Rachel Dupuy

dupuyr@tcd.ie

Abstract

Outline in detail an experience investigating a new ICT topic to ensure the completion of a defined task that emerged during day-to-day workplace activity.

LoGbook Task Year 2

Option Area 4

# Introduction

This document will detail an experience or two in my workplace in which, in order to ensure that certain tasks that emerged during the day-to-day workplace were completed satisfactorily, I was required to investigate aspects of a new ICT topic. It will discuss the various day to day activities that I complete as an ICT Software Engineer within as well as describe two topics within the one larger ICT area which are essential to the completion of my daily tasks. The document will then conclude with how my experiences in the workplace have shaped my understanding of the importance of research and investigation as a skill in my role as an ICT specialist.

As an ICT Software Engineer in my organisation, my day-to-day activities revolve around writing, debugging, and testing various bits of code. Almost all of the applications that I code, and test are web based, therefore the majority of my research and investigation focuses on Web Development based topics. However, I also get the chance to research and develop other ICT skills such as Project Management, and Testing, both of which are not limited to the scope of Web Development. This document will focus on Web Development, as that forms the basis of many of my tasks. Two topics that have been essential to my ICT Web Development experience are JavaScript and its many functionalities and libraries, as well as CSS frameworks such as Bootstrap. The investigations I conducted in order to further my knowledge of these topics were done over the course of completing various projects, however I will only focus on one project in order to limit it to just one experience.

# Scenario

## Background

I was assigned by my manager to work on a small project that only required one person to complete. It consisted of re-writing and updating existing code that implemented external web-based applications, so that it performed identical functionality, but was solely on my organisation’s dedicated application. The project in question involved map coordinates conversions which were at the time completed in an external web-based application locally known as ‘Doogle’. This application was called from within my organisation’s dedicated application. My task was to modify the code so that the conversions were done within my organisation’s dedicated application, thus eliminating the need to open the ‘Doogle’ application. This would involve using external JavaScript programs to complete the conversions instead of hard coding it, as well as adhering to the uniformity of my organisation’s dedicated application by implementing the same CSS frameworks already in use in the application.

## JavaScript

JavaScript is a scripting language that forms the core of almost all of my organisation’s web-based applications. Therefore, it is essential that I am aware of and knowledgeable about its various functionalities and notations. In terms of the scenario detailed above, I encountered the use of external programs and libraries to enhance the existing code and perform dedicated functions without the need for hard coding. The external program in question is Proj4.js.

### Research Conducted

First and foremost, before I could implement Proj4.js into my program, I had to understand what it would be doing in my program. This involved researching and reading online about Geodetic Systems and how they worked.

Geodetic Systems are reference frameworks for unambiguously representing the positions of locations on Earth. Each nation may have their own framework for locations within their borders, but there is also a universal framework (WGS84) which is used by the likes of Google and Bing Maps to show locations. The coordinates I would be converting were presented in the Irish framework (ITM) and would be converted to (WGS84).[1] [2]

Once I was satisfied, I could then investigate how to implement the library in my code. This was easily explained in Proj4.js’ dedicated GitHub page by the developers. [3][4] I discovered that there were various methods in which I could include the library in my program. One way was to include a hyperlink in my program’s HTML page, to a site where the program files were being hosted, therefore eliminating the need to download lots of files. I elected to do it this way first in order to test it and ensure it returned what I needed before I committed to it fully. The other way, which I eventually implemented, was to download the files and include them in my project files. Both options required the necessary files to be called in the same manner as any other JavaScript file, that is by using ‘script’ tags in my program’s HTML file.

### Research Outcome

As a result of conducting the necessary research outlined above, I was able to further my knowledge of JavaScript and acquire a better understanding of Web Development as a whole. I am now able to add any external JavaScript library that is necessary to my programs, both personal and in the workplace. It is important that I able to implement this aspect of JavaScript as it is a fundamental aspect of the programming language itself, but is also essential for successful completion of day-to-day activities in the workplace, especially in future projects that I may be involved in.

Another outcome of this research, whilst not entirely related to the ICT topic itself, is essential for the completion of everyday tasks in the workplace, is that I am able to understand more clearly the functionality of some the items on my organisation’s application. In this case, it was the different geodetic systems, and the required conversions used in the application. This is a huge benefit to me as an ICT Software Developer in my organisation as it means I can be more prepared and be more knowledgeable if any future projects involve coordinates or conversions.

## CSS

CSS, shorthand for Cascading Style Sheets, is a programming language which focuses on the styling of a web page using various rules and properties. Like JavaScript, it is an essential aspect in Web Development, therefore it is imperative that I am knowledgeable about its functionality. In terms of the scenario detailed above, I encountered using external CSS Frameworks to enhance the look of web-based applications without having to hard code the designs in. The Framework in question was Bootstrap.

### Research Conducted

First and foremost, before I could implement Bootstrap in my program, I had to understand what it would be doing in my program. This involved reading about Bootstrap on its dedicated webpage about items and functionalities associated with those items. [5]

Once I was satisfied, I could then investigate how to implement the framework into my code. As this framework is widely used across my organisation’s application, I could inspect elements of the application in order to look at the code behind it in order to better understand how to get certain items exactly how I wanted them to look in my program. [6] One such item I would be implementing would be modals. Modals are containers in Bootstrap which are used to hold other elements, such as input fields and buttons. The modal I would be implementing would be holding input fields for coordinates and buttons to convert those coordinates. I was able to view similar modals in my organisation’s application in order to better understand how to implement it in my own program. This involved modifying existing HTML tags with classes unique to Bootstrap, to obtain the desired functionality.

### Research Outcome

As a result of conducting the necessary research outlined above, I was able to acquire the necessary understanding and knowledge in order to complete a task that is part of my day-to-day workplace activities. I was also able to further my knowledge of CSS and Web Development as a whole. I am now able to implement Bootstrap into my programs, in private and in the workplace. It is important that I understand how to use it as it is not only essential as a CSS framework for improving the layout of a web-based application, it is also necessary for day-to-day workplace activities, as it is implemented in almost all of my organisation’s applications and it will be implemented in all future projects I will be involved in that require a change to a graphical interface.

Another outcome of this research, similarly to JavaScript above, is that I am able to understand the functionality of some of my organisation’s applications more clearly, as well as adhering more to the uniformity of all the applications, in terms of colours, text size, modal size, etc. In this case, the use of the Bootstrap framework to enhance some of the web pages of the applications and how it is implemented to achieve a uniform look which ties the applications together. This is hugely beneficial to me as an ICT Software Developer in my organisation as it means that I am more knowledgeable and understanding of tools used in applications, which means that I can be more prepared when I am completing future projects.

# Conclusion

Completing day-to-day workplace activities sometimes necessitates researching ideas and topics that I have never used before. This is essential as it broadens my knowledge and understanding of programs and other tools that are used in almost all of my organisation’s applications. It is important that I am still able to learn whilst completing projects as it will prove invaluable to me when completing future projects also. It also aids my development as an ICT professional as it exposes me to topics and ideas that I will keep with me and use in the future, and in turn improve my skillset.

# Bibliography

[1] (n.d.). *IRENET95/ Irish Transverse Mercator*. Espg.io. Retrieved July 17, 2024, from <https://espg.io/2157-85800>

[2] (n.d.). *WGS 84 – WGS84 – World Geodetic System 1984, used in GPS*. Espg.io. Retrieved July 17, 2024, from <https://espg.io/4326>

[3] Adair, M., Greenwood, R., Richard, D., Irons, S., Terral, O., & Metcalf, C. (n.d.). *Github - proj4js/proj4js JavaScript library to transform coordinates from one coordinate to another, including datum transformations*. Github. Retrieved July 16, 2024, from <https://github.com/proj4/proj4js?tab=readme-ov-file>

[4] (n.d.). *How to use proj4.Transform function in proj4 | Snyk*. Snyk.io. Retrieved July 18, 2024, from <https://synk.io/advisor/npm-package/proj4/functions/proj4.transform>

[5] (n.d.). *Modal - Bootstrap*. Getbootstrap.com. Retrieved July 19, 2024, from <https://getbootstrap.com/docs/4.2/components/modal/>

[6] Tailte Eireann (n.d.). *PRA - ITRIS*. ITRIS. Retrieved July 19, 2024, from localhost/ITRIS/