



# Health Information System

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# Introduction

The goal was to build a lightweight, functional Health Information System for doctors to manage clients and health programs, with a focus on simplicity, modularity, and clean design.

Tasks solved:

- Client registration
- Program management
- Client enrollments into multiple health programs
- Search for clients
- View a client's detailed profile
- Expose client profiles via a RESTful API for integration



# Approach

**Flask (Python)** was chosen because:

- It's lightweight, fast, and simple for building APIs and websites.
- It allows clear separation of backend logic, database interaction, and frontend templates.

**SQLite** was selected because:

- It is serverless and perfect for small to medium-sized applications.
- No complicated setup, ideal for rapid development.

**HTML + CSS** for frontend:

- Custom templates to create dynamic and responsive pages.
- Added a sidebar and improved CSS for better user experience.

**Deployment:**

- Used Render.com for free hosting, showing understanding of real-world deployments.

**REST API** for exposing client profiles:

- Designed the client profiles to be available both via Web UI (HTML pages) and API (JSON endpoints)
- This ensures easy future integration with external systems (e.g., mobile apps or other health systems).





# System Design

**Backend:** Separated the code into multiple files for maintainability:

- routes.py - handles URLs and logic
- forms.py - form handling
- utils.py - helper functions (e.g., formatting names)
- models.py – for the database models

**Frontend:**

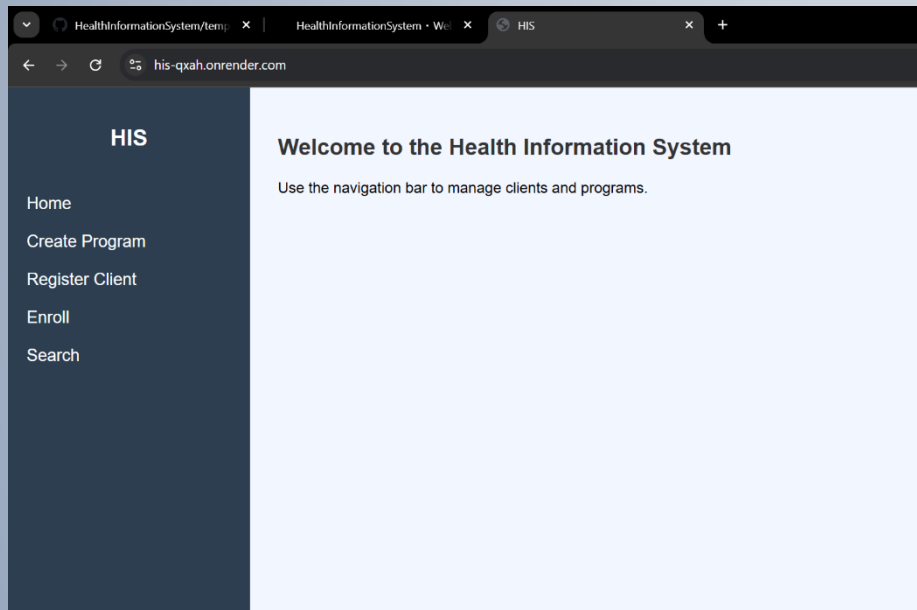
- HTML templates extending base.html
- CSS for design and sidebar layout

**Database:**

Models: Client, Program, and Enrollment tables for many-to-many relationships.

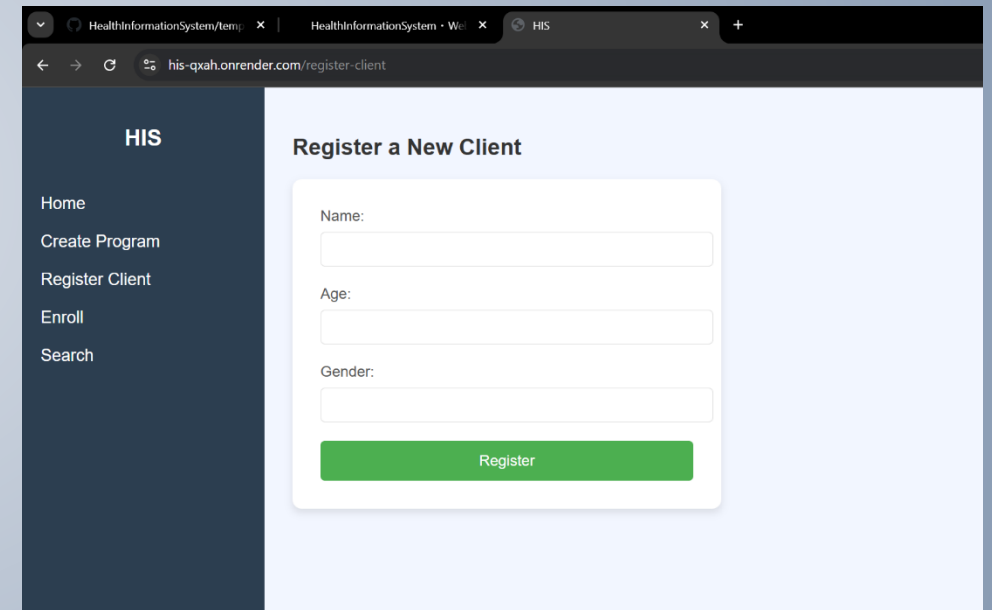
# Solution demonstration

## HOMEPAGE:



A screenshot of a web browser displaying the homepage of the Health Information System (HIS). The browser's address bar shows the URL 'his-qxah.onrender.com'. The page features a dark blue sidebar on the left with the title 'HIS' and a list of navigation links: 'Home', 'Create Program', 'Register Client', 'Enroll', and 'Search'. The main content area is white and contains the heading 'Welcome to the Health Information System' followed by the text 'Use the navigation bar to manage clients and programs.'

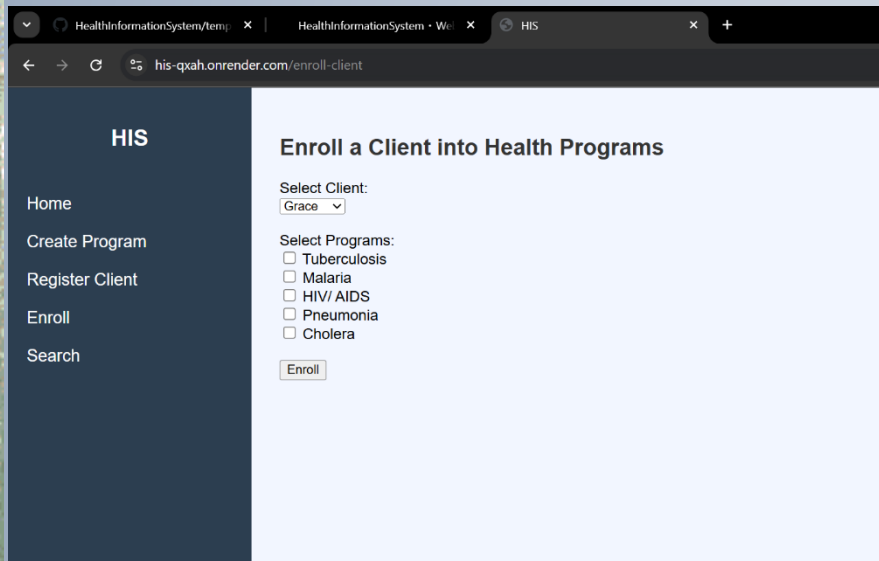
## REGISTER A CLIENT:



A screenshot of the 'Register a New Client' form within the Health Information System (HIS). The browser's address bar shows the URL 'his-qxah.onrender.com/register-client'. The page has a dark blue sidebar with the title 'HIS' and navigation links: 'Home', 'Create Program', 'Register Client', 'Enroll', and 'Search'. The main content area is white and contains the heading 'Register a New Client'. Below the heading is a light yellow form box with three input fields labeled 'Name:', 'Age:', and 'Gender:'. At the bottom of the form box is a green button labeled 'Register'.

# Solution demonstration

## ENROLL CLIENT:



The screenshot shows a web browser window with the URL `his-qxah.onrender.com/enroll-client`. The page has a dark blue sidebar on the left with the title 'HIS' and a menu containing 'Home', 'Create Program', 'Register Client', 'Enroll', and 'Search'. The main content area is titled 'Enroll a Client into Health Programs'. It features a 'Select Client:' dropdown menu with 'Grace' selected, and a 'Select Programs:' section with four checkboxes: 'Tuberculosis', 'Malaria', 'HIV/ AIDS', 'Pneumonia', and 'Cholera'. An 'Enroll' button is located at the bottom of the form.

**HIS**

Home  
Create Program  
Register Client  
Enroll  
Search

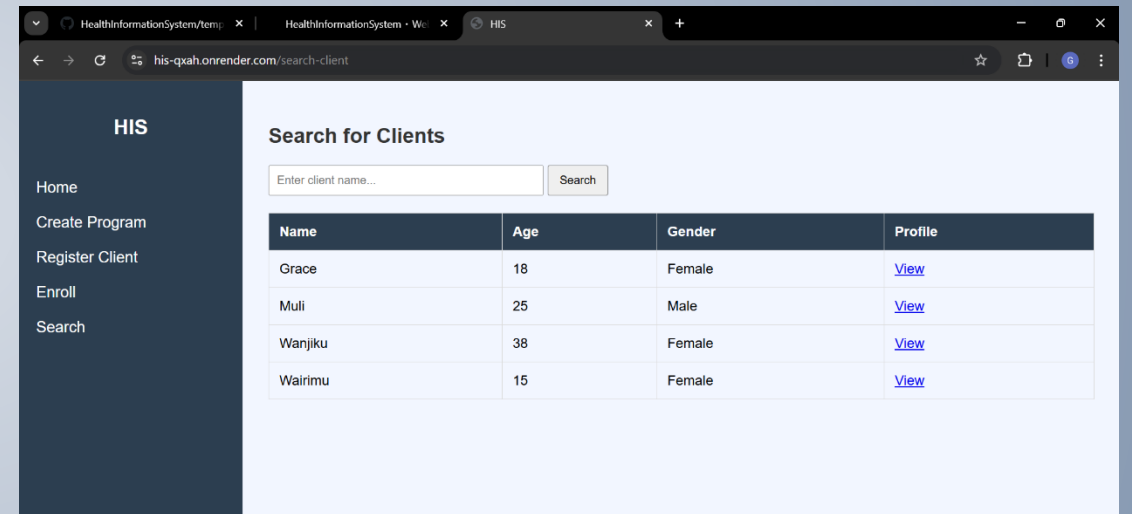
**Enroll a Client into Health Programs**

Select Client:  
Grace

Select Programs:  
☐ Tuberculosis  
☐ Malaria  
☐ HIV/ AIDS  
☐ Pneumonia  
☐ Cholera

Enroll

## SEARCH:



The screenshot shows a web browser window with the URL `his-qxah.onrender.com/search-client`. The page has a dark blue sidebar on the left with the title 'HIS' and a menu containing 'Home', 'Create Program', 'Register Client', 'Enroll', and 'Search'. The main content area is titled 'Search for Clients'. It features a search input field with the placeholder text 'Enter client name...' and a 'Search' button. Below the search bar is a table with four columns: 'Name', 'Age', 'Gender', and 'Profile'. The table contains four rows of client data, each with a 'View' link in the 'Profile' column.

**HIS**

Home  
Create Program  
Register Client  
Enroll  
Search

**Search for Clients**


Enter client name... Search

Name	Age	Gender	Profile
Grace	18	Female	<a href="#">View</a>
Muli	25	Male	<a href="#">View</a>
Wanjiku	38	Female	<a href="#">View</a>
Wairimu	15	Female	<a href="#">View</a>



# Solution demonstration

## CLIENT PROFILE:



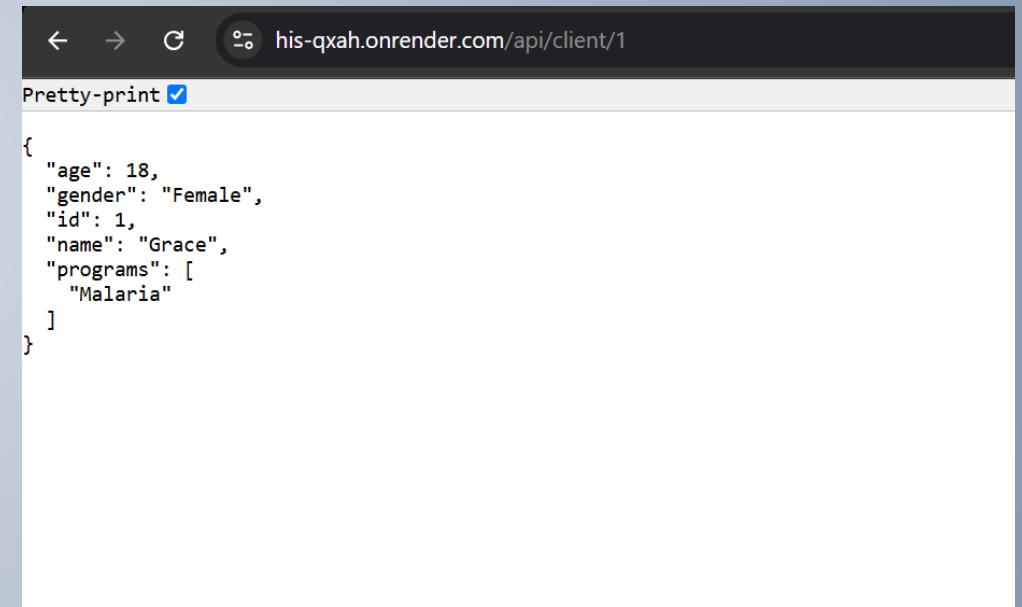
**HIS**

Home  
Create Program  
Register Client  
Enroll  
Search

**Wairimu's Profile**  
Age: 15  
Gender: Female  
Programs:

- Cholera
- Malaria

## API JSON OUTPUT



his-qxah.onrender.com/api/client/1

Pretty-print ☒

```
{
  "age": 18,
  "gender": "Female",
  "id": 1,
  "name": "Grace",
  "programs": [
    "Malaria"
  ]
}
```



# Deployment

- The system was deployed live using **Render** at: <https://his-qxah.onrender.com>





# Thank You!

You can find the full project on GitHub:

<https://github.com/GraceMuli/HealthInformationSystem>