Modernizing E-Governance: Birth Certificate Generator API

Simplifying Processes, Empowering Citizens

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E-GOVERNANCE

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The need

Traditional Content Of Birth Generator

- Manual Processes
- Long Queues and Delays
- Limited Working Hours
- Generational Shift in Expectations
- Modernization Imperative

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Inspiration

The impracticality of extensively relying on paper-based archives in Tunisia, particularly within administrative processes.

Figure: Archives In Tunsia

Inspiration

The persistent issue of long queues and inefficiencies in municipal offices across Tunisia.

Figure: Queues In Municipalities

The Content of Birth Generator

The Content of Birth Generator is a public E-Governance REST API, that enables its users to Generate Their Birth Certificates From Home.

Figure: From Home Services

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Entity Relationship Diagram

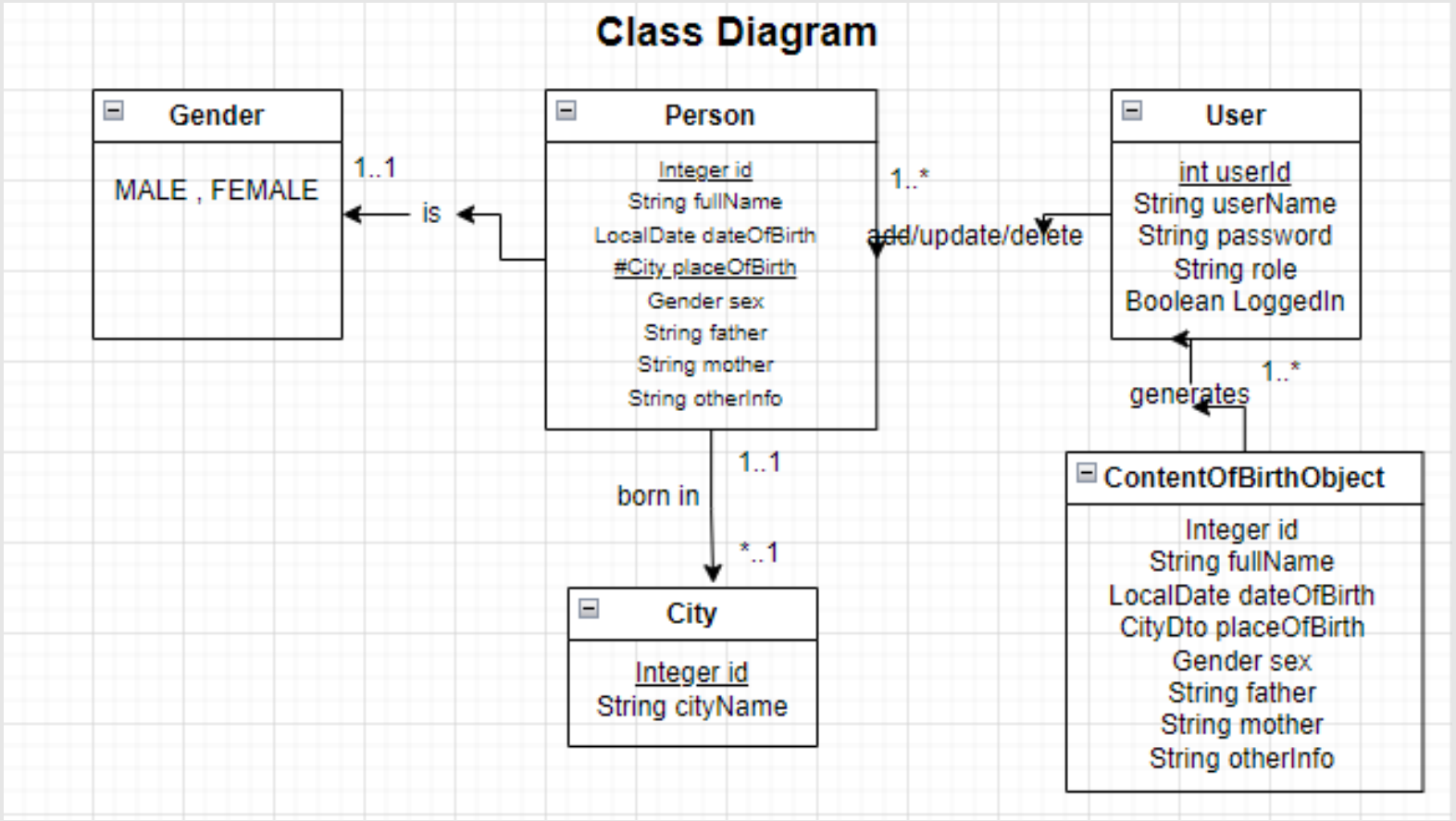

Figure: Archives In Tunsia

Database Tables

The Database contains 3 tables. The Persons table and the Cities table are related by the cityId attribute. The Users table is not related to the other tables.

SELECT * FROM PERSONS;

ID	DATE_OF_BIRTH	FATHER	FULL_NAME	MOTHER	OTHER_INFO	SEX	CITY_ID_ADDRESS	CITY_ID_PLACE_OF_BIRTH
1	1990-05-15	Michael Smith	John Smith	Emily Smith	*null*	0	*null*	201
2	1995-08-22	Robert Johnson	Emily Johnson	Linda Johnson	Married	1	*null*	202
3	1988-12-03	William Williams	David Williams	Maria Williams	Single	0	*null*	203
4	1992-03-10	Daniel Brown	Sophia Brown	Olivia Brown	*null*	1	*null*	204
5	1985-07-18	Thomas Davis	Ethan Davis	Ava Davis	Married	0	*null*	205
6	1997-11-28	Richard Miller	Olivia Miller	Grace Miller	Single	1	*null*	206
7	1989-09-05	Christopher Taylor	Noah Taylor	Victoria Taylor	*null*	0	*null*	207
8	1994-04-15	George Carter	Emma Carter	Hannah Carter	Married	1	*null*	201
9	1987-01-22	Edward Turner	Liam Turner	Isabella Turner	Single	0	*null*	202
10	1999-06-08	Jack Bennett	Ava Bennett	Sophie Bennett	*null*	1	*null*	203
11	1993-02-20	Simon Reed	Logan Reed	Eva Reed	Married	0	*null*	204
12	1996-09-12	Jeffrey Walker	Mia Walker	Catherine Walker	*null*	1	*null*	205
13	1986-11-05	Albert Foster	Caleb Foster	Jennifer Foster	Single	0	*null*	206
14	1998-04-18	Henry Evans	Stella Evans	Laura Evans	Married	1	*null*	207
15	1984-07-25	Victor Mitchell	Lucas Mitchell	Julia Mitchell	*null*	0	*null*	201

Figure: Persons Table

Database Tables

SELECT * FROM CITIES;

ID	CITY_NAME
201	Tunis
202	Beja
203	Sfax
204	Sousse
205	Medenine
206	BenArous
207	Ariana

(7 rows, 3 ms)

Figure: Cities Table

Database Tables

SELECT * FROM USERS;

USER_ID	LOGGED_IN	PASSWORD	ROLE	USER_NAME
2	*null*	Pass456	MANAGER	BALCEM
3	*null*	Secret789	EMPLOYEE	ALICE
4	*null*	SecurePwd	MANAGER	BOB
5	*null*	StrongPwd	EMPLOYEE	EMMA
6	*null*	SafePwd123	MANAGER	DAVID
7	*null*	Pwd12345	EMPLOYEE	SARA
8	*null*	SecurePass	MANAGER	MICHAEL
9	*null*	Password123	EMPLOYEE	LILY
10	*null*	StrongPassword	MANAGER	WILLIAM
11	*null*	SecurePwd456	EMPLOYEE	OLIVIA
12	*null*	SafePwd789	MANAGER	JAMES
13	*null*	Pass123	EMPLOYEE	AVA
14	*null*	SecurePass789	MANAGER	CHARLES
15	*null*	Pwd456	EMPLOYEE	GRACE
16	*null*	StrongPwd789	MANAGER	DANIEL
17	*null*	Password456	EMPLOYEE	SOPHIA
18	*null*	SafePass123	MANAGER	MATTHEW

Figure: Users Table

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POST-GET-DELETE Requests

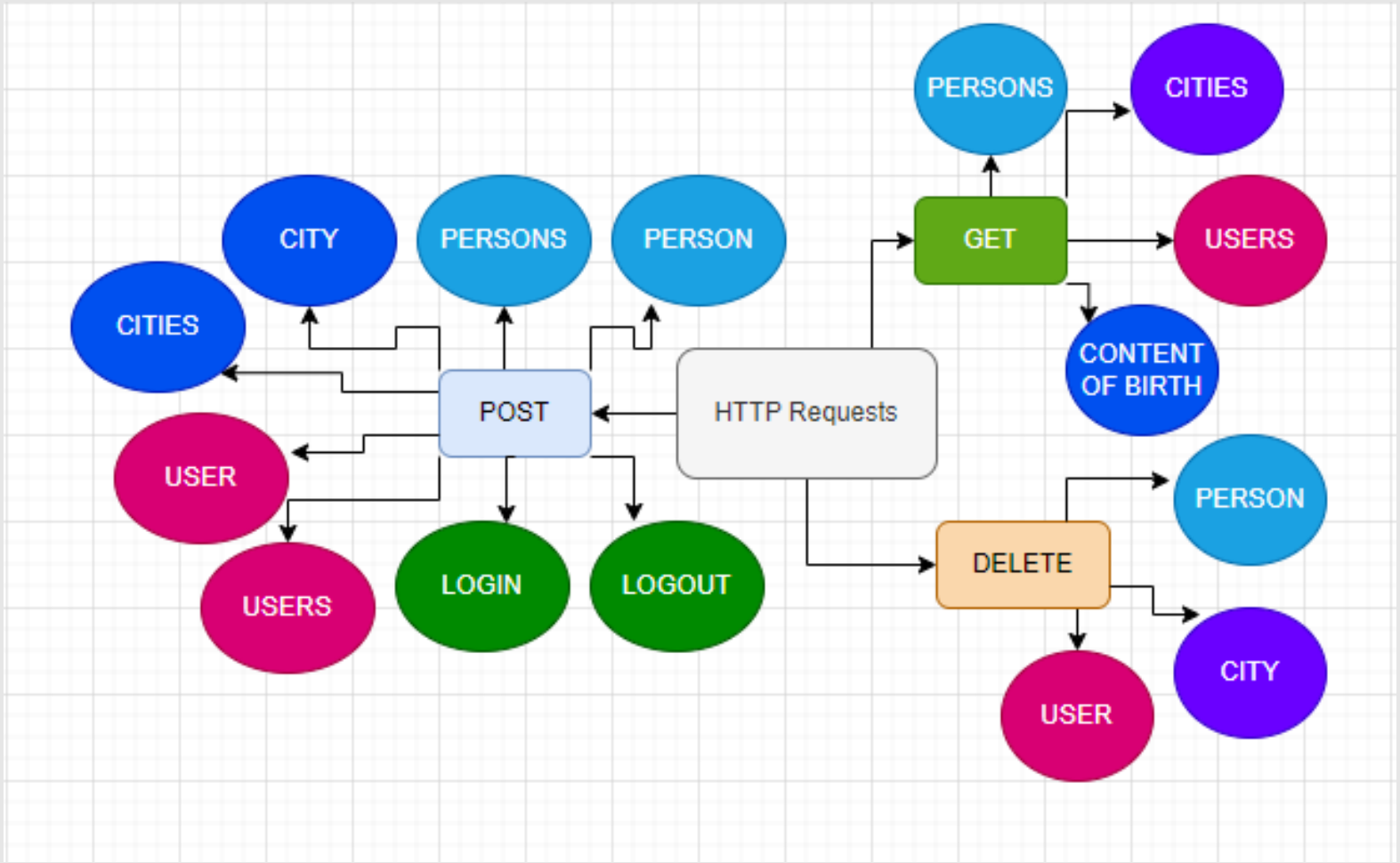

Figure: HTTP Requests

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Backend Framework

Utilizing **Spring Boot** provides a comprehensive framework for building and deploying Java-based applications. This allowed for efficient handling of complex functionalities, such as database interactions, API development, and overall project structuring, enabling a more seamless and rapid development cycle.

Figure: Spring Boot

Integrated Development Environment (IDE)

IntelliJ contributed significantly to increased efficiency and productivity through its user-friendly interface and powerful features.

Figure: IntelliJ

API Documentation

Swagger provides a clear and interactive documentation platform for our API and ensures a smooth understanding of endpoints.

Figure: Swagger

Controllers

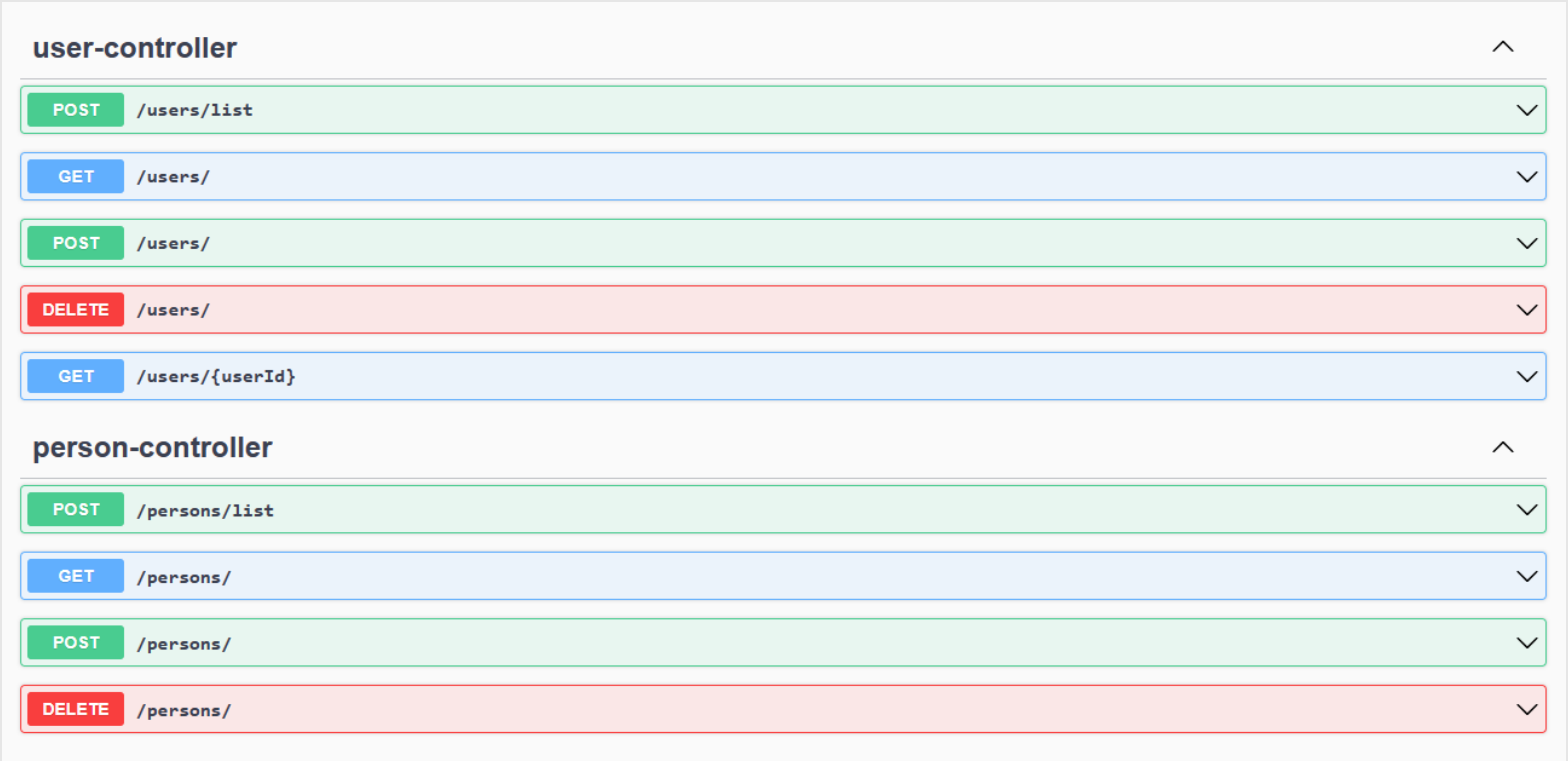

Figure: Person and User Controllers

Controllers

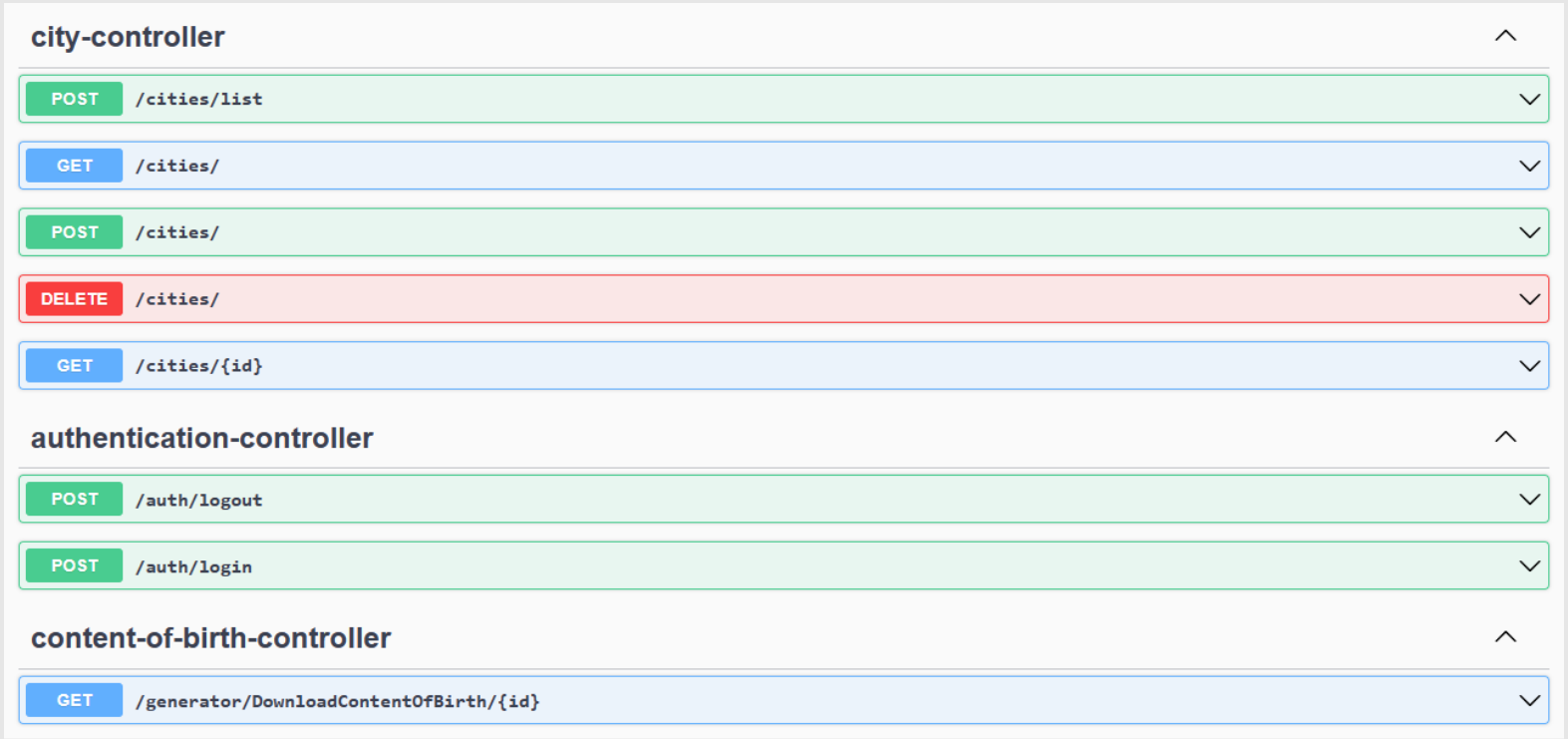

Figure: City, Auth, and Generator Controllers

API Testing

Insomnia streamlines the testing phase by ensuring reliability and effectiveness, allowing for thorough testing and validation of API functionalities.

Figure: Insomnia

Database

H2 Database provides a reliable and efficient storage solution, and smooth data management ensuring a secure and organized database foundation for our application.

Figure: H2 Database

Frontend Development

HTML, JavaScript, CSS, and Bootstrap collectively enriched the user interface to provide a visually appealing, responsive, and user-friendly design, enhancing the overall experience.

Figure: Frontend Development

Login Page

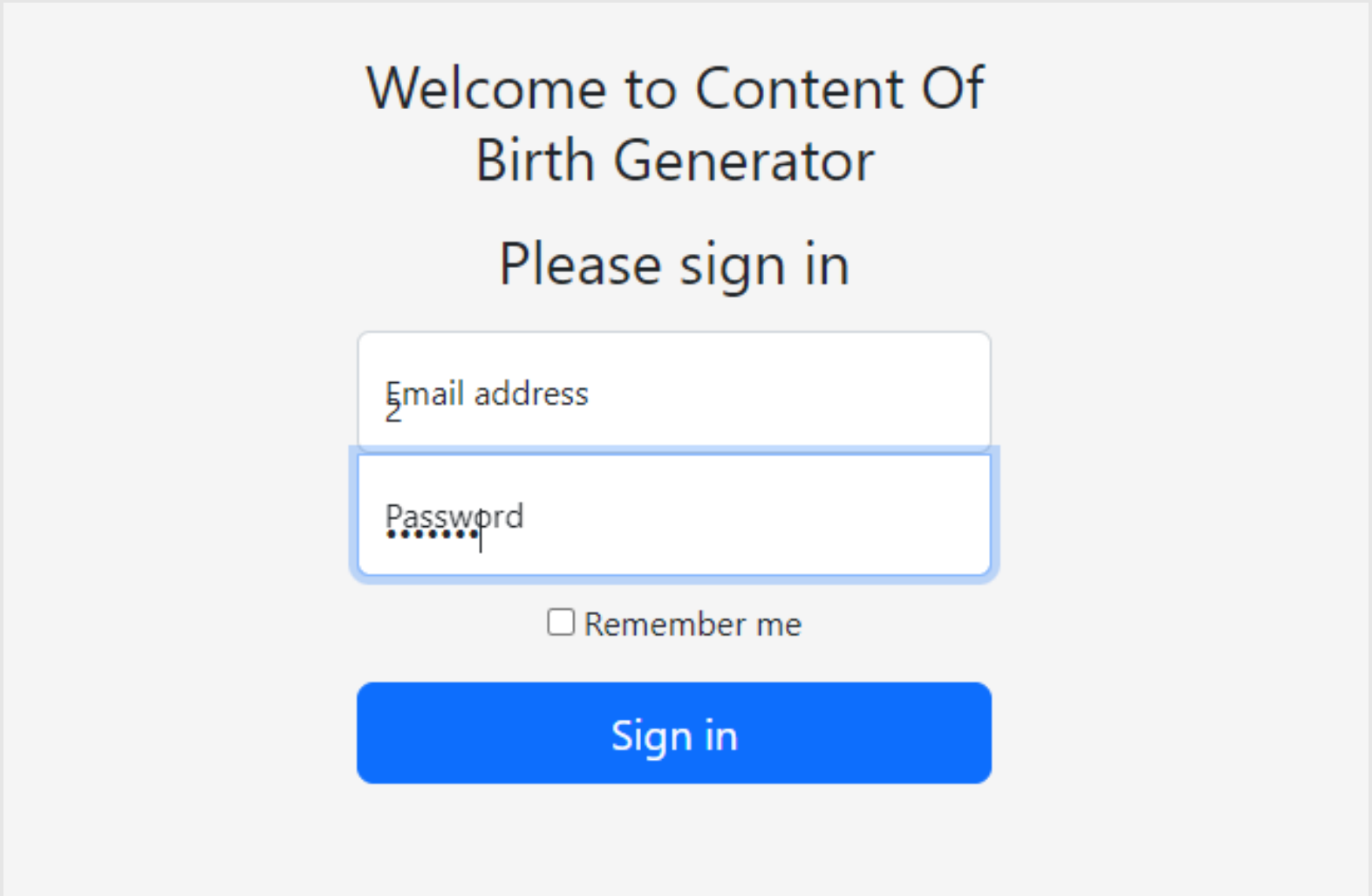

Figure: Login Page

Main Page

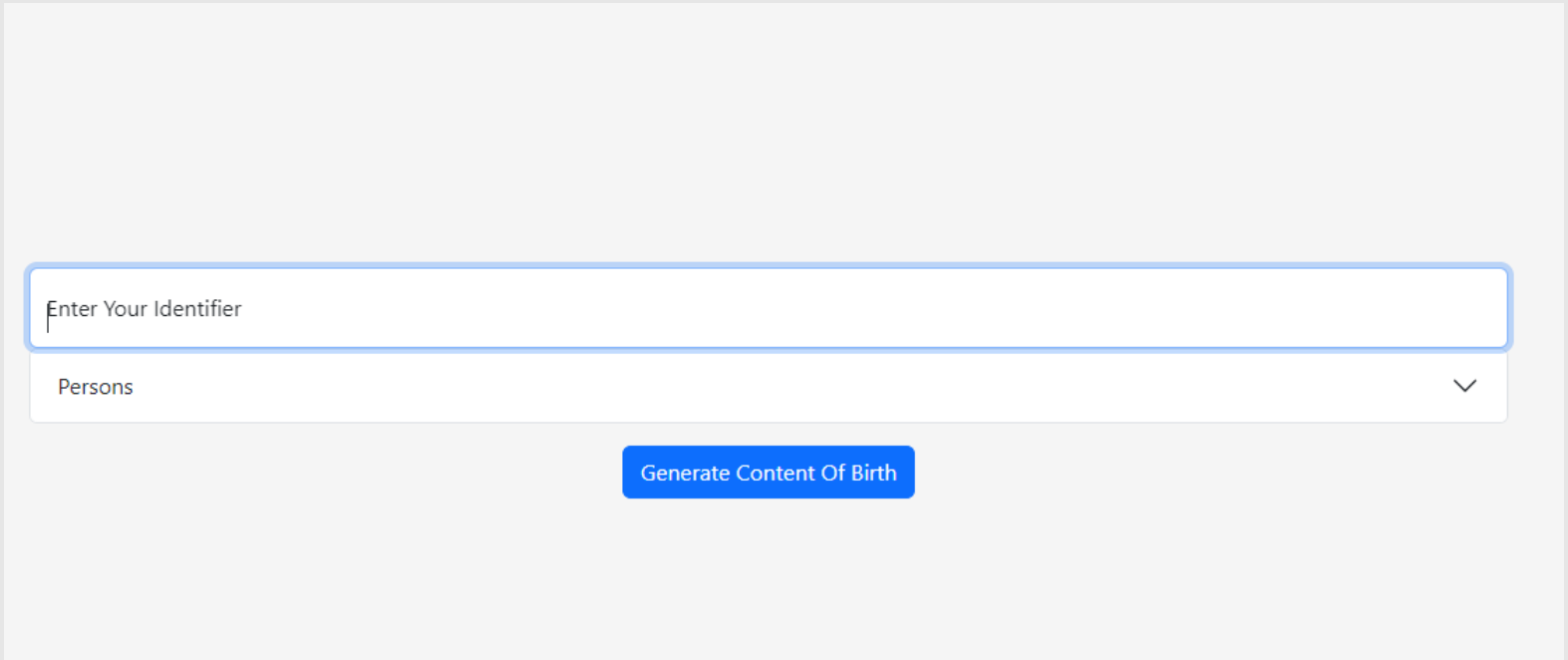

Figure: Main Page

Version Control

Git provides a robust version control system. Its contribution ensures collaborative development, tracks changes, and maintains a coherent and organized codebase.

Figure: Version Control

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User Authentication

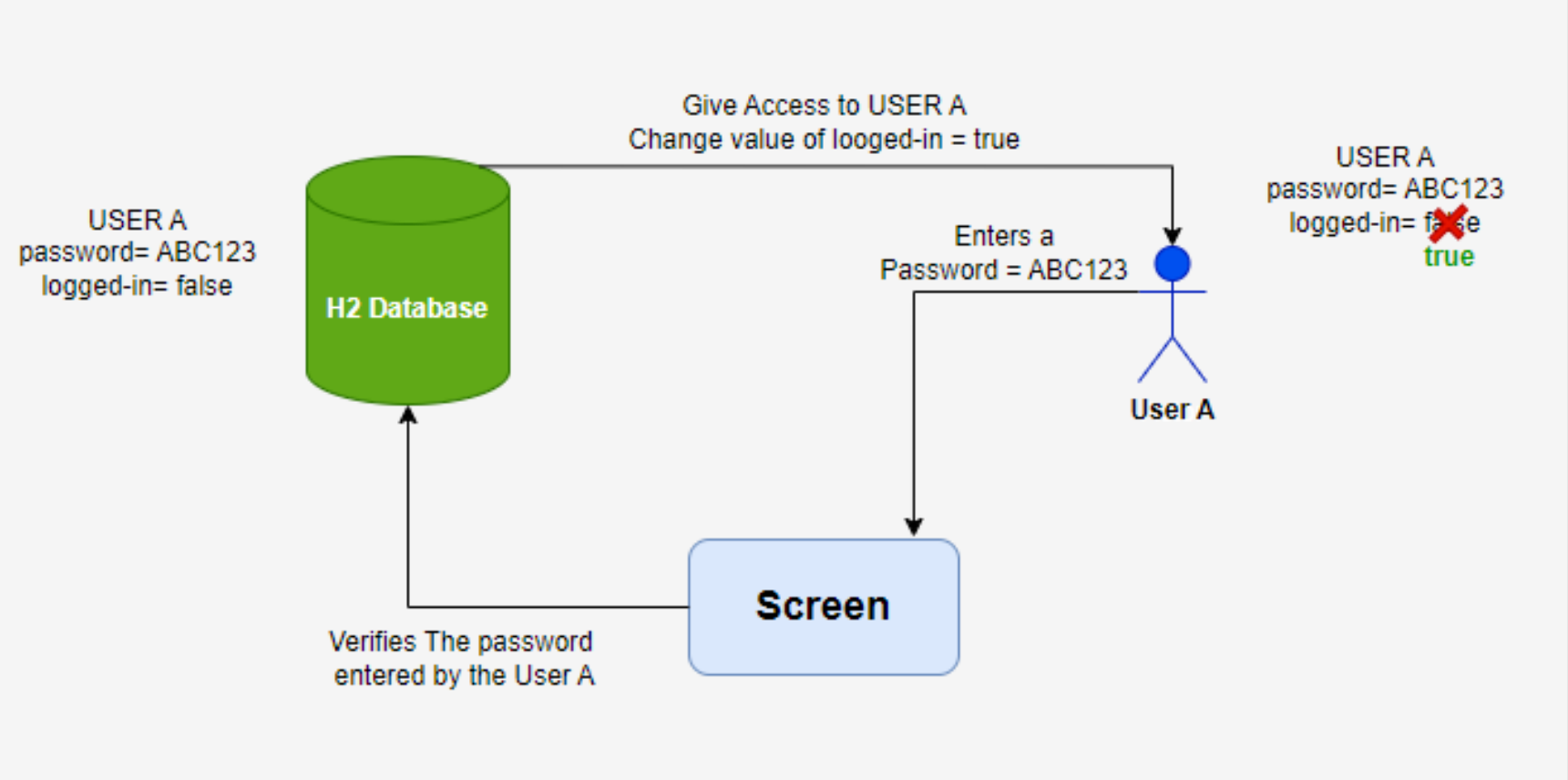

Figure: Authentication

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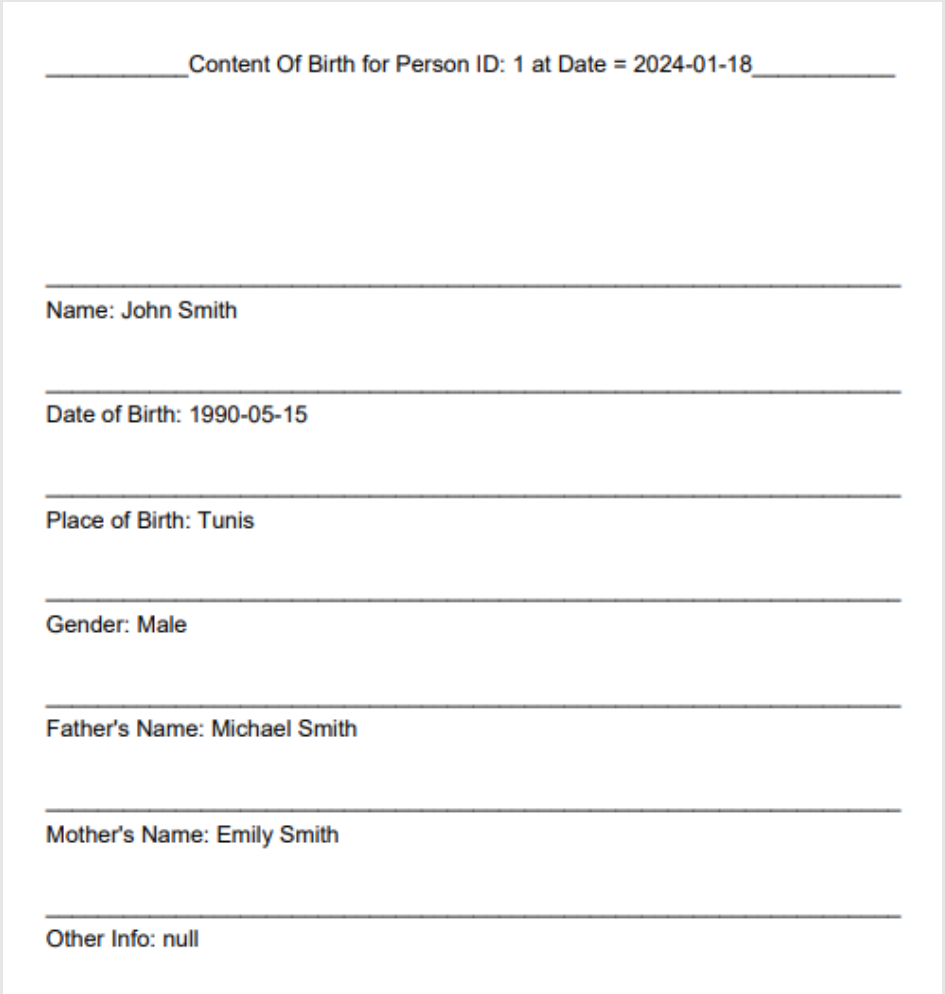
Output PDF File



Content Of Birth for Person ID: 1 at Date = 2024-01-18

Name: John Smith

Date of Birth: 1990-05-15

Place of Birth: Tunis

Gender: Male

Father's Name: Michael Smith

Mother's Name: Emily Smith

Other Info: null

Figure: IntelliJ

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Analysis Of The Project

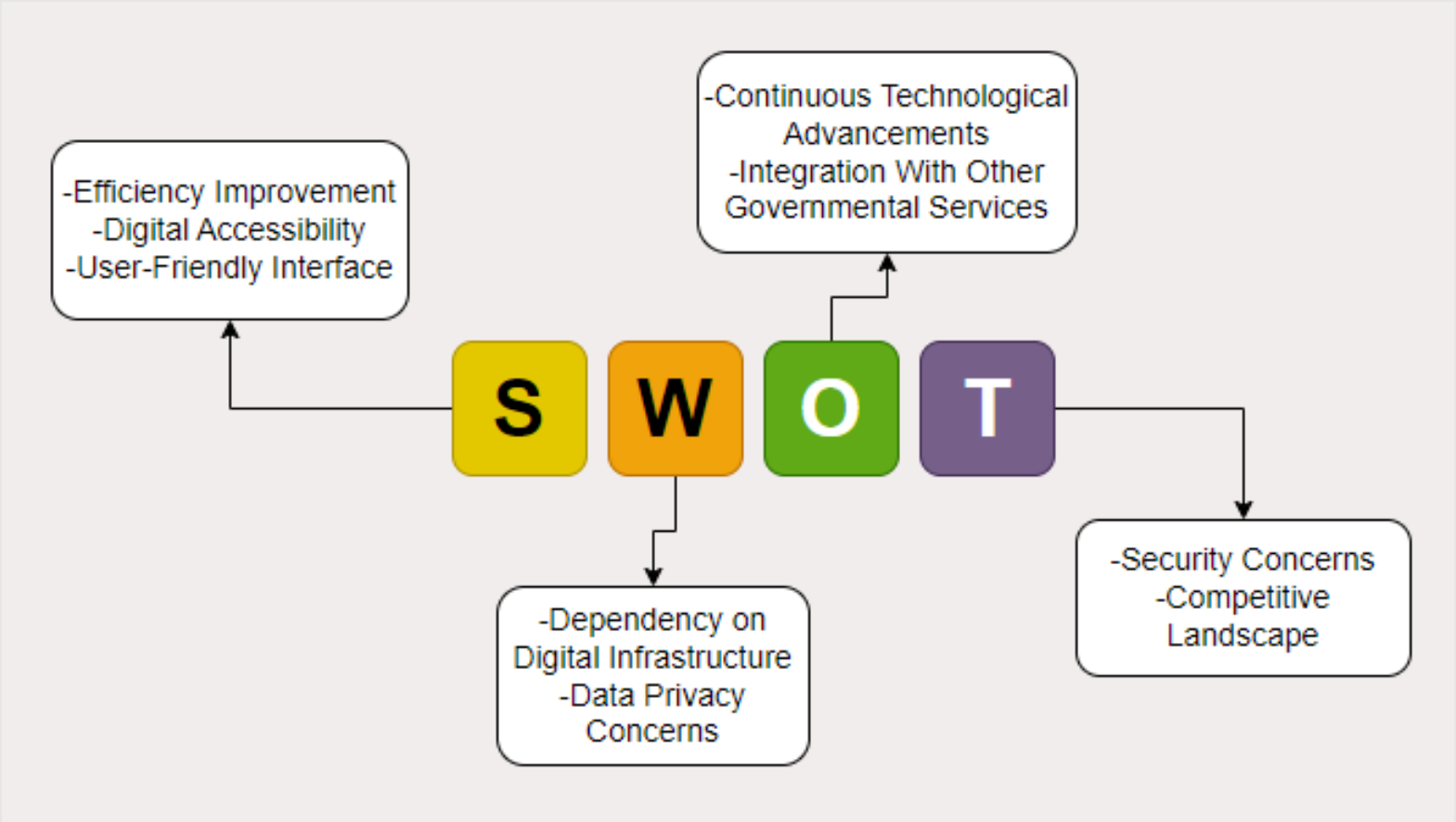

Figure: SWOT Analysis

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Possible Enhancements

- **Security Enhancement:**
  Ensure a more secure data transmission (Implement JWT for user authentication).
  Strengthen security with improved user authorization mechanisms.

- **Front-End Development:**
  Enhance the user-friendly design with more responsive features.

- **Enhancing PDF Style:**
  Design a more visually appealing PDF (Implementing the Thymleaf Spring Dependency).

Thank You

Thank You For Your Attention!