Callum McGregor

# Summary

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

I have used Java extensively. Its versatility makes it ideal for university projects as well as being essential in industry. I have experience in using JUnit for test-driven development and have followed other Extreme Programming practices 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 augmented with jQuery.

I spent the summer of 2014 working for Harlequin Computing Solutions, creating rescyoume, a mobile application that puts cyclists in touch with each other when they are in need of help. I also helped write a Python prototype of Okey-Doke, an open source approvals testing framework for Java based upon JUnit.

# Skills

## Java

I have used JUnit 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 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 university assignment was to write a genetic mutation algorithm in a thread-safe manor. As well as teaching me how to use threads, it gave me an appreciation for the power of immutable code! I also studied Java design patterns, which solve a problem that I had already experienced.

## Javascript

I have used Javascript with JQuery commercially in client-side web development. Despite the confusing closures and its unusual prototype inheritance model I find Javascript very enjoyable to use.

## Mobile Application & Web Development

I have experience designing and writing a web application in Javascript, HTML and CSS, compiled into a cross-platform mobile application using a technology called Cordova. I have used APIs to interact with technologies and applications on iOS and Android. I preferred developing for Android as it was far easier to interact with the OS. In contrast, iOS would not allow prewritten SMS messages to be sent and the move to Apple Maps from Google Maps made it very difficult to open a map over a given location.

## Programming Paradigms

I am experienced in several programming methodologies. I have used Extreme Programming and Scrum agile development in both my studies and industrial experience. I like the clear structure and distinction of roles within a Scrum Team, while XP practices such as pair programming and test-driven development have a large impact on the quality of the code. Using the project management of Scrum and the programming guidelines of XP make for successful projects.

## 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 Python ([www.github.com/callummcgregor/okeydoke-p](http://www.github.com/callummcgregor/okeydoke-p))

A prototype for a Java approvals testing framework, Okey-Doke ([www.github.com/dmcg/okey-doke](http://www.github.com/dmcg/okey-doke)): written in Python.

# 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-equivalent grade and a Dean’s Commendation for my results. In my second year I decided to concentrate on Computer Science, which is where my real interest lies.

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 functional programming in Haskell, which I found required a change in mindset when approaching programming. I am keen to bring this way of thinking into how I write my code in other languages.

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 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 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.

I helped design and implement a mobile phone application called rescyoume ([www.rescyoume.com](http://www.rescyoume.com)) that puts stranded cyclists in touch 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 device’s 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 since used it for all my projects.

# References

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