

# Higher Diploma in Science in Software Development

GitHub Repository

[G00388055](#)

[Aron Nutley](#)

## Introduction

As part of the Higher Diploma in Software Development Work Placement Alternative Project the student is required to complete a Professional Portfolio. The portfolio contains a series of digital repositories that were created using GitHub. Each repository contains documentation that showcases projects that were completed for each module of the course. They are as follows:

- Object Oriented Software Development – Rail Fence Cypher Java Application
- Computer Architecture and Technology Convergence – Linux Terminal on AWS VM
- Network Technologies – Java Network Chat Application
- Database Design and Development – Database on XAMP
- Web Application Development – Ecommerce Website
- Agile Software Development – Junit Automated Test Suite
- Operating Systems and Cloud Computing – WordPress Website
- Advanced Object Oriented Software Development – Threaded Cosine Distance Calculator for Text Documents
- Computational Thinking with Algorithms – Java Benchmark Application

This document contains a summary description of the work in my GitHub portfolios outlining the work contained in each repository.

## Object Oriented Software Development

This repository contains the Java Project I created as part of the Object Oriented Software Development module. For the project I had to create a Java application that is capable of encrypting and decrypting short messages or a file using a Rail Fence cypher. The application contains a command line menu and contains 5 separate Classes which enables it to work.

## Computer Architecture and Technology Convergence

This repository contains the project that I submitted for the Computer Architecture and Technology Convergence module. The project was broken down into two parts. For part 1 I had to answer questions on binary arithmetic, that answers of which are in the pdf file. Part 2 of the assignment had me entering commands into a Linux terminal on an AWS virtual machine that I completed during the module. A description of each command is included in pdf as well as the solutions for the project that required me to create shell script.

## Network Technologies

This repository contains the project that I submitted for the Network Technologies module. The main aim of this project was to design and write a simple network-based chat application in Java using the Java Socket API. In doing this the application had to be able to carry out a certain set of functions while also meeting certain requirements.

## Database Design and Development

This repository contains the project that I submitted for the Database Design and Development module. The aim of the project was to assess a student's ability to design and construct a database that can be deployed in a commercial database management system. The initial phase of the project required the student to design a relational database for a given scenario (In this case a dental

practice). The business rules of the scenario had to be developed and implemented via the database schema.

### Web Application Development

This repository contains the project I submitted for the Web Applications Development module. For this assignment I had to create a business e-commerce website that employs the principles of HTML5, CSS and JavaScript which meets the requirements specified in the brief. I chose a sportswear company that employed a common design throughout and meets the

### Agile Software Development

This repository contains code that was developed as part of the Agile Software Development module. For the project I was required to develop a JUnit automated test suite that can test a Java application. I was provided with code that I was required to refactor so that it can be tested using JUnit5. The application needed to contain a test suite and the code should contain the following annotations `@BeforeAll`, `@BeforeEach`, `@Test`, `@ParameterizedTest`, `@Timeout`, `@AfterAll` and `@AfterEach`. The program was designed to calculate car insurance premium based on age and the suite needed to test every method of the refactored code.

### Operating Systems and Cloud Computing

This repository contains code that was developed as part of the Operating Systems and Cloud Computing module. For the project I was required to create a WordPress website. The website had to be hosted on an AWS cloud-based LAMP server which I built as part of the module Labs. The website was based on the WearOS which is the Google operating system for smart watches and wearables.

### Advanced Object Oriented Software Development

This repository contains project code that was developed for the Advanced Object Oriented Software Development module. For the project I was required to develop a Java API that can rapidly compare a query file against a subject file by computing the cosine distance between them. The API should uphold the principles of loose-coupling and high cohesion throughout its design by correctly applying abstraction, encapsulation, composition, and inheritance.

### Computational Thinking with Algorithms

This repository contains software developed as part of the Computational Thinking with Algorithms module which is part of the HDip in Software Development at GMIT. For this project I had to write a java application which will be used to benchmark five different sorting algorithms. I also had to write a report which introduces the algorithms you have chosen and discusses the results of the benchmarking process.