Callum Dempsey **Leach**

MSc · Computer Science

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Summary

A distinguished MSc Computer Science graduate. Passionate about quality-driven software development and architectures, team-work and leadership, human-computer interaction design, and containerization techniques (studying at leisure to be a Docker Certified Associate). Industry experience in problem support and resolution for partners of EMIS Health utilizing the EMIS Web API, the flagship application of the clinical systems supplier, and agile software development with RHEA Group.

Skills

Programming Experience Java, Python, Docker, Bash, T-SQL.

Web Experience Apache, Django, NGINX, JavaScript, Python Docker SDK (for Django integration), CSS, HTML, PHP, Bootstrap, jQuery, Phoenix.

Design Experience Performance Effective Algorithm Design (Big O notation), Software Engineering Process Models (agile and waterfall), Software Architecture Design (call and return, object-oriented, and layered methodologies), GraphQL API Design, Human Interaction Design, UML Modelling, OOP Design Practices (i.e. SOLID, immutability, composition, design patterns, and concurrent programming), Django Design Practices (i.e. responsibility driven application design), MVC, Relational Database Design (i.e. entity-relationship and relational models, and normalization techniques).

Research Experience Qualitative and Quantitative Research, Requirements Analysis, Algorithm Research and Development.

Other Skills Critical Thinking, Team Leadership, Project Planning and Strategies, Problem Management, Linux System Administration, Regular Expressions, GIT, SVN, Documentation and Technical Writing, Formal Logic.

Experience

RHEA Group

Harwell Oxford, England

Junior Software Developer

Feburary. 2018 - Present

- Translated user stories into end-user features. Provided documentation evaluating pilot solution design considerations. Researched and tested relational databases, NoSQL databases, and graph databases, developing schemas to help determine which best fit the project use case.
- Maintenance of a RESTful API written in Go working closely with data engineers and UI developers to facilitate the flow of information through the database and API. Experience in Apache NiFi configuration. Developed a GraphQL API and a bespoke data-parsing tool to stream shapefile and GeoJSON data to databases written in Elixir. Provisioned shell sripts for their deployment to Vagrant and Amazon EC2 instances.

EMIS Health

Leeds, England

Support Consultant

December. 2015 - September. 2016

- Attained a first-class insight to technology development and deployment of clinical software systems which grounded my critical thinking, technical writing, social and communication skills (i.e. consultation and presentation) in an applied enterprise environment.
- Developed customer service skills through interfacing with clients, support, and development teams of accredited suppliers over the phone, to investigate API faults of third party software for the flagship application EMIS Web. This involved negotiating problem resolution strategies and technical writing to suit each of those stakeholders.
- Developed technical skills through investigating API faults for third party suppliers, interpreting C# stack trace for fault resolution, peer-reviewing and querying T-SQL for estate-wide configuration and issue diagnosis, creating automation scripts for repetitive problem management (i.e. batch or Python), and problem handling network transmissions using in-house tools and Wireshark. Many resolutions I proposed were contributed to the support knowledge base.

Rockliffe Hall Hotel

Hurworth, England

Team Member

December. 2011 - March. 2012

- Social experience empathising with customer grievences for problem resolution.
- Using conversation skills to make customers feel continually welcome and ensure the business remained competitive and efficient.

Education

Newcastle University

Newcastle, England

MSc. Computer Science (Distinction)

September. 2016 - December. 2017

- Achieved a final average of %78 raw marks.
- Awarded for best team project having played a leadership role as a team manager.

University of Leeds

Leeds, England

BA. Philosophy (2.2)

September. 2012 - July. 2015

- Flourished in programming electives with project focus on user accessibility.
- Provided expertise in qualitative analysis, critical evaluation, assessment, and technical writing as practised investigating philosophical concepts, in particular the philosophy of modern physics (general relativity).
- Provided expertise in explaining complex concepts (i.e. complex data structures) to be clearly communicated or well-understood towards individuals without detailed or technical knowledge about the subject (i.e. by abstracting, simplifying, or reducing the concept).
- Research experience in ethical evaluation and analysis, evaluation of scientific methodology, and systems of formal logic (i.e. propositional logic and Kripke semantics).

Queen Elizabeth Sixth Form College

Darlington, England

A-Levels

September. 2009 - August. 2012

- History (A*), Philosophy (B), English Language (C).

Hurworth Comprehensive School

Hurworth, England

GCSE's

September. 2004 - August. 2009

- English Literature (A*), Additional Science (A*), Physics (A*), Information and Technology (A*), English Language (A), Science (A), Biology (A), History (A), Chemistry (A), Mathematics (B), Geography (C), Statistics (C).

Projects

An application to best support student education in semantics and best practices of object-oriented programming

Available on Github

Masters Thesis, Newcastle University

June. 2017 - September. 2017

- Provided a software solution which best facilitates student education of the Java programming language by the means of educating the semantics of object-oriented programming as associable with the best practice of object-oriented programming.
- Involved in-depth qualitative research into establishing the best practices of object oriented programming as associated with understanding the kinds of meaningful language (semantics) when talking about concepts in object-oriented programming, and quantitative research to identify correlations between student failure in Java based courses and poor understanding of those semantics.
- Evaluated academic literature and statistics of various pedagogical strategies (learning styles) in synthesis to best teach those students the semantics and best practices of object oriented programming to justify choosing a single strategy from a disjunction.
- Involved market research to existing solutions and how existing technologies can be integrated with the proposed solution.
- Using a waterfall software engineering process model developed a software solution utilizing a stack of loosely coupled Django applications organised into a layered architecture each designed using the single responsibility principle. The application stack allowed for teachers to serve course-content to students to teach the semantics and best practices of object oriented programming in Java based on student learning styles on a platform with user friendliness in mind.
- The application stack served course-content by generating internal virtual hosts on allocated ports. Users were dynamically proxy passed to the suitable service. Part of this solution involved the development of an application integrating Docker with Django to launch containerized NGINX web-servers to best scale, maintain, and deliver static-HTML course-content and additional features for end users, such as isolating a Java compilation environment.

A railway-network timetable management client and optimised search engine

Available on Github

Group Project, Newcastle University

December. 2016 - May. 2017

- For a mock railway service application (similar to 'trainline.com') I acted as group project team-leader, the focal point for group meetings and managing an agile development process. My key responsibilities included organising meetings, designing and modularizing the solution architecture, motivating feedback from team-members, escalating significant risk to the project as necessary, splitting the designed solution into manageable sets of objectives and milestones and ensuring they were met, and problem management (i.e.regularly supporting team members and troubleshooting their code in one-to-one sessions).
- I was solely responsible for the research, design, and implementation of a unique fastest time routing algorithm for the web-application, and presenting the implementation to examiners.
- Where a classical approach for modelling time-table information is a database of stations and trains stopping at each station, the designed implementation deviated from this approach, representing train-arrivals at stations by making train-times and stations conjunctive as event-based nodes. The topology of connected-nodes then identified which connecting train-times and stations were reachable from train-arrival events. Searches for fastest train times from A-B were then performable using a depth-first search through connected nodes.
- The routing solution was finally implemented as a module in the overall project using an object-oriented architecture written in PHP.

Tournament matchmaking client

Available on Github

Personal Project

December. 2015

- Developed an application using a custom algorithm to rank, swap, and organize a database of active users on a gaming server into manageable sets (teams) of users of the same average rank apt to compete against each other in an online video game tournament.
- Produced and hosted that tournament using an NGINX RTMP server to broadcast to the larger involved community.

Switch configuration client

Available on Github

Task for Hewlett Packard Enterprise engineer

December. 2014

- Delivered a network capable leveraged configuration management tool for deployment of a large number of stacked switches containing mixed switch models to Hewlett Packard Enterprise environments, requiring a degree of flexible options to create the appropriate stack mix.