



The Open University of Sri Lanka
DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING
Bachelor of Software Engineering
ECJ4160 - Communication Skills for Engineers
Final examination 2015/2016 (Closed book)

Index No. :

DATE : November 15, 2016

Time : 09.30 – 12.30 Hrs

Answer all questions on the question paper itself.

Please follow the instructions carefully. Marks may be deducted if instructions have not been followed properly.

Vocabulary

1. Complete the following passage with words from the box.

technologies	paperless office	internet	radically
wirelessly	mobile phone	internet of things	outsourcing
people	revolutionary	silicon computing chips	
advances	IT world	strange	

Can you imagine what your working day would be like if you didn't have access to the¹ ?Or how about trying to arrange your life without a²? In the fast-paced 24/7 world we live and work in today, it's hard to imagine what life would be like without³ that we've come to rely on.

Yet, only a few years ago, such things would have seemed⁴. The emergence of the (almost)⁵, and the ability to lower costs by⁶, are only possible due to cheap IT. Is the⁷ change largely over, or is there more to come? Although there are remarkable⁸ in the biosciences and nanotechnology, will the way we work change⁹ in the next decade or two?

One area of computer science that will be on the horizon soon is ubiquitous computing – also known as the¹⁰. The idea is that almost everything could become part of the¹¹, including documents, packaging, equipment, clothing, and perhaps, even¹² too, in time. Imagine a world where everyday objects contain¹³, affording them the ability to communicate, mostly¹⁴, and also to sense and react to the world.

(14 marks)

Grammar

1. Use the correct form of the verb within brackets to fill in the gaps of the following text.

Software engineering is a fast-growing occupation with a high salary potential. From computer operating systems to video games, many of the products we rely upon today¹ (support) by software. Software engineers² (specialise) in either computer software applications or computer software systems. They analyse users' needs and then design, test, and develop software by³ (apply) the theories and principles of computer science and mathematical analysis.

Software engineers⁴ (involve) in all aspects of software creation, from writing code to debugging programs to⁵ (oversee) the launch of new software. In a software engineering career, it⁶ (be) essential to keep up with the latest advancements, because technology⁷ (constantly evolve).

Job opportunities for software engineers⁸ (expect) to grow much faster than the average for all occupations. According to the Bureau of Labour Statistics, the overall employment of computer software developers⁹ (expect) to increase by 30% percent from 2010 to 2020. The demand for software engineers¹⁰ (increase) because of the Internet's expansion and the growing complexity of data-processing systems used in business, telecommunications, healthcare, and government.

(10 marks)

3. Complete the paragraph below with suitable articles: *a, an, the*.

Students who want to enter ¹ University of Montreal's Athletic Complex need more than just ² conventional ID card; their identities must be authenticated by ³ electronic hand scanner. In some Californian housing estates, ⁴ key alone is insufficient to get someone through ⁵ door; his or her voiceprint must also be verified. And soon, customers at some Japanese banks will have to present their faces for scanning before they enter ⁶ building. All of these are biometrics, ⁷ little-known but fast-growing technology that involves ⁸ use of physical or biological characteristics.

(8 marks)

4. Underline the correct linking word/phrase in the following passage.

Reliability and validity are key concepts in any form of inquiry. Reliability is a measure of consistency. **Furthermore / For example** ¹, if a clock is sometimes fast and sometimes slow, it is unreliable. If a questionnaire produces different results for the same group of people each time it is used, then the questionnaire is unreliable.

Validity is a measure of truth. It is possible for a questionnaire to be highly reliable **yet / however** ², like a clock which is always ten minutes slow. **In contrast / In other words** ³, a clock which is always right provides a valid and reliable measure of time. **Similarly / Nevertheless** ⁴, a questionnaire which claims to measure what it claims to measure, is a valid questionnaire. We can assess how valid our questionnaire is by comparing its results with an independent measure. **In addition / For instance** ⁵, if we ask people how often they visit their local theatre, and then check the results against the ticket sales, we will know how valid our questionnaire is. **However / Because** ⁶ often independent measures themselves are unreliable and of low validity. **Furthermore / Consequently** ⁷, in many cases, there are no independent measures. **In other words / However** ⁸, a 'true' answer does not exist.

(8 marks)

Reading

5. Read this article on 'software piracy' and answer the questions.

- A Software piracy, or the use of software not legitimately paid for and used according to license terms, is a worldwide epidemic. Statistics from the Business Software Alliance show that 42 percent of software installed globally is not properly licensed, resulting in lost revenue of over \$63 billion.
- B While software vendors are the front line victims in this growing epidemic, the manufacturing industry is widely impacted as well. A 2014 study by the National Association of Manufacturers (NAM) found that software piracy adversely affects U.S. manufacturers who rely on software and technology to remain innovative and competitive in the global market. Globalization over the past decade has forced U.S. manufacturers to compete more intensely with emerging market companies that engage in software theft. At the same time, the rising importance of IT and software in manufacturing has increased the cost advantage from software theft. These factors create an unfair competitive playing field for U.S. manufacturers, and as revenue declines, so do jobs and funding for research and development. According to the study, between 2002 and 2012 the manufacturing sector lost \$239.9 billion in revenue and over 42,000 jobs due to global piracy. **This**, in turn, has affected the entire U.S. economy through jobs, revenue and GDP, which was decreased by \$69.6 billion.
- C Users of pirated software can fall into four general categories: hard-core pirates, soft pirates, victims, and rogue companies. The hard-core pirates are 'anarchists' who believe all software should be free. They can include the hackers who actually break the protection or just users who evade the authorities through the "darknet." Soft pirates are those who find free or low-cost versions of software online. While they may suspect it's not legitimate, **they** rationalise buying it anyway. **These** versions are dangerous as they are not only illegal, but are also sometimes infected with malware or spyware.
- D Piracy victims truly do not even realize their software is counterfeit. Sometimes these users are simply not aware of who installed the software, or are just not familiar with terms of the license agreements. Pirated software is sometimes pre-installed or sold to victims by a dishonest distributor or re-seller.
- E Rogue companies are organizations that rely on pirated software as a competitive advantage in the market. They exist in all regions and can be very small start-ups or large multi-national corporations. Many are based in Asia, the Middle East and Eastern Europe, although **they** can also include companies in the USA and Western Europe, though it is rarer. In all cases, the management team is complicit in the crime, as opposed to an individual employee or group of employees.

- F Rogue companies have a deliberate, premeditated policy to utilise counterfeit software as a competitive advantage in the market and they will fight hard to avoid detection and prosecution in the courts. This approach is quite prevalent in China, where, according to the BSA, approximately 90 percent of the software in use is counterfeit. So prevalent is the use of pirated software that it is considered a standard way of doing business — and although the government talks about reform, even the governmental bodies talking about reform consistently use pirated software within **their** own organizations. Chinese piracy is prevalent in small, medium and large commercial companies as well, and these organizations routinely export manufactured products to the U.S. and Europe, hurting local manufacturers and causing job losses and other long-term economic damages.
- G Over the past decades, large software vendors have begun to fight back. Traditional approaches may include site audits, search warrants to inspect and confiscate computers with stolen software, and costly litigation for copyright infringement. While effective, these approaches are disruptive, expensive, and typically only used by the largest software vendors like Oracle, Microsoft and SAP. Small and mid-size software companies simply lack the resources, legal expertise and hard evidence required to take this ‘boots on the ground’ approach to compliance.

1) Are these statements ‘True’ or ‘False’? Write (T) or (F) against the statement.

- a. The illegitimate use of software accounts for almost half of the software installed worldwide.
- b. The biggest impact of software piracy is on the US manufacturing sector.
- c. Software piracy has led to increased competition between US manufacturers and companies engaged in software theft.
- d. In the decade following 2002, US manufacturers suffered a revenue loss of over \$ 239 billion due to software theft.
- e. ‘Darknet’ provides a safety net for hard-core software pirates.
- f. Soft pirates believe all software should be free.
- g. Free software found online invariably carry malware or spyware.
- h. Victims of software piracy are often without knowledge of license agreements and their terms of use.
- i. Rogue companies are seldom found in first world nations.

(18 marks)

2) Why has the government of China failed to prevent the high incidence of software piracy in the country?

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(2 marks)

3) Chinese software piracy has created adverse economic effects in the US and Europe. Why?

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(2 marks)

4) Have small and medium companies benefited from traditional approaches to dealing with software piracy? Answer 'Yes' or 'No'.

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Give reasons for your answer.
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(3 marks)

5. What do these words refer to in the article?

a. This (paragraph B)

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b. they (paragraph C)

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c. These (paragraph C)

.....

d. they (paragraph E)

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e. their (paragraph F)

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(5 marks)

Writing

6. Your company has undertaken a software development project. The project has not been able to keep to the planned timelines as a result of two key programmers leaving the company. Although new appointments have been made and the project is back on track, more time is needed to complete it. Meanwhile, the customer has requested several changes. However, you are confident that you will be able to complete the project by the end of the month.

As the leader of the project team, **write an email** to your boss explaining the current situation.

(10 marks)

7. You want to apply for the position of QA Engineer at DFN Ltd., 16/1, Sea Avenue, Colombo 3. The requirements of the job are as follows:

- BSC/BIT degree or equivalent
- Ability to handle multiple projects and meet deadlines
- Excellent communication and interpersonal skills
- Strong analytical and conceptual skills
- Ability to work in a team
- Experience in a similar capacity, an added advantage

You have a BSC degree in Computer Science from the University of Colombo. While at university, you served an internship at Virtusa, a leading IT company in Sri Lanka, where you tested enhancements to Java software for distributed systems management. In addition, you served as a Linux Systems Administrator. During your undergraduate years, you participated in a number of IT exhibitions and led the debating team of your faculty.

Write a cover letter (the letter that accompanies a CV) addressed to the Human Resource Manager of DFN Ltd. Invent details as necessary. (20 marks)