

Diploma in Information Technology (DIT)
ITS D003 Communications and Networks
January 2023, Term 2306
CA003 Individual Assignment (40%)
(Written Report 30%, Individual Presentation 10%)

Task:

The objective of this assignment is to allow students to apply the concepts taught in class and further their knowledge on networking. When doing research beyond lesson materials, students are encouraged to check the validity of the sources before using it in the assignment.

This assignment will make use of what you have learnt in:

- Lesson 3 Internet Networking
- Lesson 4 Internet Protocols
- Lesson 5 Internet Applications
- Lesson 6 Domain Name System
- Lesson 9 Wired Media
- Lesson 10 Wireless Media
- Lesson 15 Interconnection Technologies

Read the following articles on Singapore's digital push to adapt and drive digital transformation within the Primary Healthcare sector:

Article (1): [GPConnect \(ihis.com.sg\)](https://www.ihis.com.sg/GPConnect)

Article (2): [https://www.ihis.com.sg/SmartCMS Programme](https://www.ihis.com.sg/SmartCMS)

GreenDoc Medical ("GDM"), a GP Clinic, was established in 2005 by Dr Soh. Today, *GDM* is a well-established medical clinic providing a comprehensive range of primary care services within its community. *GDM* has a team of five medical doctors with experience in different areas of family medicine and pride themselves in delivering safe, caring, and pragmatic services.

Due to their patient-centric approach, *GDM* has seen high growth in demand for their services and has moved their medical clinic to a bigger premises. To prepare for the future and be future-ready, *GDM* intends to use HealthTech and is looking to hire an IT Project Manager to set up an IT network at their new medical clinic.

To qualify for this role, you must demonstrate a broad understanding of networking and how you would go about implementing the IT network for them. Your task is to write a report that explains some of the networking concepts and a brief proposal to meet their requirements.

Task Instructions

1. Make sure your report is related to *GDM* and Articles (1) and (2).
2. Please make use of definitions and concepts taught in ITS D003. You are allowed to use external sources to further support the concepts but not replace the definitions.
3. You are advised to read and follow the **Report Instructions** in **Annex A**. Failure to do so will result in deduction of up to **20% of the total marks**.
4. The marking rubric for the assignment is provided in **Annex B**.

PART A (20%)

- (i) Write a summary, **in at least 300 words**, for Articles (1) and (2). In your summary, describe, with examples, **HealthTech, its importance and impact, and the HealthTech initiatives started by IHiS** in Singapore.
- (ii) List, describe and discuss, **in at least 200 words**, what are the essential HealthTech solutions which the medical clinics should consider and how each of the solutions will benefit the clinic in digital transformation.

PART B (40%)

Figure 1 below shows the floor plan of *GreenDoc Medical's* new clinic. Your task as their IT Project Manager would be to design and deploy the network infrastructure for their clinic located in one of the Singapore's Neighbourhood Town Centres.



Figure 1: Floor Plan and layout of GreenDoc Medical Clinic

Propose and justify, **in at least 800 words**, a network topology that will support the following devices to be installed / used in the clinic:

- 2 (two) Servers (one for Web access, e-mail access, email-transfer, and the other for secure information such as Clinic Management and Patient Record Management)
- 10 (ten) Desktops / Laptops (a mix of Windows/Mac OS)
- 10 Smartphones / Tablets
- 2 (two) Multi-function Printers
- 5 (five) Smart Televisions
- 5 (five) Security Cameras

Your proposal should include a simple **network topology diagram** that shows:

- a) the type of internet source (e.g., ADSL or fibre broadband)
- b) how the devices listed above are linked together through interconnection devices (e.g., Router, Switches, Hubs, Access Points, and Nodes etc.)
- c) the wired / wireless media selected to provide network access to the devices above, and the advantages / disadvantages of each wired media.

Note: You can illustrate your proposal with a Network Diagram by using **draw.io** or PowerPoint icons from this link:

(https://www.cisco.com/c/dam/en_us/about/ac50/ac47/icon-library-production-oct2016.zip)

PART C (30%)

While discussing and evaluating the network infrastructure as designed in PART B, Dr Soh referred you to an article which presents an overview of new and emerging health technologies relevant to Singapore: [overview-of-clinical-applications-of-telemedicine.pdf \(ace-hta.gov.sg\)](https://www.ace-hta.gov.sg/overview-of-clinical-applications-of-telemedicine.pdf) .

To be future-ready, Dr Soh requested you to study and analyse the research findings from the above article and propose relevant technologies which *GDM* should plan to implement at its clinic.

Your task is to summarise your finding based on the above article for Dr Soh's consideration. In your summary:

- (i) Explain, **in at least 200 words**, what is Telemedicine and the key modes of telemedicine delivery.
- (ii) List, describe and discuss, **in at least 500 words**, what are the relevant and essential Telemedicine systems which *GDM* should consider using, and how each of the solutions will benefit the clinic in the long run.

Report Instructions

Format

1. The report should have a cover page, content page, introduction, write-up on the task, conclusion, references, and appendices (if any).
2. The cover page should include:
 - i. Institution name and institution logo of this programme
 - ii. Module name, term, and year
 - iii. Date of submission
 - iv. Student's name and student ID number
3. Start each section on a separate page. Task write-up must be in paragraph form. Bulleted points and tables may only be used to support the answer.
4. The references and citations should be presented in Harvard style. Reference list should include at least **THREE (3)** references.

Report Word Limit

2000 to 2500 words

Report Font and Spacing

Font: Calibri, Black

Font size: 12 with 1½ or double spacing

Penalty Marks for Late Submission

Late by one day: **20%** of the total marks will be deducted.

Late by more than one day: submission will **NOT** be graded.

Plagiarism and Collusion

The submitted report must show evidence that this is students' own work. **ZERO MARKS** will be awarded if there are no workings, reasonable explanations, or citations. Please be reminded that plagiarism and collusion is a serious offence, and all cases will be referred to the administration. Grades will be withheld if the submission is suspected of plagiarism or collusion till investigations are completed.

Important Deadlines

CA003 Written Report Deadline: 13 February 2023, 11.59am. Submit the softcopy of your report via CANVAS.

Marking Rubric

The marking rubric for the written report can be found in **Annex B** of this document. Please understand the marking rubric carefully and **allocate your time** accordingly.

Lecturer Contact

You should contact your lecturer via your SIM email whenever you have any issue about your assignment. You may send your email through CANVAS CN module site.

MARKING RUBRIC

ANNEX B

	S/N	Criteria	Excellent	Very good	Good	Acceptable	Weak
W R I T T E N R E P O R T (1 0 0 %)	1	Part A (20%)	Student has a clear understanding of the task requirements and can describe these requirements effectively and appropriately.	Student has a clear understanding of the task requirements and can describe these requirements appropriately.	Student has sufficient understanding of the task requirements and can describe these requirements appropriately.	Student has limited understanding of the task requirements and is able to describe these requirements to some extent.	Student has limited understanding of the task requirements and is unable to describe these requirements.
	2	Part B (40%)	Student has provided appropriate solutions with detailed explanation.	Student has provided appropriate solutions with detailed explanation to some extent.	Student has provided appropriate solutions with sufficient explanation.	Student has provided solutions, but some parts of the solution are inappropriate.	Student has misunderstood the task or has not provided any solution.
	3	Part C (30%)	Student has a clear understanding of the task requirements and can report on these requirements effectively and appropriately.	Student has a clear understanding of the task requirements and can report on these requirements appropriately.	Student has sufficient understanding of the task requirements and can report on these requirements appropriately.	Student has limited understanding of the task requirements and is able to report on these requirements to some extent.	Student has limited understanding of the task requirements and is unable to report on these requirements.
	4	Referencing (5%)	Student has used more than sufficient referencing and practiced appropriate referencing and citations style.	Student has used sufficient referencing and practiced appropriate referencing and citations style.	Student has used some referencing and practiced citations style.	Student has used limited referencing.	Student has used less than satisfactory amount of referencing.
	5	Overall Report Structure (5%)	The report is coherent and clearly written. Includes title, introduction, the main tasks, and conclusion. There are no spelling or grammatical errors. Writing is clear and concise.	The report is well organized and clearly written. Includes only the title and the main tasks. There are no spelling or grammatical errors. Writing is clear and concise.	The report is well-organized and clearly written for the most part. Includes only the title and the main tasks. There are no grammatical errors but a few minor spelling errors. Writing is mostly clear.	Report shows a sense of organization. There are only a few spelling or grammatical errors. Writing is mostly clear.	The report lacks overall organization. There are several spellings and/or grammatical errors; technical terms are not defined or are poorly defined. Writing lacks clarity.

Individual Presentation (100%)	Student demonstrates full knowledge by answering all the questions with explanation and elaboration. Speaks in a clear and concise manner.	Student demonstrates good knowledge by answering all the questions with explanation and elaboration. Speaks in a comprehensible but sometimes unclear manner.	The student is at ease and answers most questions with explanation and some elaboration. Speaks in a comprehensible but sometimes unclear manner.	Students are uncomfortable with information and can answer only rudimentary questions without elaboration. Speaks mostly in an unclear manner.	Students do not have a grasp of information and cannot answer questions about the report. Speaks in an unclear, jumbled or poorly worded manner.
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