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Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2019/2020

COURSE NAME	:	SOFTWARE ENGINEERING SECURITY
COURSE CODE	:	BIE 33003
PROGRAMME CODE	:	BIP
EXAMINATION DATE	:	JULY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	1. ANSWER **ALL** QUESTIONS.
		2. THE STUDENTS SHOULD UPLOAD THE ANSWER BOOKLET (PDF/ WORD FORMAT) WITHIN 30 MINUTES AFTER EXAMINATION PERIOD.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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TERBUKA

Q1   (a)   Develop a secure relational database schema to manage the information given in **Figure Q1 (a)**.

> A university registrar's office maintains data about the following entities:
>
>   (a) courses, including number, title, credits, syllabus, and prerequisites;
>
>   (b) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
>
>   (c) students, including student-id, name, and program; and
>
>   (d) instructors, including identification number, name, department, and title.
>
> Further, the enrolment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modelled.

Figure Q1(a)

(10 marks)

(b)   Determine the information accessible level (read-only, read-write and etc) for each role in **Figure Q1(b)**. Justify your answer.

> Consider parts department of a plumbing contractor. The department maintains an inventory database that includes parts information (part number, description, color, size, number in stock, etc) and information on vendors from whom parts are obtained (name, address, pending purchase orders, closed purchase orders, etc.). In Role-Based Access Control (RBAC) system, suppose that roles are defined for accounts payable clerk, an installation foreman, and a receiving clerk.
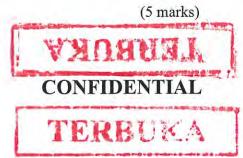
Figure Q1(b)

(10 marks)

Q2   User requirements error and incomplete design are two software vulnerabilities that commonly happened.

(a) Discuss how the attack can be implemented. Give example.

(10 marks)

(b) Propose **ONE (1)** countermeasure that might be performed to mitigate each vulnerability.

(5 marks)

Q3   Questions **Q3(a)-Q3(d)** are based on **Figure Q3**.

In Malaysia, taxpayers can start submitting their income tax return forms through the e-Filing system starting from March 1 of every year, unless otherwise announced by Lembaga Hasil Dalam Negeri (LHDN). This method of e-filing is becoming popular among taxpayers for its simplicity and user-friendliness. Unlike the traditional income tax filing, where taxpayers have to print out the income tax form and fill it in manually, the e-Filing income tax form calculates the income tax for the taxpayers automatically. So, questions like "how to calculate my income tax" will not be stopping them from getting their income tax returns.

Filing the tax through e-Filing also gives tax payers more time to file their taxes, as opposed to the traditional method of filing, where the deadline is usually on April 30. Other than truthfully declaring the income and reliefs, and submitting the tax files before the deadline stipulated by LHDN, taxpayers are also responsible for record keeping. Taxpayers are required to keep the following documents for **seven years** from the end of the year in which the Income Tax Return Form (ITRF) is filed: i) EA/EC Form, ii) Original dividend vouchers, iii) Insurance premium receipts, iv) Books purchase receipts, v) Medical receipts, vi) Donation receipts, vii) Zakat receipts, viii) Children's birth certificates, ix) Marriage certificate, x) Other supporting documents and xi) Working sheets (if any).

If taxpayers have paid income tax payment in excess via the monthly tax deductions, the excess amount will be reimbursed to the taxpayers via the bank account details that they had provided. For those who do not provide bank accounts details, taxpayers will be reimbursed via cheques or the new tax refund voucher system (BBBC), which will be implemented in stages.

However, if taxpayers have taxes due, they can pay through various methods, such as e-banking, collection agents, and the ATMs to name a few. Taxpayers can also pay their income tax via credit card. If taxpayers are looking for a card that will reward them for the tax payment, check out all the credit cards available in Malaysia. Taxpayers can also pay using FPX services, over the counter at bank branches or tele-banking.

(Adopted from : https://www.imoney.my/articles/income-tax-guide-malaysia/how-to-pay-income-tax)

Figure Q3

(a)   Develop a use case diagram.

(12 marks)

(b)   Outline **FIVE (5)** critical assets.

(5 marks)

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(c)   Choose **ONE (1)** asset listed in **Q3 (b)**,

    (i)   determine a related security goals.

                            (5 marks)

    (ii)   determine the related threats. Support your answer with a misuse case diagram or any related diagram

                            (10 marks)

    (iii)   determine the related risks.

                            (5 marks)

    (iv)   produce the related security requirements.

                            (8 marks)

- END OF QUESTIONS -

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