CA366 INTRA Report

SCHOOL OF COMPUTING

CASE3 - COMPUTER APPLICATIONS & SOFTWARE ENGINEERING

COMPANY: **VERITAS TECHNOLOGIES LLC**
ROLE: **EV.CLOUD INTERN**

Name | *Student ID no.* | *Due Date*

Nigel Guven | 14493422 | 21st September 2018

Table of Contents

1. Abstract

1.1. Role at VERITAS Technologies LLC

My official role at Veritas is the position of EV.Cloud Intern. I worked in QA, investigation and research of various aspects of EV.Cloud, an email archival and management system appended onto Microsoft Office 365.

1.2. Reflections

I worked at Veritas for a period of 6 months starting from the 3rd of April to the 14th of September. It was an enjoyable experience because I was able to learn so much in such a short space of time. I was on a team consisting of 10 software engineers, each of whom with a different role to play and from different nationalities and with different capabilities in the Dublin branch of EV.Cloud. I also worked internationally where I coordinated with other engineers and interns in the UK and in the United States. I gained valuable insight from working in this international environment.

This team is one branch of an entire division with other teams based in Pune, India and Mountainview, USA. I have made some valuable friends and expanded my network of contacts while on my INTRA placement where I am connected on professional sites like LinkedIn as well as personal sites. The team I worked with were always happy to help and gave knowledge transfers to the interns on the various areas of their expertise. I learned many interesting things while taking part in these sessions.

I worked in Quality Assurance where I developed skills in testing software especially through the utilization of certain industry-accepted tools. Over the period of my employment, I have felt involved and at all times. My team possessed a powerful synergy and were welcoming since the first day. I have felt more passionate of and also understand the importance of my university course which is why I might decide on working at Veritas in the future.

2. My INTRA Experience

2.1. Introduction

The purpose of my internship at Veritas is to learn as much as possible in the working environment of a software engineering company. I am working on EV.Cloud, a subsidiary product of Veritas which handles archival, management and backup of emails. I am involved in testing on the QA team and am also involved in infrastructure cost analysis on EV.Cloud's data facilities on Microsoft Azure.

2.2. Company Structure

Veritas Technologies is a company which creates cloud data management, backup/recovery and email archival solutions. There are more than 7000 customers and partners with Veritas of whom there are 84 large corporations ranging from telecommunications companies and government departments to banks and security firms.

The company was founded in 1983 as Tolerant Systems and rebranded as Veritas Technologies in 2016. It had moved to Dublin in 2017 with an official opening by Leo Varadkar and the promise of creating over 250 new jobs in sales, finance and engineering.

The corporation is based in Mountainview, California with over 7544 employees of which some 1000 are engineers and there are also engineering teams based in Dublin, Waldorf in Germany and Pune in India. It was bought by a private equity firm the Carlyle Group for 8$ billion from Symantec.

Veritas can become a monument for global influence and growth because it has very few competitors and those who do specialise in cloud storage, archival and backup are not nearly as big. Two examples are BarracudaFX and Acronis, one Irish and one based in Singapore who specialize in backup and recovery of personal data. Veritas were the first company to release a product that handles the management and archival of emails which is why EV.cloud has become so successful.

The major products that are sold are NetBackup which involves cloud data management and Ev.Cloud aforementioned as well as CloudPoint and eDiscovery two subsidiaries of NetBackup which handle backup and recovery of user data. There are roughly 500 employees working in EV.Cloud and more even still working in Sales, Finance, and Management.

2.3. Duties Performed

I worked on a 9-5.30 basis for 5 days a week. Each day at 4.30 pm there was a standup meeting where each member of the team discussed what they were doing, what they will be doing and if they need assistance. These were done over the Cisco Jabber team conferencing software. There were bi-weekly sprint retrospective meetings to discuss how successful was the previous sprint and what is the plan for next sprint. This follows the Agile system of software development with the term "CICD – Continuous Development/Continuous Deployment" being coined. There were also demonstrations of certain elements of the application and some monthly all-hands meeting to discuss the future roadmap of certain applications and new features both inside EV.Cloud and over all productions.

I was a member of the quality assurance team (QA) which was composed of members in both Dublin and in Mountainview. I was involved in manual and automation testing of a new software module with regards to an automated billing service appended to the EV.Cloud Administration Console and documentation of any bugs that I found to be reported to the developers. I used Microsoft Test Manager to document bugs and write up test cases which I then carried out on the console user interface.

I also had a virtual machine which I used as my testing environment. I used VMWare and Remote Desktop Protocol (RDP) technologies to access this machine. I utilized Visual Studio as my IDE and with plugins for Selenium and Fitnesse to establish automated tests for certain modules.

We utilized Microsoft Team Foundation Server and later JIRA as work collaboration tools for our Agile system workflow. On the TFS site there was a collection of tasks to be completed assigned to a scrum team. These were all listed in a backlog and placed in a 'to-do' state. The scrum master oversees giving team members items and controlling the progression board. I was assigned work and then I had it in a state of 'In Progress' until I completed it and put in state 'Done' where the work item was reviewed at the next daily stand-up meeting by associated members of that item. Slack a third-party application was used as a non-professional communications network to discuss smaller sections of the workload and personal matters.

Towards the last month of my internship, I was involved in cost analysis and optimization of EV.Cloud. The overall goal of this project was to reduce the cost of maintenance and storage on Azure where the expense of containing a huge amount of virtual machines, networks, services and accounts can be massive. EV was an old application that had only in 2018 been moved to the cloud under the new name EV.Cloud. It was then pushed onto Microsoft Azure in three main locations: Australia, Europe and the USA. This is why we had to reduce the cost of Azure based on our first quarterly fee from Microsoft.

I investigated some services, two web servers and an application programmable interface (API) which were not being utilized efficiently. I worked on investigating the consolidation of some of these services. I contacted the Development Operations (DevOps) teams with my proposals for areas where changes could be made to reduce the cost of Azure licensing.

I also investigated the roles of Terraform and Puppet. Terraform is an infrastructure tool which coordinates services and virtual machines from one script. Puppet is a configuration language which assigns the terraform rules to manage the EV.Cloud architecture on Azure. I examined these scripts to see where savings could be made based on which virtual machine licenses on Azure were being dynamically assigned by Puppet.

2.4. Knowledge Gained

I gained a lot of valuable experience in my time at Veritas. I had come in with some rudimentary technical computer skills and have completed my INTRA placement, leaving with an in-depth knowledge of the environment in which software engineers operate.

The engineers had Transfer-of-Information (TOI) sessions, some 1-to-1 and some were directed at the team. I learned the following in these sessions:

- Database Theory
- Terraform/Puppet
- Elixir Language
- EV.Cloud modules
- Github/Gitlab
- Azure
- JSON
- Powershell
- TFS/MTM/JIRA
- LinqPad
- Selenium/Fitnesse
- NetBackup

One of the engineers had set aside a two hour period every Friday to teach the interns on EV.Cloud about the programming language of C Sharp. This was quite beneficial for us as we learned how crucial it is for Microsoft .NET applications. I also learned how to perform automation testing using Selenium and Fitnesse, two crucial tools which are mandatory when performing a testing rubric on modules in the application.

We were given walkthroughs about how to set up our own development environment by another engineer. This was done using VMWare and setting up Visual Studio and Team Foundation Server to map the code from its repository on Github. I also learned about Javascript as that was the core language of the UI.

One of the most important things that I learned was the agile system of software development. I was able to learn how applications are planned, developed and how engineering team are organised to produce results. This is essential experience for me so that I know how to be cooperative and responsible once I have become a graduate engineer.

2.5. Theory versus Practicality

I believe that the workplace is much different to college. There are some missing elements that need to be filled in DCU Computer Applications. Project work in college is not organised efficiently because the tools available are not advertised to students to help them organise group work efficiently.

CA214 Systems Analysis covers how teams operate with sprints and Scrum but I think it should be a necessary part of group projects. Team collaboration tools like JIRA and Team Foundation Server should be accessible to students and should be obligatory.

CA267 Software Testing does not cover automation testing with Selenium and Fitnesse so I was unprepared for the work that I was given and therefore I believe it is crucial for students to learn this in the module. Also noting that on most of my INTRA interviews, I was always asked about my software testing project and if I had had experience with Selenium or Fitnesse or some testing suite in general.

CA218 Introduction to Databases was quite relevant to the work I was doing. I had to investigate database structures and archives of accounts and log files. I had experience in SQL for this work. I believe that there should be a further database module in 3rd year which gives the student the ability to create their own databases and perform manipulations on them. In this way it can help with college projects and preparation for working with databases in an engineering environment.

The CA304 Computer Networks module was helpful for me as I was able to create my own virtual machines and set up my own environment with Microsoft networking tools. This was quite important for my role in the team which was to test the environment and investigating various aspects of Azure.

I think that the various publications of Git i.e. Gitlab, Github should be used from first year onward so students can become familiar with these tools. Git is used in most working environments as well as the 3rd and 4th year projects so I believe that it should be given priority.

3. Conclusions

I thoroughly enjoyed my time working at Veritas Technologies. I gained valuable experience working here which I know will be of great benefit to me when I graduate from my course. INTRA is an important module in that it allows students to experience the working environment up close. With the work that I did, I have gained experience in QA and could possibly seek a role as a QA engineer but I would also like to examine the roles in development operations or as a database engineer.

My team were all very helpful in that they would set aside time from their own work to aid me with issues and also the fact that I was treated as a full member of the team with the ability to provide input, make decisions and provide my own opinion on work related matters, had made me feel inclusive and involved. If I had questions that I needed an answer for, I knew that I could always trust in my team to give me a clear answer. I would sometimes visit their desks and discuss both work and personal items and vice-versa which creates a good working atmosphere.The overall atmosphere inside the building was also welcoming as most of the staff in other departments would also make conversation.

I would consider working for the company once I have graduated. The working environment and employment benefits are some of the reasons I would like to become a member of the engineering team. I would also consider working on the American side of the engineering team based in Mountainview.

For future INTRA students that wish to apply for Veritas, I would recommend working here because of the reasons aforementioned. The advice I would offer to new interns is that they should be as inclusive and inquisitive as possible. Interns should learn from the experienced engineers working here. The environment at Veritas is a perfect place to learn new and current technologies that are being utilized in most engineering workplaces. The goal of this module is to learn as much as possible in the working environment. There are some highly experienced engineers at Veritas and the best way to show them that the intern wants to learn is to apply yourself and don't be afraid to show a lack of understanding because then you will be given help with any issues you may have.

4. Appendices

4.1. References and Links

https://www.veritas.com/

https://www.versionone.com/agile-101/

https://www.microsoft.com/en-gb/learning/mcsd-certification.aspx

https://azure.microsoft.com/en-gb/

https://www.linqpad.net/

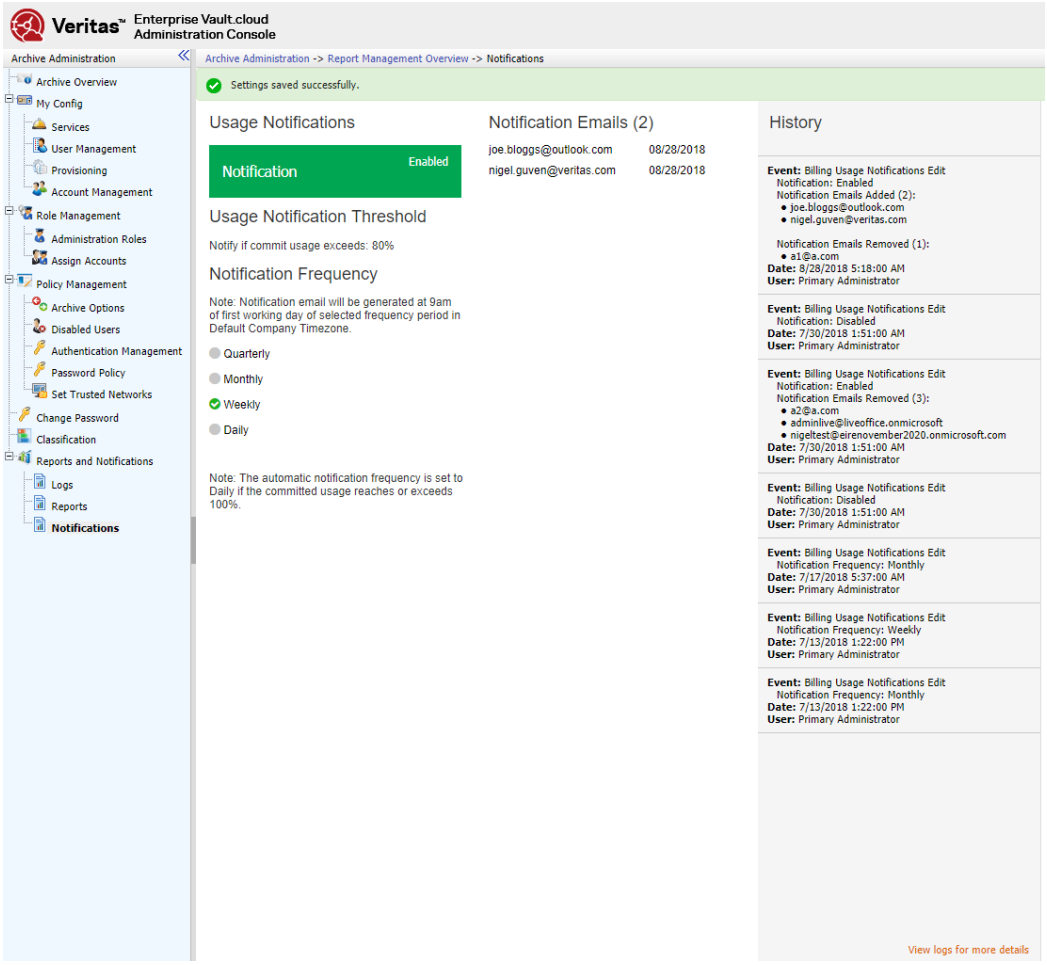
https://www.vmware.com/uk.html

https://social.msdn.microsoft.com/Forums/vstudio/en-US/70f6f520-e9df-46a7-b182-64380ebde331/problems-executing-tests-in-tfs-testing-functionality?forum=tfsgeneral

4.2. Appended Diagrams

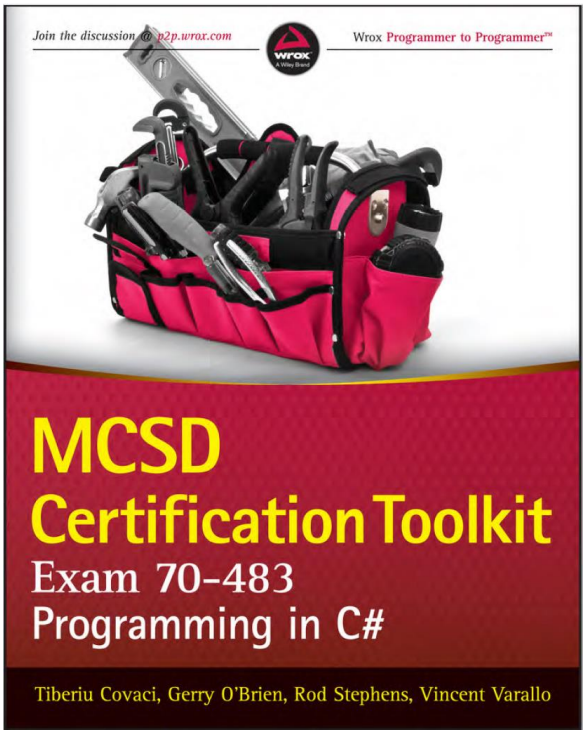
EV.Cloud Administration Console

"I worked in software testing on this module for Billing Notifications."



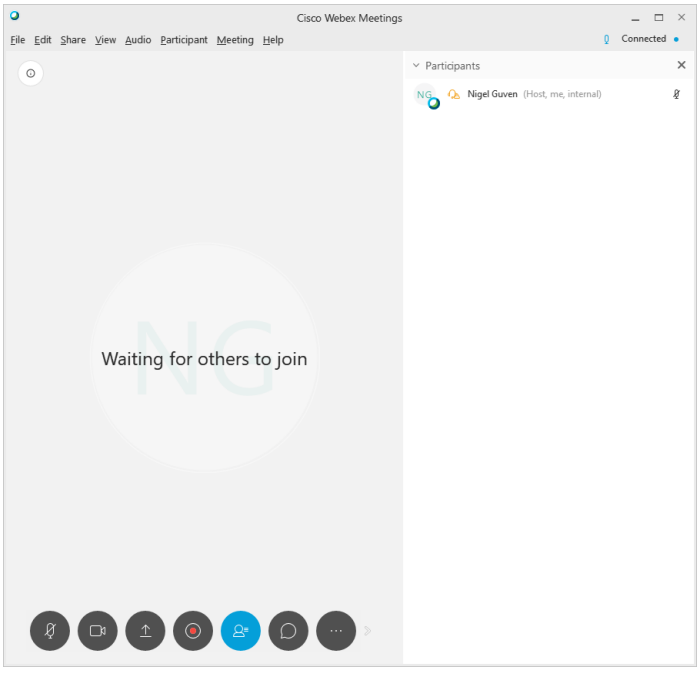
Microsoft Certification Toolkit

"Learning C# Manual for .NET frameworks."



Cisco Webex

"Team Conferencing Application."



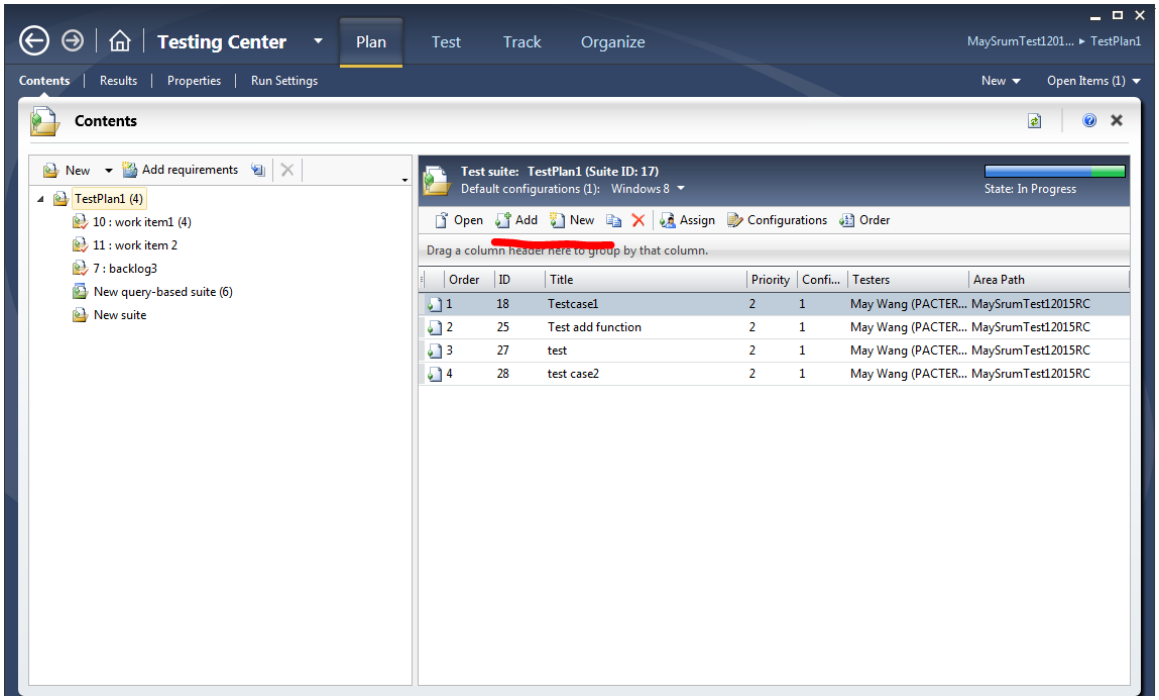
Azure VM Cost

"I had to calculate cost pricing of services and look for cheap alternatives."

Burstable VMs—B1S	Compute Optimised—Fv2	General purpose—Dv3	Memory optimised—Ev3
Most economical	**Raw compute power**	**Balanced CPU and memory**	**High memory-to-core ratio**
Our B-series VMs provide an economical, low-cost solution for workloads that normally don't use a lot of CPU, but occasionally need to burst to handle higher workloads. Free for 12 months.	Fv2 is our newest compute-optimized VM family and uses the Intel Skylake processor. Fv2 delivers the latest Intel CPU for raw compute power.	Our Dv3 family is the latest generation of our general purpose VMs. It's appropriate for a variety of workloads.	Ev3 is our latest generation memory-optimized VM. It's great for relational database servers, caches, and in-memory analytics.
Specs:	**Specs:**	**Specs:**	**Specs:**
B1S 1 vCPU 1 GiB RAM	F2 v2 2 vCPU 4 GiB RAM	D2 v3 2 vCPU 8 GiB RAM	E2 v3 2 vCPU 16 GiB RAM
Starting from	Starting from	Starting from	Starting from
£0.004/hour	**£0.024**/hour	**£0.028**/hour	**£0.036**/hour
+ Add to estimate	+ Add to estimate	+ Add to estimate	+ Add to estimate

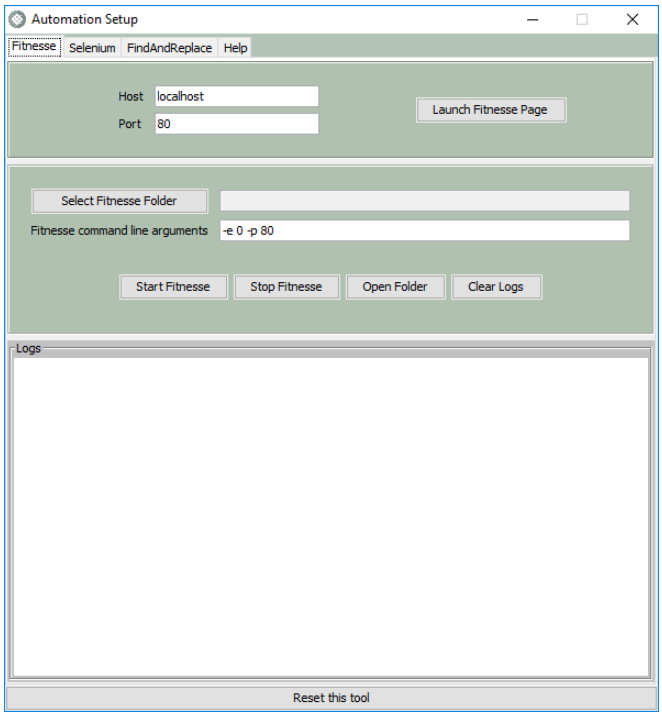
Microsoft Test Manager

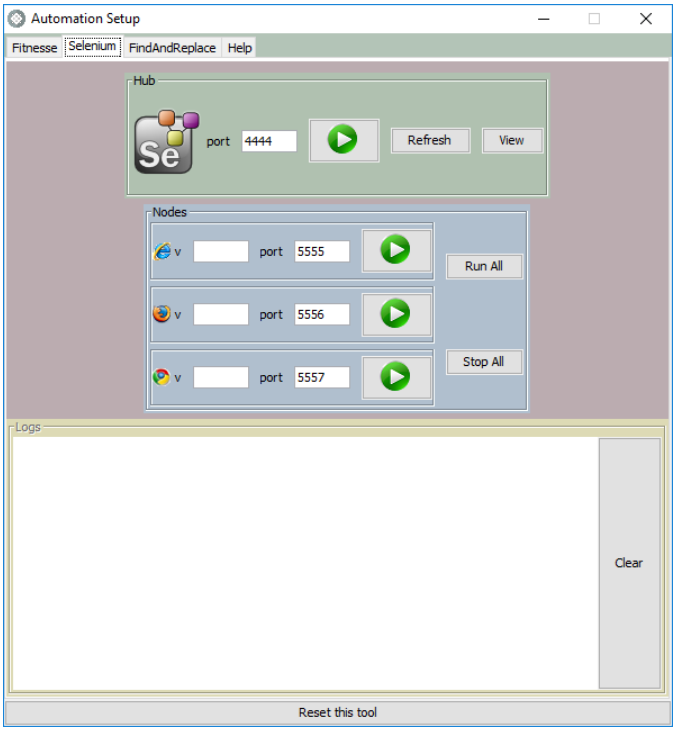
"Writing up test cases (Image found online in referenced site)."



Fitnesse & Selenium

"I used these tools for automation testing of associated modules."





Technologies Given by Logo

"For every technology that was used or mentioned."