



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION SEMESTER I SESSION 2021/2022

COURSE NAME

: SOFTWARE AND SYSTEM

SECURITY

COURSE CODE

: CIE10503

PROGRAMME CODE

: CIE

EXAMINATION DATE

: JANUARY/FEBRUARY 2022

DURATION

: 3 HOURS

INSTRUCTION

: 1. ANSWER ALL QUESTIONS

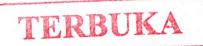
2. THIS FINAL EXAMINATION IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **OPEN**

BOOK

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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

 (10 marks)
 - (b) Determine the access control policy using Discretionary access control (DAC) including the classes of subject, object and the access right according to the scenario in Figure Q1.

(10 marks)

Q2 (a) Evaluate THREE (3) information assets in Figure Q2(a) to prioritize the risk management for Megah Holding Sdn Bhd to determine which vulnerability should be evaluated for additional control first, second and last. Show the calculation.

(10 marks)

(b) Suggest reasonable values for the items in the risk register for this assets and threat describe in Figure Q2(b), and provide justifications for your choices.

(5 marks)

- Q3 (a) Evaluate using the common criteria of Information Technology Security Evaluation for trusted system, focusing on the FOUR (4) CC security functional requirements to the following system:
 - (i) Maybank 2u.com

(4 marks)

(ii) Grab Transportation Services Mobile Application

(4 marks)

(iii) UTHM-SMAP Online

(4 marks)

(iv) Debate the evaluation result of the systems

(3 marks)

(b) Choose ONE (1) system from Q3(a), develop a security testing plan to the user authentication component of the system.

(10 marks)

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Q4 Questions Q4(a)-Q4(b) are based on Figure Q4.

(a) Determine FIVE (5) critical assets.

(5 marks)

(b) Choose ONE (1) asset listed in Q4(a):

(i) Propose a related security goals.

(8 marks)

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

(12 marks)

(iii) Determine the related risks.

(5 marks)

(iv) Produce the related security requirements.

(10 marks)

-END OF QUESTIONS-

from one pharmacy to another.



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KPJ Hospital own chain of pharmacies and in need of developing a database management system for the pharmacies. In the hospitals, patients are identified by an SSN, and their names, addresses, and ages must be recorded. Doctors are also identified by an SSN. For each doctor, the name, specialty, and years of experience must be recorded. Each pharmaceutical company is identified by name and has a phone number. For each drug, the trade name and formula must be recorded. Each drug is sold by a given pharmaceutical company, and the trade name identifies a drug uniquely from among the products of that company. If a pharmaceutical company is deleted, you need not keep track of its products any longer. Each pharmacy has a name, address, and phone number. Every patient has a primary physician. Every doctor has at least one patient. Each pharmacy sells several drugs and has a price for each. A drug could be sold at several pharmacies, and the price could vary

Doctors prescribe drugs for patients. A doctor could prescribe one or more drugs for several patients, and a patient could obtain prescriptions from several doctors. Each prescription has a date and a quantity associated with it. You can assume that, if a doctor prescribes the same drug for the same patient more than once, only the last such prescription needs to be stored. Pharmaceutical companies have longterm contracts with pharmacies. A pharmaceutical company can contract with several pharmacies, and a pharmacy can contract with several pharmaceutical companies. For each contract, you have to store a start date, an end date, and the text of the contract. Pharmacies appoint a supervisor for each contract. There must always be a supervisor for each contract, but the contract supervisor can change over the lifetime of the contract.

Figure Q1: KPJ Hospital Pharmacies Database Management System

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Switch L.47 connects a network to the internet. It has two vulnerabilities:it is susceptible to hardware failure at a likelihood of 0.2, and it is subject to an SNMP buffer overflow attack at likelihood of 0.1. This switch has an impact rating of 90 and has no current controls in place. You are 75 percent certain of the assumptions and data.

- Server webSRv6 hosts a company website and performs e-commerce transactions. It has a web server version that can be attacked by sending it invalid Unicode values. The likelihood of the attack is estimated at 0.1. The server has been assigned an impact value of 100, and a control has been implanted that reduces the impact of the vulnerability by 75 percent. You are 80 percent certain of the assumptions and data.
- Operators use an MGMT45 control console to monitor operations in the server room. It has no passwords and is susceptible to unlogged misuse by the operators. Estimates show the likelihood of misuse is 0.1. There are no controls in place on this asset; it has an impact rating of 5. You are 90 percent certain of the assumptions and data.

Figure Q2(a): Information Assets Risk Data

As a part of a formal risk assessment of the main file server in IT consultancy firm, you have identified the "confidentiality of techniques used to conduct penetration tests on customers, and the results of conducting such tests for clients, which are stored on the server" and threat " theft/breach of this confidential and sensitive information by either an external or internal source."

Figure Q2(b): Formal Risk Assessment



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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-quidemalaysia/how-to-pay-income-tax)

Figure Q4: Lembaga Hasil Dalam Negeri (LHDN) case study