

Summer Homework

T Level Digital Support and Security

You will complete two parts as part of your summer homework. This work is designed to prepare you for your next year by developing your understanding of ethical issues in technology and your ability to develop your understanding of networking independently.

You should aim to spend around:

- 1 hour on Part A
- 5 hours on Part B

You should complete this independently. AI tools should not be used to generate answers.

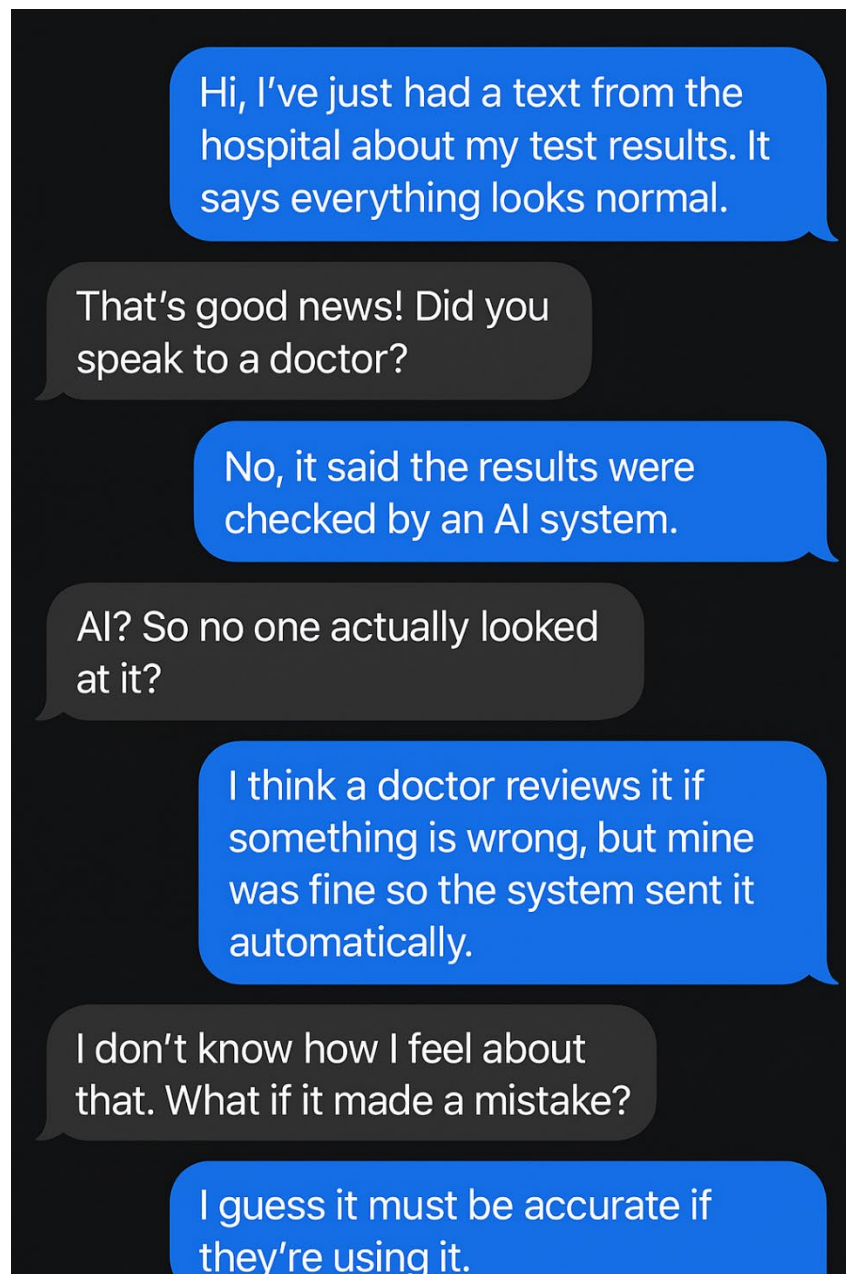
Part A: Ethical Use of AI in Healthcare (10 marks)

Scenario

A hospital has started using an Artificial Intelligence (AI) system to analyse simple patient test results. Once the results have been reviewed by the system, a message is automatically sent to the patient informing them of the outcome. The system is designed to save time and allow doctors to focus on more serious cases.

Text conversation

The following conversation is between the patient and the family member.



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Your task

Using the scenario and conversation, write a structured response of four paragraphs:

- *Paragraph 1: Introduction* - Explain how AI is being used in this situation.
- *Paragraph 2: Arguments for* - Explain at least two benefits of using AI in this way.
- *Paragraph 3: Arguments against* - Explain at least two risks or concerns of using AI in this way.
- *Paragraph 4: Conclusion* - Give your overall judgement/opinion on the situation. Do you think hospitals should use AI like this? Explain why without repeating points from paragraph 2 or 3.

You should try to include ideas such as accuracy, speed, privacy, reliability, or trust in your response.

If you are unsure how to start, you may use sentence starters such as:

- In this scenario, AI is used to...
- One advantage of using AI is...
- However, one concern is...
- Overall, I believe that...

Part B: Networking (15 marks)

Using the Simple Network Simulator (<https://computingtools.co.uk/>):

- Navigate to the **Welcome tab** and read the instructions carefully (use the arrows to see the examples you will be creating).
- Complete scenes 1, 2 and 4 below
- The total mark for this task is **15 marks**
- For each scene you must:
 - Complete the network setup
 - Capture a clear screenshot of your final network
 - Provide a written response to the questions

Marks are awarded for both the correct network setup and the quality of your written explanations.

You may refer to online resources to support your understanding the technical terminology, which you can retrieve from the following video (<https://craigndave.org/videos/ocr-alevel-slr11-network-hardware/>).

Scene 1, 2 and 4

Scene 1: Basic Internal Office Network (2 marks)

Your task:

- Connect all the PCs to a new switch outside of the server room
- Connect a switch to the server in the server room
- Ensure all devices are connected together, including the two switches

Goal: Create a simple working office network with no unnecessary devices

Written response: Explain why a switch is used instead of connecting each PC directly to the server. You may wish to refer to efficiency or number of connections in your answer.

Mark breakdown:

- 1 mark: Network is mostly complete with minor errors
- 2 marks: Network is fully correct and explanation shows clear understanding of why a switch is needed

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Scene 2: Office with Firewall and Server (4 marks)

Your task:

- Add a PC for every desk and connect them using a switch
- Add a server for shared services
- Add a firewall and router, placing them logically within the network, for example between the internal network and the internet
- Ensure all internal devices use Ethernet
- Use Fibre only for the external internet connection

Goal: Create a secure office network with correct device placement

Written response: Explain why the firewall is placed where it is **and** how this prevents unauthorised access from outside the network.

Mark breakdown:

- 1 mark: Network attempted but contains multiple errors
- 2–3 marks: Mostly correct setup with some understanding of firewall placement and purpose
- 4 marks: Fully correct network with clear and accurate explanation of how the firewall improves security

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Scene 4: Enterprise Network (9 marks)

Your task:

- Design a multi-floor enterprise network
- Place switches and wireless access points logically
- Use Ethernet and Fibre where appropriate
- Ensure all wireless demand is covered
- Include three servers in your design
- Do not add unnecessary devices

Goal: Support as much demand as possible using correct cabling and layout without congestion

Written response:

- Identify one feature of your design that reduces congestion and explain how it works
- Explain why both Ethernet and Fibre are used in your design
- Suggest one way the network could be improved to support more users

Mark breakdown:

- 1–3 marks: Basic attempt with limited organisation and little or no explanation
- 4–6 marks: Mostly functional network with some correct device placement and simple explanations
- 7–8 marks: Well-structured network with logical layout and clear explanations of performance and cabling choices
- 9 marks: Fully effective and well-balanced network with clear, accurate explanations and a justified improvement

Submission guidance

For each scene, include:

- An appropriate title for each scene
- A screenshot of your completed network
- A written response answering the questions provided

Ensure your work is clearly organised, well structured, and easy to read.

Submission Instructions

You must submit your work as a Word document, saved with the following naming convention: SURNAME_FIRST INITIAL_COURSE.docx, e.g. BLOGGS_J_TLevelDSS.docx

Your document must include clear titles:

- Part A
- Part B

For Part B:

- All screenshots must be clear and readable
- Written responses must be typed beneath each screenshot.

Make sure your work is clearly organised and easy to read. Watch the following YouTube video on how to use word processing documents appropriately for this task:

https://youtu.be/ktMjpvGM_4k?si=b7e3OHODTwKvp7Jp

When you have completed your work, bring a printed copy or have an electronic version ready to submit when instructed.

Marking Guidance

This homework is marked out of 25 marks in total.

- Part A (10 marks)
- Part B (15 marks)
- Total (25 marks)

If you find some questions difficult, attempt as much as you can — effort is important. This homework is designed to help prepare you for the T Level Digital Support and Security course.