Dormitory Care Tracker

A Python-Based Health Management System

Project Report & Code Analysis

Project Overview

The **Dormitory Care Tracker** is a console-based application designed to digitize and manage the health records of students living in hostels.

It replaces traditional manual logging systems with a robust Python backend, ensuring that vital health data—from allergies to emergency contacts—is stored securely and retrieved instantly.

> *"Efficient health data management is critical for student safety and rapid emergency response."*

The Real-Life Problem

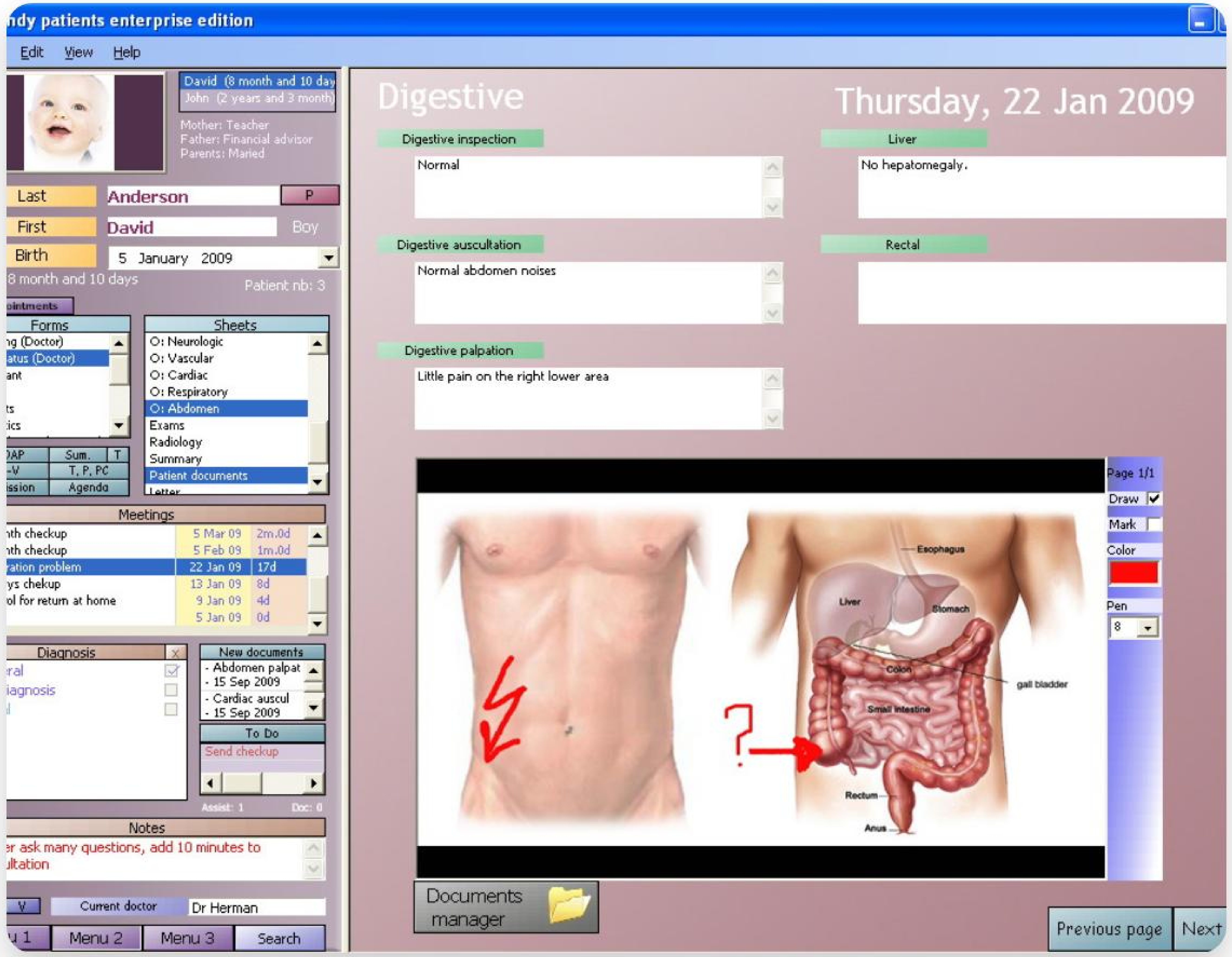
Information Chaos

Traditional hostel systems often rely on physical logbooks. These are prone to damage, loss, and unauthorized access.

Critical Delays

In a medical emergency, searching through piles of paper to find a student's blood group or allergy information takes too much time.

The Solution



David (8 month and 10 day
John (2 years and 3 month)

Mother: Teacher
Father: Financial advisor
Parents: Maried

Last: Anderson
First: David — Boy
Birth: 5 January 2009
8 month and 10 days — Patient nb: 3

Sheets: O: Neurologic, O: Vascular, O: Cardiac, O: Respiratory, O: Abdomen, Exams, Radiology, Summary, Patient documents, Letter

nth checkup	5 Mar 09	2m.0d
nth checkup	5 Feb 09	1m.0d
ation problem	22 Jan 09	17d
ys chekup	13 Jan 09	8d
ol for return at home	9 Jan 09	4d
	5 Jan 09	0d

New documents:
- Abdomen palpat - 15 Sep 2009
- Cardiac auscul - 15 Sep 2009

To Do: Send checkup

Assist: 1 Doc: 0

Notes: er ask many questions, add 10 minutes to ultation

Current doctor: Dr Herman

Digestive — Thursday, 22 Jan 2009

Digestive inspection: Normal

Liver: No hepatomegaly.

Digestive auscultation: Normal abdomen noises

Rectal:

Digestive palpation: Little pain on the right lower area

A Centralized Digital System

- **Instant Retrieval:** Search by name or ID to get immediate medical history.
- **Standardized Data:** Uniform entry fields for blood group, allergies, and room details.
- **Persistent Storage:** Data is saved automatically to a JSON file, ensuring no information is lost when the program closes.
- **Privacy & Security:** Eliminates loose papers; data is contained within a structured digital format.

Core Features

Add Records

Detailed input form for personal info, accommodation, and medical history.

Search System

Powerful search algorithm to find students by Name or Registration ID.

View Summary

Formatted tabular view of all registered students for quick auditing.

Auto-Save

Commits data to storage immediately after entry to prevent data loss.

Libraries & Tech Stack

OS Module

Used to check for file existence (`os.path.exists`) ensuring the system handles missing data files gracefully without crashing.

Datetime

The `datetime` library automatically timestamps every record entry, creating a reliable chronological audit trail.

JSON

Replaced the insecure `eval()` method with `json` library for safe, standard data serialization and parsing.

Code Structure: The Class

Class: DormitoryCareTracker

The system is encapsulated in a single class to maintain state and manage data flow.

```
def __init__(self):
  self.file = "data.json"
  self.entries = self.retrieve()

def gather_student_data(self):
  # Collects inputs

def persist_entries(self):
  # Writes to JSON
```

Data Integrity & Safety

Why JSON over Eval?

The original prototype used `eval()`, which executes strings as code. This is a security risk. The refactored code uses `json.loads()` and `json.dump()`.

Structured Storage

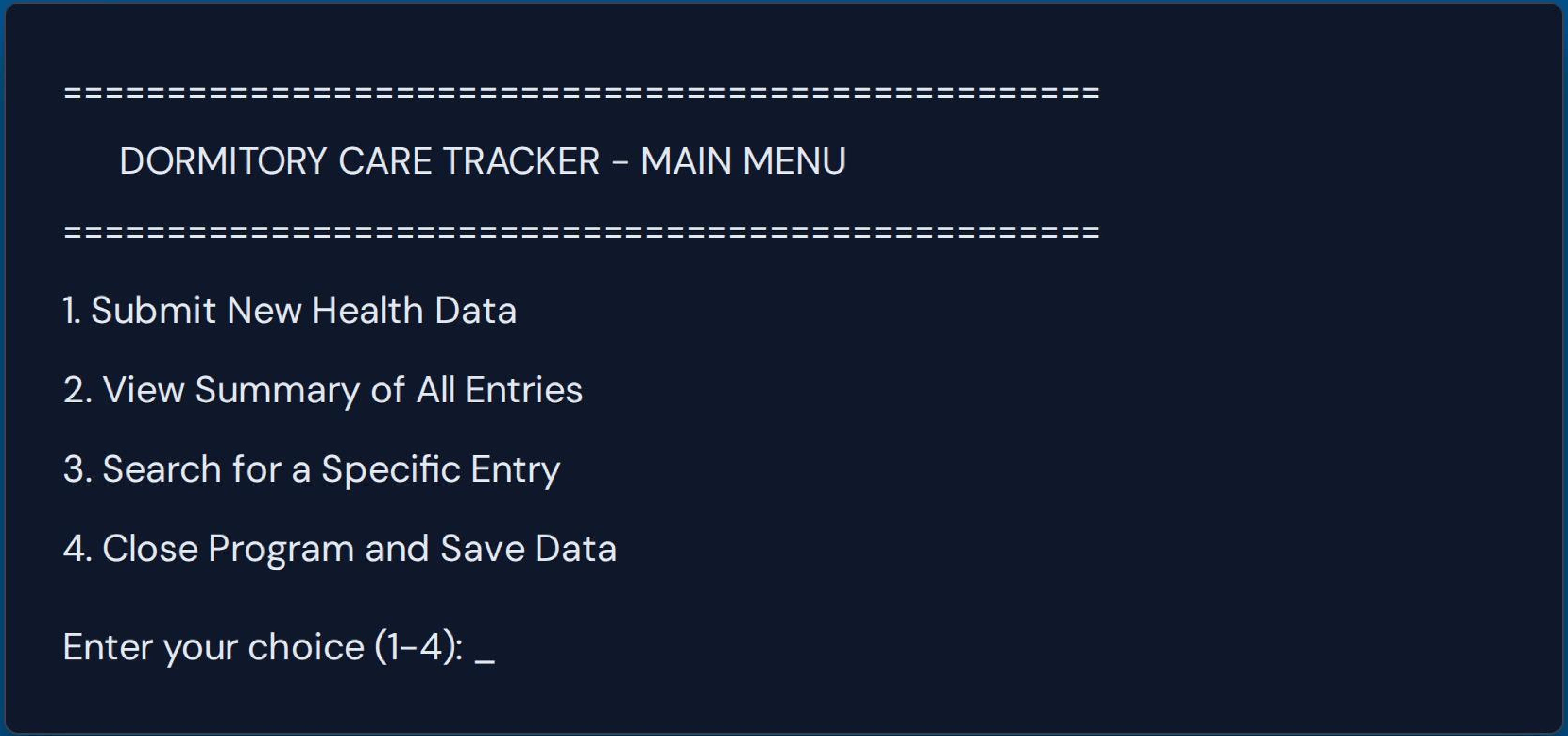
Data is stored in `student_wellness_data.json`. This allows the data to be easily portable and readable by other applications or web interfaces in the future.

JSON Structure

```
[
  {
    "data_id": "WEL-0001",
    "name": "John Doe",
    "blood_type": "O+"
  }
]
```

User Interfa

The application runs in the terminal, providing a clean, menu-driven interface for ease of use.



```
==================================================
   DORMITORY CARE TRACKER - MAIN MENU
==================================================
1. Submit New Health Data
2. View Summary of All Entries
3. Search for a Specific Entry
4. Close Program and Save Data

Enter your choice (1-4): _
```

Future Enhancements

GUI Development

Transitioning from CLI to a graphical interface using libraries like Tkinter or PyQt for better user experience.

Cloud Sync

Moving storage from local JSON files to cloud databases (Firebase/SQL) to allow access from multiple devices.

Analytics

Adding statistical charts to visualize health trends in the dormitory (e.g., common allergies, flu outbreaks).

Conclusion

The Dormitory Care Tracker successfully solves the problem of inefficient manual health record keeping. By leveraging Python's file handling and object-oriented structure, we created a tool that is secure, fast, and scalable for future needs.

Questions?

Thank you for listening.

Image Sources

https://images.squarespace-cdn.com/content/v1/5f47a8af2417bb4bbfe64111/11990d6a-5128-4d87-be35-1b44a488b3ca/Urbanite+York_G04+Bedroom.jpg

Source: studio-93.co.uk

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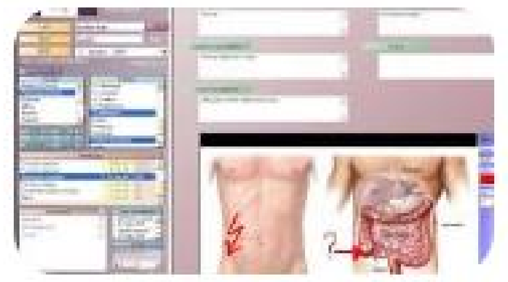

https://upload.wikimedia.org/wikipedia/commons/7/74/Electronic_medical_record.jpg

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