UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2019 – 3rd Year Examination – Semester 5

IT5105: Professional Issues in IT
Structured Question Paper

06th July, 2019
(TWO HOURS)

To be completed by the candidate

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BIT Examination Index No:
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Important Instructions:

- The duration of the paper is **2 (two) hours**.

- The medium of instruction and questions is English.

- This paper has **4 questions** and **12 pages**.

- **Answer all questions.** All questions **do not** carry **equal** marks.

- **Write your answers** in English using the space provided **in this question paper**.

- Do not tear off any part of this answer book.

- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.

- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.

- Calculators are **not** allowed.

Questions Answered
   Indicate by a cross (✗), (e.g. ✗) the numbers of the questions answered.

	Question numbers				
To be completed by the candidate by marking a cross (✗).	1	2	3	4	
To be completed by the examiners:					

1)

Copyrights, Patents, Confidential information and Trademarks are Intellectual property right laws that can be used to protect different aspects of a packaged software.

Consider a company that has developed an innovative computer game called "Ghostcatcher". The game is marketed in packaging that features the name superimposed on the image of a ghost. It comes with an add-on device that the company has invented called a wailer. This attaches to the computer and produce very convincing ghostly wails (scary sounds) at suitable points in the action. The software used some intelligent data structures developed within the company that makes it possible to achieve very high performance.

(a) Explain how various laws of Intellectual property rights (Copyrights, Patents, Confidential information and Trademarks) can be used to protect the "Ghostcatcher" package.   (12 marks)

ANSWER IN THIS BOX

The law of copyright automatically protects the source code and all documentation of the package from copying.

The company can patent the wailer, in which case no one else would be able to produce a similar product.

The law relating to confidential information could be used to prevent any employee who left to join a competitor from passing on details of the clever data structures.

The name and the logo could be registered as a trademark to prevent other companies from using it on their products.

Ref 3: Page 162

(b) "The fair use doctrine" establishes four factors for courts to consider when deciding whether a particular use of copyrighted property is fair and can be allowed without penalty. Name these **four** factors. (4 marks)

ANSWER IN THIS BOX

The purpose and character of the use, the nature of the copyrighted work, the portion of

the copyrighted work used and the effect of the use on the value of the copyrighted work.

Ref 2: Page 239

(c) Mark the statements given below as true or false. (3 marks)

Statement	True or False
It is explicitly stated in Copyright law that it is not an infringement of copyright to make a backup of a program that you are authorized to use.	True
According to Copyright law you cannot decompile a program in order to correct errors in it.	False
You can sell your right to use a program in much the same way you can sell a book you own.	True
A literary, dramatic, musical or artistic work or any other aesthetic creation can be protected by the law of patents.	False

Confidential information is as same as the skills you gained during your employment as mastering a new programming language, which you can carry with you to another employer.	False
UK TradeMarks Act 1994 prohibits the sale or offer for sale (hire), goods or packaging that bear an unauthorized trademark.	True

Ref 3: Page 162 – 173

(d) List **six** actions that can be taken by educational institutions to control potential plagiarism actions by students. (6 marks)

> **ANSWER IN THIS BOX**
>
> Help students understand what constitutes plagiarism and why they need to cite sources properly
>
> Show students how to document Web pages and materials from online databases
>
> Schedule major writing assignments so that portions are due over the course of the term, thus reducing the likelihood that students will get into a time crunch
>
> Make clear to students that instructors/teachers are aware of Internet paper mills
>
> Ensure that instructors/teachers both educate students about plagiarism detection services and make them aware that they know how to use these services
>
> Incorporate detection software and services into a comprehensive antiplagiarism program
>
> Ref 2: Page 254 & 255

2) The "Software Engineering Code of Ethics and Professional Practice (Version 5.2)" Jointly approved by the professional bodies, ACM and the IEEE-CS, as the standard for teaching and practicing software engineering specifies that Software engineers shall dedicate themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to Eight Principles described in the above code.

(a) List these **eight** principles and give a short description of each principle.

(14 marks)

> **ANSWER IN THIS BOX**
> **Example:**
> Principle – PUBLIC, brief description - Software engineers shall act consistently with the public interest.
>
> 1. PUBLIC - Software engineers shall act consistently with the public interest
>
> 2. CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest
>
> 3. PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible
>
> 4. JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment.
>
> 5. MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance
>
> 6. PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
>
> 7. COLLEAGUES - Software engineers shall be fair to and supportive of their colleagues.
>
> 8. SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession. Ref 2: Pages 445,446

(blank answer box)

(b) The statements given in Column A are taken from the detailed descriptions of the above eight principles. Identify correctly to which principle each statement belongs to and write the answer in column B.

(11 marks)

	Column A	Column B
1	Approve software only if they have a well-founded belief that it is safe, meets specifications, passes appropriate tests, and does not diminish quality of life, diminish privacy or harm the environment. The ultimate effect of the work should be to the public good.	**Public**
2	Keep private any confidential information gained in their professional work, where such confidentiality is consistent with the public interest and consistent with the law.	Client and Employer
3	Ensure that specifications for software on which they work have been well documented, satisfy the users' requirements and have the appropriate approvals.	Product
4	Disclose to all concerned parties those conflicts of interest that cannot reasonably be avoided or escaped.	Judgment
5	Further their knowledge of developments in the analysis, specification, design, development, maintenance and testing of software and related documents, together with the management of the development process.	Self
6	Offer fair and just remuneration.	Management
7	Be fair and avoid deception in all statements, particularly public ones, concerning software or related documents, methods and tools.	Public

8	Report significant violations of this Code to appropriate authorities when it is clear that consultation with people involved in these significant violations is impossible, counter-productive or dangerous.	Profession
9	In situations outside of their own areas of competence, call upon the opinions of other professionals who have competence in that area.	Colleagues
10	Only endorse documents either prepared under their supervision or within their areas of competence and with which they are in agreement.	Judgment
11	Ensure adequate documentation, including significant problems discovered and solutions adopted, for any project they work on.	Product
12	Ensure adequate testing, debugging, and review of software and related documents on which they work.	Product

Ref 2: Pages 447 to 451

3)
(a) What is meant by green computing? (3 marks)

ANSWER IN THIS BOX

Green computing is a term applied to a variety of efforts directed toward the efficient design, manufacture, operation, and disposal of IT-related products, including personal computers, laptops, servers, printers, and printer supplies.

(b) List **four** methods used by computer manufacturing organizations to support the green initiative. (4 marks)

> **ANSWER IN THIS BOX**
>
> try to produce computers that use less electricity,
>
> include fewer hazardous materials that may harm people or pollute the environment
>
> contain a high percentage of reusable or recyclable material in the manufacturing and packaging processes.
>
> provide programs to help consumers dispose of their products in an environmentally safe manner at the end of their useful life
>
> Ref 2: Pages 408 - 409

(c) What are the **three** Rs (RRR) with reference to "green computing"? (3 marks)

> **ANSWER IN THIS BOX**
>
> Reducing, Reusing, Recycling
>
> Ref: Notes in VLE - http://vle.bit.lk

(d) Explain the 3Rs in green computing by elaborating on how each one of them can be achieved.

(15 marks)

> ### ANSWER IN THIS BOX
>
> In basic terms, **green computing** involves **reducing** the environmental impact of technology. That means using less energy, **reducing** waste, and promoting sustainability. **Green computing reduces** the carbon footprint of a business and provides a reputation boost.
>
> **Reusing** electronics can indirectly help to prevent health problems, by reducing **green**house-gas emission and also **it** offers protection to environment. To make the **computer** society completely **green** everyone should do the following things. Instead of discarding **computers**, upgrade their parts in order to make them new.
>
> The electronics **recycling process -** Shredding, Sorting, and Separation: After collection and transportation to **recycling** facilities, materials in the **e-waste** stream must be processed and separated into clean commodities that can be used to make new products. Or any acceptable answer
>
> Ref: Notes in VLE - http://vle.bit.lk

(4) Telecommuting, also known "working from home" is a popular work arrangement in which employees do not travel to workplaces (e.g. office building). With the innovations of Information and Communication Technologies (ICT) telecommuters often use mobile technologies such as Wi-Fi-equipped laptop or tablet computers and smartphones to work either from home or coffee shops. Recent reports show that "one in five workers around the globe, particularly employees in the Middle East, Latin America and Asia, telecommute frequently and nearly 10 percent work from home every day". However, some argue that since all jobs can not be done from home, telecommuting cause a digital divide among the workers.

(a) List **five** advantages and **five** disadvantages of telecommuting for organizations.

(10 marks)

> **ANSWER IN THIS BOX**
>
> **Advantages:**
>
> 1. As more employees telework, there is less need for office and parking space; this can lead to lower costs
> 2. Allowing employees to telework can improve morale and reduce turnover
> 3. Telework allows for the continuity of business operations in the event of a local or national disaster.
> 4. The opportunity to telework can be seen as an additional perk that can help in recruiting
> 5. There may be an actual gain in worker Productivity
> 6. Telework can decrease an organization's carbon footprint by reducing daily commuting
>
> **Disadvantages:**
>
> 1. Allowing teleworkers to access organizational data and systems from remote sites creates potential security issues
> 2. Informal, spontaneous meetings become more difficult if not impossible.
> 3. Managers may have a harder time monitoring the quality and quantity of the work performed by teleworkers, wondering, for instance, if they really "put in a full day".
> 4. Increased planning is required by managers to accommodate and include teleworkers
> 5. There are additional costs associated with providing equipment, services and support for people who work away from the office.
> 6. Telework increases the potential for lost or stolen Equipment.
>
> Ref 2 – Page 322

(c) What does the term the "Digital Divide" mean? (2 marks)

> **ANSWER IN THIS BOX**
>
> The digital divide is a term used to describe the gulf between those who do and those who
>
> Do not have access to modern information and technology, such as computers and the
>
> Internet.

Ref 2: Page 323

(d) List **three** reasons why it is important to bridge the "Digital Divide". (9 marks)

> **ANSWER IN THIS BOX**
>
> 1. Health, crime, and other emergencies could be resolved more quickly if people in trouble had access to a communications network.
>
> 2. Much of the vital information that people need to manage their retirement, health, and safety is increasingly provided by the Internet.
>
> 3. Ready access to information and communications technology can provide a country with a wealth of economic opportunities and give its industries a competitive advantage.
>
> Ref 2: Page 339

(e) List **four** reasons why you think a Mobile Phone is a better tool than a computer to bridge the Digital Divide? (4 marks)

> **ANSWER IN THIS BOX**
>
> Cell phones come in a wide range of capabilities and costs, but are cheaper than personal computers
>
> Cell phones are more portable and convenient than the smallest laptop computer
>
> The infrastructure needed to connect wireless devices to the Internet is easier and less expensive to build.
>
> There is almost no learning curve required to master the use of a cell phone.
>
> Basic cell phones require no costly or burdensome applications that must be loaded and updated.
>
> There are essentially no technical-support challenges to overcome when using a cell phone.
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> Ref 2: Pages 327, 328

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