**INTERCOM PROGRAMMING AND MANUFACTURING COMPANY**

**(IPMC)**

**SCHOOL OF CYBERSECURITY | EC-COUNCIL**

**IPMC**

**C|CT 2023/2024 ACADEMIC YEAR**

**COURSE TITLE: CERTIFIED CYBERSECURITY TECHNICIAN (C|CT)**

**COURSE CODE: 212-82**

**PROGRAMME: DIPLOMA IN CYBERSECURITY**

**STUDENT NAME:**

**STUDENT ID:**

**DATE: SUNDAY, 28TH APRIL 2024**

**PROJECT TITLE: NURSING HOME FOR OLD PEOPLE**

Outline/Scenario

A new nursing home for old people is opening in your town. A nursing home provides accommodation, meals and support to old people who are unable to take care of themselves and require medical treatment.

This new nursing home is a one-story building, which contains 40 bedrooms. It is planned that 40 old people will live in the building. Each bedroom contains a bed, chair, wardrobe, chest of drawers and small table. There are also 5 bathrooms with walk-in shower facilities and wash basins and 5 lavatories with wash basins. The building also contains a dining room and two lounges for old people.

Staff members have their own separate small lounge. Furthermore, they have a kitchen for preparing meals for the old people and an office with desk space for 3 staff. Near the front entrance of the building is a reception room. Located next to the reception room is a manager’s office. There is also a private meeting room in the building for staff meetings and private meetings with the families of old people living in the home.

This nursing home for old people will provide all staff with e-mail, Internet, intranet and access to a range of applications via a wired network in the building. This wired network will serve workstations in the staff lounge, staff office, reception, meeting room and manager’s office. There will be access for staff to all of the above workstations.

There will also be a workstation in each of the old people’s lounges with internet access for them. The nursing home will also provide wireless access to the internal network that will store data about each old person living in the home, including medical records and medication dosage records. Patient medication is given by staff and tablet devices are used to show medication requirements, doses and the recording of patients taking their medication. Records of all medication taken are kept for 5 years to satisfy the country’s monitoring requirements. Medical records will be transmitted to and from the government health service via an Internet connection.

The wireless network will also include public access so that old people can access the internet and email via personal portable devices (such as mobile telephones) and via laptops. Your role is to write a report outlining some of the options for the care home in setting-up, configuring and securing its networks. The detail of your report is given in the tasks below. You should provide a range of options for the practice and make recommendations as to which you think is the best option.

**Task 1** - Analyse the secure data storage and transfer requirements

Plan your approach to data storage in the nursing home network, data transfer within the nursing home network, and data transfer to/from the government health service including any legal requirements relevant to your country. Make sure you include a detailed discussion of any data protection issues, including confidentiality, integrity and availability, that relate to the caring of old people. Your analysis should include the requirements for the secure transmission of data for staff recording medication details via tablet devices and medical records to and from the national records system. This should be delivered as part of Task 3 (a).

**Task 2** - Create authentication methods, network security methods and ongoing network monitoring plans.

Create a plan that explains how users will be authenticated. It should consider the types of users that will have legitimate network access. Moreover, it should ensure that only members of staff have access to the private area of network and the data it holds. Make detailed notes on how user types will be authenticated.

Write a plan of how the wireless network will allow secure recording and transmission of data (e.g. medication records) while simultaneously allowing public access. You should make detailed notes of the hardware, software, device to device channels, encryption and authentication mechanisms required.

Describe how the network will be monitored to maintain security via checking for and removing vulnerabilities. This should be delivered as part of Task 3 (b).

**Task 3**

Report

A detailed breakdown of the marks for tasks 1 and 2 is also included below:

Prepare a report on data storage, data transfer, how users will be authenticated and how the network will be monitored. The following subsections must be included in your report:

a) Data storage and transfer (40 marks in total). This should include:

i. A detailed discussion of the data protection issues in a care home environment – 10 marks

ii. A detailed explanation of methods of ensuring information security that have been created, including plans for both storage and transmission of data – 20 marks

iii. A discussion on alternative methods that could be used to protect data – 10 marks

This section of the report should be approximately 500 words.

b) Description of how the network users will be authenticated, how sensitive data will be transmitted whilst staff are working with tablets for medication delivery, and how data will be transmitted to and from the government health service. Moreover, you also consider how public and private wireless networks will be delivered, how the network will be monitored for vulnerabilities and how vulnerabilities will be removed. (50 marks in total) This should include detail on the features given below including hardware and software involved, standards and protocols used, cryptographic methods used, network services allowed/denied, policies and examples of how these would be applied.

i. A detailed description of the user authentication methods planned – (10 marks)

ii. A discussion of other user authentication methods considered including reasons why they were discarded in favour of the planned methods – (10 marks)

iii. A detailed description of the methods planned to ensure privacy and security of sensitive data transmitted when working with tablet devices – (10 marks)

iv. A discussion of other security methods considered for data transmission including reasons why they were discarded in favour of the planned methods – (10 marks)

v. A description of how the network will be monitored for security vulnerabilities and how such vulnerabilities will be removed – (10 marks)

This section of the report should be approximately 850 words.

c) Reflective commentary (10 marks in total)

You should assess the feasibility of implementing the measures you have designed (4 marks), the success of your methods and problem-solving techniques (3 marks), and also use this section to reflect on what you learned from completing the assignment (3 marks). This section of the report should be approximately 150 words.

**Guidance**

The report should be professionally presented, checked and proofed. In addition, the report should be presented in a format and style appropriate for your intended audience.

**Report Contents**

1. Executive Summary

2. Project Scope

3. Network Requirements

4. Proposed Network Topology diagram

5. Outline all identified security issues in Existing Infrastructure

6. Security issues with their mitigation plan

7. New/Proposed Network Design Topology ***(must be designed with a Microsoft viso or any animated application)***

8. Use 50 cybersecurity controls tools including; Firewalls, DMZ, Network Segmentations, Web applications security tools, Network analysis tools, web application firewalls, data migrations techniques, backup techniques, backup policy, device usage policy, LAN/WAN access control, cybersecurity policies.

9. Perform a security and vulnerability assessment and generate a report.

10. Proposed Network Configurations (Router Interface, ACL Configuration, ACL to block external access (Internet) to Server, ACL to restrict LAN access to Server)

11. Conclusion.

**Report format – PDF**