



## Intra Report 2018

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## **Abstract**

Capita IB Solutions is a software solutions company who provide financial management software and purchasing software solutions to clients around the UK, Ireland, Hong Kong and Australia. The company develop web based applications for organisations, which include both private sector and government organisations. While the product is web based, all development is done in Java. The company have their own Java framework which I got trained in over the course of my first few weeks of the internship which will transform the Java code into JavaScript and HTML. During my internship at Capita I have primarily worked on the Comprehensive Information System for the Mental Health Commission which will be used to register users, manage users/staff, manage tribunals/inspections. In the second week of September, the product was launched into a live environment to perform a User Acceptance Test after three months of development followed by one month of testing. During my internship I have seen what it is like to be part of the product development lifecycle. I have gained valuable knowledge in improving my teamwork and professional skills. The overall experience has led me to become a better programmer and had given me a better view of the end goal while developing product code in the early stages of the development lifecycle. I have learned invaluable debugging, communication and programming skills, I have learned a lot from working with a team of other people and how to work in a professional environment. These skills will be a great help when it comes to developing my 4th year project and when I begin my developer career after I graduate.

## **Report**

For my Intra work experience I worked in Capita IB Solutions at Merchants Quay in Dublin, I was given the title of Intern Software Developer. The purpose of my role within Capita was to work as part of the 'Bespoke' team. Here we created business management tools for the private and commercial sector, some of our notable clients are: Irish Times, Failte Ireland and various City Councils and Government organisations. Over the course of my internship applications we worked on were: Client Billing Module for Teagasc, Dental Contract Support System for the British Services Association and Comprehensive Information System for the Mental Health Commission. My main focus was development on the Mental Health Commission (MHC) project, throughout my time at Capita.

Capita IB Solutions is a part of Capita plc, which is a business process outsourcing and professional services company. They were founded in 1984 and are headquartered in London. The company employs 68,000 people, 3000 of which are in Ireland, and are the UK's leading provider of business process outsourcing. The company is listed on the London Stock Exchange and are a FTSE 100 company. With reference to the office where I worked in Dublin IB Solutions is located on the Merchants Quay, the office structure was split mainly into two groups, Group Development and Software Engineering. My department employs about 15 people, which include: Developers, Testers, Business Analysts and Project managers. My office hours were 9.00-17.30 Monday to Friday, with an hour lunch in the middle.

During my internship I worked exclusively in Software Engineering department. The code I wrote was all in Java and SQL, so Eclipse and SQL Server Manager were used as my development environment. Within Eclipse, Apache Subversion (SVN) was used where I could upload my code to a SVN server to create backup copies of the code along with viewing the history of all code changes to specific files. The latest code submitted to the SVN was also the code which was used in the final product. As I was developing a web-based service, I used another product called JRebel which enabled me to make code changes without having to do a fresh build and redeploy to see the changes. JRebel scans for changed Java classes and when found, they are recompiled and instantly reloaded in the running application.

When I first started my internship, I was given a seat and an induction process which is given to all Capita employees. The process consisted of several Capita produced courses on how to use the products they develop along with other courses on fraud protection and IT in the workplace. Some of these courses are done on a yearly basis to keep employees up to date on the latest IT in the office and new ways of detecting fraud, this is especially apparent with the new GDPR rules that came in during the start of 2018. After the initial induction, I spent a few weeks studying and learning how to develop code using their own Java framework which I used to develop my code throughout my time on the internship. The API was based purely around Java and converted the Java code into the necessary JavaScript and HTML needed to view the application in a web browser. After I completed this training course I was given several Bugs (defects within the application) to fix on the CBM project for Teagasc. This was to let me get a further knowledge on the system before I moved onto my first large scale project which was starting in 3 weeks time.

My main duties of work revolved around the development of the Comprehensive Information System (CIS) for the Mental Health Commission (MHC). The Mental Health Commission is a government body which oversees all mental health facilities in Ireland to ensure they are adhering to standards. Comprehensive Information System allows the Mental Health Commission to manage its work in the following areas:

- Manage the registration process of new and existing Mental Health Facilities.
- Manage the Inspections of Mental Health Facilities and the generation of Inspection Reports.
- Manage Corrective and Preventative Actions stemming from Inspection findings to ensure Mental Health Facilities found to be in breach of the standards make the necessary changes.

Most importantly CIS will replace the current paper system of the MHC and allow for much easier changes that can be made instantly. The current paper system is very cumbersome and error prone. Implementing CIS will improve the efficiency of the MHC and benefit everyone involved, patients and staff alike. The CIS will be used across all of Ireland by Mental Health Facilities.

When it came to start this project, we began with four developers and one business analyst. We followed the Agile development approach while implementing the SCRUM process. This method assists teams in responding to the unpredictability of constructing software. It uses incremental, iterative work sequences that are commonly known as sprints. We had bi-weekly sprints and daily stand-ups. In our daily stand-ups we talked about:

- What we are currently working on.
- What we will be moving onto.
- Do we have anything blocking us from finishing our current task.

Each developer took turn talking to the team and if they had a problem it would be brought up and other developers could give suggestions. I have found that this was very helpful because as an intern I get to listen in to what some of the senior developers are doing and how they are doing it, it also helps a lot because when it comes to my turn talking what I'm currently working on the senior developers would give me suggestions on what I could improve on or maybe approach from a different angle. Every two weeks we started a new sprint, this is where we are given a set of tasks to do and need to finish by the next sprint. At the end of each sprint we would have a retrospective meeting where we discuss any problems we had or is there is anything we could do differently for the next sprint to improve our workflow. I have found that commenting code is of great use to everyone as it makes it easier for other developers to add to existing code another person wrote, improving overall efficiency of the project timeline.

At Capita I was working on the registrations and system administration section of the MHC project. I was working on the front-end part of the application, creating a link between various pages and insuring pages have correct validations as per functional specification, for example, when users are entering data into the application I must ensure that when they enter a non-numeric value into the phone number field it would give an error and stop the user from saving the values. When I was finished writing the code and unit tested everything I have implemented I would give my task to another developer who would further test it before giving it to Quality Assurance. Quality Assurance then test that the application adheres to certain company standards such as button placement and labelling, also making sure that there are no errors or crashes in the application. JIRA was used to keep track of any errors which the testers found. My duties would involve fixing any error logs which were assigned to me and to resubmit them for another round of testing. Along with sending the code to the testers, developers who worked on the project cross tested each other's code as well. We launched our release in the second week of September where it was given to our clients who would perform a User Acceptance Test. This is where they would look for errors in the applications that need to be fixed before the final release. After launch I spent my last two weeks working at Capita fixing other error logs from the main CIS application.

I have gained a lot of knowledge from my internship at Capita. It was very interesting to see the development lifecycle of a project in a real world environment, from developing my code along with cross testing the code of my peers up to product launch. I have found that there are many stages of a project lifecycle that I never knew existed before, such as double testing where

another developer would test your code/section before giving it to Quality Assurance. As there were three other employees along with myself working on the project, I would say that I have also further developed my team working skills and communication skills. It was vital that all of us working on the project that we understood what to do and how to do it. I furthered my Java and SQL skills as all the development was in Java and SQL. I think this will help me greatly when it comes to developing my 4th year project and in the workplace after I graduate. The most important skill I think I have learned is debugging code, this will be of great help to me coming along in my career, regardless of the language I will be developing in.

## **Conclusion**

I feel that the Computer Applications course prepared me very well for my internship at Capita. The three months of Java which I studied over the course of year two gave me a great understanding of the language. The module which we were taught on Databases ensured that I was able to use SQL as required without any issue. However, if I was to make any adjustments to the course, I would start by making sure that all students in first year begin coding in a Java integrated development environment such as Eclipse or IntelliJ or maybe a mixture of all the popular IDE's. I didn't find any advantage to coding in Notepad++ as we were told to do in first year. I would have found it very helpful if I had been coding in Eclipse from the beginning of first year as it took a few weeks of my internship to fully get to grips with the IDE.

In conclusion, I found my internship at Capita IB Solutions to be of very high quality. From the beginning I was doing the same work as the other developers who worked there. I was able to see first-hand what it is like to be in a development team with targets to make. Unlike other internships which I have read about, my every move wasn't scrutinised, they trusted me to do my work and offered help when I asked for it. Overall it was a very rewarding experience with a great work ethic in the office. I would have no problem in recommending other Intra students do their internship at Capita IB Solutions. They will be treated like every other member of staff and will be assigned real work relevant to the Computer Applications course. I would defiantly consider going back to work at Capita IB Solutions when I graduate due to the reasons listed above. I thoroughly enjoyed my development role there and would love to further add to it after I graduate.