T5

The internet and its uses

CHAPTER ASSIGNMENT · 64 MARKS

Name _____ Class _____ No. _____ Date _____

> Answer every question in the space given. Show your working. You may use the chapter page to help you.

Questions from *Cambridge IGCSE and O Level Computer Science*, 2nd edition, David Watson and Helen Williams (Hodder Education), for classroom use.

Activities from the chapter

5.1

(1) A URL being entered is: **http://www.urlexample.co.ie/sample_page** Identify:

(a) the domain name

(b) the domain type

(c) the file name

(d) which protocol is being used.

(2) Give two differences between session cookies and persistent cookies.

(a)

(b) Describe three uses of cookies.

(3) The following table shows five features of the internet and the World Wide Web. Tick (✓) the appropriate box to indicate which feature refers to the internet and which feature refers to the World Wide Web:

Feature	Internet	World Wide Web
it is possible to send and receive emails		
makes use of http protocols		
uses URLs to specify the locations of websites and web pages		
resources can be accessed by using web browsers		
makes use of TCP and IP		

(4) Why do you think persistent cookies are sometimes referred to as **tracking cookies**? Give at least two pieces of evidence to support your answer.

5.2

(1) **(a)** A blockchain has seven blocks. Draw a diagram to show how they are all connected to form a blockchain network.

(b) Describe what would happen if block 4 was hacked to change the sum of money in the transaction.

(2) What are the main differences between digital currency and cryptocurrency?

5.3

(1) A company has offices in four different countries. Communication and data sharing between the offices is done via computers connecting over the internet.

(a) Describe **three** data security issues the company might encounter during their day-to-day communications and data sharing.

(b) For each issue described, explain why it could be a threat to the security of the company.

(c) For each issue described, describe a way to mitigate the threat that has been posed.

(2) Explain the following three terms: – worm – ransomware – Trojan horse.

(3) John works for a car company. He maintains the database that contains all the personal data of the people working for the car company. John was born on 28th February 1990 and has two pet cats called Felix and Max.

(a) John needs to use a password and a user name to log onto the database. Why would the following passwords not be a very good choice:

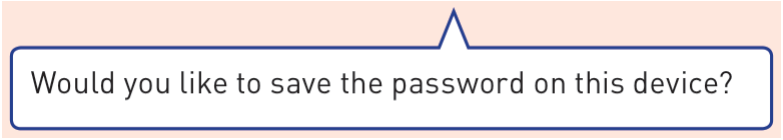
(i) 280290

(ii) FiLix1234

(iii) John04

(b) Describe how John could improve his passwords and also how he should maintain his passwords to maximise database security.

(c) When John enters a password on his computer he is presented with the following question on his screen: Why is it important that John always says **No** to this question?



5.4

(1) Which of the following are weak passwords and which are strong passwords? Explain your decision in each case.

(a) 25-May-2000

(b) Pas5word

(c) ChapTer@06

(d) AbC*N55!

(e) 12345X

(2) An airport uses a computer system to control security, flight bookings, passenger lists, administration and customer services.

(a) Describe how it is possible to ensure the safety of the data on the system so that senior staff can see all the data, while customers can only access flight times (arrivals and departures) and duty-free offers.

(b) Describe how the airport can guard against malware attacks from outside and also from customers using the airport services.

5.5

(1) In the biometric application example, retina scans were used to control entry to a secure research building.

(a) Describe how the system might change if face recognition was used instead of retina scanners. The system is triggered automatically if a motion sensor detects the presence of a person.

(b) Name other biometric devices which could be used to control entry to this building.

(2) Many cars now use voice control as a form of security before a car can be started and it is also used to give some key commands, such as start navigation system. Describe the benefits and drawbacks of such systems in cars.

5.6

From: WW and Co <accounts@customer nr 012305555>
To: customer 012305555
Sent: February 15th 2021 @ 13:45
Subject: Payment of January 2021 account

Dear WW & Co customer

We not able to take payments for account 012305555 on January 30th
Please re-submit account details immediatly to the following address:

Customer accounts link

(1) Which computer terms (used in this chapter) are being described below?

(a) a user is granted access only after successfully presenting two pieces of evidence to verify or identify who they are

(b) uses a cache to speed up access to web pages from a website

(c) controls that are used on social networks and other websites to allow users to limit who can access data from their stored profile

(d) protocol that is used to allow data to be sent securely over a network, such as the internet

(e) software or hardware that sits between a computer and an external network which monitors and filters out all incoming and outgoing traffic

(f) supplies domain names for internet hosts and is used to find IP addresses of domain names

(g) use of unique human characteristics to identify a user as a form of authentication

(h) made up of three types of identification: – something you know – something you have – something you are

(i) manipulation of people into breaking normal security procedures and best practices to gain illegal access to a user's computer system

(j) malicious code stored on a user's hard drive or web server used to redirect a browser to a fake website without their knowledge

(2) Describe how SSL and TLS certificates are used to ensure that secure sharing of data between a browser and website takes place.

(3) **(a)** Describe three things you should look out for when deciding whether or not an email is a potential phishing scam.

(b) Identify at least three potentials problems with this email from a company called Watson, Williams and Co:

Exam-style questions

1

(a) What is meant by a **cookie**? [1]

(i)

(ii) Describe the difference between a **session cookie** and a **persistent cookie**. [2]

(iii) Give **three** uses of persistent cookies. [3]

2 A company has several offices. It uses the Internet to transfer data between offices. The company also makes payments to staff and suppliers using online banking. The company are concerned about spyware and other security aspects of using the Internet.

(a) Explain what is meant by spyware **and** how it is used to obtain data. [3]

(b) The company uses a web page to log on to the online bank. Identify **one** method that could be used by the online bank to reduce the impact of spyware when logging on. State **how** the method prevents the use of spyware. [2]

(c) The company has installed a firewall as part of its data security. Describe how a firewall can help protect against unauthorised access to data. [4]

(d) State **two** other methods the company could use to help prevent unauthorised access to data. Method 1 Method 2 [2]

3 Six statements are shown on the left and six computer terms are shown on the right. By drawing lines, connect each statement correct term. [6]

set of rules that must be obeyed when transferring files and data across the internet	cookie
software used to access, translate and display web pages on a user's screen	World Wide Web (WWW)
collection of multimedia web pages and other information on websites; these resources are accessed by a browser	digital currency
worldwide collection of interconnected network computers that make use of TCP and IP protocols	hypertext transfer protocol (http)
small file or program downloaded when user visits a website; it remembers user preferences and other data	internet
financial system which allows the transfer of funds and purchasing items electronically	web browser

4

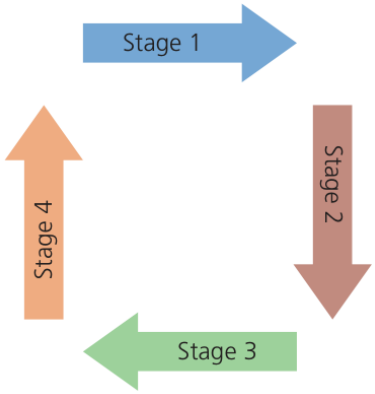
(a) John uses two step verification when purchasing some items from a website. There are five stages in the process. These stages are listed below but are not in the correct order. Place the five stages into their correct order. A – user takes note of the one-time authentication code B – user enters the one-time authentication code into the original device C – user enters website user name and password into device D – user is authenticated and allowed access to website to order items E – one-time authentication code sent to user's email address [4]

(b) One form of authentication is fingerprint recognition. A school is using fingerprints to uniquely identify each student. The system is used to act as a register instead of the existing manual system. Describe how fingerprint recognition can be used so that the school knows exactly which students are presently attending. [5]

5

(a) Describe four ways cybercriminals can use to trick a user into downloading malicious code onto their computers using social engineering. [4]

(b) There are four stages in the course of action when a cybercriminal targets an individual using social engineering. Describe each of the four stages in the diagram below which depicts these stages. [4]



(c) Some cybercriminals have decided to hack into a company's financial system. Customers buy goods using digital currency.

(i) How does digital currency vary from traditional fiat currency? [2]

(ii) Explain how blockchaining could protect the company and the customers from hackers. [4]

6 HTML can be used to create the structure and the presentation of web pages.

(a) Describe what is meant by HTML structure. [2]

(b) Gloria writes a paragraph as an answer to an examination question about accessing a website. Use the list given to complete Gloria's answer by inserting the correct **four** missing terms. Not all terms will be used. – browser – cookies – Hypertext Markup Language (HTML) – hypertext transfer protocol (http) – hypertext transfer protocol secure (https) – Internet Protocol address (IP address) – Media Access Control address (MAC address) – web server The user enters the URL of the website. The uses the DNS server to look up the of the website. The browser sends a request to the to obtain the website files. The website files are sent as that is interpreted by the browser. [4]

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7 An art gallery has a website that is used to display and sell art.

(a) The gallery uses Secure Socket Layer (SSL) to provide a secure connection when selling art. Describe the process of SSL and how it provides a secure connection. [6]

(b) The art gallery also uses a firewall. **Six** statements are given about firewalls. **Tick** (✓) to show if the statement is **True** or **False**. [6]

Statement	True (✓)	False (✓)
Firewalls are only available as hardware devices		
Firewalls allow a user to set rules for network traffic		
Firewalls will automatically stop all malicious traffic		
Firewalls only examine traffic entering a network		
Firewalls encrypt all data that is transmitted around a network		
Firewalls can be used to block access to certain websites		

Cambridge IGCSE Computer Science 0478, Paper 11 Q8, May/June 2019

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/computer-science/o-level/internet/