

# **CSS 418 – APPLICATION SECURITY**

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**Documentation of GROUP 6 Course Registration Web App**

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## **Group Members**

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## **Introduction**

A web application (web app) is an application program that is stored on a remote server and delivered over the internet through a browser interface. This comprehensive guide details how to navigate the Cybersecurity Course Registration web app. This secure platform allows you to register for courses offered at your level (100-500) within the program. It's also secure as it does not allow registration from non-cybersecurity students.

## **Tech Stack**

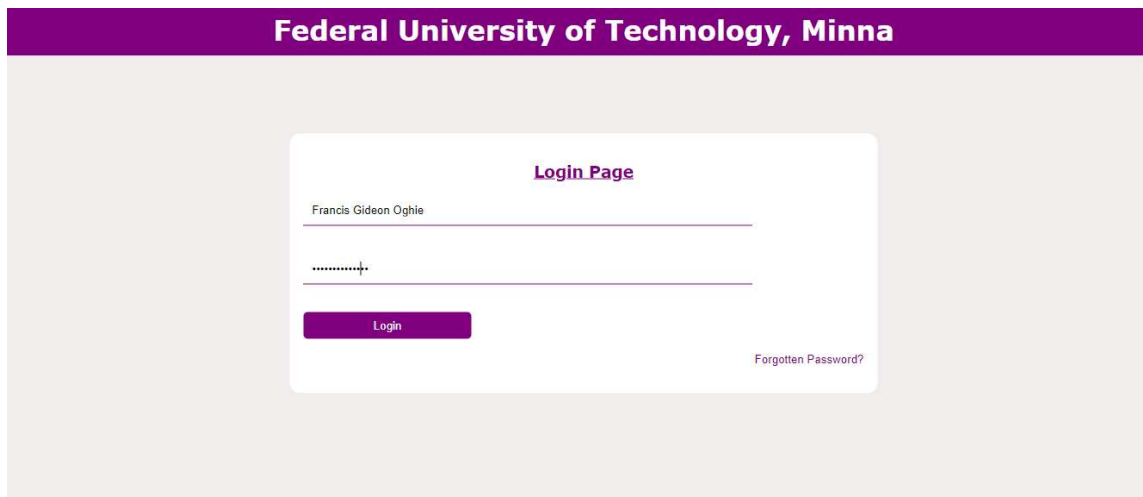
- HTML - Hypertext Markup Language
- CSS - Cascading Stylesheet
- JavaScript
- Firebase database
- Animation on Scroll(AOS) library

The site was hosted live on <https://www.courseregapp.netlify.app>

# FRONTEND

## Course Registration Process

**1. Access the Web App:** Using a web browser, navigate to the official university website and locate the link to the Cybersecurity Course Registration web app. Proceed to enter your full name, and password. Your password is your matric number. Click the "Login" button to submit your information and be redirected to the dashboard.



The screenshot shows a web application interface for the Federal University of Technology, Minna. At the top is a purple header bar with the text "Federal University of Technology, Minna" in white. Below the header is a light beige background. In the center is a white rounded rectangle representing the login form. Inside the form, the title "Login Page" is displayed in purple. Below the title is a text input field containing the name "Francis Gideon Oghie". Underneath the name field is a password input field with masked characters ".....". Below the password field is a purple button labeled "Login". To the right of the button is a link labeled "Forgotten Password?" in purple.

**2. Dashboard (before payment):** The dashboard contains relevant information about the candidate such as biodata, level, department and a dynamic payment status. It also contains information about the department as well as quick links to payment portal and Course registration.

Federal University of Technology, Minna

Student's Dashboard

**BIODATA**

Name: Francis Gideon Oghie

Matric Number: 2019/1/75578CS

Department: Cybersecurity Science

Payment status: NOT PAID

**QUICK LINKS**

[Payment Portal](#)

[Course Registration](#)

Tue Mar 26 2024 11:39:04 GMT+0100 (West Africa Standard Time)

**ABOUT THE DEPARTMENT**

Cybersecurity is all about protecting our stuff in the digital world. That includes things like computers, phones, tablets, and even the giant networks that connect them all together.

The Federal University of Technology, Minna (FUTMinna) Cybersecurity Team is dedicated to safeguarding our school's digital infrastructure and fostering a secure learning environment for students, faculty, and staff.

**3. Payment Gateway:** To make payment of registration fee, you will be directed to a secure payment gateway. Follow the on-screen instructions to complete your school fee payment. You have to select your current level and then the school fees amount allocated to that level will be displayed.

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Payment Portal

Please select your level and click "Make Payment" to proceed

Dashboard

Select Level:

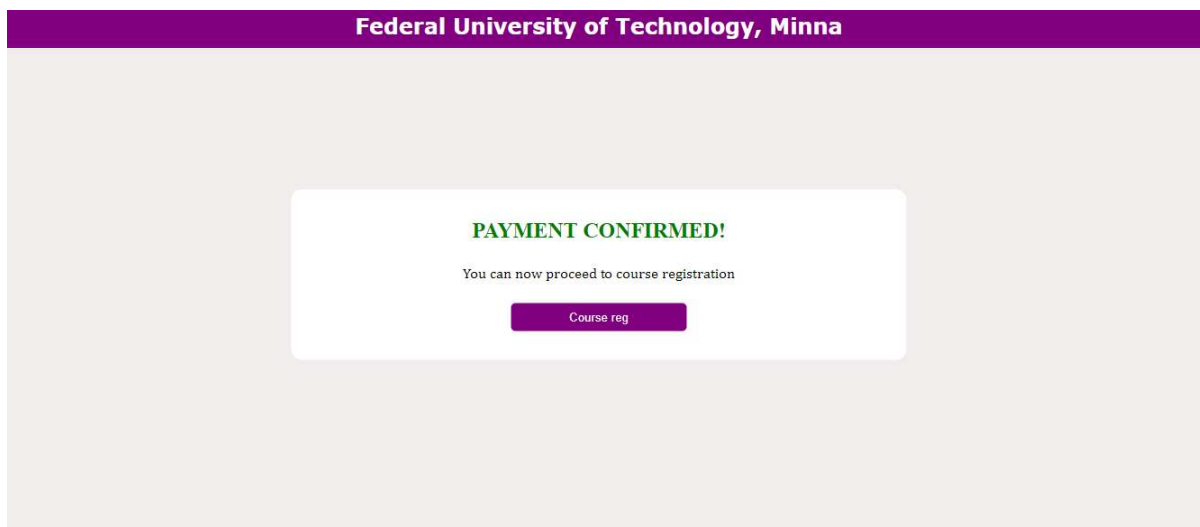
400 Level

Registration Fee:

N39900.00

Make Payment

**4. Payment Confirmation:** Once successful, a confirmation message will appear within the payment gateway. And you'll be directed to the course registration section.



## **5. Course Selection and Viewing**

1. **Available Courses:** Upon returning from the payment gateway, the web app will display a list of courses offered at your registered level (100-500).
2. **Course List:** This list will include details such as:
  - ○ Course Code
  - ○ Course Name
  - ○ Course Credit Unit
3. **Select Courses:** Click the checkboxes next to the courses you wish to register for. You can select multiple courses.
4. **Review Selection:** Click the "Confirm Registration" button to confirm your selections.

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Course Registration

Dashboard

Level 400 Courses - First Semester

☒ Advanced Algorithms (400AAL) - 3 credits  
☒ Cloud Computing (400CC) - 3 credits  
☒ Cybersecurity (400CS) - 3 credits  
☒ Artificial Intelligence (400AI) - 3 credits  
☒ Computer Vision (400CV) - 3 credits

Total Credits: 15

Second Semester

☒ Natural Language Processing (400NLP) - 3 credits  
☒ Big Data Analytics (400BDA) - 3 credits

☒ Artificial Intelligence (400AI) - 3 credits  
☒ Computer Vision (400CV) - 3 credits

Total Credits: 15

Second Semester

☒ Natural Language Processing (400NLP) - 3 credits  
☒ Big Data Analytics (400BDA) - 3 credits  
☒ Blockchain Technology (400BT) - 3 credits  
☒ Internet of Things (400IoT) - 3 credits  
☒ Robotics (400RB) - 3 credits

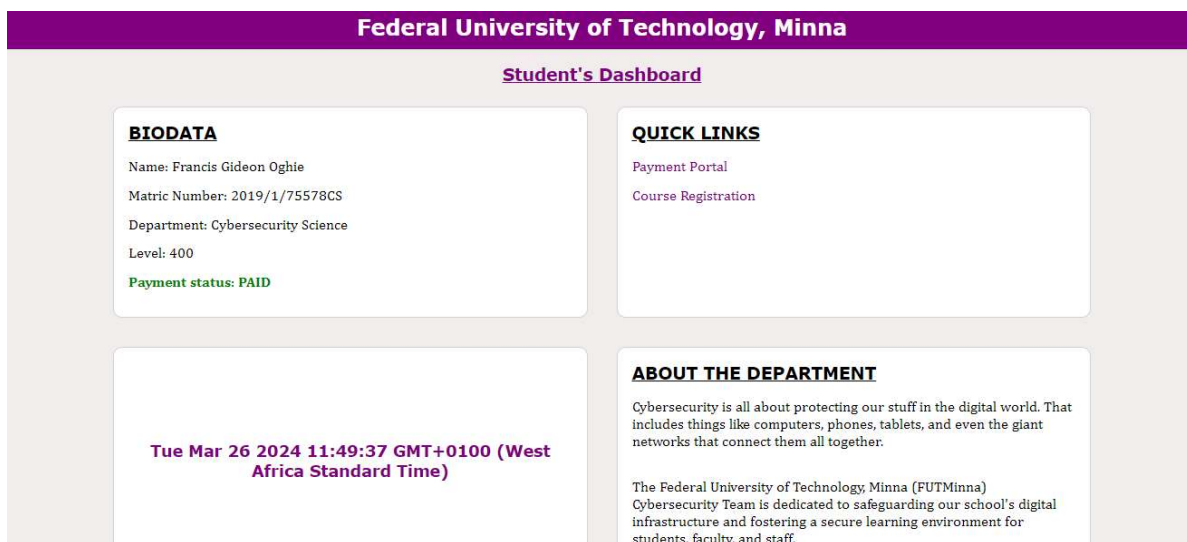
Total Credits: 15

Confirm Registration

**6. Registration Complete:** Here you'll be notified that course registration is successful. The courses you selected will also be displayed on the screen with a congratulatory message.



**7. Dashboard (after payment):** After payment, the level and payment status of the student is updated on the dashboard.



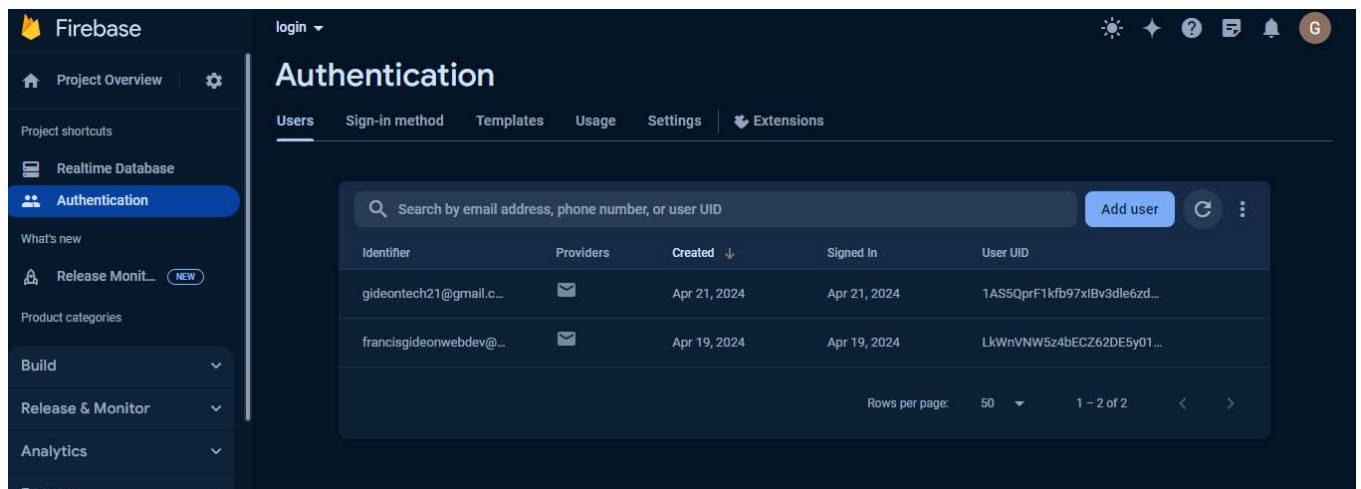




# BACKEND

The backend of our course registration web app enables authentication, and database storage as well as threat modeling and the necessary security policies to ensure the safety of user personal credentials

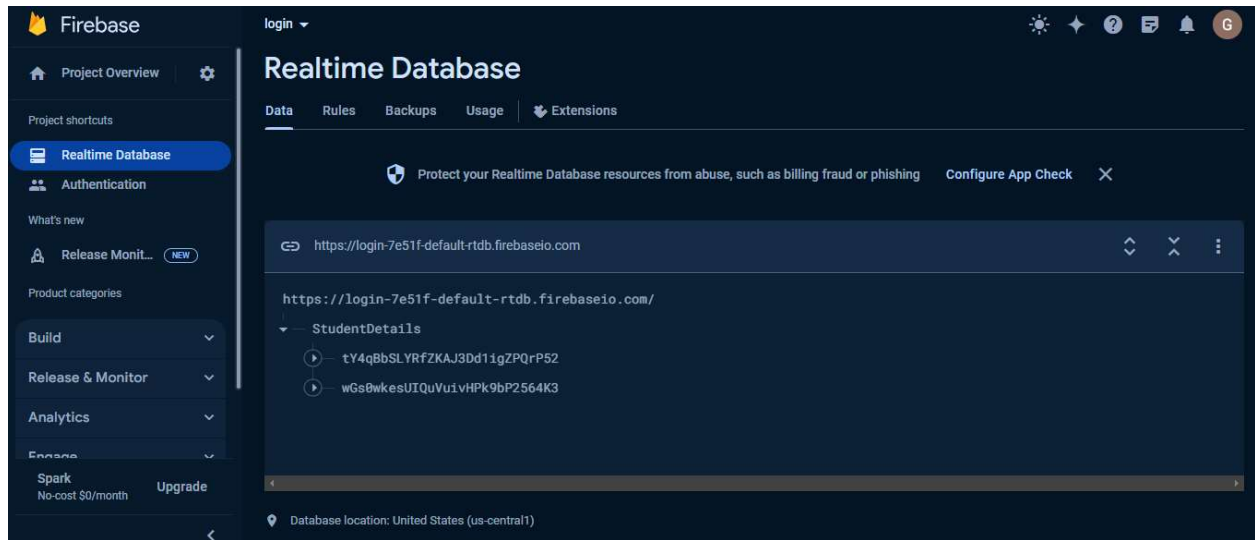
## Authentication



The database stores the user input in the backend authentication section to check the validity of a user before granting access to the dashboard.

## Database

Using the firebase realtime database feature, the user profile and input is stored on the database in real time. This realtime database ensures that changes are reflected immediately on the backend.



## **Threat Modeling**

We did a thorough threat model on potential threats and security attacks that could adversely affect our web application and one that stood out was the Session Hijacking attack. And to prevent this, we implemented a unique session id for every user session on the browser.

## **Security Policies**

We implemented the following security policies:

- User authentication before access to database
- Threat modeling to prevent various attacks such as session hijacking
- User input sanitization

- User password abstraction on the database in the case of a potential database breach
- Password hashing with SWYFT algorithm of 64-bits

