



**UNIVERSITY OF COLOMBO, SRI LANKA**



**UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING**



**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)**  
**Academic Year 2006/2007 – 3<sup>rd</sup> Year Examination – Semester 5**

***IT5102: Professional Issues in IT***

***Structured Question Paper***

**24<sup>th</sup> March, 2007**

**THREE HOURS**

**To be completed by the candidate**

BIT Examination Index No: .....

**Important Instructions:**

- The duration of the paper is **3 (Three) hours**.
- The medium of instruction and questions is English.
- This paper has **4 questions** and **21 pages**.
- **Answer ALL questions. Each Question carries 25 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.

**Questions Answered**

Indicate by a cross (X), e.g. 

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|---|
| X |
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 the question numbers of the questions answered.

| To be completed by the candidate by marking a cross (X). |   |   |   |   |  |
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|  | 1 | 2 | 3 | 4 |  |
| To be completed by the examiners:                        |   |   |   |   |  |
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### Case Study

- (1) GlobalSoft is a reputed, large software developing company with around 400 employees. The company administration recently sponsored the two Software Engineers Mr. A and Miss B and the System Administrator to participate in a workshop and a training program on 'Computer Security'. When A and B returned to work after training, they tested a password cracking software package which was introduced to them during the workshop, in the premises of GlobalSoft, in the presence of a few other Software Engineers. During this process, they were able to trace passwords of all users of the local area network of the GlobalSoft Company, which included the password of the System Administrator. Those who were present on this occasion, having realized the seriousness of what had happened assured to each other not to reveal what they have discovered. After several days, it was found out that, the System Administrator was unable to log on to the system with his password. An investigation revealed that an intruder had logged on to the system using the password of the System Administrator and had later changed the password.
- (2) A leading bank in Sri Lanka called for tenders to automate its banking operations including the functions of a large network of Automatic Teller Machines (ATMs). One of the major requirements of the bank was that, the proposed software should be able to handle at least 100 concurrent (on-line, real time) ATM transactions per minute. Among the offers for this tender were a few leading software developers from overseas who were already maintaining similar software. GlobalSoft decided to submit an offer for this tender but it was the first time that they were submitting an offer to develop software for such a large banking activity. However, GlobalSoft was unable to test the software in an actual environment so that it was not in a position to determine the number of concurrent ATM transactions per minute, but, the leader of this project in GlobalSoft was confident that they would be able to meet this requirement. Assuming that other bidders would respond to this requirement positively in their offers, GlobalSoft too decided to do the same.
- (3) The Employee Mr. X of GlobalSoft, who was permanently residing in Sri Lanka, was operating a website in India through an Internet Service Provider from India. Upon a complaint from a world famous software developer 'MSoft', Indian investigators found out that, X was advertising and marketing, unauthorized copies of a software package which was originally developed by MSoft, through his website. Subsequently, the Indian investigators requested relevant Sri Lankan authority for an investigation and later it was found out that X was operating his website using the resources at GlobalSoft.
- (4) GlobalSoft was awarded a project from the Department of Social Welfare to expand their automated activities within a specified period. In this project, GlobalSoft was required to develop a Total Solution to the Department of Social Welfare. At the time of the assignment of this project, this department was operating a software package developed and commissioned by another software developing company, SoftSolutions. The leader of the project (at GlobalSoft) decided that, due to the time constraint, GlobalSoft should automate only the remaining manual activities of the department and accommodate the already automated components into their software package as reusable modules. This proposal was approved by the department. GlobalSoft completed the project within the specified period and installed it with a free maintenance agreement of one year. However, GlobalSoft was unable to debug, modify or update the modules developed by SoftSolutions as the source code was not available. When SoftSolutions was called by the department to attend to what they have developed, they were surprised to see GlobalSoft using the software of SoftSolutions inside their software package.

SoftSolutions accused the Department of Social Welfare for allowing GlobalSoft to handle the software developed by them. At the same time, SoftSolutions accused GlobalSoft for fraud and lodged a formal complaint to the respective body.

- 1) (a) In the incident of the exposure of passwords, what should have been the ethical responsibilities of
- (i) Mr. A and Miss B?
  - (ii) other individuals who were present at that time?

(06Marks)

**ANSWER IN THIS BOX**

- i)
- Not to attempt such a thing in the first place
  - At least after the incident, disclose the incident to the relevant authority immediately
  - Refrain from requesting/influencing/preventing others from their right to disclose the truth
  - Should not take any risk on the confidentiality of information maintained by others

Continued...

(ii)

- **Not to get involved in such incidents in the first place**
- **Disclose the truth, for the benefit of the organisation**
- **Should have advised Mr. A and Miss B on the danger of their exercise**

(b) What should have been the ethical responsibilities of those who conducted this workshop on computer security?

**(05 Marks)**

**ANSWER IN THIS BOX**

- **Advice to follow ethics strictly since the scope of the workshop directly related to information stored in a networked system**

Continued...

- use what they learn only for constructive purposes
- carry out the exercise on simulated environments

(c) In what situations can the cracking of a password be justified ethically?

(04 Marks)

**ANSWER IN THIS BOX**

- To access protected data to assist in a life-saving act
- To prevent harmful act on children such as inappropriate chatting etc.

(d) In what situations can the cracking of a password be justified legally?

(04 Marks)

**ANSWER IN THIS BOX**

- If the data protected by a password has evidence for a particular crime
- Death/Disappearance/Proven misconduct of the Administrator
- Prevent malicious use of protected information

(e) What are the steps which should be taken in order to prevent such incidents?

(06 Marks)

**ANSWER IN THIS BOX**

- Maintaining proper discipline

Continued...

- **Practicing Professional Ethics**
- **Continuing training on ethical and legal practices**

- 2) (a) What steps could have been taken by GlobalSoft to ensure that they submit a competitive offer without violating ethical commitments?

**(05 Marks)**

**ANSWER IN THIS BOX**

- **Disclose the truth – the fact that the performance of ATM access can only be proved theoretically**
- **Request the client (bank) for a trial session**

- (b) What are the ethical responsibilities of organisations in their tender evaluation processes to minimize the injustice caused to emerging software developers when they have to bid for projects with well-established and experienced software developers?

(05 Marks)

**ANSWER IN THIS BOX**

- Fair evaluation criteria
- Evaluating the credibility of bidders independently
- Requesting a presentation on the proposed project
- Evaluating past experiences on other large projects



- (c) In the tender to automate banking operations, there were offers from two software developing organisations P and Q. The Organisation P has been functioning for a long period but at present it is managed by several administrators with little experience. In contrast, the Organisation Q has recently been formed by a group of senior administrators.

Propose a suitable criterion to evaluate the credibility of these two organisations.

(05 Marks)

**ANSWER IN THIS BOX**

- Points to experience of individuals in IT staff
- Points to experience of company
- Experience of individuals in similar projects

- (d) It is a known fact that due to the overlapping of hardware features such as RAM and Hard Disk capacity, Clock Speed of computers, printers etc. as a result of rapidly advancing technology, it is extremely difficult to compare two similar devices for evaluation. Under such circumstances, propose a suitable criterion to evaluate two similar devices to ensure fairness to hardware suppliers/manufacturers.

**(04 Marks)**

**ANSWER IN THIS BOX**

- Meeting minimum requirements
- Extra points/weights to additional features

- (e) In this case, the selected software developer fails to fulfill the main requirement of the bank. Assuming the role of a Software Engineer, present your recommendations to the
- (i) bank
  - (ii) Software Developer
- in order to avoid a confrontational (tense) situation.

**(06Marks)**

**ANSWER IN THIS BOX**

- (i)
  - **Request explanation for the failure**
  - **Consider giving extension to improve**
  - **Payment revision**
- (ii)
  - **Request to provide adequate evidence of improvement within a specified period**
  - **No extra cost for extended services and negotiate a payment revision to recover the actual damage (or a part) to the bank**

- 3) (a) What (i) ethical and (ii) legal points have been violated by Mr. X?

(04 Marks)

**ANSWER IN THIS BOX**

(i)

- Advertising and marketing unauthorised software
- Using the resources of GlobalSoft for personal gain
- Apparently exploiting the situation for legal protection

(ii)

- Advertising and marketing unauthorised software
- Using the resources of GlobalSoft for personal gain if it violates any agreement between the employer and the company

(b) Discuss the legal background available in Sri Lanka to deal with such a case.

(04 Marks)

**ANSWER IN THIS BOX**

- There is no legal agreement with India to deal with such a case.
- International law is applicable if Sri Lanka has entered into the same.

(c) Mr. X has obtained the services of a reputed bank in India to facilitate on-line payments through a gateway for his on-line transactions.

Comment on the legal obligations of the bank for the activities of X.

(04 Marks)

**ANSWER IN THIS BOX**

- If the bank initiates the services to an individual after proper authentication process, bank does not have any legal obligation for the actions of Mr. X.

Continued...

- However, bank is obliged to produce the required record as evidence in case of any legal actions against Mr. X.

(d) MSoft requested the owner (Mr. X) of the website (which was advertising and marketing) to remove the reference to their products and when their request was unheeded, MSoft accessed the website and displayed a message explaining the unethical and illegal act of X.  
Comment on the act of MSoft.

(04 Marks)

**ANSWER IN THIS BOX**

- Whatever the reason may be, there is no authority for MSoft to access the website of another owner.

Continued...

- This act is illegal, a violation of the law
- This act is unethical and cannot be justified under any reason

(e) A freely accessible website displays information on 'How to make a Bomb'.  
Being a Computer Professional what are your ethical commitments towards such a scenario?

(03 Marks)

**ANSWER IN THIS BOX**

- Commitment to remove this website in the first place.
- Approaching the owner of the website to explain the adverse effects of this information and get it removed voluntarily
- Failing this, approaching the service provider

Continued...

|   |
|---|
| <ul style="list-style-type: none"> <li>• Failing to get this removed through the service provider,</li> </ul>       |
| <p>approach</p>   |
| <ul style="list-style-type: none"> <li>• the relevant legal authorities.</li> </ul>                                 |
| <ul style="list-style-type: none"> <li>• Approach the Professional Bodies to halt such situations in the</li> </ul> |
| <p>future.</p>  |

- (f) Your Manager requests you to prepare a plan to minimise the Internet access among the employees of your organisation for inappropriate information.
- (i) Give the main points you wish to include in this plan.
- (ii) How do you ensure that your plan will be implemented effectively?

(06 Marks)

**ANSWER IN THIS BOX**

- (i) •Conducting a seminar to promote awareness on unethical access of
- inappropriate information
- Its legal status
  - Harm to the institute
  - Giving a bad example to others
  - Trustworthiness

Continued...



(ii)

- **Getting feedback**
- **Monitoring with prior notice**

4) (a) Present your views on this situation?

**(05 Marks)**

**ANSWER IN THIS BOX**

**Answer should include both positive and negative aspects such as the following:**

- **In this case the issue is around a single client and two different suppliers**
- **A software system developed by one developer is used by another developer inside their software system without prior arrangement.**

Continued...

- It is n acceptable concept that software should be reused

as much as possible. It is a waste of the effort of Software Developers if an usable software is discarded.

- However, no developer has the right to use such software without prior permission.

- In such a case, the owner of the original software should be acknowledged officially.

- The client should play a major role with a proper agreement with suppliers, in order to upgrade existing software

(b) What is the apparent injustice caused to SoftSolutions?

(05 Marks)

**ANSWER IN THIS BOX**

- Financially, losing maintenance responsibility
- Technically, preventing responsibility for further developments/expansions etc.

Continued...

- **Ethically, undermining their identity, copyright**

(c) If GlobalSoft genuinely wanted to fulfill the client/customer requirements, suggest a better approach for the same solution.

**(05 Marks)**

**ANSWER IN THIS BOX**

- **Negotiate with SoftSolutions to get their consent**
- **Offer a reasonable amount for their software (i.e. to acquire)**
- **Acknowledge the contribution from SoftSolutions through a copyright statement or something similar**

Continued...

- **Allow SoftSolutions to continue their services of maintenance to the client**
- **Agree on future arrangements for maintenance e.g. Joint agreement**

(d) What are the ethical commitments of an organisation towards the software developer who maintains software for the respective organisation?

**(05 Marks)**

**ANSWER IN THIS BOX**

- **Respecting the copyright of the software**
- **If more than one developer is involved, make every attempt to avoid conflicts between them.**

Continued...

- **Make every attempt to cooperate with the developer to obtain the maximum benefit**
- **Respecting the copyright of the software**
- **If more than one developer is involved, make every attempt to avoid conflicts between them.**
- **Make every attempt to cooperate with the developer to obtain the maximum benefit**

(e) What provisions are available to deal with this situation legally?

**(05 Marks)**

**ANSWER IN THIS BOX**

- **Copyright law**
- **Intellectual Property Law**

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