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 refactoring and pair programming. 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 application that puts cyclists in touch with each other when they are in need of help. I also helped write Okey-Doke, an open source Approvals Testing framework for Java based upon JUnit.

# Skills

## Java

I have experience using JUnit 4.12 to write Unit Tests, Mock Objects and Test Suites. It was while contributing to Okey-Doke, an open source Approvals Testing framework that I first developed an interest in formal testing methods. I find that using JUnit along with test-driven development makes for much better code in a process that I find very satisfying.

Recently I have studied more advanced parts of the Java language. One assignment was to write a genetics mutation algorithm in a thread-safe manor. As well as teaching me how to use threads, it has given me an appreciation for the power of immutable code! I also studied Java Design Patterns, which solve a problem in software development that I have often considered before.

## Javascript

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

## Mobile Application & Web Development

I have experience designing and writing a web application in Javascript, HTML and CSS which was then compiled into a cross-platform mobile application using a technology called Cordova. I have used APIs to interact with technologies and applications on. I preferred developing for Android, as it was far easier to interact with the device. In contrast, iOS would not allow prewritten SMS messages to be sent and the 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 programming practices. I have used Extreme Programming and Scrum agile development in both 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. I worked on it 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 is 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. I have studied C, Linux on a Raspberry Pi and areas such as artificial intelligence, system architectures, databases and networks with some practical experience in each area. I learnt the functional language Haskell, which I found required a 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 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 and a quirky, novelty to it was a fun way to start programming and 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 theorise, 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 client-side 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 enjoyed exercising Extreme Programming practices such as 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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