



TN SMART IOT



PRIVATE STADIUM CONTROL

Streamlining Operations Across Multiple Locales

Aya Abid ghozy



Project Context



Introduction

In the dynamic environment of managing multiple mini football stadiums, efficient control and real-time monitoring are essential. Our IoT project aims to integrate web, mobile, and hardware components to streamline these operations across various locales

Background

Managing game sessions manually is often inefficient and prone to errors. Administrators and security personnel need a centralized system that offers real-time updates and comprehensive analytics to optimize performance and enhance security



Existing System Analysis

Current Challenges

- Manual scheduling and game management lead to frequent conflicts and operational inefficiencies.
- Lack of real-time data hinders quick decision-making and responsiveness.
- Security personnel face difficulties in monitoring and managing multiple stadiums without a unified system.

Operational Gaps

- Absence of centralized data collection and performance analysis.
- Limited ability to monitor and control stadium operations remotely.
- Inefficient communication between security staff and administrators"



Proposed Solution

- Integrated Solution: Combines web, mobile, backend, and hardware to manage game sessions and provide real-time analytics.

1. Web Interface:

- Central platform for admins and security staff.
- Mirrors mobile functionalities and provides analytics.

2. Mobile App:

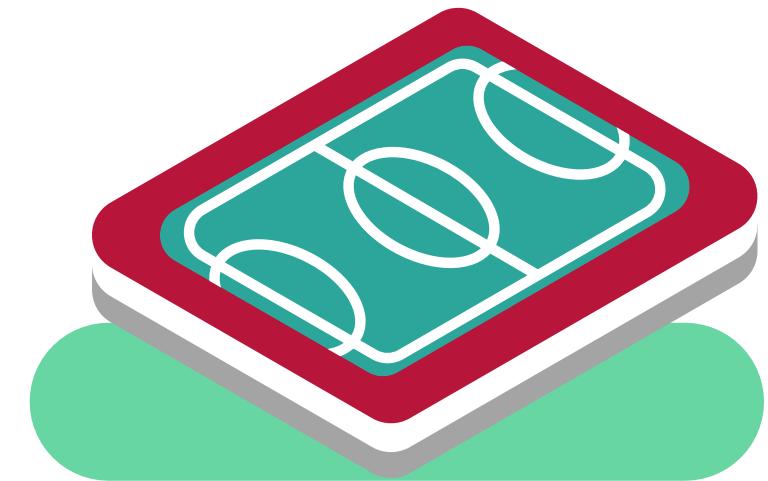
- Easy-to-use app for managing game sessions on-the-go.

3. Backend Services:

- Firebase handles authentication, data, and real-time updates.

4. IoT Hardware:

- ESP8266 controls countdown displays in stadiums.



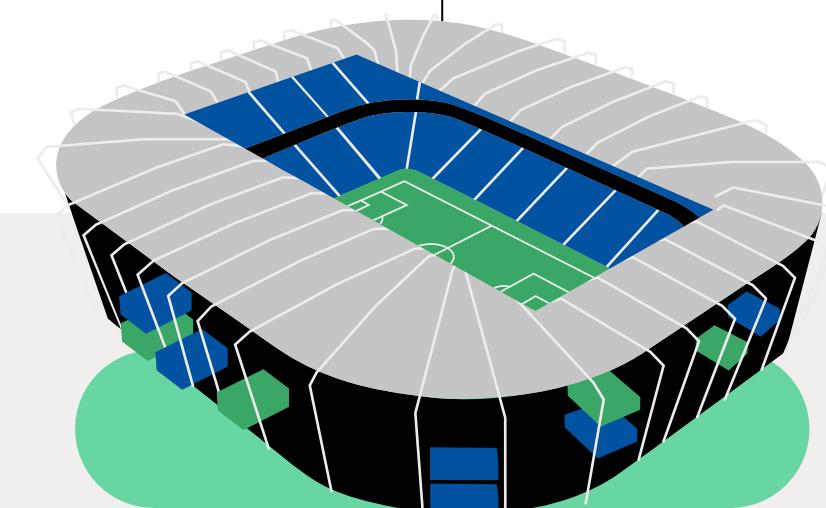
Objectives

PRIMARY GOALS:

- Enhance operational efficiency by providing a centralized management system.
- Enable real-time management and monitoring of game sessions across multiple stadiums.
- Provide detailed analytics and insights to help administrators make informed decisions.

SECONDARY GOALS:

- Improve security by giving personnel better tools to manage game sessions.
- Reduce operational costs through efficient resource management and reduced manual effort.
- Enhance the user experience for both security personnel and administrators through intuitive interfaces and real-time data.
- strators make informed decisions.



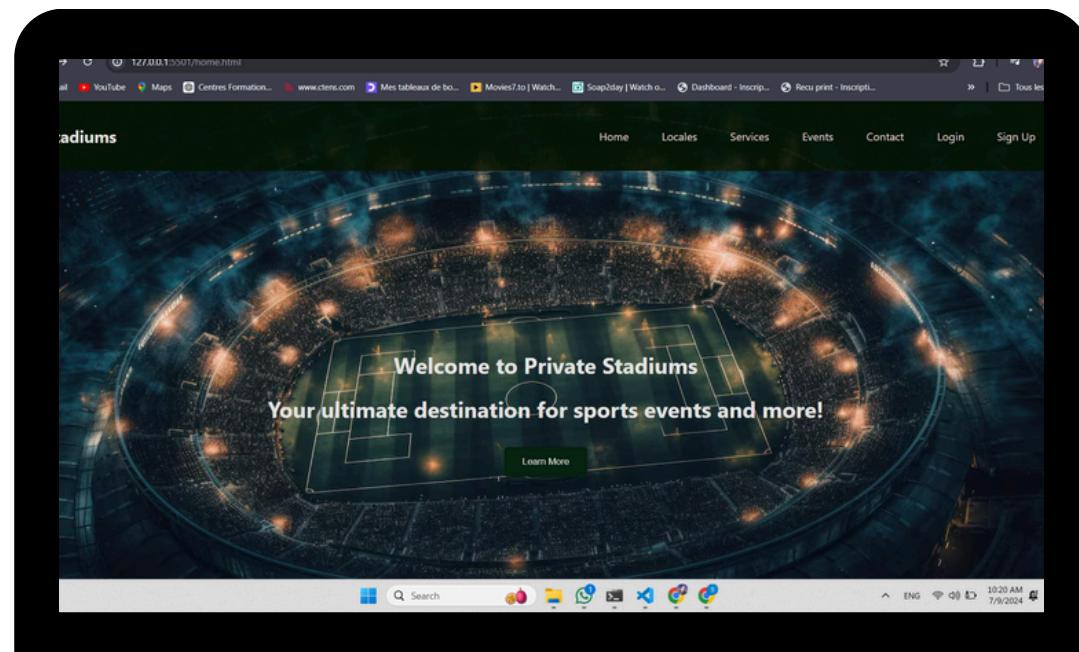


Integrated IoT Solution for Managing Mini Football Stadiums



Project Components and Features

L'interface utilisateur permet au personnel de sécurité de gérer les sessions de mini-football via des applications mobile et web, offrant une expérience cohérente et réactive. Les administrateurs disposent d'outils d'analyse et de gestion avancés pour surveiller les performances et prendre des décisions informées. Le projet, développé en HTML, CSS, JavaScript et intégré avec Firebase, assure une authentification sécurisée, une gestion en temps réel des stades et des visualisations de données interactives.





Mobile Application

- Technologies: Developed using Flutter for a consistent experience on Android and iOS, supported by Firebase for backend services.
- Key Features:
 - Login Page: Access to the assigned locale based on security personnel credentials.
 - Stadium Selection Page: Select and manage specific stadiums within the locale.
 - Player Management Page: Start a countdown for game sessions by entering player details.

Backend Services

- Technologies:

Utilizing Firebase for authentication, database management, and real-time updates.

- Key Features:

Secure user authentication and session handling.

Real-time data synchronization for game sessions and player counts.

Backend processing for data analytics and reporting.





IoT Hardware

- Components:

Employing ESP8266 microcontrollers to manage countdown displays.

- Key Features:

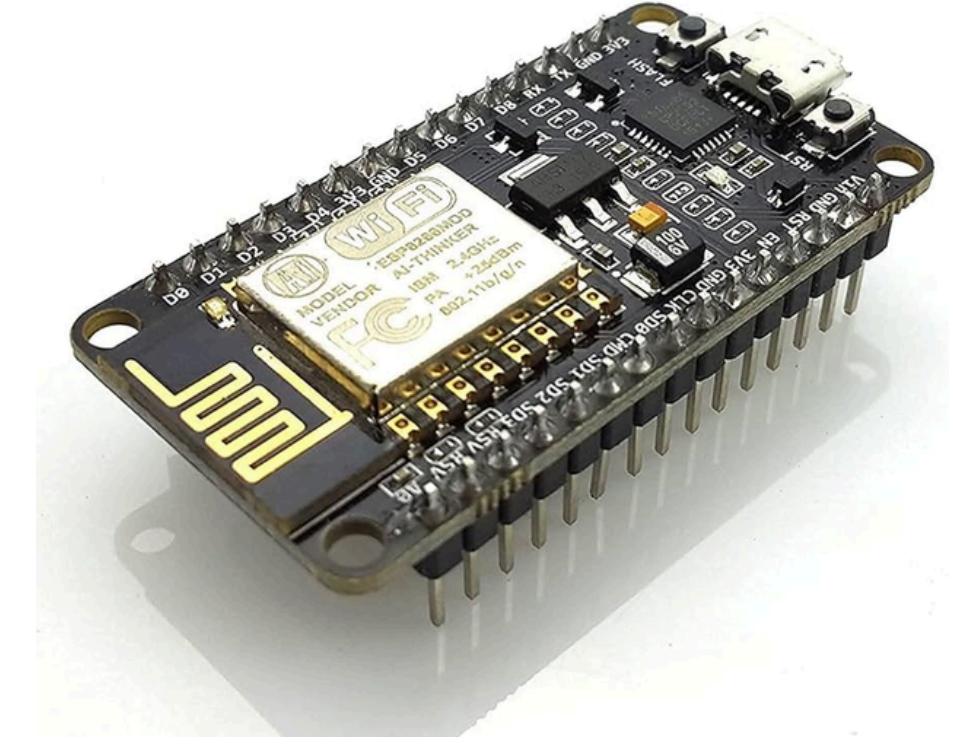
Wi-Fi connectivity to receive updates from Firebase.

Display countdown timers in real-time as initiated from the mobile app or web interface.

- Implementation Steps:

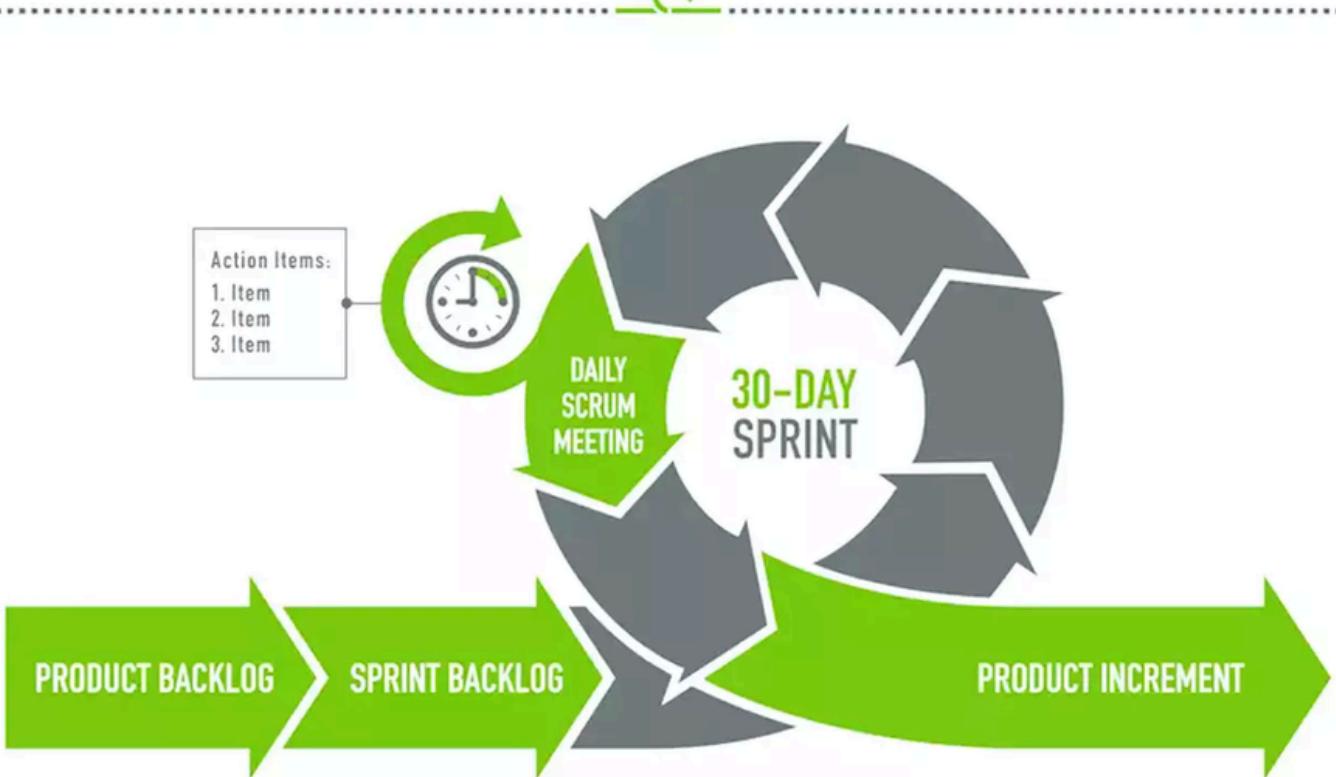
Setup ESP8266 for connectivity and integration with Firebase.

Display and update countdowns on digital screens.

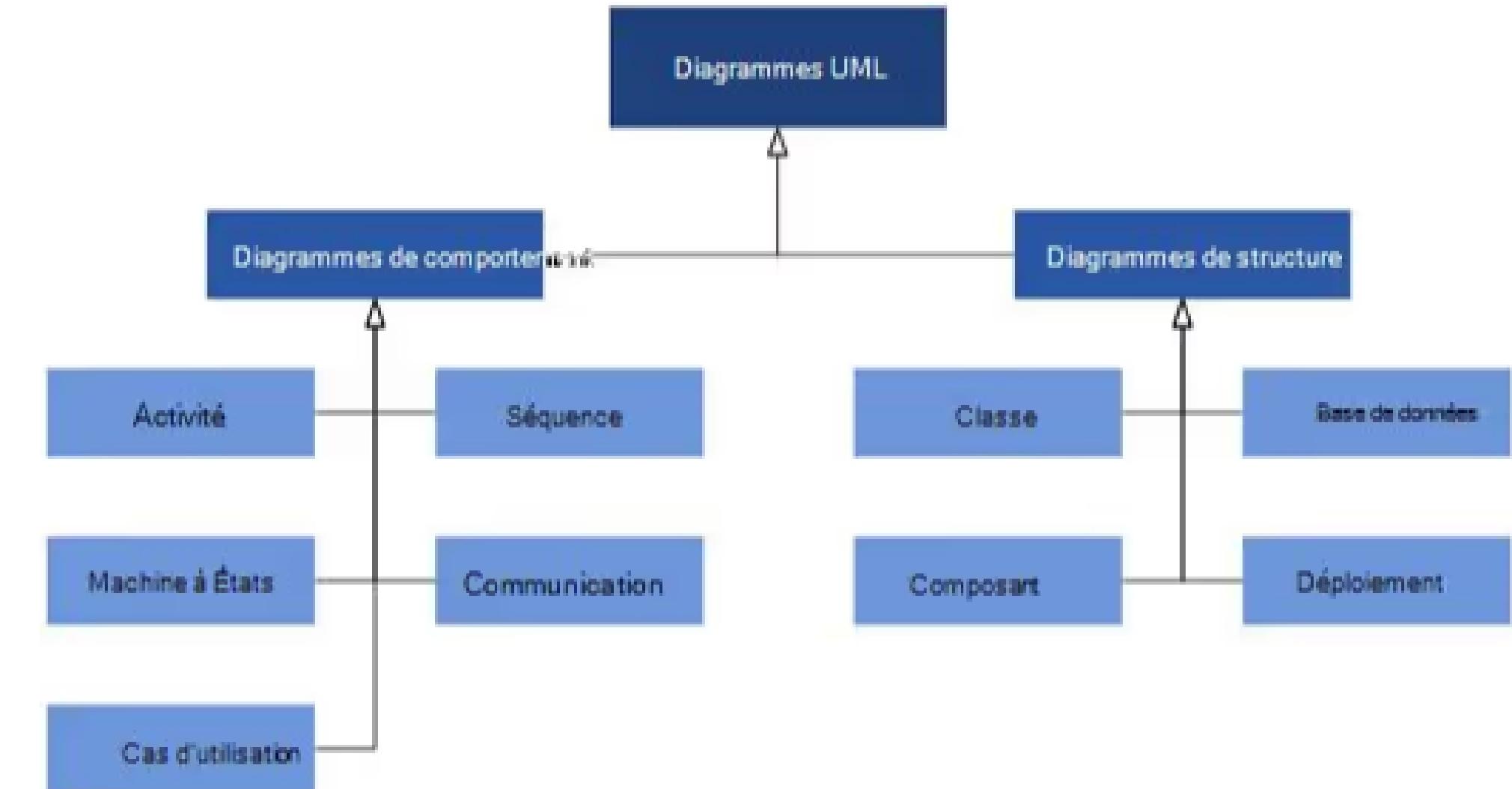


MÉTHODOLOGIES ADOPTÉES

SCRUM DEVELOPMENT PROCESS



méthode SCRUM



méthode UML

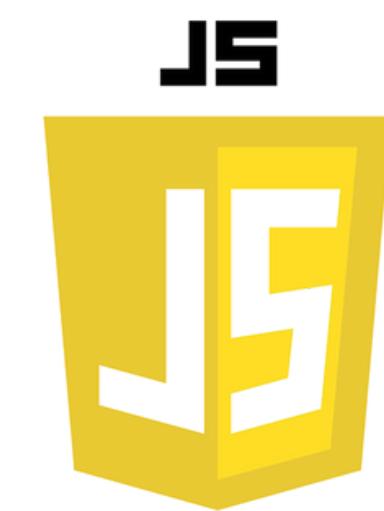
ENVIRONNEMENT LOGICIEL



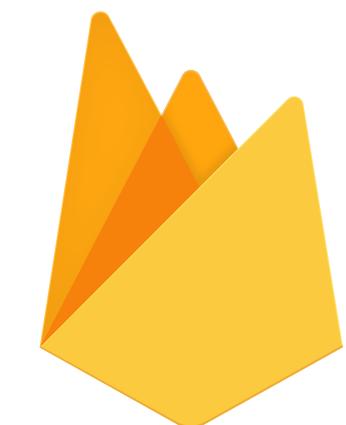
HTML



CSS



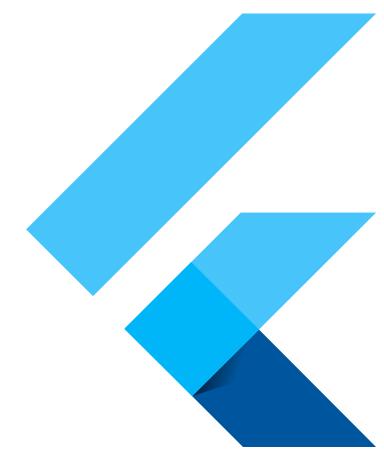
JavaScript



Firebase



Arduino.io

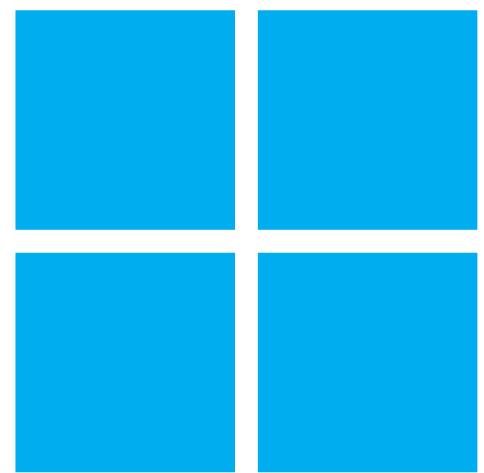


Flutter

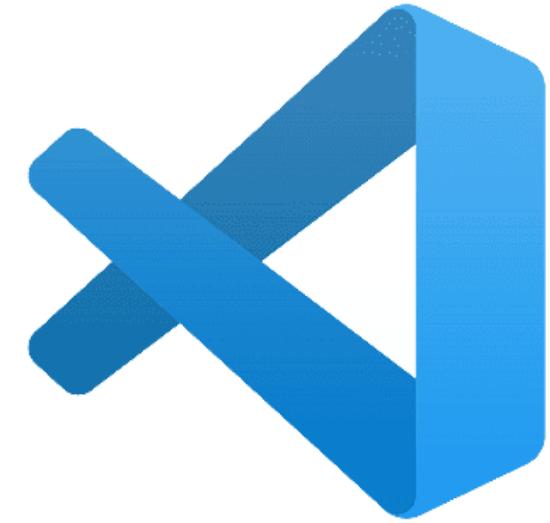


Draw io

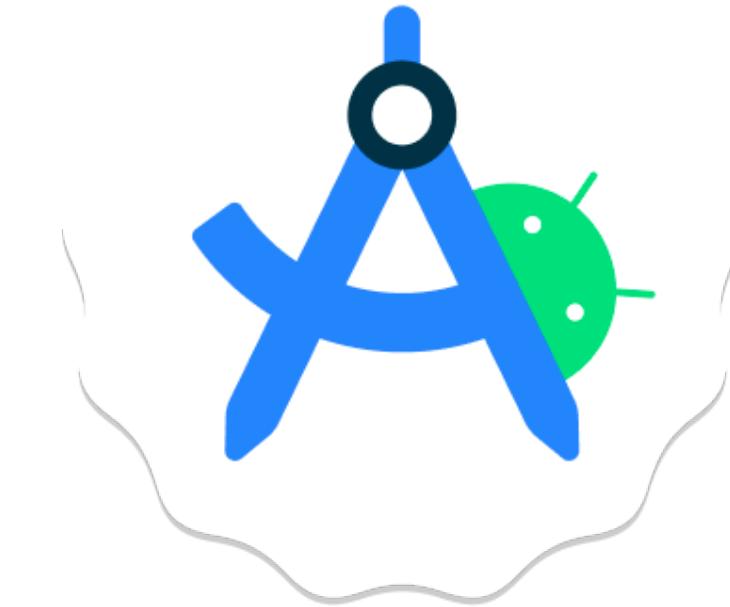
ENVIRONNEMENT DE DÉVELOPPEMENT



Windows 11



Visual Studio Code



Android studio



Google Chrome

BESOINS FONCTIONNELS POUR LE PERSONNEL DE SÉCURITÉ

01 **S'authentifier**

02 **Choisir le stade**

03 **Entrer le nombre de joueur**

04 **Démarrer le compte à rebours**



BESOINS FONCTIONNELS POUR L'ADMINISTRATEUR

- 01 S'authentifier
- 02 Gérer les locaux
- 03 Gérer les stades
- 04 Analyser les performances



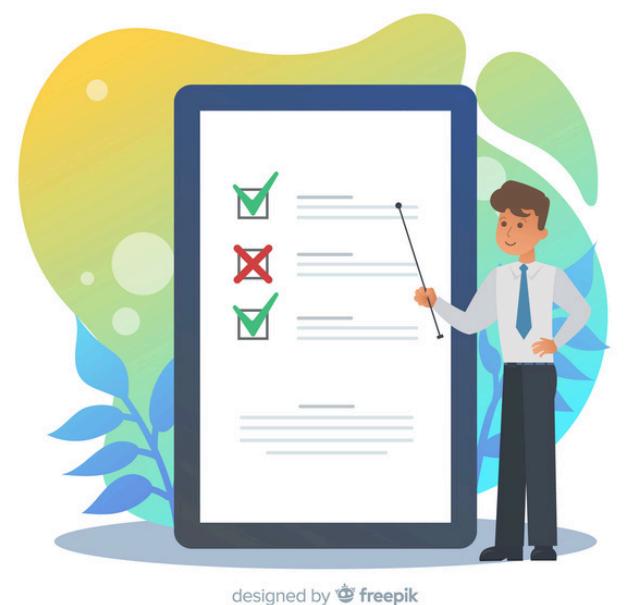
BESOINS NON FONCTIONNELS



Performance et Sécurité Accessibilité et ergonomie



Design Responsive



Tests et Validation

DIAGRAMME DE CAS D'UTILISATION GÉNÉRAL

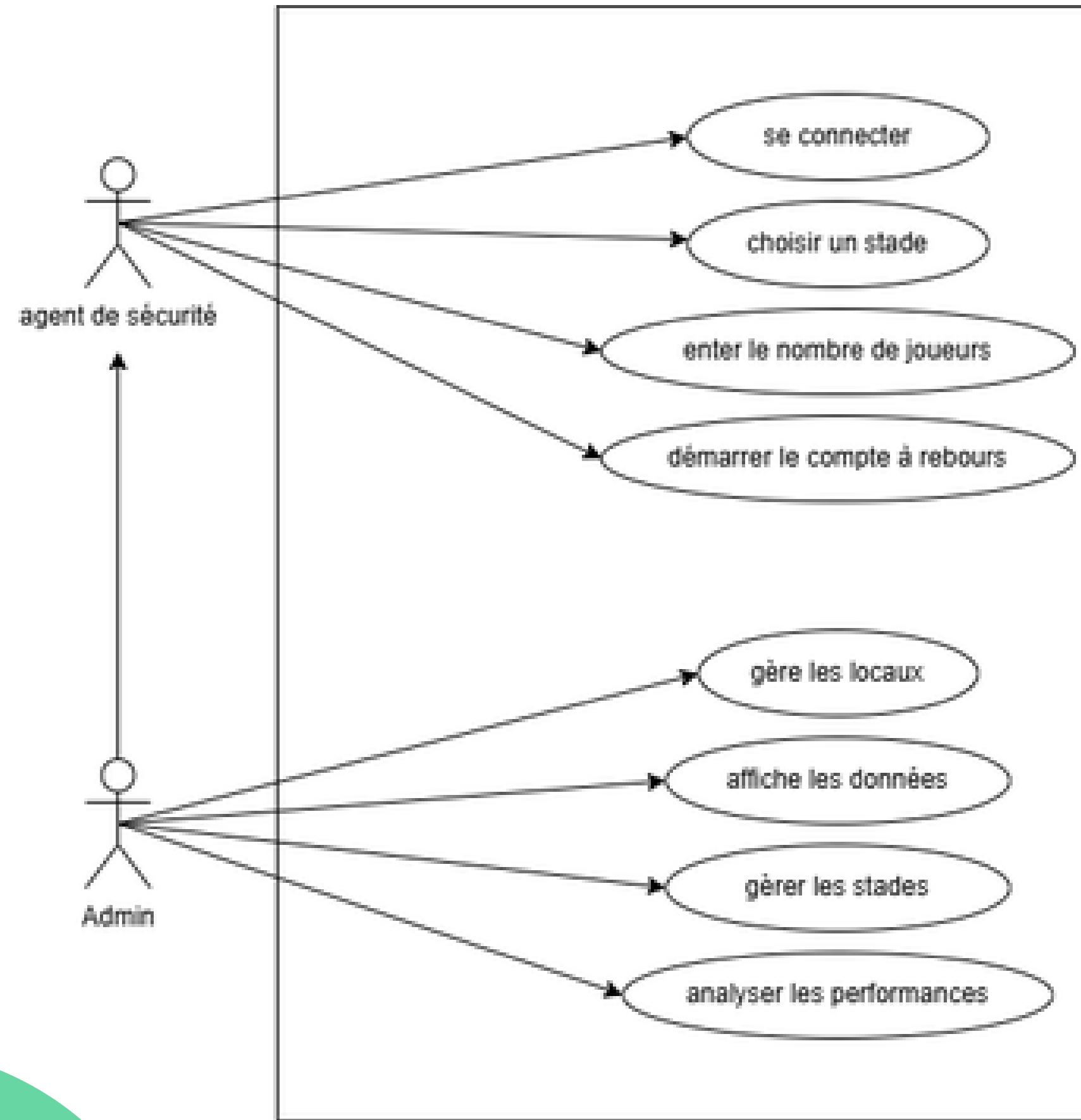


DIAGRAMME DE CLASSE GÉNÉRAL

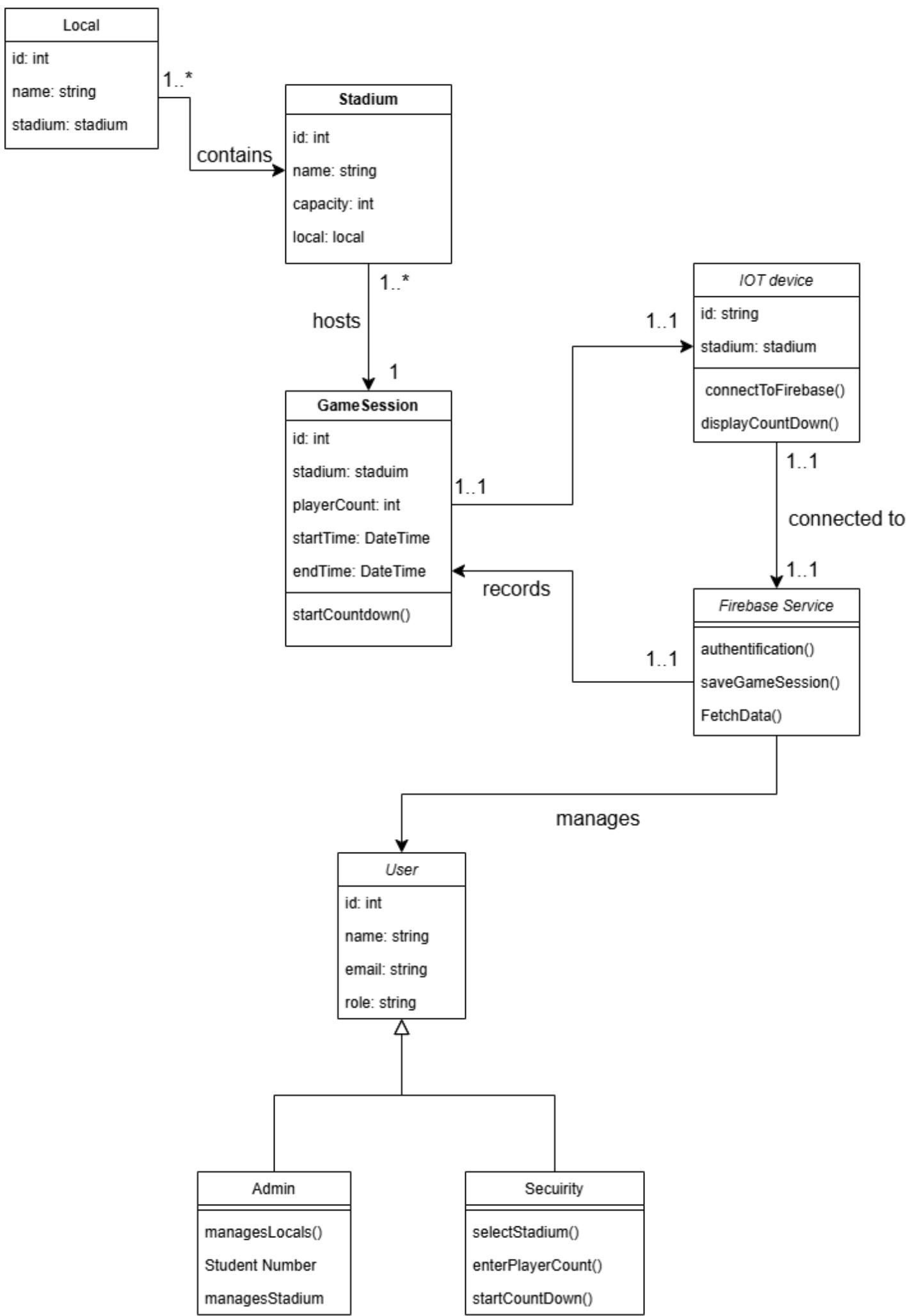


DIAGRAMME D'OBJET GÉNÉRAL

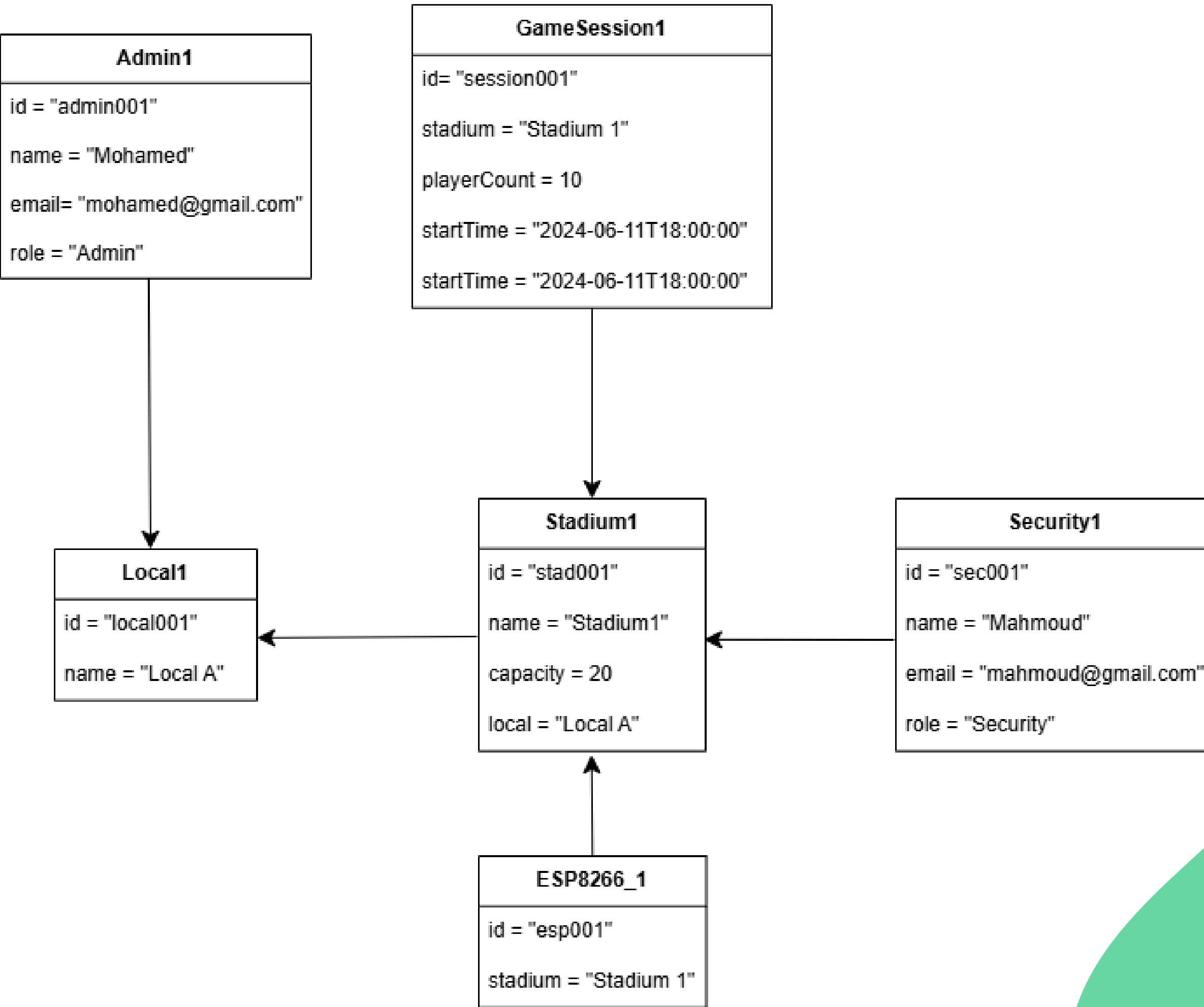
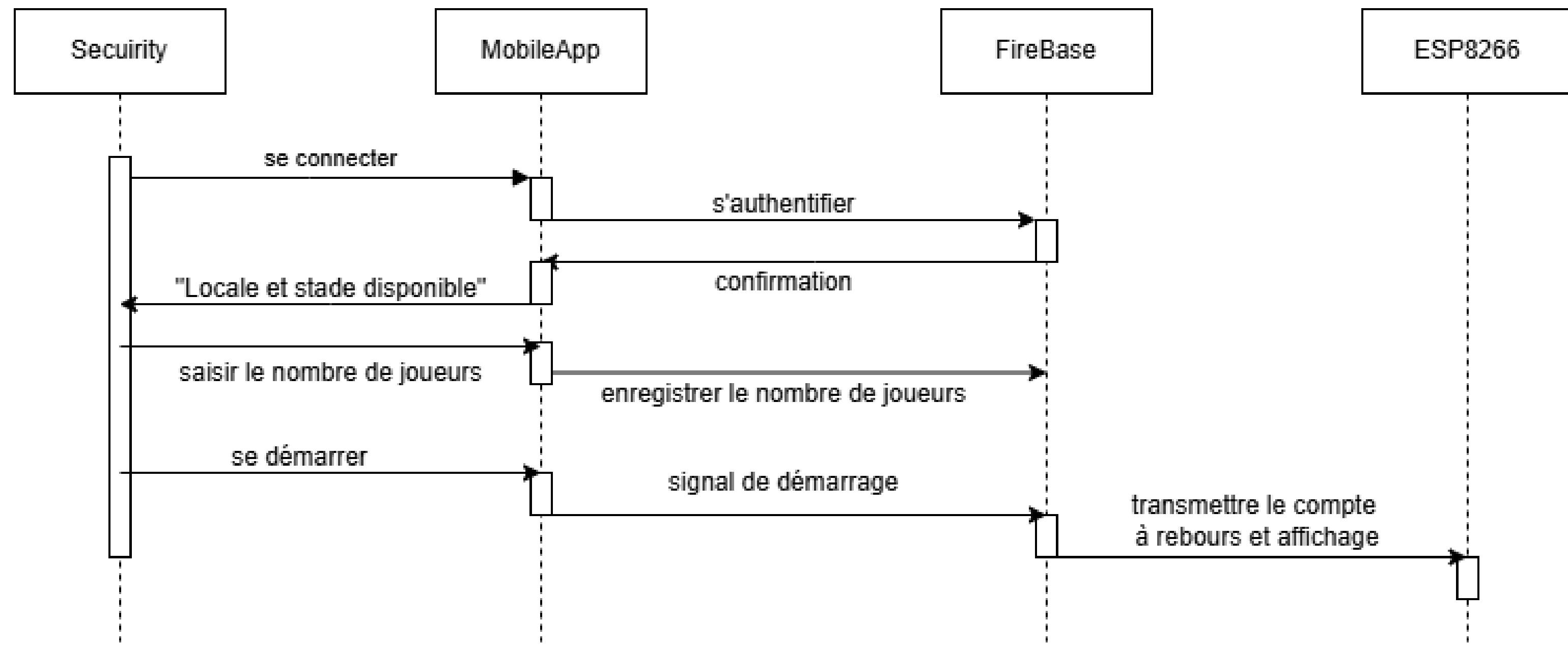
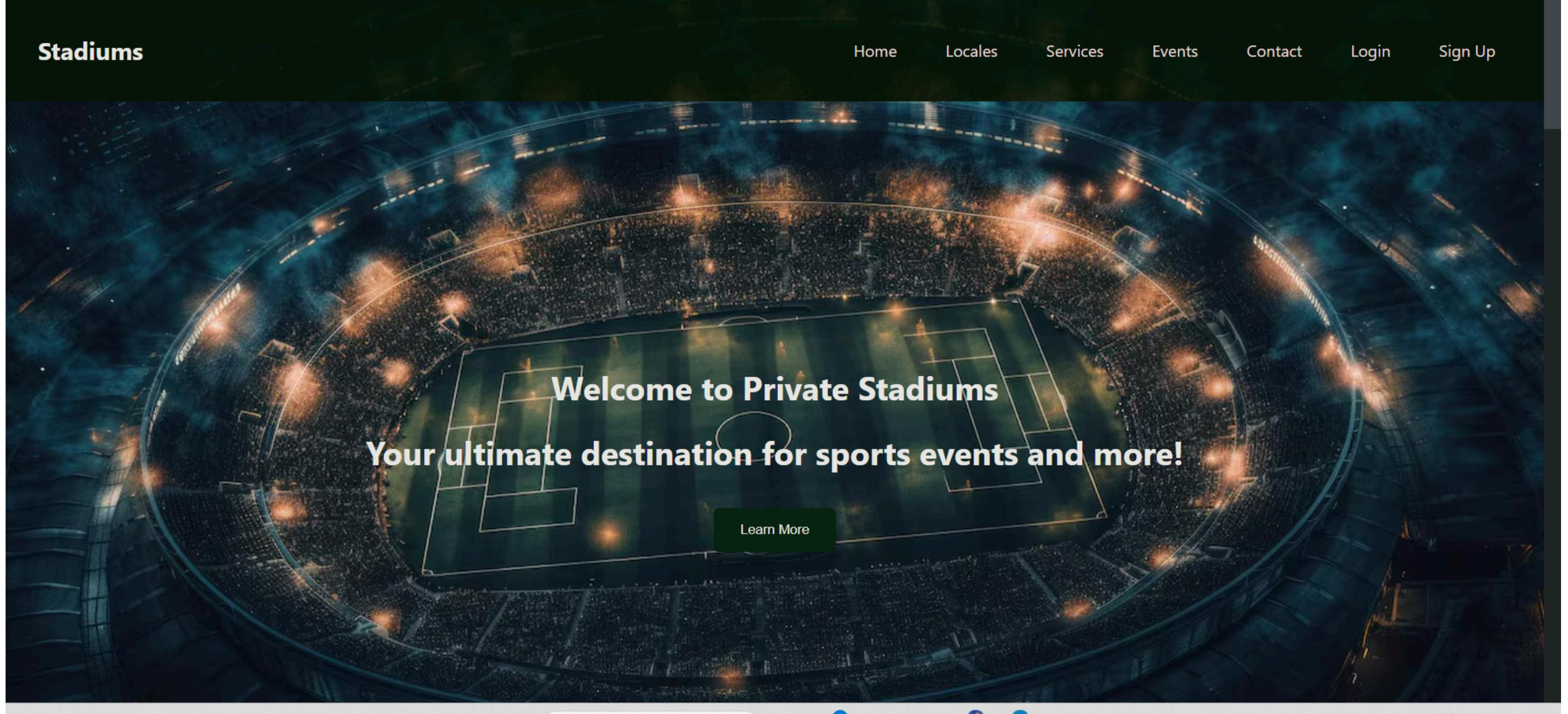


DIAGRAMME DE SÉQUENCE GÉNÉRAL



The web interfaces



Private Stadiums

127.0.0.1:5501/home.html

Gmail YouTube Maps Centres Formation... www.ctens.com Mes tableaux de bo... Movies7.to | Watch... Soap2day | Watch o... Dashboard - Inscript... Recu print - Inscripti... Tous les favoris

Stadiums

Home Locales Services Events Contact Login Sign Up

Welcome to Private Stadiums

Your ultimate destination for sports events and more!

Learn More

Private Stadiums

127.0.0.1:5501/home.html

Gmail YouTube Maps Centres Formation... www.ctens.com Mes tableaux de bo... Movies7.to | Watch... Soap2day | Watch o... Dashboard - Inscript... Recu print - Inscript... Tous les favoris

Our Locales

Locale 1

Number of Stadiums: 5

Owner: John Doe

Date of Creation: 01/01/2020



Locale 2

Number of Stadiums: 3

Owner: Jane Smith

Date of Creation: 02/01/2021



Private Stadiums

127.0.0.1:5501/home.html

Gmail YouTube Maps Centres Formation... www.ctens.com Mes tableaux de bo... Movies7.to | Watch... Soap2day | Watch o... Dashboard - Inscripti... Recu print - Inscripti...

Tous les favoris

Date of Creation: 01/01/2020

Owner: Jane Smith

Date of Creation: 02/01/2021

Discover Our Services

Explore a wide range of services that cater to all your needs. From top-notch facilities to excellent customer support, find everything you need for an unforgettable experience.

Explore Services

Our Services



Restaurant

Enjoy a variety of cuisines at our in-house restaurant.



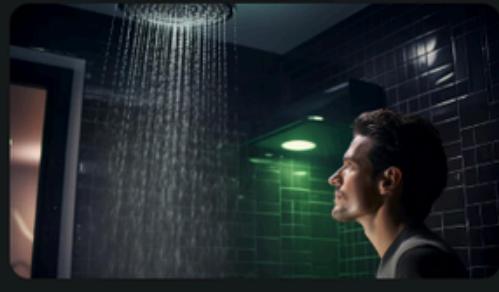
Garden

Relax in our beautifully maintained gardens.



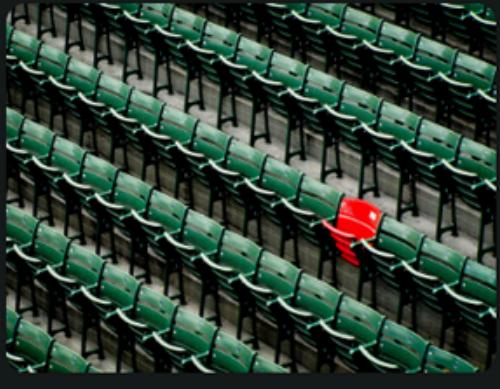
Bathrooms

Clean and hygienic bathroom facilities.



Showers

State-of-the-art shower facilities available.



Private Stadiums

127.0.0.1:5501/home.html

Gmail YouTube Maps Centres Formation... www.ctens.com Mes tableaux de bo... Movies7.to | Watch... Soap2day | Watch o... Dashboard - Inscriptio... Recu print - Inscriptio... Tous les favoris

Past Events



Stadium Clean Day

The Stadium Clean Day, where volunteers come together to maintain and enhance the beauty of our beloved stadium. This event is perfect for individuals, families, and groups who are passionate about keeping our environment clean and green.



Charity Runs and Marathons

Participate in charity runs and marathons organized at our stadium. Support noble causes while enjoying the camaraderie of fellow runners. An inspiring event for fitness enthusiasts and philanthropists alike.

Private Stadiums

127.0.0.1:5501/home.html

Stadium Clean Day

The Stadium Clean Day, where volunteers come together to maintain and enhance the beauty of our beloved stadium. This event is perfect for individuals, families, and groups who are passionate about keeping our environment clean and green.

Charity Runs and Marathons

Participate in charity runs and marathons organized at our stadium. Support noble causes while enjoying the camaraderie of fellow runners. An inspiring event for fitness enthusiasts and philanthropists alike.

Private Stadiums

Your ultimate destination for sports events and more!

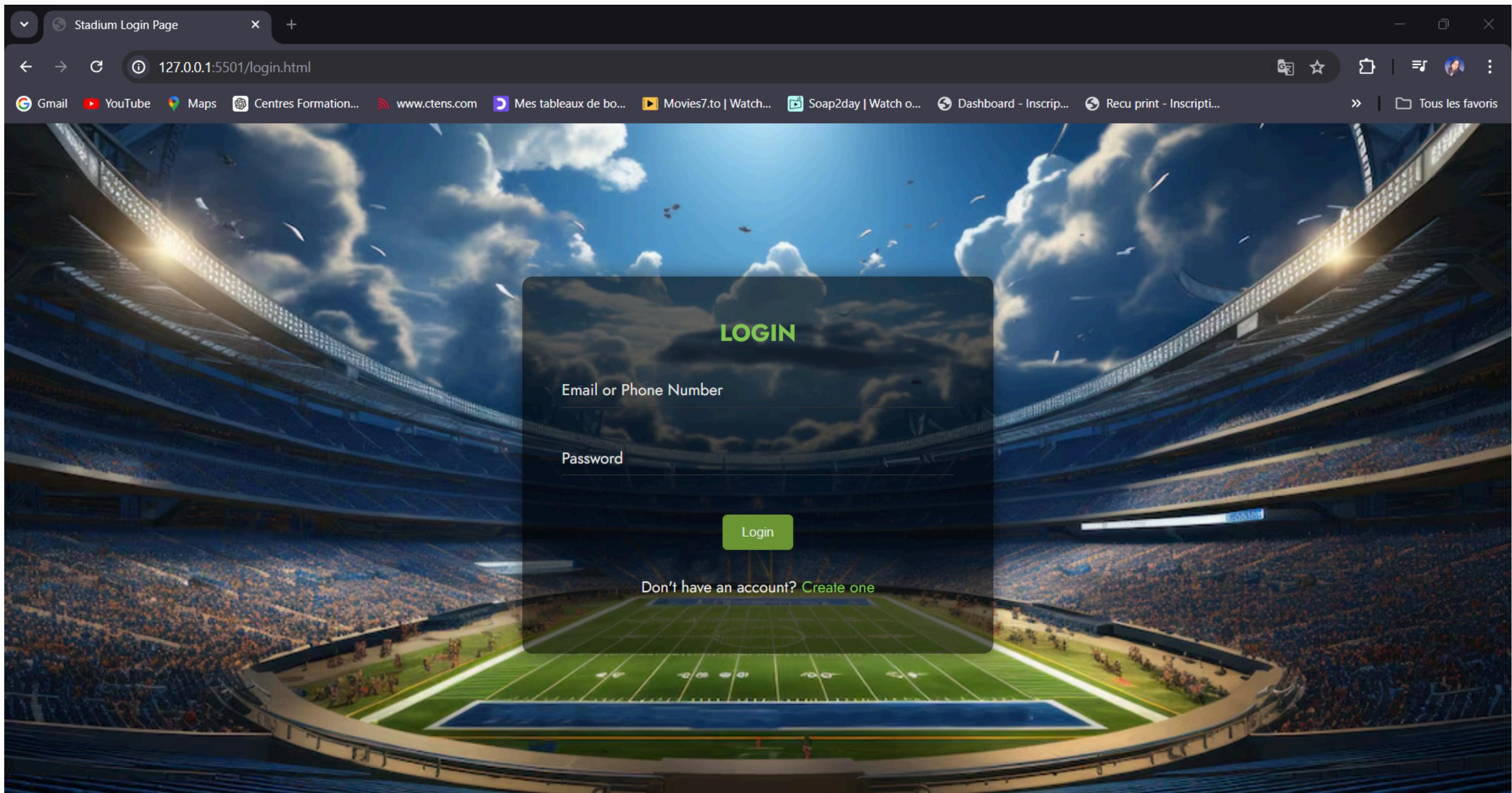
+123 456 7890
info@privatestadiums.com

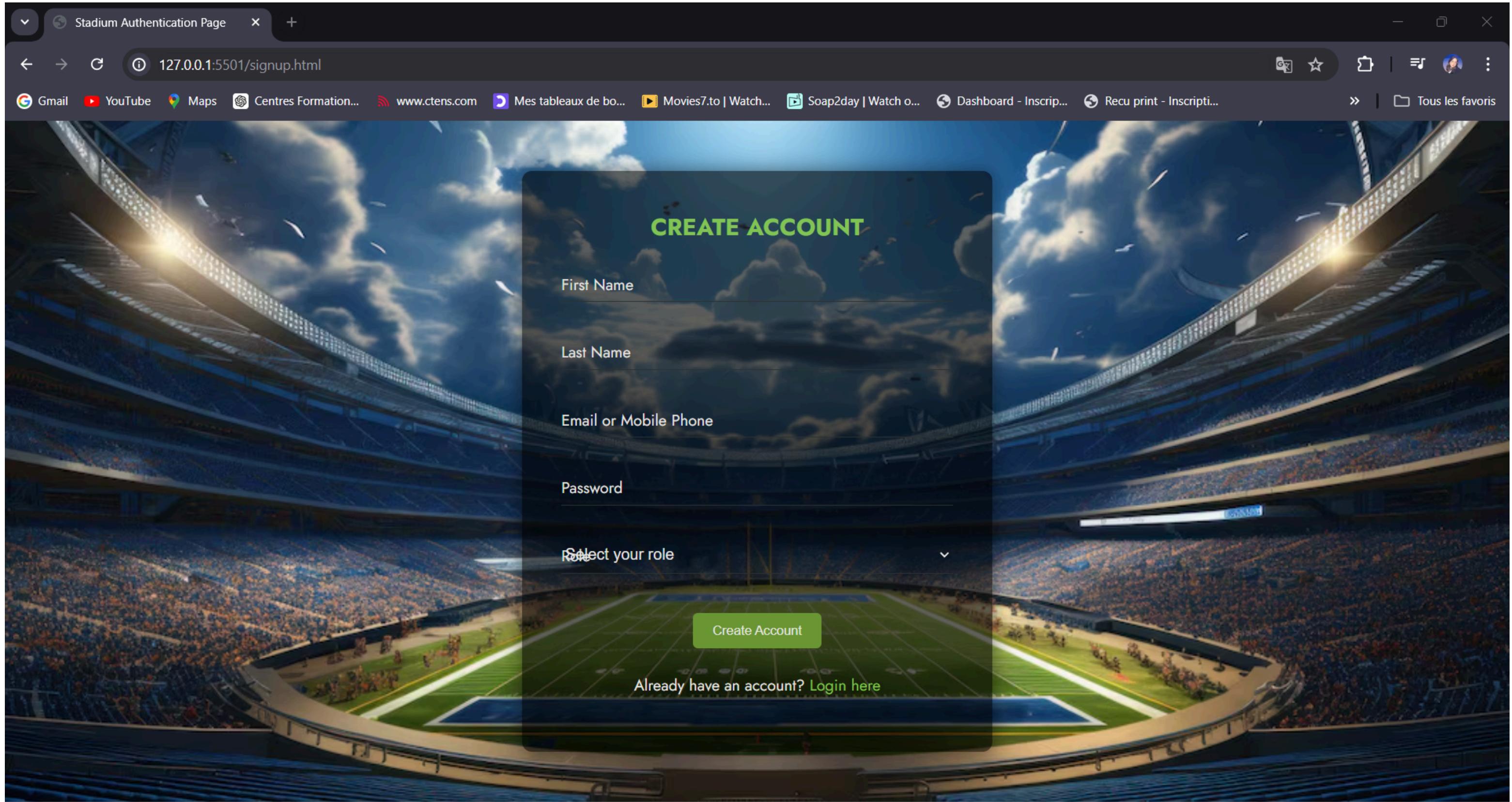
• • • • •

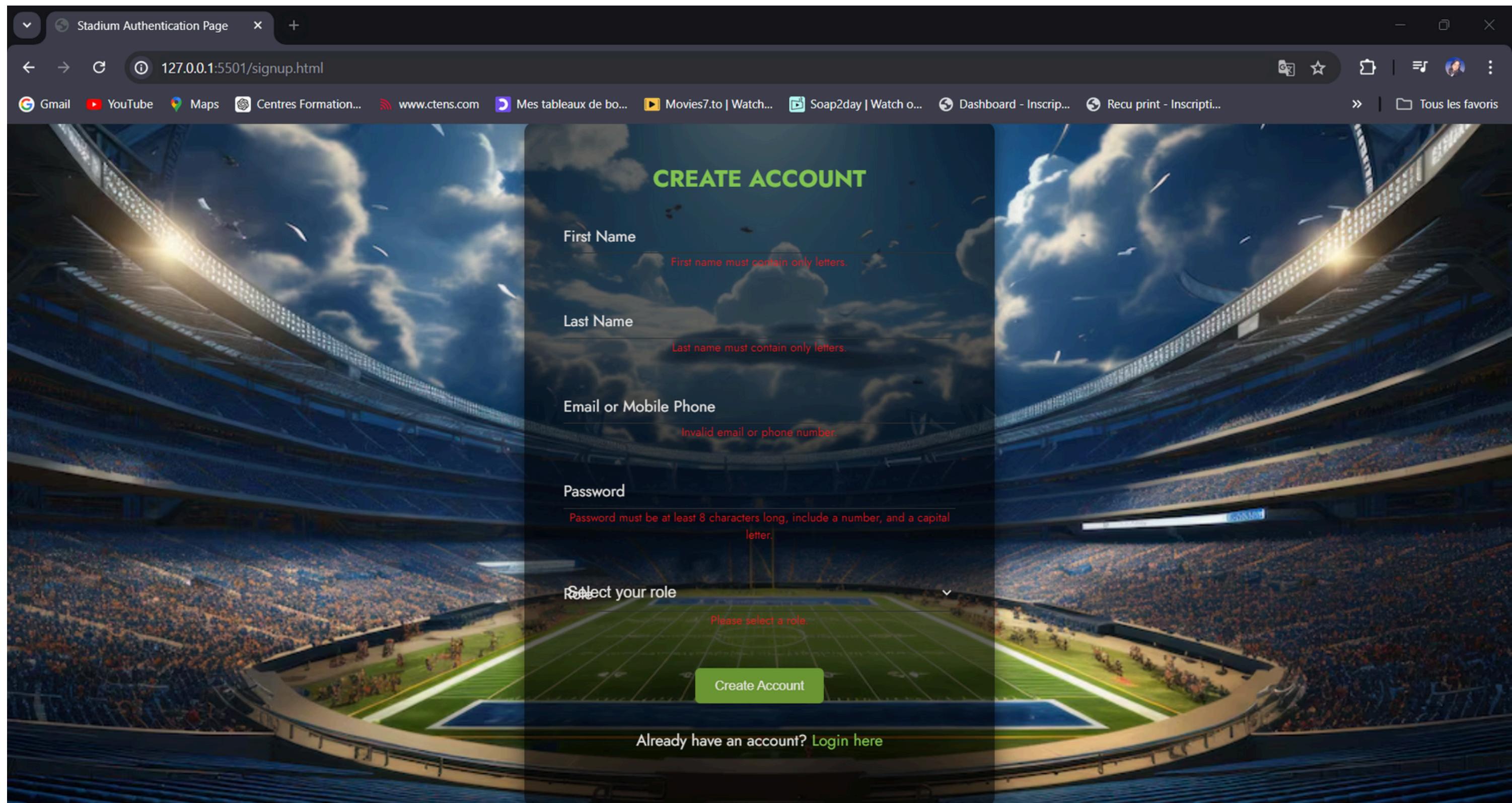
Quick Links

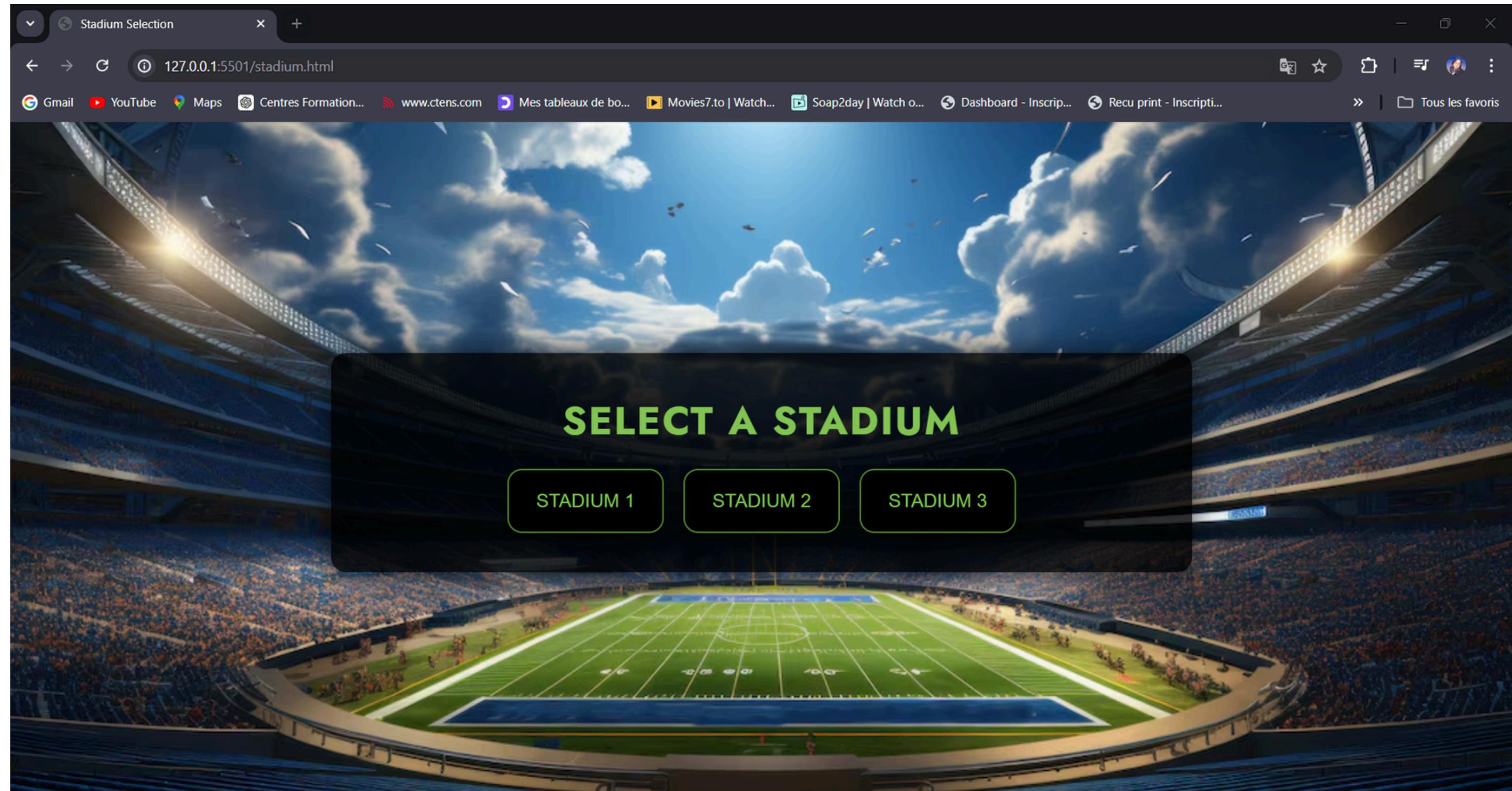
[Home](#)
[Locales](#)
[Services](#)
[Events](#)
[Contact](#)
[Login](#)
[Sign Up](#)

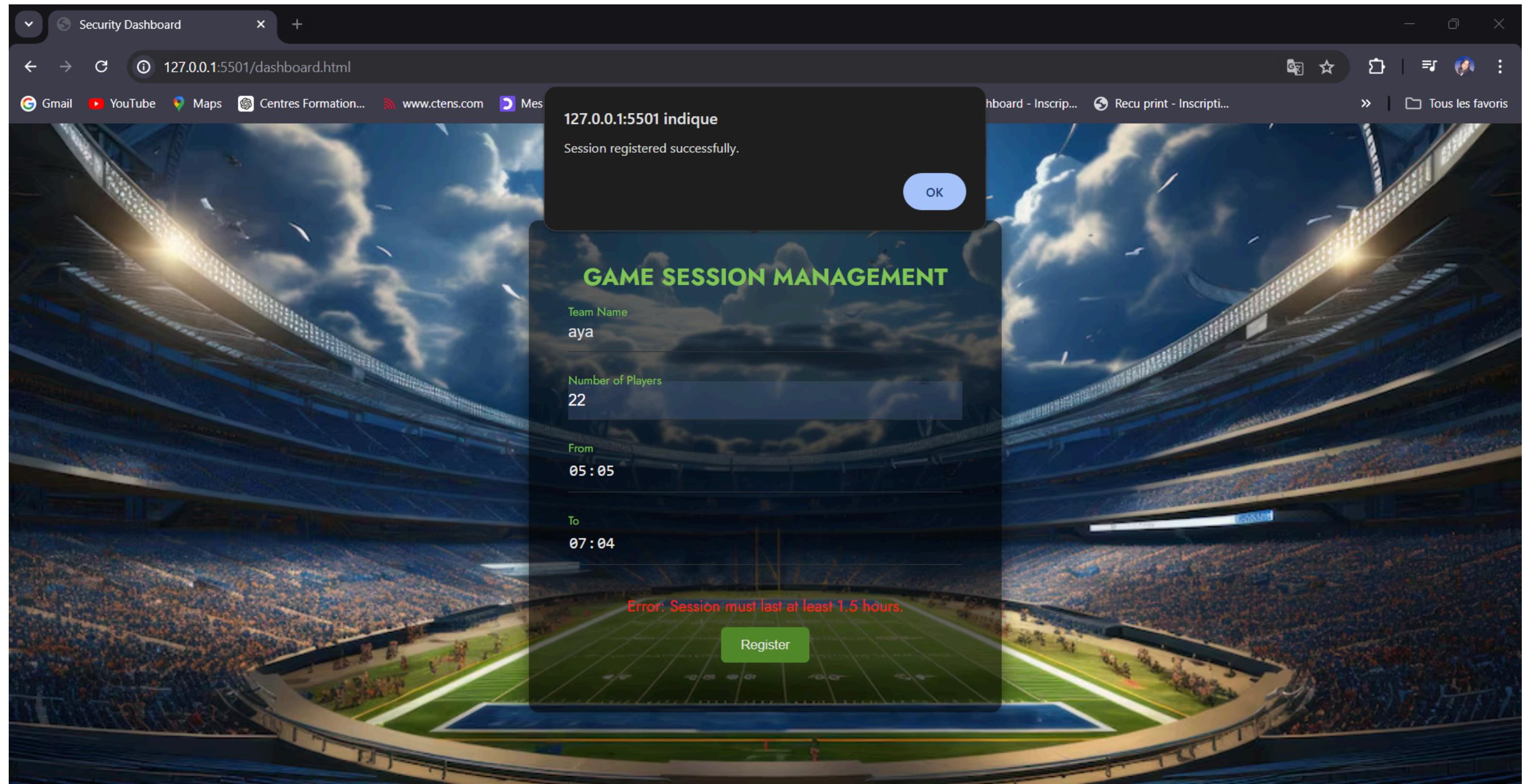
© 2024 Private Stadiums. All rights reserved.

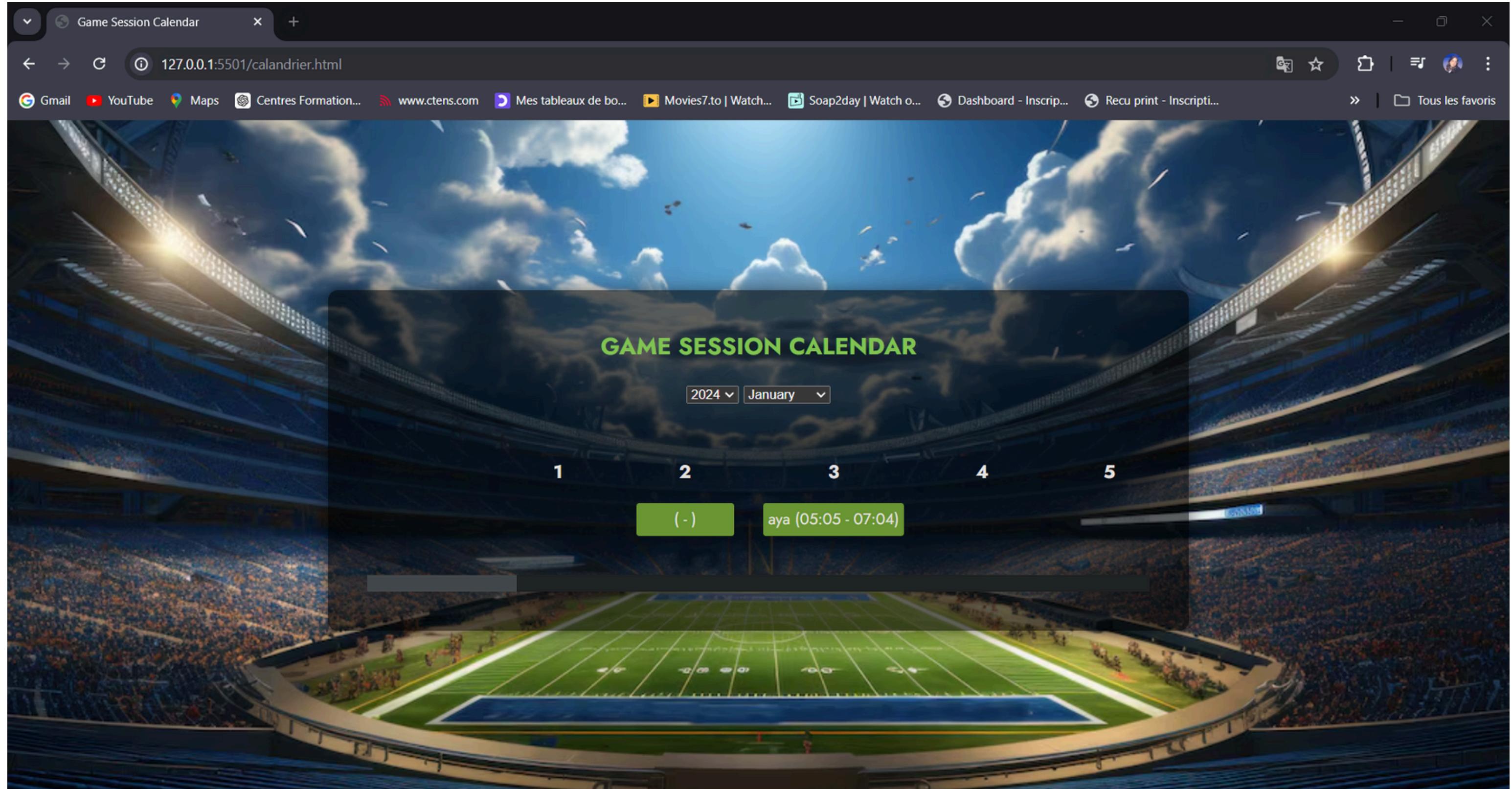


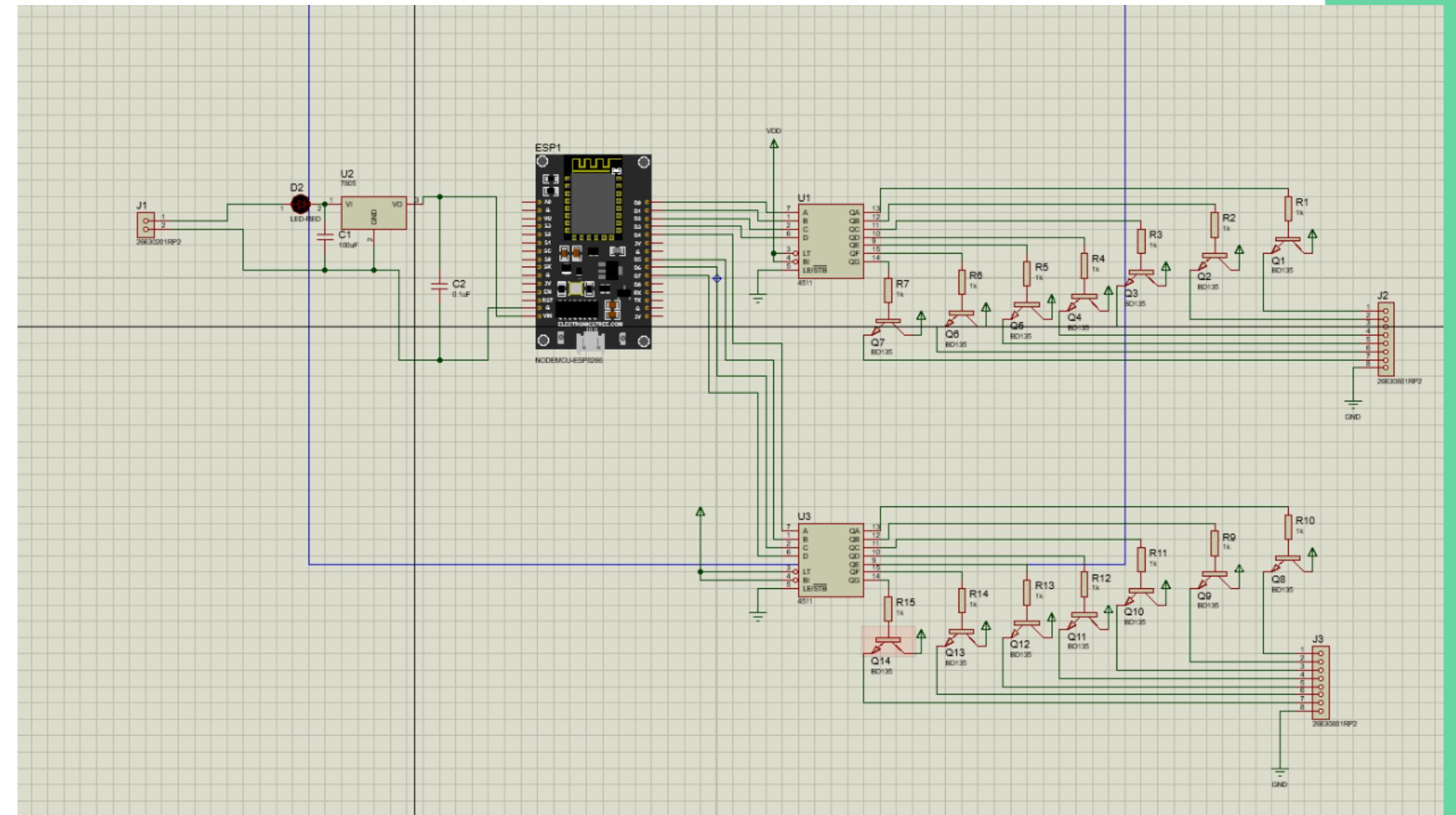










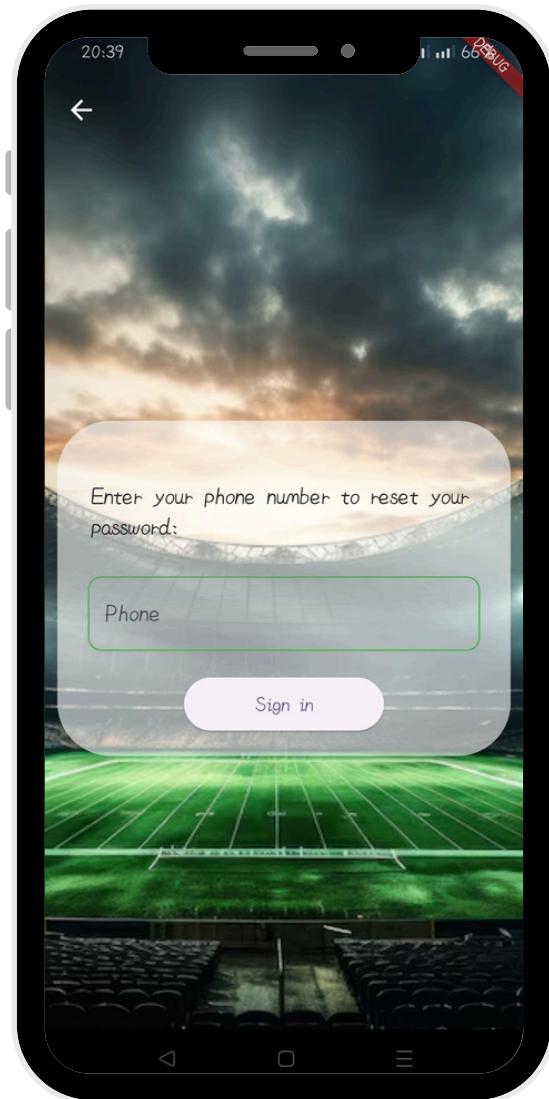
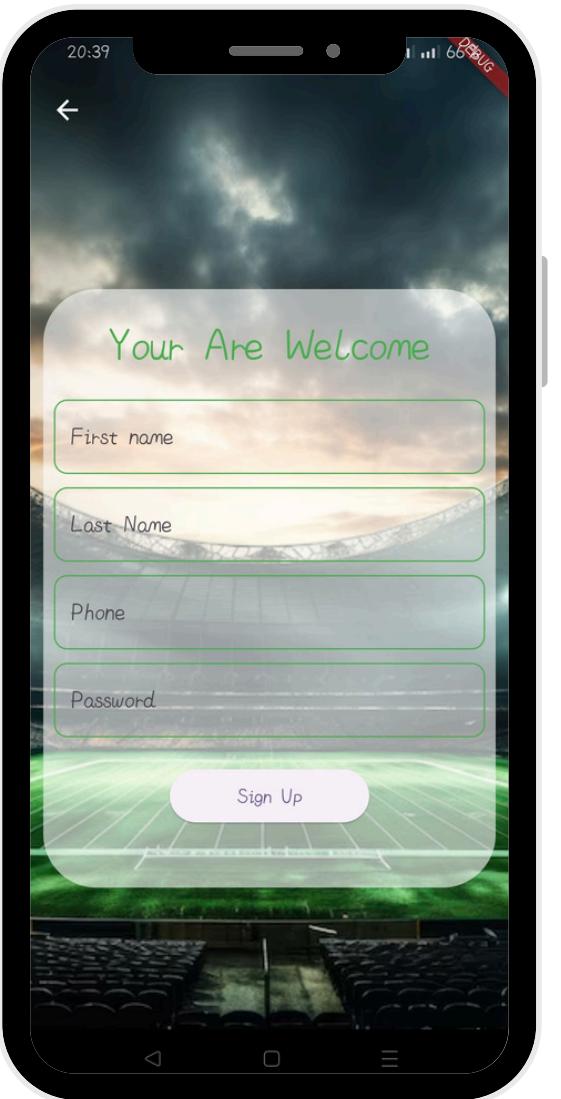
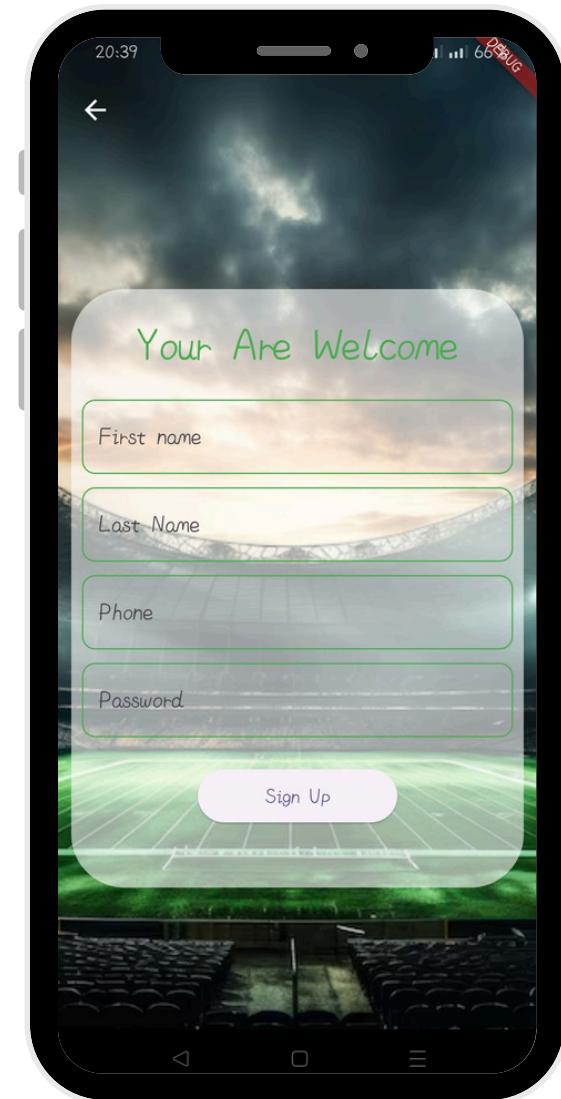
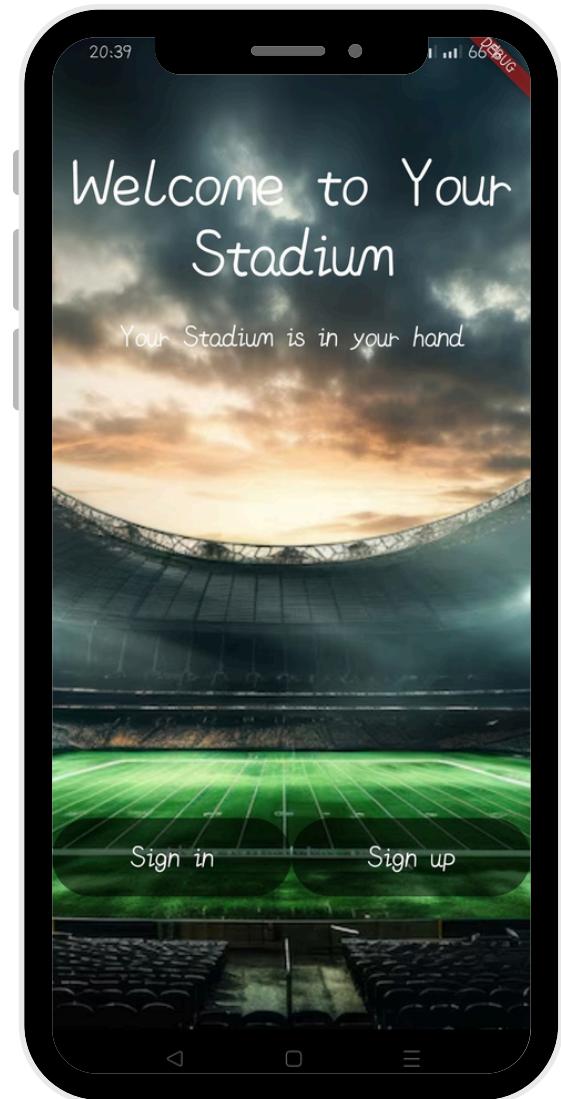


The IoT component in this project utilizes the ESP8266 microcontroller, which serves as the core of the system, interfacing with various other components to control and monitor the status of stadiums in different locales. The schematic provided in the image demonstrates how the ESP8266 is connected to multiple 7-segment display drivers (74LS47), which in turn drive displays or actuators like LEDs to provide visual feedback.

Key Features of the IoT Setup:

- **ESP8266 Microcontroller:** Acts as the central unit that processes inputs and controls outputs. It's connected to various display drivers to control the visual representation of game sessions in each stadium.
- **Display Drivers (74LS47):** These are responsible for driving the 7-segment displays that show the status of the game sessions, such as which group is playing, how much time is left, and which stadium is in use.
- **Transistors (BC135):** The transistors are used to control higher power devices that the ESP8266 alone cannot drive directly.
- **Power Regulation:** The circuit includes a power regulation section to ensure the ESP8266 and other components receive a stable voltage supply, using a voltage regulator (7805) and capacitors for filtering.

Mobile Application



Conclusion :

Au terme de ce stage, j'ai pu appliquer mes connaissances théoriques, développer de nouvelles compétences et mieux comprendre les enjeux du monde professionnel. Les missions confiées ont renforcé mes compétences techniques et confirmé mon choix de carrière. Je remercie toute l'équipe de Smart IOT pour leur encadrement. Cette expérience a été déterminante et m'a donné une vision plus claire des objectifs futurs, avec une motivation renouvelée pour poursuivre dans le domaine de l'IOT et dev web .

Encadrant de Stage

Prénom Nom: mr ilyes Elleuch

Titre/Position: encadrant et directeur

Entreprise: tn smart iot

Adresse e-mail professionnelle: contact@tn-smart-iot.com.tn

Signature :

