Summer Homework

T Level Foundation Year / Digital Software Development

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 learn programming 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.

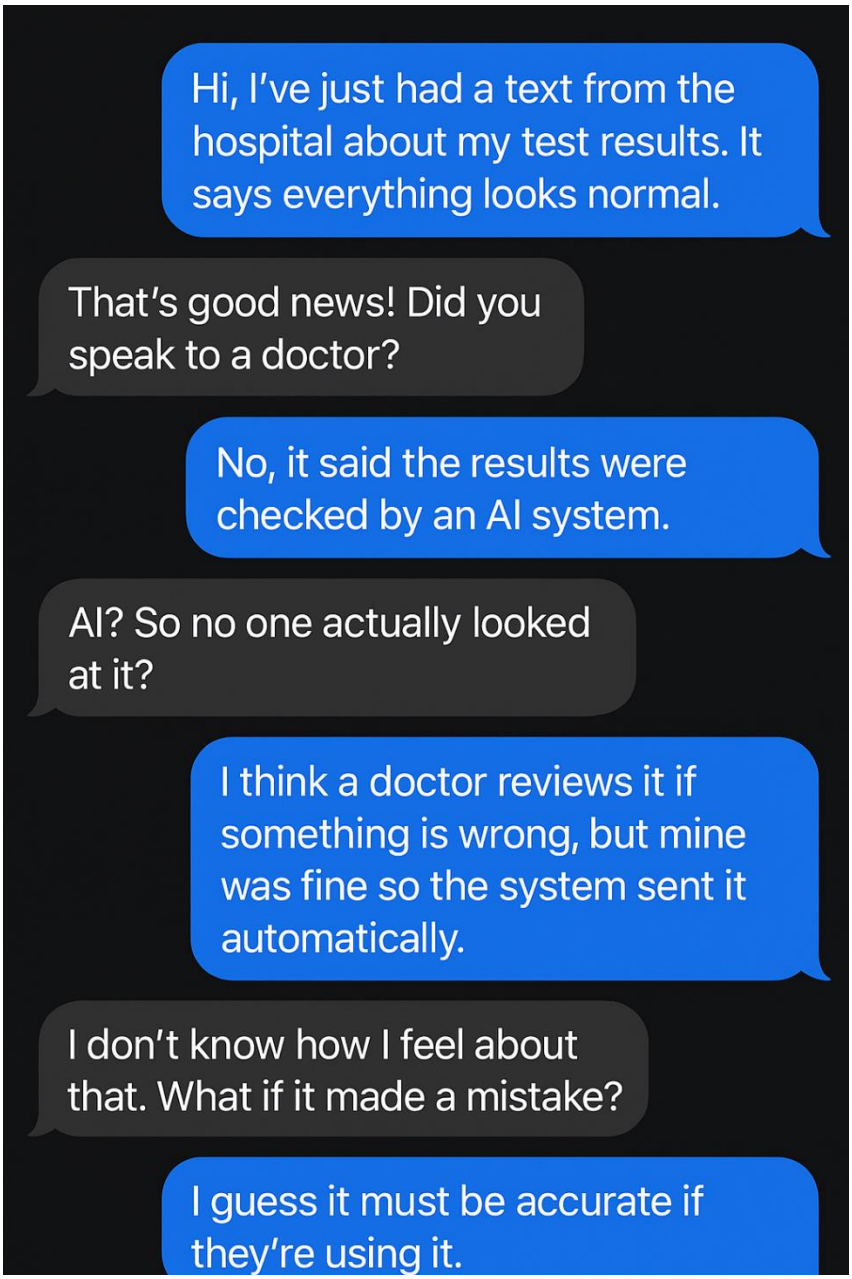
Part A: Ethical Use of AI in Healthcare (10 marks)

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.



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: Python Learning and Coding (15 marks)

You will spend time learning Python independently, then complete a set of short coding tasks. This is designed to help you practise problem-solving and debugging.

Time guidance

- Spend around 5 hours in total on Part B.

What you are allowed to do

You are allowed to use the learning websites below while answering the questions. This is expected. The goal is to practise finding information and applying it.

Python learning websites (use these to learn and to help you fix code) Start here if you are new or need reminders:

- https://www.w3schools.com/python/
- https://www.programiz.com/python-programming#guide

If you are more a visual learner, the following YouTube channel can help you:

- https://www.youtube.com/watch?v=KzvDBhQ3c7s&list=PL85AXnriXmCaXvurnXdNI0XXbZG_2Y7SZ&index=2

There are many online coding platforms you can use, such as this one: https://create.withcode.uk/ where you can run and debug your Python code.

What to learn or revise before answering the questions Variables and data types (strings and numbers)

- `print()`
- `input()`
- `if / elif / else`
- `comparison operators (>, <, ==, !=, >=, <=)`
- `for loops with range()`
- `basic lists (a stretch topic)`

How you will be marked:

- Questions 1 – 10: 1 mark each
- Question 11 – 5 marks

Fix or complete the code so it runs correctly and matches the scenario. You will need to provide the full code for each question.

Coding Questions (Questions 1–10)

Question 1 (1 mark)

Scenario: The system should store a patient's first name and print a welcome message. Fix the code so it prints: `Welcome Sam`

```
name = "Sam"
print("Welcome " name)
```

Question 2 (1 mark)

Scenario: The system checks if a patient has a high temperature (above 37). Fix the syntax error so the code runs correctly.

```
temperature = 38
if temperature > 37
    print("High temperature")
```

Question 3 (1 mark)

Scenario: The system should print "Normal" when heart rate is between 60 and 100 inclusive. Fix the syntax error so the code runs correctly.

```
heart_rate = 72
if heart_rate < 60:
    print("Low")
elif heart_rate > 100:
    print("High")
else
    print("Normal")
```

Question 4 (1 mark)

Scenario: The system counts from 1 to 5 to simulate checking five patients. Fix the code so it prints the numbers 1 to 5.

```
for i in range(1,6)
    print(i)
```

Question 5 (1 mark)

Scenario: Oxygen level below 95 should show a warning. Fix the logic error so the condition is correct.

```
oxygen = 92
if oxygen > 95:
    print("Low oxygen level")
```

Question 6 (1 mark)

Scenario: The system asks for age and checks whether the patient is an adult (18 or over). Complete the missing line so the code works.

```
age = int(input("Enter age: "))
if age >= 18:
    print("Adult")
else:
```

Question 7 (1 mark)

Scenario: The system should calculate the total of two appointment fees (£12 and £8) and print the total. Fix the code so it prints: Total: 20

```
fee1 = "12"
fee2 = "8"
total = fee1 + fee2
print("Total:", total)
```

Question 8 (1 mark)

Scenario: The system stores today's queue numbers in a list and prints the first number in the queue. Fix the code so it prints the first queue number.

```
queue_numbers = [101, 102, 103]
print(queue_numbers[1])
```

Question 9 (1 mark)

Scenario: Patients aged 16 or older should be sent to the adult department. Patients under 16 should be sent to paediatrics. There is a logic error in the code. A logic error still runs, but does not give the expected output.

```
age = int(input("Enter patient age: "))
if age > 16:
    print("Adult department")
else:
    print("Paediatric department")
```

Fix the logic error so the program matches the scenario.

Question 10 (1 mark)

Scenario: Patients with a pain level of 8 or higher are classed as urgent and should be treated immediately. All other patients must wait. There is a logic error in the code.

```
pain_level = int(input("Enter pain level: "))
if pain_level >= 8:
print("Patient will wait")
else:
print("Patient will be treated immediately")
```

Fix the logic error so urgent patients are treated correctly.

Question 11 (5 marks)

A hospital system is being developed to check patients as they arrive.

The program must:

- Ask the user for their name
- Ask the user for their age
- Ask the user for their pain level (1–10)

The system should then decide:

- Which department the patient goes to
- Whether they are treated immediately or must wait

Rules:

- Patients aged 16 or older go to the adult department, otherwise paediatrics
- Patients with a pain level of 8 or higher are urgent and treated immediately
- All other patients must wait

Write a complete Python program that meets the requirements above.

You must:

- Use input() to collect data and store values in variables
- Use if / else statements to make decisions
- Use comparison operators correctly (e.g. >=)
- Use print() to display clear output messages

Your output should include:

- A welcome message using the patient's name
- The department the patient should go to
- Whether they will be treated immediately or must wait

You may find it helpful to solve this step by step (inputs → decisions → outputs).

Example output (for guidance only):

```
Welcome Sam
Department: Adult
Status: Treated immediately
```

Submission Instructions

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

Your document must include clear titles:

- Part A
- Part B

For Part B:

- All code must be typed and copied as text
- Do not use screenshots or images of code

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, email your document to: lukepr@shrewsbury.ac.uk

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 Software Development course and Foundation Year in Digital.