CS150: Introduction to Computer Networks and Security
Assignment 2
Networking
Security Countermeasures
Weight: 15%

Learning Objective: Outline the preliminary security threats for computer and networks and their countermeasures

Due Date: 26th October 2023, 11:55pm

Assignment Group: Can be done in groups of up to 3 members.

Scenario 1: Weighting 15%

The school community watch zone is concerned of security breach during the pandemic and the school community wish to top up their surveillance. A company sells a video surveillance set for $1400 and this has found to be the cheapest in Suva.

Proposed specifications are as follows:

- 4 x 6mp camera
- 1 x VCR
- Cables provided within the school (no length restrictions)
- Provision to add 4 more cameras
- Remote control to adjust camera at heights
- A monitor to playback footage
- VCR allows recording and storage
- Human motion detection will allow recording
- Remote surveillance of footage via mobile / web application

Required:

You are to present a technical report to the board for approval. The report should include:

- Technicalities
- Hardware specs (you can add from your research)
- Warranty
- Backup service by the vendor
- Setup and labor cost
- comparison of buying and involving the vendor (cost) and doing it yourself

- price analysis with other vendors (you can use online or local prices)
- software requirements
- security requirements
- access level

The report should highlight the best vendor, with backup service, cost analysis, duration of project (start and end date), product specification and comparison (local and overseas market price). Your aim is to convince the board of your feasibility studies before the actual projects are undertaken.

The report must also include a **Threat Assessment** section which should:
1. Include potential security threats to the network, both physical and digital threats for example unauthorized access, camera tampering, data interception etc.
2. Prioritize the threats based on their potential impact on the network's security.
3. Identify countermeasures for each identified threat using network and security principles.
4. Provide recommendations for further enhancing the security of the network.

Packet Tracer

A packet tracer file should be provided that show the following:

- connectivity of all devices
- correct cables
- Private IP address only: IP of your choice for all device but of the same class (doesn't matter which class) for e.g. 10 devices maximum to be connected for the surveillance system. Details are given below:

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Network:   192.168.0.0/28        (Class C)
Broadcast: 192.168.0.15
HostMin:   192.168.0.1
HostMax:   192.168.0.14
Hosts/Net: 14 Devices           (Private Network IP)
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- You can illustrate device connecting from outside for monitoring purpose.
- IP of outside device is your choice.
- Monitoring device will NOT have a Private IP.
- All devices should ping to each other. Network should be working.
- For recording purpose, instead of a VCR, a PC can be used.
- Be innovative with IP cameras.

For submission:
The completed technical report should be submitted as a single file, either as a word or pdf along with the packet tracer file by one member of the group. Penalty applies for late submission. Plagiarism cases will be dealt with severely. This could lead to zero if sufficient evidence proves that the assignment has been copied. Do acknowledge material used from other sources.

Marking Rubric

Question	CBOK	Unsatisfactory (0 – 49%)	Satisfactory (50 -75%)	Good (76 – 100%)
(a) Write up	Interpersonal Communication (20%)	I. Poor presentation/communication skills (hard to understand) IV. Does not follow the given standard template	I. Satisfactory presentation/communication skills (partially understood) IV. Able to follow the given standard template	I. Good presentation/communication skills (clear and loud IV. Clearly understands requirements view
(b) • Packet Tracer • Topology • Correctness of IP addressing	Networking (40%)	I. Unable to describe most of the fundamental concepts of networking and data communication II. Unable to identify most of the network principles or protocols or standards and how they can be applied to loosely-coupled problems in the discipline III. Unable to apply most of the fundamental midlevel aspects of this Gradate Attribute when provided with occasional guidance	I. Can describe the most of the fundamental concepts of networking and data communication II. Can identify most of the network principles or protocols or standards and how they can be applied to looselycoupled problems in the discipline III. Can apply most of fundamental mid-level aspects of this Gradate Attribute when provided with occasional guidance	I. Can demonstrate the applicability of most of the key data communication and networking concepts to open ended problems in the discipline II. Can identify all of the network principles or protocols or standards and how they can be applied to loosely-coupled problems in the discipline III. Can apply all of fundamental mid-level aspects of this Gradate Attribute when provided with occasional guidance

(c) • Teamwork • Or individual	Teamwork /Individual (5%)	I. Inappropriate task distribution and/or failure in completion of tasks in a given timeframe. IV. Delay in submission of assignment V. Individual work not integrated successfully		I. Appropriate task distribution & completion on time IV. Submission of assignment on time V. Individual work integrated successfully
(d) Security	Security Management (35%)	I. Unable to list down various security issues in the literature II. Unable to Identify the key security strategies and their counter measures to be adopted to a ICT domain.	I. Partially list down various security issues in the literature II. Partially to Identify the key security strategies and their counter measures to be adopted to a ICT domain	I. Properly list down various security issues in the literature II. perfectly Identify the key security strategies and their counter measures to be adopted to a ICT domain