SECP1513-02 STEM

ASSIGNMENT 3 REPORT

Title: Skills in University and Industry as a Computer Science Student

Group Name: Bistro 2 Square Bytes (B4B)

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1.0 INTRODUCTION

On 17th December 2024, students from Section 02 and Section 03 gathered together in Bilik Kuliah 1, N28 for an industry talk on how the knowledge and skills required as key factors in order to maintain their successful in this computer science field. Two speakers have been invited which focusing into two aspects; industry requirements and preparing for entrepreneurship. The first speaker began at 9.00 a.m. and the baton was passed to the second speaker which his session was conducted online via Webex. Throughout these sessions, students were actively participated and open their mind and eyes on how to improve skills and knowledge to produce high quality of fresh graduates.

2.0 DESCRIPTION SPEAKER EXPERIENCE

Mohd Hakimi Iqmall bin Mohd Zolkifly works as an IT Officer at UTMDigital located at Universiti Teknologi Malaysia. His career began in 2017 where he works as an intern at ME-Tech Solution Sendirian Berhad (Sdn Bhd). He worked on a ship simulator for Tentera Laut Diraja Malaysia (TLDM). After graduate, he joined Okakichi Sendirian Sdn Bhd, from 2018 to 2019. During his time, he develops a game called Kingdom Ran. Despite experiencing system down after pushing a new code, his Chief Executive Officer (CEO) and colleagues still provide support to bring encouragement to his spirit.

Nik Mohd Habibullah bin Nik Mohd Nizam, CEO of Micro Semiconductor Sdn Bhd. His journey started when he created montages video for Digital Library during his student years. He then established his own company name NI Solution that provides many services regardless any project such as web designing, mobile apps development, software and hardware supply, system development, and many more, which later evolve into Micro Semiconductor Sdn Bhd specializing in hardware development. His company has two products which are GetMe Hired, a platform which help fresh graduate in producing standout curriculum vitae (CV) creation and Dialysis Manager, an innovative system that help in streamlining operations for Haemodialysis Centers around Malaysia.

3.0 BASIC SKILLS FOR COMPUTER SCIENCE

Previous studies mostly defined computer science would appear to be a meta philosophical science in the mathematical tradition that provides a new tool to define the algorithm, which is a sequence of instructions (Kossmann, 2021). Computer science skills play a vital role in today's digital age, where technology is rapidly evolving (Tprestianni, 2023). As a person who are majoring in computer science, there are a few basic skills must be mastering, so that it can be applied when entering the workforce.

3.1 PROGRAMMING LANGUAGE

Technical skills are essential in computer science by learning programming languages like Hypertext Markup Language (HTML), C, C++, and Python being key for career growth, especially in large companies. This skill was mention by first speaker which is Sir Mohd Hakimi Iqmall bin Mohd Zolkifly. By mastering the programming languages, people can get the tools when need to go on and be part of shaping the future. This include roles in RPA which is robotic process automation, building automated systems for global banks or healthcare organisations, or even

helping to improve the tech in self-driving cars (Ghoshal, 2021).

Furthermore, programming languages allows you to exercise creativity in ways that many people don't have the chance to do (App academy, 2023). Last thing that can be elaborate, Programming languages is one of the essential things because it can increase flexibility in the job market by showing that you can bring a different value to your prospective employer and demonstrate your dedication to self-improvement (Indeed Editorial Team).

3.2 DEVELOPMENTS TOOLS

Sir Mohd Hakimi Iqmall bin Mohd Zolkifly also tell us to learn how to use developments tools such as Visual Studio, VS Code, and Sublime Text. These tools can help us when writing a programming with easier and faster which is fully effective in developing a system that can give a contribution in the large company (Ghoshal, 2021).

By learning the development tools, it will allow you to develop a software application for example you can read JavaScript code without accessing a web browser (Noble Desktop, 2024). This is because development tools can give a support for hundreds of languages, helps you be instantly productive with syntax highlighting, bracket-matching, auto-indentation, box snippets and more (Microsoft, 2021).

3.3 ANALYTICAL AND LOGICAL SKILL

In addition to technical expertise, strong analytical and logical skills are necessary, particularly in algorithms and data structures, to design efficient systems and databases. This may lead you to be able to do an analysis and accurately display the collected data to the project analyst who the one that will make a future planning for the organization (The Indeed Editorial Team, 2024). For the logical thinking skill, it will be a crucial aspect of primary education as it equips them with essential cognitive abilities for a problem-solving, critical thinking and decision-making (

3.4 DEBUGGING SYSTEM

The ability to debug effectively is a crucial skill for any aspiring system designer or developer. As emphasized by Sir Mohd Hakimi Iqmall bin Mohd Zolkifly during the talk, debugging is not only about fixing errors but also about understanding the system and improving your overall programming proficiency. Debugging is a skill that requires patience, attention to detail, and a systematic approach to problem-solving.

The practice system, **DebugIt**, provides an excellent platform for novice programmers to hone their debugging skills. According to Lee (1999), **DebugIt** is designed to help learners quickly improve their program comprehension and debugging abilities. This tool allows users to identify and resolve issues in a structured and efficient manner, ultimately enabling them to reduce time, energy, and cost when working on real-world projects.

When debugging, the goal is to trace errors systematically, pinpointing their source in the code. By developing a keen understanding of common programming mistakes and how to fix them, you can not only become more efficient but also enhance the quality of the software you develop. Debugging experience is invaluable, especially for those seeking to pursue careers in computer science or software engineering. Employers often value candidates who are proficient in debugging, as this skill can significantly contribute to the success of software development projects.

In summary, mastering debugging through tools like **DebugIt** is an essential part of becoming an expert in system design and development. This skill will not only help you improve the quality and efficiency of your work but also make you more competitive in the job market.

3.5 SECURITY AWARENESS

As a computer science person, threats or risks need to be aware when we develop a system. There a few classics of examples for security vulnerabilities like **SQL injection (SQLi)** and Cross-site Scripting **(XSS)** that can be happen in the system that been develop. **SQL injection** basically is Structured Query Language injection (SQLi) attacks pose a serious security threat to web applications. They allow attackers to obtain unrestricted access to the databases underlying the applications and to the potentially sensitive information in the database (William, Jeremy and Aleesandro, 2006). To address this problem, developers have proposed a range of coding guidelines that promote defensive coding practices, such as encoding user input and validation. For **XSS** which known Cross-Site Scripting which is the top most vulnerability found in the today's web applications. **XSS** attacks a permit an attacker to execute the malicious scripts on the victim's web browser resulting in various side-effects such as data compromise, stealing of cookies, passwords, credit card numbers and more (Shashank and Brij Bhooshank, 2017). Therefore, the countermeasure of Cross-Site Scripting **(XSS)** is presented and proposed to improve web security (Hong, 2013).

In conclusion, skill in identify and resolve issues is needed to prevent future problems and ensure system integrity.

4.0 SKILLS REQUIRED FOR INDUSTRY

Encik Mohd Hakimi Iqmall shared that the industry is very competitive, so we need to develop skills beyond just computer science. One of these is problem-solving skills, which are essential for completing projects successfully and solving tough challenges. These skills are especially important during planning and analysis, where we need to evaluate ideas and find the best solutions. Whether fixing technical issues like debugging or dealing with project conflicts, professionals need to think logically and creatively to solve problems effectively.

Another important skill is technical expertise, which is the foundation of success in the industry. Knowledge of programming languages, tools, and database management helps in designing, developing, and testing systems smoothly. Being familiar with system frameworks and version control systems increases productivity and ensures standards are met. Having a strong understanding of algorithms, data structures, and security practices like SQL injection (SQLi) or cross-site scripting (XSS) is also crucial for creating reliable and scalable solutions. Familiarity with these softwares is essential so that you can adapt quickly to any other software required by the industry.

Finally, communication skills are critical for connecting different groups, such as stakeholders, developers, and end-users. These skills are important in gathering requirements, planning, and implementing solutions, as they help explain ideas clearly and encourage teamwork. Good communication also helps with clear documentation and identifying risks early.

5.0 REFLECTION

How will you successful in the computer science in the next four year?

1. Aman Sufian Shah bin Shamsudddin (A24CS0046)

To succeed in computer science over the next four years, full effort will be provided to make sure everything that been working such as assignment or project will be perfect. Furthermore, good time management must be applied to ensure that both technical skills and soft skills can be master at the end of the semester during 4th year of degree. Moreover, hands-on experience through internships and projects must be gained, so that in future, skills that been develop like create a beneficial software or manage the database can give a contribution to the industry.

2. Haritz Haykal bin Hisham (A24CS0250)

To become successful in computer science, a productive schedule will be followed, programming languages will be learnt and mastered and will be followed by participations of coding events.

3. Auni Sofia binti Abd Rahman (A24CS0051)

To become successful in the upcoming four years, endless effort will be given to ensure that all possible outcome and improvements are made into the skills in computer science, with the ultimate goal of enabling meaningful contributions to be provided so that meaningful impacts can be created in the ongoing development of society.

4. Nur Umairah binti Zamri (A24CS0168)

Throughout these four years, effort will be focus on improving technical skills and increase knowledge in various aspect in this field. Staying updated to the changes in technologies trends for better preparation to be successful in the computer science field.

6.0 REFERENCE LIST

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