



Student Information

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Program: BUT GEII – Electrical Engineering and Industrial Computing

University: IUT de Soissons – Université de Picardie Jules Verne (UPJV)

Internship Details

Company: Altair School Support & Private Lessons

Internship Period: March 2025 – May 2025

Company Supervisor: Mr. Youness Chrifi

University Tutor: Arnaud Sivert

Date of Submission: June 2025

Report submitted in partial fulfillment of the requirements for the BUT GEII diploma.

Academic year 2024–2025



1.The Company

History and Mission

Altair School Support & Private Lessons is a French educational company based in Soissons. It was created to offer personalized support to students and their families. The company focuses on tutoring, academic mentoring, and digital educational tools to improve the connection between schools, students, and parents.

Its mission is to reduce school dropout rates, improve student motivation, and strengthen the link between families and teachers. The company operates both online and in-person, with a strong commitment to innovation in education.

Structure and Your Position

Altair is a small educational project led by Mr. Youness Chrifi. It works as both a personal initiative and a growing organization, combining the structure of a small business with the values of an association. The team includes a few volunteers, some part-time student workers, and one person in charge of human resources.

During my internship, I was the only person working on the technical part of the “Altair Parents” project. I worked both remotely and on-site, depending on the needs. My main role was to develop a new backend system using Django and PostgreSQL. I was very autonomous in my work, but Mr. Chrifi helped me when I was blocked and gave me technical advice when needed.

Products and Environment

The company manages different educational projects, including the one I joined: Altair Parents. This platform is designed to facilitate communication between parents and teachers, by offering features like student profiles, file sharing, notifications, and dashboards.

The company is part of a competitive environment, with other educational platforms like Klassroom or Educartable, but its added value lies in its close collaboration with local schools and families, and its custom-made tech solutions.



2. Your Assignments

During my internship, I was fully in charge of developing the backend of the “Altair Parents” platform. This web application was designed to help parents and teachers communicate more effectively, especially in the context of school support.

The technical part of the project required me to migrate from Firebase (used initially for authentication and database) to a more advanced stack based on Django and PostgreSQL. This transition was challenging, especially because I had never used Django authentication before. I learned how to set up a custom login system using JWT tokens and Django REST Framework (DRF).

I created around 10 API endpoints (GET, POST, PUT, DELETE), and used Postman to test them during development. I also built many Django models, including parents, children, messages, and educational files. These files (such as PDFs) were uploaded and managed directly in pgAdmin.

The entire backend was built and tested by myself. I did not collaborate with frontend developers, but I kept my code organized and ensured that all the routes worked properly. I used GitHub to upload my code, although I didn’t use branches or commit frequently. The most complex part of the internship was learning how to structure the database relations and secure the backend properly.



3. Analysis

Skills Developed

This internship helped me improve many technical skills. I learned how to build and organize a backend system using Django REST Framework and PostgreSQL, two technologies that I had never used before. I also became more confident using Postman for API testing, and I now understand how to manage authentication with JWT tokens.

On the soft skills side, I improved my autonomy and problem-solving abilities. Since I was working alone most of the time, I had to search for solutions on my own and make technical decisions. This gave me more confidence in my programming skills and my ability to learn by myself.

Achievements

My biggest achievement was to successfully replace the old Firebase backend with a new, functional Django API connected to a PostgreSQL database. I managed to build and test the main features: user accounts, child profiles, messages, and file uploads. I delivered a clean backend that can now be connected to the frontend to complete the platform.

Difficulties

The most difficult part of the internship was learning Django authentication. At the beginning, it was hard to understand how to create tokens, protect the routes, and manage user sessions. I also found it hard to structure the database and organize the models correctly. But step by step, and with the help of my supervisor, I was able to overcome these problems and complete the backend.



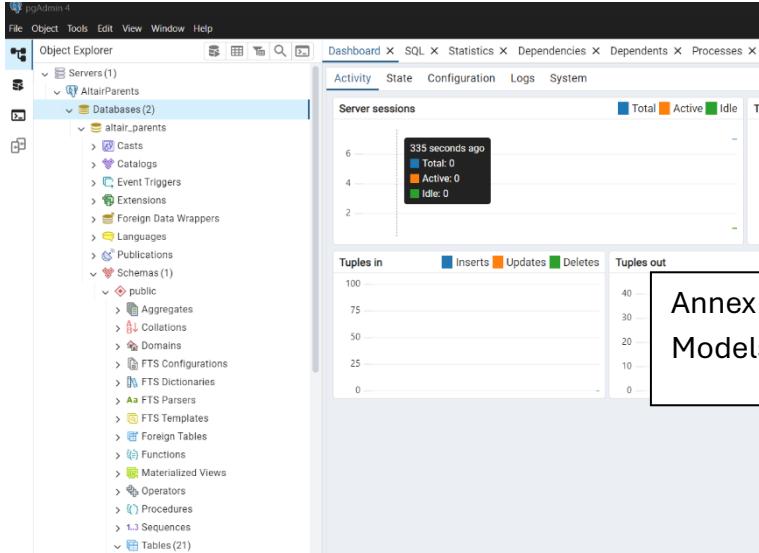
4. Conclusion

This internship was a great opportunity to apply my programming knowledge in a real project. I discovered new tools such as Django, PostgreSQL, and JWT authentication, and I learned how to work more independently. One of the most interesting parts was exploring user authentication — we first used Firebase, then moved to a custom system with Django and PostgreSQL.

It also confirmed my interest in web development and backend programming, especially in building APIs and managing data. However, I also enjoyed working on frontend elements, where I felt more comfortable at times.

Thanks to this experience, I now have a clearer vision for my future. I want to continue my studies in computer science, and I am planning to apply for a master's degree in networks, supervision systems, or DevOps. This internship was a first step in building my professional action plan, and it motivated me to find an alternance to gain more experience.

If I had to give one piece of advice to a future intern in this field, it would be: don't be afraid to work independently and take initiative, but also prepare by learning the basics of Django before starting.

 Annexes

Annex 1 – pgAdmin: Database Models

```
core > models.py
1  # core/models.py
2
3  from django.db import models
4  from django.contrib.auth.models import User
5
6  class Parent(models.Model):
7      user = models.OneToOneField(User, on_delete=models.CASCADE)
8      nom = models.CharField(max_length=100)
9      prenom = models.CharField(max_length=100)
10     email = models.EmailField()
11
12    def __str__(self):
13        return f"{self.nom} {self.prenom}"
14
15 class Enfant(models.Model):
16     parent = models.ForeignKey(Parent, on_delete=models.CASCADE, related_name='enfants')
17     nom = models.CharField(max_length=100)
18     prenom = models.CharField(max_length=100)
19     niveau = models.CharField(max_length=50)
20
21    def __str__(self):
22        return f"{self.prenom} {self.nom}"
```

Annex 2 – Django Model Example

Feature	Firebase	Django + PostgreSQL
Authentication	Built-in (easy to set up)	Custom (JWT, more flexible but harder)
Database	NoSQL (document-based)	SQL (relational, structured)
Backend Logic	Mostly on client side or cloud functions	Full control in Django views and logic
Learning Curve	Easier for beginners	Steeper, especially with auth and DB setup
Cost	Free for small use (limited quotas)	Free locally, server cost if deployed online
Flexibility	Limited by Firebase structure	Full flexibility and customization
Deployment	Simple with Firebase Hosting	Requires own hosting solution (e.g. Heroku)
Data Security	Managed by Google	Managed by developer (more control, more risk)

Annex 3 – Migration from Firebase to Django/PostgreSQL: Pros, Cons, and Key Differences

USERNAME	EMAIL ADDRESS	FIRST NAME	LAST NAME	STAFF STATUS
admin	admin@gmail.com	-	-	✓
admin2	-	-	-	✗
ADMIN23	-	-	-	✗
jean.dupont@example.com	jean.dupont@example.com	-	-	✗
patrick	-	-	-	✗
seb@gmail.com	-	-	-	✗
sebastien	sebastien@gmail.com	-	-	✗
sebastien@gmail.com	sebastien@gmail.com	-	-	✗
test6	-	-	-	✗
userf	admin@gmail.com	-	-	✓

Annex 4- Django admin interface, interface for managing user passwords and adding records and parents

