

Assignment contains five questions and all are compulsory.

**Question 1 [5 marks]**

You have been asked by Thrift Towne, a local charity retail organization, to install a network in its downtown office. It currently has four PCs, all of which were donated and came with the Windows 7 operating system, a 1 GHz processor, 1 GB of memory, and an 80 GB hard drive. It also has a donated hub, which can be used to connect the computers.

Thrift Towne's owners are not very concerned about security because the network will share only staff schedules and inventory information (customers remain anonymous and are not tracked) between its own PCs. Thrift Towne uses mostly volunteers to run its stores, and the volunteers are not technical experts, so they are hoping for a solution that doesn't require any complex maintenance. In addition, Thrift Towne doesn't have any money to spend on this project. In short, the owners have asked for a simple, inexpensive solution.

What type of network would you recommend and why? What kind of additional equipment would Thrift Towne have to purchase to make your solution work? What role (or roles) would you assign to each of the four workstations and any other equipment you recommend? What type of upgrades, if any, might the workstations require to make your solution work?

**Question 2 [5 marks]**

Your work at Thrift Towne was so successful that you are asked to provide networking advice to a chain of ice cream stores called Scoops. The company already has a server-based network. The server that holds the company's inventory, ordering, sales, time tracking, and employee information and provides an Internet connection is located at their store across the street from Thrift Towne. Three other Scoops stores in town connect to the central server through high-speed Internet connections. Scoops is having problems with heavy traffic and slow server response at 8:00 a.m. and 3:00 p.m. each day. They don't exactly know where the traffic originates or what type of traffic it is. They also don't know whether the two heavy traffic times every day warrant a change in their connection methods.

What kind of network services will help them assess their traffic situation and provide answers about possible network expansion? What types of things can they find out? What other kinds of services might they also use, given their network configuration?

**Question 3 [5 marks]**

The client/server network at Scoops currently depends on one server machine running Windows Server 2008 as its NOS. However, the system was installed five years ago, and the chain is growing. The company's general manager has heard a lot of good things about Linux

operating systems—in particular, a type of Linux called Fedora. He asks you to find out how these two NOSs differ in their file sharing, remote access, and mail service capabilities. Also, he wonders how the two compare in their ease of use, reliability, and support. He remarks that he doesn't want to spend a lot of time looking after the server, and reminds you that he is not a technical expert. After some research, what can you tell him about the similarities and differences between these two NOSs? Do you advise the Scoops chain to change its server's NOS to Linux? Why or why not?

#### **Question 4 [5 marks]**

A student is curious about how a Web site appears on his computer screen. On a piece of paper, draw and explain the communication between a client and a server when the client requests a Web page; use the OSI model as a reference. For example, what Application layer protocol is required? How will the process differ if the student is sending or retrieving information to or from a secure Web site? Explain to the student how each OSI model layer contributes to data arriving in the correct place without errors.

#### **Question 5 [5 marks]**

Virtualization is the current rage due to the cost-savings and performance it provides. Virtualization can be implemented through open source solutions as well as proprietary solutions, allowing you to take a single physical device and make it appear to users as if it is a number of stand-alone entities. Discuss and compare at least three different virtualization solutions that are available in market. Choose any five features for comparison.

#### **Assignment Requirements**

1. Answers should be neatly typed in paragraphs or in table forms. Bullet points can be used for listing purpose. Use diagrams(can be hand drawn) where appropriate.
2. Assignment layout and format
  - a. Margins: 1 inch all sides
  - b. single line spacing
  - c. font: Arial
  - d. font-size: 12 pts
3. Use Harvard style or IEEE style to create all in-text references, and to generate the bibliography.
4. Use correct grammar and spellings.

#### **Instructions for Submission**

You are required to submit the assignment using the Assignment 1 Submission Drop box on Moodle before the due date. Please note that no emailed assignments would be accepted.

What to submit:

- SXXXXXYourName\_Assign\_1.pdf

## **Submitting Late**

Start EARLY. Also when you finish don't hold on to your assignment till the last moment. Submit as soon as you are satisfied with it. If you think you will not be able to submit the assignment on time due to unwarranted circumstances, then you will need to seek approval from the course lecturer prior to the due date to avoid deduction of marks.

## **Section 5.2 of University Academic & Student Regulations (UASR)**

### **5.2 Academic Dishonesty**

This misconduct involves any type of cheating that occurs in relation to study at the University. Some forms of academic dishonesty are listed below:

5.2.1 **Complicity:** voluntarily or consciously aiding other students in one or more of the offences covered in these regulations.

5.2.2 **Plagiarism:** submitting or presenting someone else's work (writing, invention or other creative work, etc.) as one's own and that is done solely for that particular course. Plagiarism may exist in the following forms:

5.2.2.1 The work submitted was done in part or whole by an individual other than the one submitting or presenting the work.

5.2.2.2 The whole work or parts of it are copied from another source without due reference.

5.2.2.3 A student submits, in one Course, work which has already been submitted in another Course, without prior arrangement with both Course lecturers.

### **5.2.3 Other Forms of Academic Dishonesty:**

This includes, but is not limited to, the following

5.2.3.1 Tampering or attempting to tamper, with examination scripts, class work, grades or class records.

5.2.3.2 Failure to abide by directions of an instructor regarding the individuality of work handed in, or collaborates with others in the preparation of material, except where this has been approved as an assessment requirement.

5.2.3.3 Acquisition, attempted acquisition, possession, or distribution of examination materials.

5.2.3.4 Falsification or fabrication of clinical or laboratory or workshop reports.

5.2.3.5 Falsification of attendance records to cover the absence of others.

5.2.3.6 Fraudulent authorization or use of official documents (e.g. sick sheets; etc.).

5.2.3.7 Impersonates or causes to be impersonated.

5.2.3.8 Other attempts to circumvent course assessment requirements

## Assignment Marking Guidelines

Question		Marks Allocated	Marks Obtained
1	<ul style="list-style-type: none"> <li>What type of network would you recommend and why?</li> <li>What kind of additional equipment would Thrift Towne have to purchase to make your solution work?</li> <li>What role (or roles) would you assign to each of the four workstations and any other equipment you recommend?</li> <li>What type of upgrades, if any, might the workstations require to make your solution work?</li> </ul>	1.5 1  1 1.5	
2	<ul style="list-style-type: none"> <li>What kind of network services will help them assess their traffic situation and provide answers about possible network expansion?</li> <li>What types of things can they find out?</li> <li>What other kinds of services might they also use, given their network configuration?</li> </ul>	2  2 1	
3	<ul style="list-style-type: none"> <li>What can you tell him about the similarities and differences between these two NOSs?</li> <li>Do you advise the Scoops chain to change its server's NOS to Linux? Why or why not?</li> </ul>	3  2	
4	Drawing must include/explain/illustrate <ul style="list-style-type: none"> <li>Application layer protocol is required.</li> <li>How will the process differ if the student is sending or retrieving information to or from a secure Web site?</li> <li>Explain to the student how each OSI model layer contributes to data arriving in the correct place without errors.</li> </ul>	1 2  2	
5	Discuss and compare at least three different virtualization solutions that are available in market. Choose any five features for comparison	5	
	Total	25	