



School of Informatics & IT
TEMASEK POLYTECHNIC

Temasek Polytechnic
School of Informatics and IT
Diploma in Cybersecurity & Digital Forensics
AY 2021/2022 Sem

Student Internship Program Report

Company Name: PricewaterhouseCoopers

Duration of internship: 20th September 2021 – 18th February 2022

Supervisor:

Manager, Menglin Zou, Manager, PricewaterhouseCoopers

Submitted To:

Mr Willie Lui, Liaison Officer (LO), Temasek Polytechnic; School of Informatics & IT

Submitted By:

Zachary Phoon Jun Ze, 1900353B

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1) INTRODUCTION

PricewaterhouseCoopers (PwC) is well known as one of the 'Big 4' in the accounting industry.

PwC purpose is "To Build Trust in Society and Solve Important Problems" along with their 5 Values, "Act with Integrity", "Make a Difference", "Care", "Work Together", "Reimagine the Problem".

One interesting fact that I learned something interesting about PwC's Culture, they do not have any firing policy. Still, if one is underperforming, they will be recommended for more training to achieve better results. They help people stay employed and help them improve their work skills to stay up to date with the work skills they require.

I have been assigned to the Risk Assurance – Digital Trust Operating Unit of our Assurance Line of Service, Cloud Trust. The team is mainly engaged to either audit the cloud environment or assist in developing or transitioning towards cloud computing and services. This internship allowed me to learn the difference between the working force and module projects. The team leaders expected us to know how the team was engaged from the beginning to the end where the project was delivered and learn more about the cloud environment in the ever-changing industry.

2) WORK IN THE COMPANY

The work environment, its organisational structure and employees:

Work from home is easily accessible via the company provided laptop. My colleagues were super caring and offered support for us to get used to the new work life. The team does not encourage a hierarchy system; they feel that everyone's input is precious, and there is always a learning opportunity in every discussion or brainstorm session.

Before the covid restriction was lifted, I visited the office once to see the environment and experience working there. The office space was a free sitting area with standing desk areas and couch seats with the monitor to use along with our laptop if we require it.

When Covid restrictions were slightly lifted, the team held a social event where I planned along with the full-timers. This was the first time meeting my supervisor, Menglin, in person. The team at the dinner were so friendly as we talked about work-life and other parts of life. They shared their work experience as well as other life knowledge. After working in another company part-time during my school breaks, I felt that PwC is the best community to grow and learn.

The nature of the business (include the primary services and products):

Cloud Trust Team in PwC provide services for auditing on the cloud environment, proof checking before an audit on the cloud environment and advisory work to aid in the transition to the cloud environment for their clients.

Starting the first week at PwC, it was mainly online training regarding using the company laptop and office space and job scope training. The table below contains the list of the primary and Ad-hoc tasks however, due to confidentiality of the contents, I was not allowed to share any of the products in this report.

Task	Details
Extraction of Data	I was given a JSON (JavaScript Object Notation) file that contained a client's cloud environment configuration; the data was difficult to read as there was no breaking point. I first analysed the data and realised it was a recursively nested dataset. Using Python, following the official documentation to find out the delimiter and symbols aided me in splitting data accurately. Once the data is split accurately, it will be placed in an array which will then be exported into a CSV (Comma-separated Values) file. This CSV file will be the final product.
Auditing of the Cloud Environment	<p>This was an ongoing project when I had joined. My task was to look at the contents of the evidence, mainly policies and protocols, provide and state the observations for the managers to check and approve if it is compliant. Join weekly team meetings to provide updates on progress internally and with clients and see if any necessary changes require immediate action.</p> <p>Once it was checked, we had to ensure that the audit covered was in line with the best practices standards, such as MAS TRM 2021 and Cyber Hygiene Notice and state what content was related to the audit.</p> <p>When the managers gave the green light, I was tasked to prepare the draft template report using Google Slides, reviewed by higher management once ready.</p> <p>This helps me practice my cloud computing and environment knowledge and widen it with more of the current best practice standards.</p>
Semi-automation Dashboard	This was the most challenging portion of my internship. We faced many issues due to the limitations of the things we can run on the cloud and our Microsoft Azure knowledge. Sadly, if we had more time due to the ending of our internship, we had to write the handover report for the team to refer to when a better solution has been created.
Client Presentation Slides	I was tasked with a team to create Multiple Presentation Files targeting BFSI (Banking, Financial Service and Insurance), which show how the migration of the cloud can help better the business. These files will be used by the directors and firm partners when trying to bring in clients.

Training Presentation Slides	<p>This was the most exciting as there were many Training sessions on different content under the cloud for both external and internal. I learned more about the cloud, risk assessment, risk management, risk treatment and possible difficulties faced when dealing with the cloud. When I was doing these tasks as I had to summarise and make it easier for people who do not have a technical aspect to understand better.</p> <p>For example, understanding risk, we can use a risk equation where the likelihood and the impact will result in the different severity of the risk. Which leads to the importance of managing risk in an organisation. With this information, we need to understand the business impact that will aid us in threat profiling to better understand how urgent these threats are. With the urgency being confirmed, then the risk treatment approach and execute to ensure that it is solved and noted down with proper details for future references.</p>
On-site simulation of a cyberattack for healthcare companies	<p>This was most interesting as the first time seeing each companies' playbook and their responses first person. I was tasked with the preparation of the exercise with a team. We had to print all the scenarios and prepare all the other equipment to be used on an actual day. I reported to the client site on the execution date and oversaw displaying the exploit for the organisation assigned to me alongside the command centre leader callouts.</p> <p>This exercise made me understand how important a playbook is when faced with a cyberattack as it shows how prepared are they when it comes to such events. There are many key steps to not allow a threat actor to win in such situations, from seeking higher up approval to informing important government bodies about such attacks and even ensuring there are sufficient backups in the event of a total failure to overcome the adversary.</p>

3) ANALYSIS OF THE SIP EXPERIENCE

I felt that SIP was meant to learn and hone our skills from people in the workforce and how it works to be ready once we graduate. My director felt that SIP was for us interns to learn and experiment to see what we think about the different sectors of IT before joining the workforce full-time. Going into this SIP, I did not have many expectations as I thought I should learn from the people in the force.

This SIP was the best learning ground, there were a lot of learning opportunities, and everyone supported each other to improve ourselves and get better in the cloud environment. I felt that taking the meeting minutes of the weekly client meeting was the hardest as I was unsure of all the content they talked about.

Over time when working on the project, I slowly understood all the acronyms and content they talked about. All that aside, I felt that I gained more than I could have; I learned all the insight, knowledge and future advancement of the cloud environment from the best.

4) CONCLUSION

I was able to utilise the skills that I have learned during the course in this SIP. The TPFun modules aided me in my preparation for the workforce. One such example will be workplace communication, they taught us how to do meeting minutes. This helped me in understanding what I should be taking notes on as well as how things should work during client meetings or team meetings.

This SIP has also made me learn more about cloud security and regulations to help keep organisations in line to keep the threat actors out of the people's sensitive data.

This taught me how to step out of my comfort zone to try new things as well as not be afraid to reach out to the team when I needed help or lend a helping hand to reduce the workload for them.

All in all, I think both the company's and my expectation have been fulfilled. I learned that this SIP allowed me to experience Cloud Auditing before trying other sectors which made this overall experience a fruitful one.

5) RECOMMENDATIONS

The best would be a longer duration for the SIP and did not clash with all the public holidays and the festive season as well as the submission dateline.

Another issue that I faced throughout the internship was workload distribution. The workload between interns could fluctuate depending on the projects that they are onboarded, some were too busy while others were quite free. This could have been solved easily by listing down the percentage of work we have and how free we were weekly.

6) APPENDICES

Appendix A1: Screenshot of Student Survey

Thank you for your submission.

Please include the Response ID below in your SIP Report, and save this email for future reference. If you have done more than one student survey due to multiple internship placements, please include all Response IDs in your SIP Report.

Response ID: 62603496

1. SIP Organisation Name

PricewaterhouseCoopers GHR

* 2. My polytechnic course provided me with the relevant knowledge and skills for the internship.

» Agree

* 3. My internship enabled me to learn and deepen skills relevant to my course of study.

» Strongly Agree

* 4. My internship gave me a better understanding of the industry/job and career pathways.

» Agree

* 5. I would like to develop my career further in the same or similar job.

» Yes

*

6. I would like to further my studies in a related course, right after my diploma studies or National Service.

» Yes

Appendix A2: SIP Mentorship

SIP MENTORSHIP

OVERVIEW

SkillsFuture is a national movement to provide Singaporeans with opportunities to develop their fullest potential throughout life. One key thrust of SkillsFuture relates to developing an integrated, high-quality system of education and training that responds to evolving industry needs. Internships are an integral component of the courses to give students exposure to the actual work environment and a better transition into the workplace.

To improve students' learning experience, SIP organisations are encouraged to facilitate mentorship activities during SIP.

Mentorship refers to a personal developmental relationship where an experienced industry practitioner (mentor) provides professional and industry guidance to a student (mentee).

A Mentor takes on a long-term view to provide guidance, support, encouragement and inspiration to the students through sharing knowledge and experience relevant to work, career and professional development. The intent is to develop the student's capabilities through a one-on-one relationship. **The Mentor could either be the organisation Supervisor or a senior staff assigned by the SIP organisation.**

Through the mentorship relationship, the student is kept aware of job and career growth opportunities in the industry/sectors they are being trained for. The student will be encouraged to reflect on what they hope to accomplish at the internship and beyond and the pathways to get there.

Students must be fully aware that it is a privilege to have a mentor while on an internship as industry professionals are spending their time mentoring them. Students should initiate and maintain contact with their mentors to coordinate the meetups.

It is recommended for the mentorship focus meeting to take place **at least three times** during the SIP, i.e. initial period, during and at the end of the SIP.

Proposed topics for discussion at the meeting could include, but are not restricted to the following:

- a) Knowledge, experiences and career journeys.
- b) Industry insights, developments and trends.
- c) Demands of the various career options.
- d) Personal development, career and professional development.

To fully reap the benefits of the mentorship, students are encouraged to record the meetings, reflect on the discussions and jot down the action plans using the template in this document.

Student Name	Zachary Phoon Jun Ze	Admin No	1900353B
Diploma	CDF	School	IIT

SIP Mentorship Record

Mentor's Details Name: Menglin Zou Designation: Manager Company: PricewaterhouseCoopers		Mentor Same as Supervisor? Yes Mentor from same SIP Organisation? Yes Remarks
Mentoring Session #1	Date: 4 th October 2021 Time: 4:30pm to 5pm	Other Details: Group Session
Mentoring Session #2	Date: 1 st November 2021 Time: 4:30pm to 5pm	Other Details: Group Session
Mentoring Session #3	Date: 4 th February 2022 Time: 11am to 11:30am	Other Details: Group Session

Note: Student may add the additional session(s) and provide other details such as venue, whether it is a group session etc.

Areas Discussed	Student Reflections
Knowledge, experiences and career journey	<p>We need to master be a jack of all trades, master of none but better than a master of one. Very hard to find balance as it's hard to leave the desk to work to destress.</p> <p>Presenting in person just treat everyone as potatoes or watermelon. Most importantly is to practice enough, it will come naturally, and the flow will be alright. Random meeting- learn from your mistakes and see how you can better improve your speech.</p> <p>Check-in on the team and make sure they need to rest. Talk to managers and understand the workload. Make sure your weekends are resting and if there are long breaks you should take them.</p>

	<p>Keep yourself interested in the job, try something new and excited. Varies from different people.</p>
<p>Industry insights, developments and trends</p>	<p>We are the pursuit team; partners are the relationship builders, and we are to assist them with making the solution. More of word-of-mouth kind of sharing about the services and price.</p> <p>Normally people talk in between the team and then report to the manager who will report to the rest. In PwC, we have an open talking culture. Project level communication depends on many people, such as daily standard or like weekly meetings or like daily meetings. work relationships with clients is harder to develop as there are lesser ways to build the relationship</p>
<p>Demands of the various career options</p>	<p>Soft skills are a must as it always requires communication skills is required. Basically, convey the message effectively. Effective for both speaking and writing. Time management is important for the day today.</p>
<p>Personal development, career/professional Development</p>	<p>There are no hard and fast rules, there are only some fundamental rules which is communication, proactiveness and responsibility. As a person is able can commit to a timeline and no need to be chased from work. In PwC, it's very straightforward, it happens as a natural progression over several years. Encourage people to go take any certification to better themselves as it is an investment in ourselves for the time to come.</p> <p>If we are more interested in the other technologies, the trends may change then. It is always good to keep in check with the industry trends, like blockchain development etc.</p> <p>Take the chance to do as many internships as possible to better understand all the industry to see if we like any career in those fields. See if we are suitable for the job now. Ensure you make the right choice; you know yourself best.</p> <p>Find what they require now and how to stand out to get yourself the opportunity to enter.</p>

Note: Students may add additional area(s).

Appendix A3: Learning Outcome Form

Temasek Polytechnic School of Informatics & IT

Diploma in Cybersecurity & Digital Forensics

Student Internship Programme (SIP) Learning Outcomes

Student Name: ZACHARY PHOON JUN ZE

Admission No: 1900353B

SIP Company: PricewaterhouseCoopers

SIP Start Date: 20 September 2021

SIP End Date: 18 February 2022

Tick (✓) the relevant learning outcomes that the student will achieve through the internship.

The set of selected outcomes will serve as an understanding between the Company and Temasek Polytechnic. The tables below should record the mutually agreed learning outcomes between the two parties at an **Initial** meeting. The student should be briefed on the learning outcomes. If there are subsequent changes to the learning outcomes, updates should be recorded at the **Final** meeting. If there are no subsequent changes, the Liaison Officer (LO) will still sign off and tick "No Changes in Learning Outcomes" after the **Final** meeting.

S/No.	Learning Outcomes (Generic Life Skills)	Initial	Final
		✓	✓
1.	Communicates clearly and effectively	✓	✓
2.	Works well in teams	✓	✓
3.	Works out solutions to day-to-day issues	✓	✓
4.	Shows time and task management abilities	✓	✓
5.	Shows initiative and independent learning	✓	✓

S/No.	Learning Outcomes (Diploma-Specific)	Initial	Final
		✓	✓
1.	Apply knowledge and skills in administering IT security for the organisation		
2.	Apply IT security tools and techniques to test the vulnerability of systems		
3.	Design, develop and implement security projects and solutions		
4.	Utilise the organisation or established security framework and standard to develop, implement policies, and/or audit the systems according to the security policies and procedures for the organisation	✓	✓
5.	Apply forensics and investigation techniques and methodologies to collect, preserve, analyse and report evidences		
6.	Monitor and analyse threats, handle security incidents by applying incident response and management procedure accordingly.		

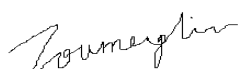
Optional:

S/No.	Learning Outcomes (Company-Specific)	Initial	Final
		✓	✓
1.			
2.			

Remarks (e.g. reasons for any changes)

Learning Outcomes:

(Initial)



Name and Signature
SIP Company Supervisor
Date: 31 Oct 2021

Willie Lui



Name and Signature
Liaison Officer
Date: 20 October 2021

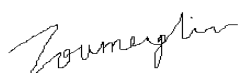
Zachary Phoon Jun Ze



Name and Signature
Student
Date: 31 Oct 2021

Learning Outcomes:

(Final)



Name and Signature
SIP Company Supervisor
Date:

Willie Lui



Name and Signature
Liaison Officer
Date: 16 Feb 2022

Zachary Phoon Jun Ze



Name and Signature
Student
Date: 07 Feb 2022

☐ No Changes in Learning Outcomes (SIP Company Supervisor's signature not require)