

# CogStack Catalogue

Summer Internship 2024



# About Me

- I'm Wahab, 19 Years Old
- 1<sup>st</sup> Year Electrical & Electronic Engineering Student, going into 2<sup>nd</sup> Year
- Interested and skilled in Learning and working with Fullstack applications i.e. Python, SQL
- Co-Founder of Circuit Design Society at QMUL

## Extra-Curricular:

- Train and Compete in Brazilian Jiu Jitsu and Judo



## What is CogStack Catalogue?

- Before Catalogue existed...
- CogStack Catalogue streamlines data requests for healthcare professionals
- Easily create custom request forms
- Select specific data with just a few clicks
- Designed for doctors, researchers, and healthcare administrators



Initial Small  
Changes |  
First Steps

# Login Bugs

## Task:

Fix the login error when users enter wrong credentials. If the user doesn't exist, display a pop-up and prompt them to try again.

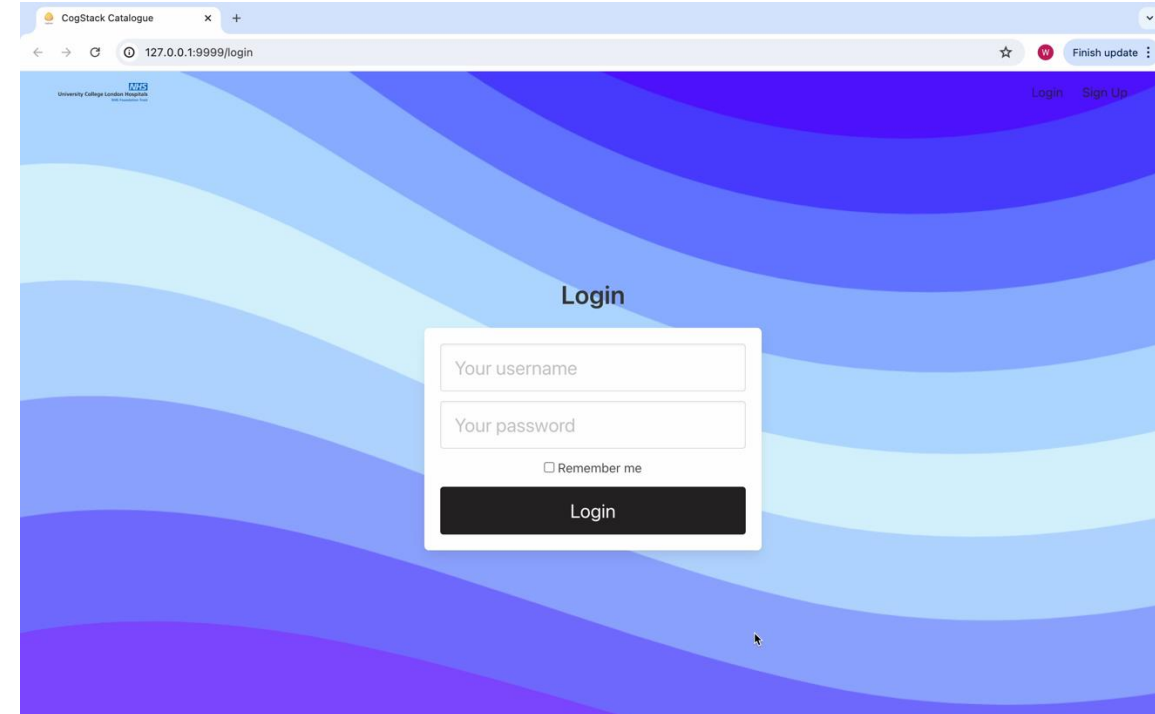
## Changes Made:

- Updated login.html to handle errors by displaying a notification if the user doesn't exist.
- Added this error check in run.py:

if user is None:

```
    return render_template("landing/login.html",  
data={'login_error': username})
```

## Video Representation





# Adding a Delete Button

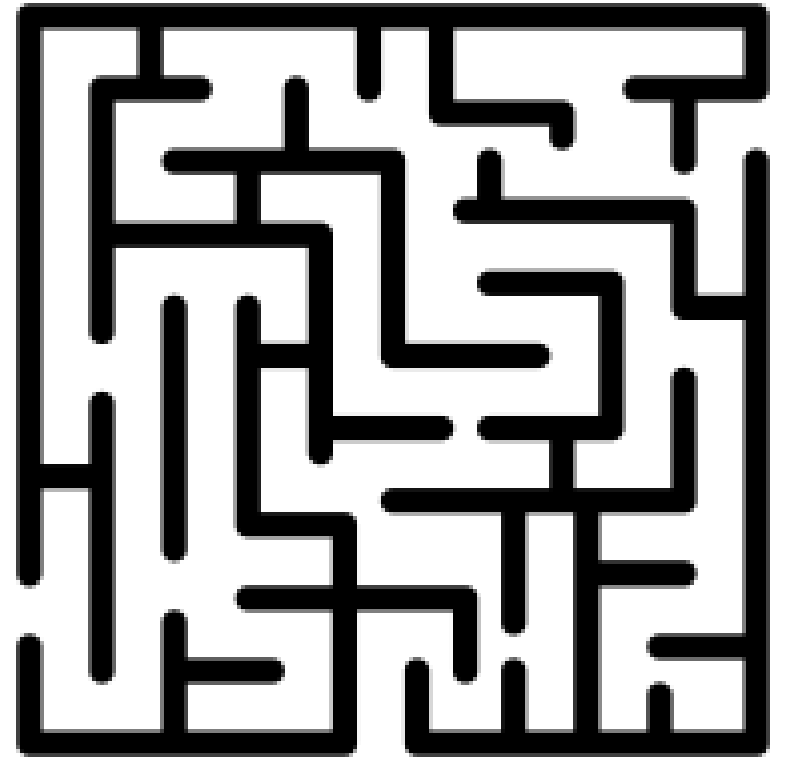
**Task:** Add a Delete Button to Request form which will also delete it from SQL database

**What I did:** Altered multiple files:

1. saved\_requests.html – added a delete section
2. utils.py – added function (deleteSubmittedForm) to delete corresponding .json file
3. run.py – altered main run file to finalise changes

Welcome							Logout
UCLH COGSTACK DATA REQUESTS							
<a href="#">Submitted Requests</a>							
<a href="#">New Request</a>							
No	Name	Date Created	Status	Request	Download	Delete	
1	promo request	30/08/2024	submitted	<a href="#">Show Request</a>		<a href="#">Delete</a>	

# Intermediate Level Changes



# Adding Demographics To Request Form

**Task:** Add a Demographics tab to the data request field, which must include gender, ethnicity and date of birth.

## What I did:

- Enhanced **data\_field\_settings.json** and **data\_listable\_options.json**
- Added **sections** and **options** for all fields
- Added **gender** and **ethnicity** to listable options
- Defined **date of birth** as a range option

## Video Representation of Demographics section

The screenshot shows a web browser window with the URL `127.0.0.1:9999/new_request/data_selection/epic_demographics`. The page has a blue header with 'Welcome' and a 'Logout' link. The main content area is titled 'UCLH COGSTACK DATA REQUESTS' and features a 'Submitted Requests' section with a 'New Request' button. The 'Data Selection' tab is active, showing a horizontal list of tabs: 'epic\_letters', 'epic\_notes', 'epic\_imaging\_reports', and 'epic\_demographics' (which is highlighted). Below the tabs, the 'epic\_demographics' section is expanded, showing three fields: 'Date of Birth' (with 'start' and 'end' date pickers), 'Gender' (a dropdown menu with 'Male' and 'Female' options), and 'Ethnicity' (a dropdown menu with 'Asian or Asian British' and 'Black, Black British, Caribbean or African' options). At the bottom of the section are two buttons: 'Add to Request' and 'Reset Data Selection'.



# Front end drag and drop form added

## Old Version

The screenshot shows the 'Old Version' of the UCLH CogStack Data Requests form. The browser address bar indicates the URL: 127.0.0.1:9999/new\_request/data\_selection/epic\_demographics. The page has a blue header with 'Welcome' and 'Logout' links. The main content area is titled 'UCLH COGSTACK DATA REQUESTS' and features a sidebar with 'Submitted Requests' and a 'New Request' button. The main form is divided into two tabs: 'Request Form' and 'Data Selection'. Under 'Data Selection', there are buttons for 'epic\_letters', 'epic\_notes', 'epic\_imaging\_reports', and 'epic\_demographics'. The 'epic\_demographics' button is highlighted. Below these buttons, there are sections for 'Date of Birth' (with 'start' and 'end' date pickers), 'Gender' (with 'Male' and 'Female' radio buttons), and 'Ethnicity' (with a dropdown menu). At the bottom, there are 'Add to Request' and 'Reset Data Selection' buttons.

## New Version

The screenshot shows the 'New Version' of the UCLH CogStack Data Requests form. The page has a blue header with 'Welcome' and 'Logout' links. The main content area is titled 'UCLH COGSTACK DATA REQUESTS' and features a sidebar with 'Submitted Requests' and a 'New Request' button. The main form is divided into two tabs: 'Request Form' and 'Data Selection'. Under 'Data Selection', there are buttons for 'epic\_letters', 'epic\_notes', 'epic\_imaging\_reports', and 'epic\_demographics'. The 'epic\_demographics' button is highlighted. Below these buttons, there are sections for 'Date of Birth' (with 'start' and 'end' date pickers), 'Gender' (with 'Male' and 'Female' radio buttons), and 'Ethnicity' (with a dropdown menu). At the bottom, there are 'Add to Request' and 'Reset Data Selection' buttons.

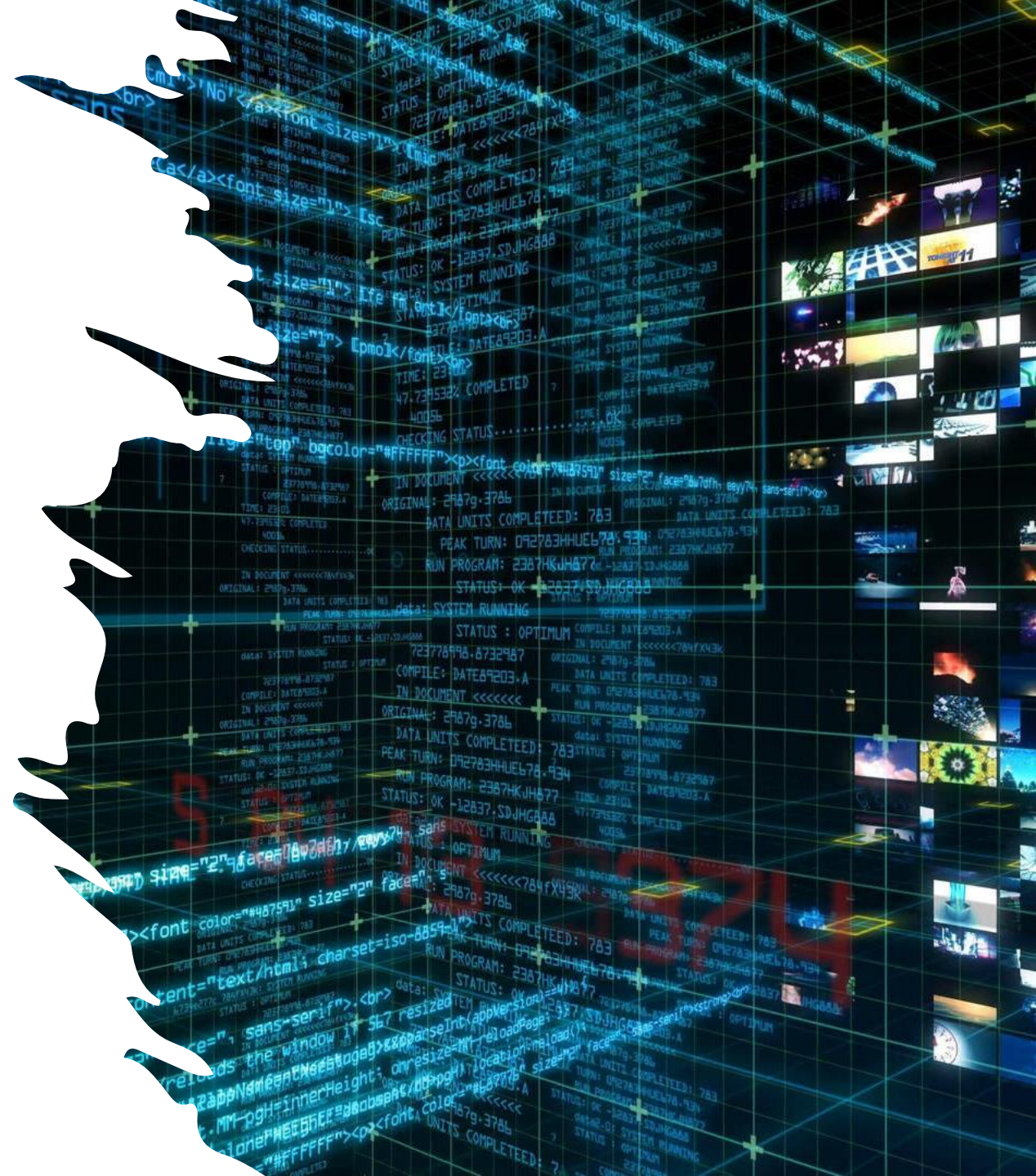
# Advanced Change



# Synthetic/Dummy Data

**Task:** Generate and load synthetic data for epic\_notes, epic\_letters, epic\_imaging\_reports, and epic\_demographics into CogStack and Elasticsearch (backend).

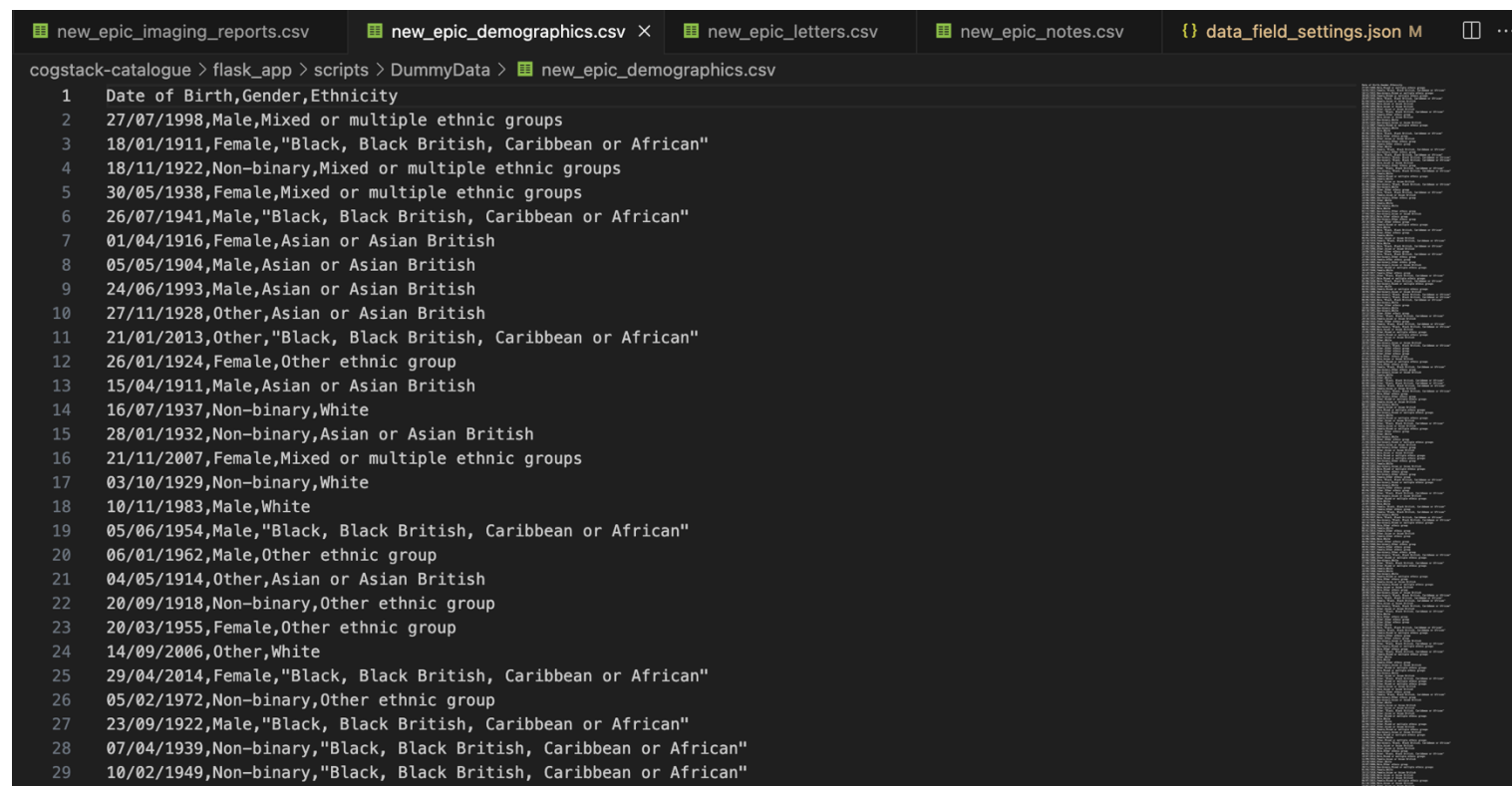
**Reason:** To allow external users (outside UCLH) to run the app locally using synthetic data. This resolves the previous limitation where only internal UCLH data was available, preventing external testing.



# Synthetic/Dummy Data

## Implementation:

- Created 4 CSV files with dummy data for each section.
- Created generateDummyData.py to generate random values for CSVs, including:
  - Predefined options for specific columns/lists.
  - Random numbers, dates, or strings based on column types.
- Developed insertDummyData.py to load data into Elasticsearch.



```
new_epic_imaging_reports.csv  new_epic_demographics.csv X  new_epic_letters.csv  new_epic_notes.csv  {} data_field_settings.json M  ...
cogstack-catalogue > flask_app > scripts > DummyData > new_epic_demographics.csv
1  Date of Birth,Gender,Ethnicity
2  27/07/1998,Male,Mixed or multiple ethnic groups
3  18/01/1911,Female,"Black, Black British, Caribbean or African"
4  18/11/1922,Non-binary,Mixed or multiple ethnic groups
5  30/05/1938,Female,Mixed or multiple ethnic groups
6  26/07/1941,Male,"Black, Black British, Caribbean or African"
7  01/04/1916,Female,Asian or Asian British
8  05/05/1904,Male,Asian or Asian British
9  24/06/1993,Male,Asian or Asian British
10 27/11/1928,Other,Asian or Asian British
11 21/01/2013,Other,"Black, Black British, Caribbean or African"
12 26/01/1924,Female,Other ethnic group
13 15/04/1911,Male,Asian or Asian British
14 16/07/1937,Non-binary,White
15 28/01/1932,Non-binary,Asian or Asian British
16 21/11/2007,Female,Mixed or multiple ethnic groups
17 03/10/1929,Non-binary,White
18 10/11/1983,Male,White
19 05/06/1954,Male,"Black, Black British, Caribbean or African"
20 06/01/1962,Male,Other ethnic group
21 04/05/1914,Other,Asian or Asian British
22 20/09/1918,Non-binary,Other ethnic group
23 20/03/1955,Female,Other ethnic group
24 14/09/2006,Other,White
25 29/04/2014,Female,"Black, Black British, Caribbean or African"
26 05/02/1972,Non-binary,Other ethnic group
27 23/09/1922,Male,"Black, Black British, Caribbean or African"
28 07/04/1939,Non-binary,"Black, Black British, Caribbean or African"
29 10/02/1949,Non-binary,"Black, Black British, Caribbean or African"
```



A close-up photograph of a green marker drawing a checkmark inside a square box on a document. The text "Additional Task" is overlaid in white. There are other square boxes visible in the background, some empty and some partially filled.

Additional Task

# Instructional Video



# What the future looks like for CogStack Catalogue

- Develop a dummy de-identification model/service to allow external users to utilize the app's DID (De-Identification) function
- Next step: Load MIMIC-III dataset (publicly available healthcare records) into the database to work with real patient data
- Create instructional and “how-to” guides for internal UCLH use, helping users navigate the app effectively (didn't finish during internship)
- Improve README file for application





# Skills I've Learnt

## Tech & Hard Skills

- Flask / Python
- HTML
- SQL Database
- Elasticsearch / Kibana
- GitHub

## Soft Skills

- Learnt how Tech projects work in healthcare
- Learnt constraints surrounding patient privacy regarding their data
- How to problem-solve in a development team
- Attended research presentations: Steve Harris team



**Unlock**  
the power of  
healthcare data



Thank you!