in his/her field of work.

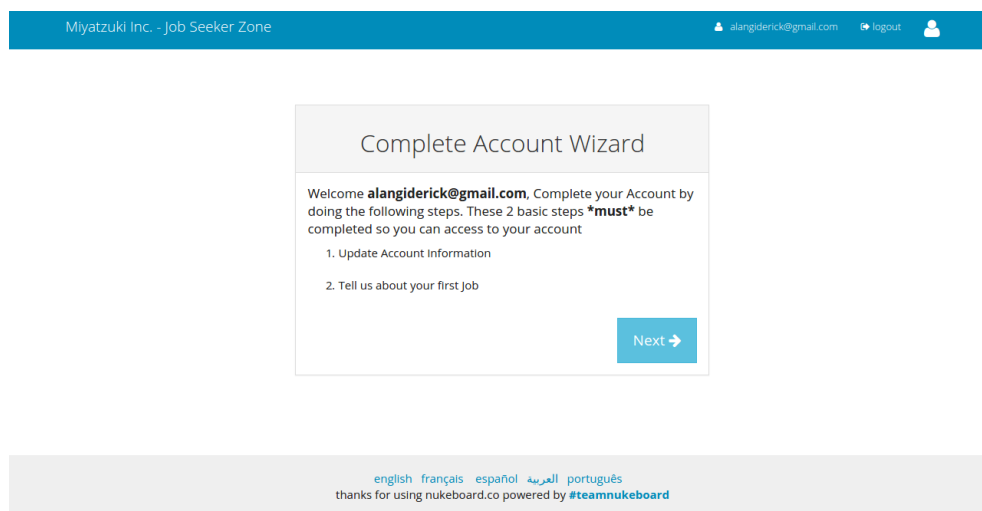


FIGURE 3.4: Wizard welcome page for Job seekers

This wizard is very similar to the employer registration wizard in terms of information saving in the database after each step to prevent information loss in case of internet failure and power failure. Also redirection with old input to prevent users from inputting the same information again over and over. Informations like date of birth is collected in the account information of the job seeker to know his/her age so that if there is job with an age range, this will enable recruiters to filter applicants/job seekers based on age, experience and age range. This will be further explain ahead in the report.

In addition, by default when a job seeker creates an account he/she has access to it immediately so the he/she can start applying for job offers matching his/her required skill set.

3.2.4 Changes and Migration of Employer and Job Seeker Themes

Due to the too much similarity of them Employer and Job Seeker themes with the job site, there was a need to migrate this into two separate entities and change the theme completely so that the users of these sections of the software will have a feeling of difference and also privileged that they are different from the normal users. When we met the system, admins theme for these modules where the same with the job site making them to

feel as if they are still using the system as normal user.

This was a great improvement on the system since the change in the theme for admins separated them from the normal user mode to a different environment. They felt as if there were working on a different level of abstraction in the software making them feel superior and more comfortable in their position as admins. Below is the current theme used by the admins of the various modules and this theme match the theme used by the job board owner when he/she access the backend of the his/her job board.

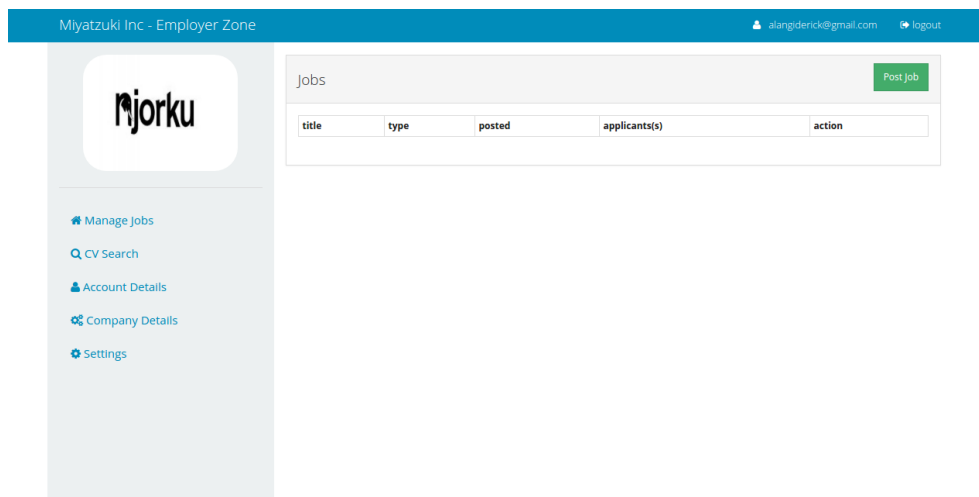


FIGURE 3.5: Theme used by employer module and other modules in nukeboard.co

Like I earlier mentioned, this same theme is used by all the modules in nukeboard.co and also the backend for the job board owner uses the same theme.

3.2.5 Implentation of CV Search on Nukeboard(nukeboard.co)

CV's of job applicants where saved in nukeboards cloud server where they can later on be searched based on particular search criteria. These CV's are uploaded as .pdf, .doc, .docx files. Since the CV search functionality was available for both the Employers and the nukeboard.co core, it was necessary that employers and job board owner would search for CVs matching particular criteria to speed up their recruitment process. There are two kinds of CV search methods available; - General CV search approach.
- Specific CV search approach.

When CVs collected by nukeboard.co is uploaded to the servers, a dump of the text in the CVs is collected using Apache Tika which parses these files and dumps the text in each CV into the database. This is to make sure that when keywords are searched in applicants CVs, it will be possible to find as text since there is not possibility to search in a .pdf document and more...

General CV Search Approach

This is a search method in which all CV's matching a particular keyword are returned. Given a keyword like "engineering", searching through the index table of nukeboard will

return all applicants CVs matching the keyword "engineering" or CVs that have the keyword "engineering". The applicants having these CVs are returned in a long paginated list which can be viewed by the recruiter. Below is a sample output search.

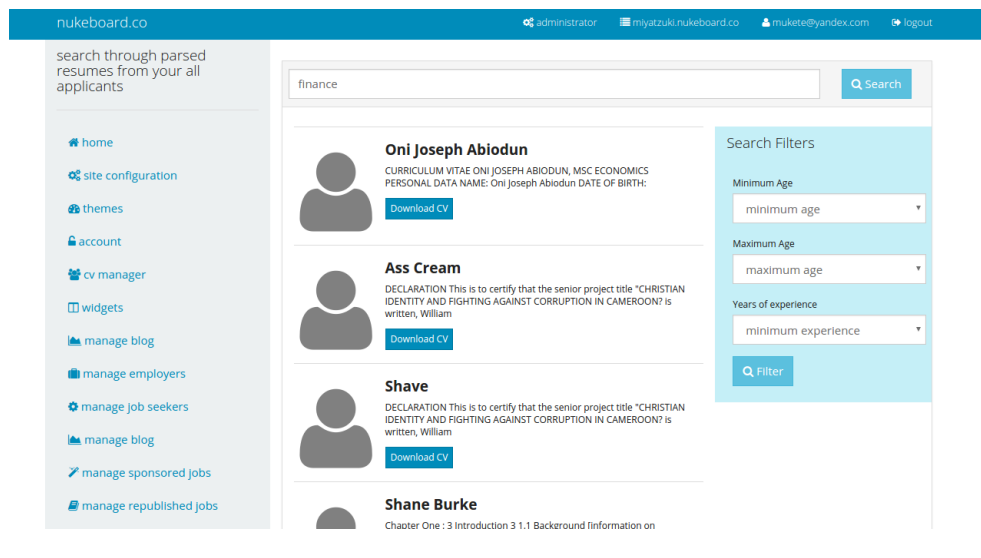


FIGURE 3.6: General CV Search, Keyword "finance"

The output of the General CV search is too vague because a list of all CVs matching the keyword criteria will be rendered. Also, this search was already existing in nukeboard before I joined the development team so my own part of the work was to make the search specific so that recruiters can narrow down their search result making it easy for them to recruit job seekers.

Specific CV Search Approach

The specific CV search approach used the general CV search method including filters for narrowin down the search results. These filters where; age, age range and experience. Recruiters might want to quicken their search and also recruite job seekers in a particular age range with a particular level of experience, so a general search will not solve the problem since the recruiter will have to go all the CVs returned by the general search to pick out this applicants which is very stressful and adds more work to the users of the system. So I solved this problem so that recruiters can specify their search using filters to narrow down their search and pick out the required job seekers to employ. A sample output for this search can be as follows;

This search approach greatly solved the problem that the recruiters faced using the general search approach. In addition, the general search approach was a slower considering the time required to search and return all the CVs have to be searched but the specific CV search was faster since searching the CV was based on not only the keyword but on three different filters; minimum age, maximum age and years of expirience. So to wrap up, the more the filters, the faster the search but in future, we are to improve on the search speed using a different search algorithm not the filters.

In addition to the search results, presentability was a problem to the clients using the system so it was necessary to make the results look very presentable with a download button beside each applicant so that his/her CV can be directly downloa and his/her profile can be viewed by the recruiter. In the search results, applicants with profile pictures,

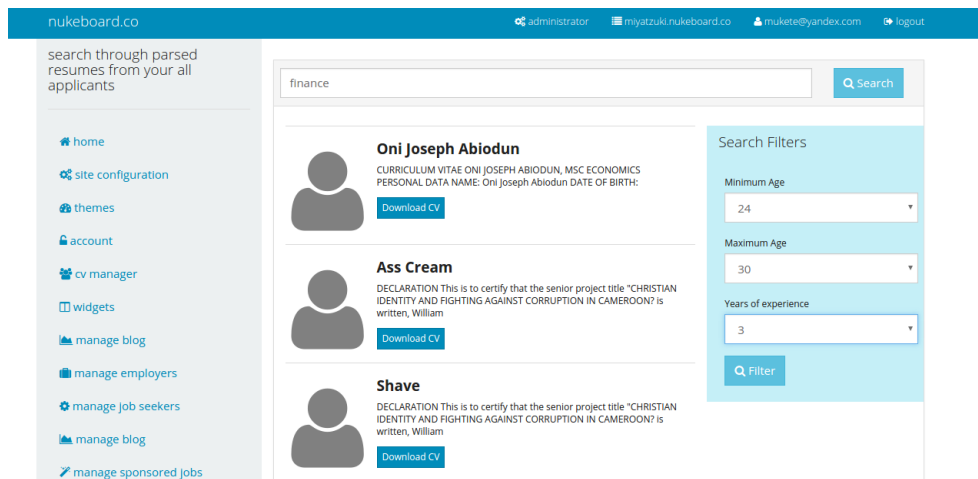


FIGURE 3.7: Specific CV Search, Keyword "finance" and filters

their pictures were displayed and those without pictures, a default glyph icon-user was placed showing there is no picture.

3.2.6 Implementation of Sponsored Jobs Module Front-end(FE)

As I described the Sponsored jobs module above, I was required during my internship period to work on the front-end display of the sponsored job on all the themes available in nukeboard.co. My task was to get all jobs from the database and render them in a specified location(top of all jobs) in the nukeboard job board themes. A snapshot of sponsored jobs in the search green theme below

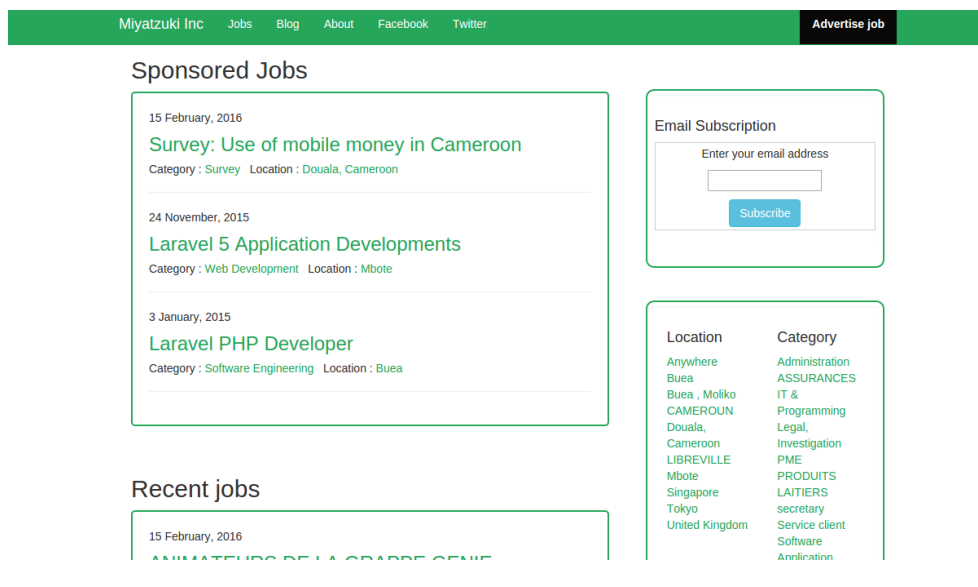


FIGURE 3.8: Sponsored jobs, search green theme.

A field was added to the DB jobs table to check if a job is marked sponsored or not. My job was to go through this field and check if its marked sponsored and any corresponding field marked sponsored has a job ID attributed to it and I will just query all the jobs that are marked sponsored from the jobs table.

3.2.7 HTML Email support for Nukeboard(nukeboard.co)

When I join the project, nukeboard had email support and was already sending emails when needed but the emails were not presentable and did not look nice to the user/-clients. There was a need to improve on the email structure and design for nukeboard. So the project owner decided that HTML emails should be implemented also known as styled emails. The task was assigned to me and I searched online for HTML email templates and I stumbled on one. I proposed it to the nukeboard team and it was agreed that I should use it.

I went ahead and replaced some of the plain-text email into HTML Emails and positions where plain-text email was replaced to HTML emails was;

- Account Creation.
- Registered Job seeker application.
- Reset password.
- etc. . .

After this task was completed, I had incorporated HTML emails into nukeboard.co where necessary and it was running very well. All emails were ok and links embedded into them were all working fine. Below will be a snapshot of HTML email in nukeboard.

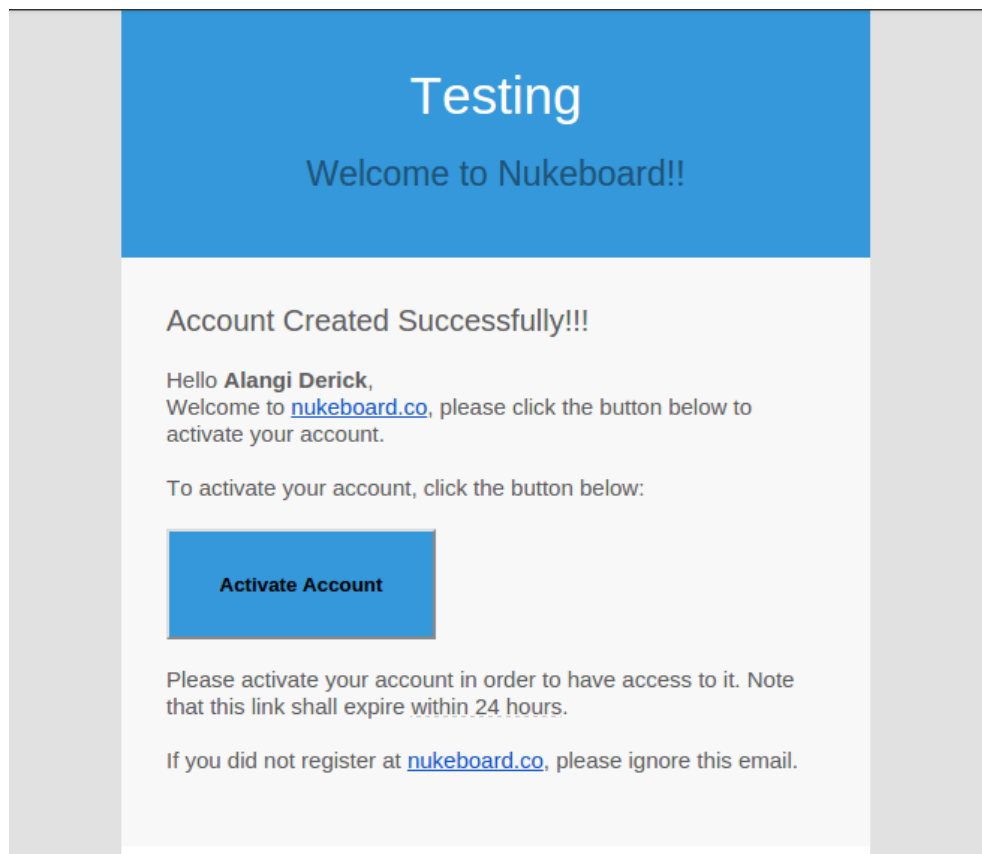


FIGURE 3.9: HTML email for account activation

3.2.8 Testing/Quality Assurance(QA) on Nukeboard(nukeboard.co)

This is a very important key aspect in software engineering. It is to make sure that all aspects of a software is working well and as expected. Basically, it's a process carried out

to know the performance of a system, what to improve, change and more...

Formally, **Quality Assurance** is the maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.

This task was assigned to me during my internship period and even though I did not finish testing the whole software, I tested about 80% of the whole software and at the end of the testing, I had a total of 53 test cases spanning across various functionalities of the software. I was instructed to create an online spreadsheet (Google Spread Sheet) and give it access to all members in the nukeboard development team so that if there is a test carried out of my own tests, it can be added and when maintenance is being done, all will be included and worked upon. The sheet was created and the link can be found at [x] which holds information about all the test cases.

Statistics of the QA

Below is a table showing the number of test carried out, the ones that failed and those that passed. Also those that need improvement also need to be improved.

Quality Assurance Statistics			
Number of Test Cases	Tests passed	Tests failed	Test that need improvement
53	37	13	3

Explanation of test results

Passed means that the test was carried out and the expected output was equal to the users output or the output of the existing system.

Failed are the various test cases whose output was not as expected meaning there is something not working in the software as it is supposed to work. Cases like this need to be looked into and fixed.

Improvement is a test that actually passed and did work as expected but there is a way of improving this functionality to make it look better to the user at the moment. Cases like this can be looked into but not urgently.

At the end of this testing, the statistics gathered will be shown in percentage pass and failed in the results section of this report. Including other results, everything shall be revealed in the discussion and results section of the report.

Chapter 4

Discussion and Results Obtained

4.1 Discussion and Results Obtained

4.1.1 Discussions

Hours spent at work everyday

During my internship period, I make sure i report to work at 9am and leave at 5pm making a total of 8 hours per day. Working days are from Monday to Friday and during the weekends, we are officially not allowed to work but if there is something someone wants to work on in the office during the weekend, he/she seeks permission from the Owner of the company in order to notify the attention of the company.

How was work carried out each day?

Before we start working each day, task are assigned to us either by the project lead or the overall founder of the project and we make sure to finish the task given to us by the end of the week and if its difficult and require some research, we shall use 2 - 3 weeks to finish the task and there are some minor task that take a few hour to finish but some take days.

Depending on the work load, before departing from the office to the house, the work I have done that day and including all the other interns are shown to the owner of the project or the project lead to review it and if there is any corrections that can be done quickly, we fix it but if it can't be done immediately, we carry it over to the next day.

Submission of task to be Intergrated to the main project

At the end of each task, when I see that its possible to integrate my work into the main software online, I push my codes to my repository online and send a pull request to the project leave to do a final review before merging the codes to the main repository. This means every intern working on nukeboard had a separate repository of the project online but there was a main one that was only used to merge only working codes so that we won't be mess up the main repository. Below is the contributors page for all users contributing to the nukeboard project;

General discussion about entire work done

Generally, the work I did for 5 months during my internship was a great contribution to the success of this project. Together with my other colleagues, we made sure that when doing a task, we should work on the task very well such that the software in general will be almost perfect and if there is any change we are not make, it will not cost us rebuilding

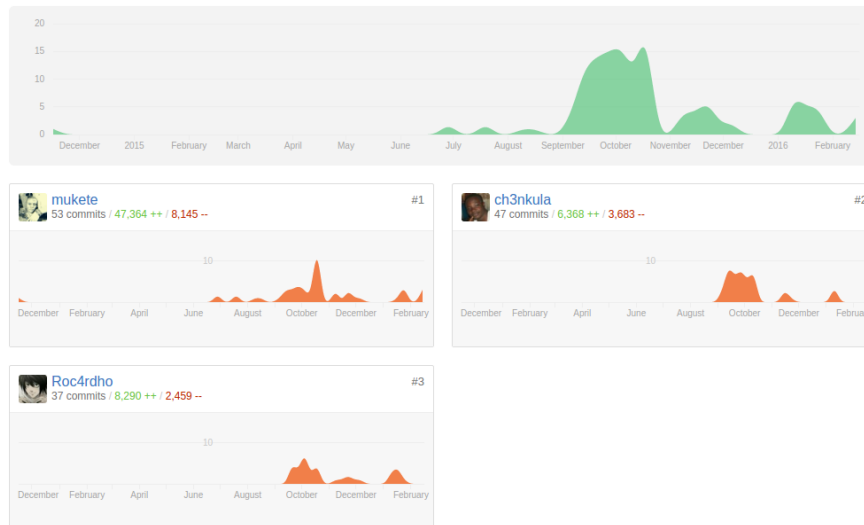


FIGURE 4.1: Contributors of codes to Nukeboard

the whole software from scratch.

In addition to this, we as the nukeboard team worked very much in collaboration both online and offline to make sure that the project goes well and task are accomplished on time and accurately. Also we code in such a way that if a task is given to us and another colleague has to complete it when we are not available, he/she is not stressed up in order to understand the code since its well commented and documented for ease of understanding.

4.1.2 Results Obtained

At this point, results obtained after carrying out all my tasks during my internship period will be revealed. In addition to the above mentioned outcomes(results) where snap-shots where inserted and textual results mentioned, I will also reveal more results here concerning the outcomes as regards my work done during internship.

Quality Assurance for Nukeboard

Quality Assurance Statistics		
Test Cases	% passed	% failed
53	75.47%	24.53%

Testing of the whole software took me 1 month and at the end of the month, I did not still finish testing the whole software but the statistics in the table above reveals the performance and out come of the system including my work and the work of other interns concerning the project.

Chapter 5

Conclusion and Recommendations

5.1 Evaluation of Internship Experience

5.1.1 Self Evaluation

Evaluating myself, I found out that in even though I had all the skills to work on any programming project, school is complete different from industrial working environment or real life implementation of systems. I realized that its not only about coding or writing little scripts that will perform basic task in your computer. Its about engaging into many things and solving real life problem to provide solutions to the society. Engineering especially software is all about designing, analysis, implementation, maintaining of softwares to help the community grow by solving their problem to easy day to day transaction using softwares and computer programs.

In addition to the skills I had before starting internship, I learnt many other technologies and tricks in engineering to problem solving. Communication and working as a team which is a key aspect in engineering was also a great skill that i learnt making me able to work with others from different background of discipline like; Translators, Business Analysts, etc. . .

In a nut shell, I will conclude by saying that the internship period was a great success and I learnt many things if I had remained in school I wouldn't have known them and also discovered many of my short comings and will make sure that I fix them so I can be better prepared myself for the job environment.

5.1.2 Company Evaluation

This part of the evaluation was done by the owner of the companay in which he filled an evaluation form provided to us by the Faculty in which we have submitted to the faculty. Over all, my evaluation from the company was a good one.

5.2 General Conclusion

To conclude, its a great idea for the facult to give engineering students internship for them to go out to the world and see how the job environment really works. From my experience, I will encourage the faculty to strictly evaluate students on internship because its an opportunity for engineering students to fix all their problems and prepare themselves for the job market. My internship was a success and I really thank everyone that contributed me in one way or the other to develop modules for Nukeboard because it was really indeed a successful one.

5.3 Recommendations

I recommend that the faculty should not change the rule of thumb that students should not do internship because will cause more harm than good since leaving school to the job market without any internship is a real disaster and can jeopardize the reputation of the company if care is not taken. So I strongly recommend that internship periods should be taken really seriously because this is the only one opportunity that students have to have a directly relationship with real life companies while still a student.

5.4 Future Works on the project

There is more work to be done on nukeboard as time goes by and most of these work will be building modules for the software and improving on the nukeboard.co core itself to support new features that will be built on it. Below is a list of upcoming features that will be built into the software in the nearest future;

- Republishing Jobs Module.
- Application text dump that will be stored in the MySQL database will be well formatted and transferred to a different server where search will be done and return as JSON objects since as time goes by, the amount of CV coming in is exponentially big that MySQL database won't be able to handle.
- Searching CVs in nukeboard.co will be slow if the amount of CVs grow too large so a different algorithm will be used to speed up the search. A proposed algorithm already was Binary search.
- Nukeboard codebase will be refactored and cleaned in order to re-organize the codes and make it really easy to understand so that other developers won't face difficulty in understanding the codes.
- etc...

5.5 Other projects and work done during internship

In addition to my work done during internship, I am really amazed at the other tasks I carried out and other technologies I learnt. A quick mention of other things I did during internship is as follows;

- Contributed Codes to Open Source Organisation in PHP(Fixed 25 bugs as of today, 15th Feb 2016).
- Worked on other real life projects like; <http://efarm.cm>(Online Agricultural Market for selling and buying of agricultural products), <http://derick-tech.xyz>(My Personal Website).
- Mentored a Google program(GCI: Google Code In) where students from 13 - 17 years old contribute to open source projects. I mentored under the WMF(Wiki Media Foundation).

- Did Freelancing jobs online on Upwork Global Inc and accomplished 10 jobs.
- Learnt how to write professional documents in LaTeX which uses TeX as the scripting language. I used this technology to write my internship report.

Bibliography

Shihan, M N Islam (2015). "Laravel 4.2.x Docs". In: *Laravel Documentations* 1.26, pp. 1–351.
URL: http://leanpub.com/laravel-4_2-docs.

[1] Visited on: 1st Sept, 2015, <http://daanlenaerts.com/blog/2015/07/05/create-subdomain-with-apache2-on-ubuntu-server/>, Subdomain Creation in Ubuntu Apache Server

[2] Visited On: 14th Oct, 2015, <https://laravel.com/docs/4.2>,
Laravel 4.2 Documentations

[3] Visited On: 1st Sept, 2015, <https://support.rackspace.com/how-to/set-up-apache-virtual-hosts-on-ubuntu/>, Configuration of Apache Virtual host on Ubuntu

[4] Visited on: 10th Sept, 2015, <https://tika.apache.org/0.5/documentation.html>,
Apache Tika Documentation.

[5] Visited on: 17th Dec, 2015, <http://www.softwareqatest.com/>
Quality Assurance Docs.

[6] QA test results: <https://docs.google.com/spreadsheets/d/1tGCM8aJPhJMd72sqRn\ nYN6l4yl7kqiBgliYK86zPlqk/edit#gid=0>

[7] Visited On: 12th Dec, 2015, <https://www.campaignmonitor.com/email-templates/>,
HTML email templates.

[8] Visited On: 2nd Nov, 2015, <http://stackoverflow.com/questions/27742097/jquery-autocomplete-with-laravel-4-not-working>,
Auto-complete jQuery using Database Values.