Callum McGregor

# Summary

I am a second year student at Exeter University, reading Computer Science. Most of my academic experience is in Java with exposure to C, C++, Python, Microsoft Visual Basics and Haskell. I also have industrial experience in web design and mobile application development primarily using HTML, CSS and Javascript.

I have used Java extensively as its versatility makes it ideal for University projects as well as being essential in industry. I have experience in using JUnit to practice test driven development and have followed other Extreme Programming principles such as pair programming in my assignments. Most of my commercial experience is in Javascript, which despite its rough patches I find very enjoyable to use, particularly when used with jQuery.

I spent the summer of 2014 working for Harlequin Computing Solutions, creating a mobile phone application that puts cyclists in touch with each other when they are in need of help. We used a technology called Cordova, which allows web applications to be run as a cross-platform mobile application.

# Skills

## Java

I have experience with using JUnit 4.12 in my studies and side projects. I worked on a Java Approvals Testing framework with my father, which introduced an assertion testing functionality to JUnit. I have experience using Mock Objects and Test Suites for large, multi-class systems. I find that JUnit’s testing framework, along with test-driven development makes for much better code in a process that I find very satisfying.

In my recent modules I have studied more some more advanced parts of the Java language. I have experience on using in writing a multi-threaded system in a thread-safe manor and this has given me an appreciation for the power of immutable code! I also studied Java Design Patterns and have experience using many of the more commonly used ones. The problem that design patterns solve is one that I have often considered before.

## Javascript

I have experience in using Javascript commercially in client-side web development. Despite confusing closures and its unusual prototype inheritance model I found Javascript very enjoyable to use. The additional use of jQuery made selecting objects within the DOM far more fluid.

## Mobile Application & Web Development

I have experience designing and writing a cross-platform mobile phone app in JavaScript, HTML and CSS using a technology called Cordova. I have used APIs to interact with technologies and applications on devices such as geo-location services and SMS messaging. I preferred developing for Android, as it was far easier to interact with the device. In contrast, iOS would not allow a prewritten SMS to be sent from the app and their move to Maps from Google Maps made it very difficult to open a map over a given location.

## Programming Paradigms

I am experienced in several different programming practices. I have used Extreme Programming and Scrum agile development in my studies and industrial experience. I find aspects of Extreme Programming such as pair programming and test driven development to have a large positive impact on the quality of code. However I also like the clear structure and distinction of roles within a Scrum Team.

## Other Skills

Other languages and skills that I have experience in and would be happy to discuss are: Python, C, C++, C#, Objective-C, Functional Programming in Haskell, Prolog, Artificial Intelligence, Databases, SQL, System Architectures, Network Architectures and Protocols.

# Open Source

## Okey-Doke ([www.github.com/dmcg/okey-doke](http://www.github.com/dmcg/okey-doke))

A Java approvals testing framework implemented using JUnit rules. Worked on with my father while studying at University last year.

# Education

## University of Exeter: Computer Science September 2013 – Present

Skills learnt:

Java, JUnit, Java Threading, Java Design Patterns, C, C++, C#, Objective-C, Python, HTML, CSS, Javascript, Ajax, PHP, Functional Programming (Haskell), Logic Programming (Prolog), SQL, Git, Test-Driven Development, Agile Development (Scrum), Pair Programming, UML, Linux, Network Architecture and Protocols.

I studied Computer Science and Mathematics in my first year at Exeter and received a First-Level mark and a Dean’s Commendation for my results. In my second year I decided to continue without Mathematics, as Computer Science was where my real interests lie.

After covering the basics of Java I started to learn about the software development process and various programming paradigms, which I found insightful. We learnt the functional language Haskell and I found this required a huge change in mindset when approached programming. I am keen to bring this way of thinking into how I write my code in other languages such as Java. I have studied C, the Linux OS using a Raspberry Pi and other areas such as artificial intelligence, system architectures, databases and networks with some practical experience in each area.

I am the Treasurer for the Exeter University Computer Science Society and am also on the committee for the Real Ale Society.

## Alton College September 2011 – June 2013

Skills learnt: Pascal, Windows Visual Basic

It was at Alton College that my interest in computer science was sparked. I learnt to program using Pascal, which as a strongly typed language with no exception handling or modern IDE and a quirky, novelty to it was a fun start to programming which taught me to have an eye for detail from the start. In my second year I developed a central heating control system in Microsoft Visual Basic using a waterfall development process. This approach to software engineering made it difficult to include forgotten system requirements and caused many propagating bugs. I achieved Computer Science, A; Mathematics, A; Further Mathematics, B.

# Experience

## Harlequin Computing Solutions June 2014 – September 2014

Skills used:

HTML, CSS, Javascript, jQuery, Git, Java, Extreme Programming, Test-Driven Development, Pair Programming, Cordova, iOS Development, Android Development, use of APIs.

Role overview:

I helped theorize, design and implement a mobile phone application called RescYouMe ([www.rescyoume.com](http://www.rescyoume.com)) that puts stranded cyclists in communication with other nearby cyclists. I influenced the course of the project by researching and analysing the technologies that we would use. The application was written in HTML, CSS and JavaScript, which I taught myself from books. In particular I used APIs to use a devices map application and geo-location services to find a user’s current position and direct others to them. I exercised Extreme Programming and enjoyed using test-driven development and pair programming. We used Git as our version control system and I have used it since for all my projects.

# References

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