

Object Oriented Programming CSC8101

Class Presentation Refugee Biodata Verification API System

National Social Security Fund Verification Portal - Accessing data from Office of the Prime Minister -Department of Refugees Database.

Name: Noel Ikwap Access Number: B35094
Registration Number: S25M19/017
Class: Master of Science in Data Science and Analytic



The Problem Context

- The National Social Security Fund (NSSF) needs a secure, automated method to verify refugee identities.
- Current verification via email is: Slow, Manual and error-prone, Not suitable for real-time systems
- The solution: Create an API that connects NSSF systems directly to the Office of the Prime Minister's (OPM) refugee databases:



Why is this Project Important?

- ❑ Enables NSSF to open savings accounts for refugees legally working in Uganda.
- ❑ Supports employers who remit monthly contributions.
- ❑ Allows identity verification before money is deposited, especially for returning refugees.
- ❑ Complies with: Uganda Data Protection and Privacy Act (2019), Security and confidentiality rules in the Terms of Reference
- ❑ Protects sensitive refugee information.



Project Scope

- ❑ Develop a FlaskAPI for verifying refugee biodata.
- ❑ Create synthetic (fake) data resembling OPM's databases.
- ❑ Implement secure API key authentication.
- ❑ Build verification logic returning: "Match" "No Match" Basic biodata fields



Technical Approach

- ❑ Programming Language: Python
- ❑ Framework: FastAPI
- ❑ Database: SQLite + SQLAlchemy
- ❑ Validation: Pydantic
- ❑ Server: Uvicorn
- ❑ Configuration: python-dotenv
- ❑ This combination ensures: Fast API performance, Easy data modeling, Strong validation, Lightweight deployment



Database Design and Landing Page

- individual_number
- process_status
- family_group_number
- full_name
- family_size
- age
- gender
- country_of_origin
- legal_status
- location_address
- date_of_birth
- registration_date
- created_at

National Social Security Fund

[View Report](#)

Refugee Verification Portal

Official System For Verifying Refugee Status Before Issuance of NSSF Numbers.

Both Ugandans and Foreigners/Refugees are eligible to register for NSSF. The employee's contribution amounts to 5% of their monthly wage, while the employer's contribution amounts to 10% of the employee's monthly wage. This new law allows for mid-term access of members' benefits, with up to 20 Ugandans aged 45 years and above qualifying for up to 20% of their NSSF savings. The Fund covers all employers, irrespective of the number of employees between 16 and 55 years of age, except for those under the Government Pensions scheme. Employers are obliged to remit contributions to the Fund for their employees every month. Members can opt to receive payments if they reach the age of 50 and have already retired from regular employment.

Q Verify Refugee Status

Individual Number

Enter Individual Number (e.g., UGA-13975301)

Enter the unique refugee individual number. Format: UGA-00000000

VERIFY CASE

Need Help?

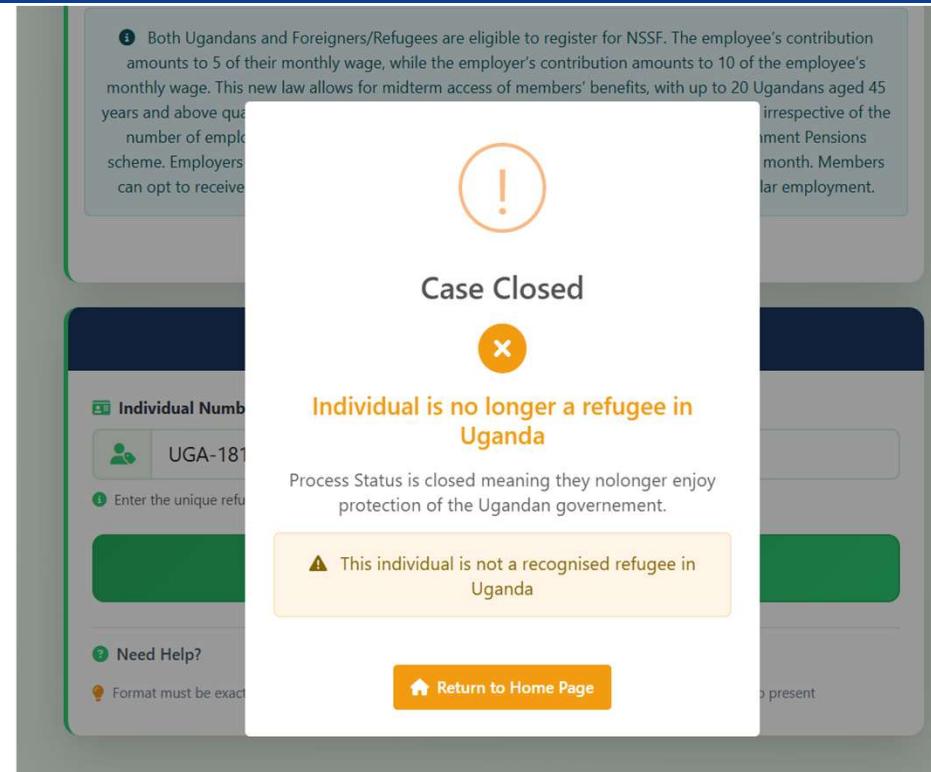
Format must be exactly: UGA-00000000

System contains records from 2005 to present

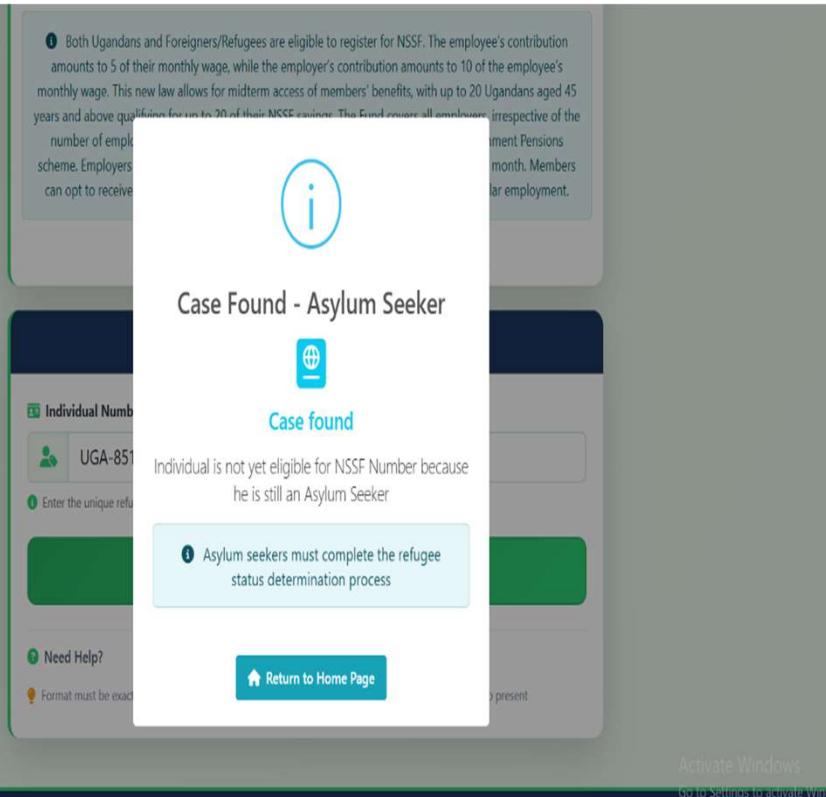


How the APP handles Closed cases illustration

If the case has a process status of closed, irrespective whether they are refugees or asylum seekers, it rejects the case and returns a message saying individual is no longer a refugee in Uganda. Process status is closed meaning they no longer enjoy protection of the Ugandan government hence they do not qualify for any services in Uganda including NSSF. Snapshot below shows that pop-up.



How it handles Asylum Seekers



If the case is Active (process_status) and legal_status is an Asylum seeker it displays “case found -Asylum seeker and since Asylum seekers are not eligible for NSSF Numbers, it says “individual is not eligible for NSSF Number because he is an asylum seeker, asylum seekers must complete the refugee status determination process. It rejects the case nevertheless.



If case is Active Refugee

and above qualifying for up to 20 of their NSSF savings. The Fund covers all employers, irrespective of number of employees between 16 and 55 years of age, except for those under the Government Pension Fund. Employers are obliged to remit contributions to the Fund for their employees every month. Members opt to receive:

Individual Number: UGA-948
the unique refu
Individual is eligible for NSSF services

Verification Successful!

Individual is a Recognized Active Refugee in Uganda

Show Personal Information Close

System contains records from 2005 to present

Personal Information

Personal Details		Status Details	
Individual No.:	UGA-94820657	Legal Status:	Refugee
Full Name:	Robert Dunlap	Country of Origin:	Pakistan
Age:	44 years	Registration Date:	2025-06-11
Gender:	Male	Location/Address:	Raymondborough
Date of Birth:	1975-05-04	Family Size:	10

NSSF Status

NSSF Number:
Not Issued

Click button below to issue

National Social Security Fund Identification

Secure ID

Proceed and Issue NSSF Number Return to Main Page

Generate and assign NSSF number returns to main screen

Personal Information

Personal Details		Status Details	
Individual No.:	UGA-94820657	Legal Status:	Refugee
Full Name:	Robert Dunlap	Country of Origin:	Pakistan
Age:	44 years	Registration Date:	2025-06-11
Gender:	Male	Location/Address:	Raymondborough
Date of Birth:	1975-05-04	Family Size:	10

NSSF Status

NSSF Number:
NSSF976127

Issued just now

National Social Security Fund Identification

Secure ID

NSSF Issued Return to Main Page

Generate and assign NSSF number returns to main screen



Minors handling

Incase one needs to view the number of cases issued with Nssf numbers, they can click the view report link at the top right corner of the application to view the report and the report will be displayed as seen below.

National Social Security Fund

[View Report](#)

 NSSF Issuance Records

#	NSSF NUMBER	INDIVIDUAL NUMBER	FULL NAME	AGE	ISSUE DATE	STATUS
1	NSSF-5599	UGA-66318391	Paige Evans	57	Invalid Date	Active
2	NSSF-7070	UGA-56679290	Edgar Lawson	16	Invalid Date	Active
3	NSSF-1755	UGA-65877735	Matthew Alexander	72	Invalid Date	Active
4	NSSF-6430	UGA-63309171	Justin Cunningham	37	Invalid Date	Active
5	NSSF-8748	UGA-64333323	Haley Wallace	30	Invalid Date	Active
6	NSSF-5640	UGA-43260738	Steven Phillips	66	Invalid Date	Active
7	NSSF-8740	UGA-20484531	Andrea Jacobs	8	Invalid Date	Active
8	NSSF-6518	UGA-60511300	Joe Brennan	16	Invalid Date	Active
9	NSSF-8644	UGA-99020261	Kim Cruz	41	Invalid Date	Active
10	NSSF570811	UGA-48454797	Erika Hernandez	6	Dec 12, 2025, 05:05 AM	Active
11	NSSF851489	UGA-89860852	Yolanda Aguilar	67	Dec 12, 2025, 04:49 AM	Active
12	NSSF178594	UGA-86436091	Cheryl Cannon	8	Dec 12, 2025, 04:13 AM	Active
13	NSSF830787	UGA-90091748	Kelsey Wall	29	Invalid Date	Active

Enter the unique refugee individual number. Format: UGA-00000000

Activate Windows
Go to Settings to activate Windows.





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Q&A

Thank you!

