University of Sfax

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International Institute of Technology

Tunisia

Computer Engineering Department

Summer Internship Report

Realized by:

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Excel to MySQL Employees Data Migration
Using Spring Boot

Host Company:

Primatec Engineering

ACADEMIC YEAR:2022/2023

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GENERAL INTRODUCTION

In an age defined by the rapid evolution of technology and data-driven decision-making, the effective management and utilization of data have become paramount for companies across the globe. Data migration, a process that involves transferring data from one system to another, is a critical component in this endeavor. This report delves into a significant data migration project undertaken during the summer internship, focusing on the migration of employee data from Excel spreadsheets to a MySQL database, a task accomplished through the utilization of Spring Boot, a powerful Java-based framework.

In today's highly competitive business landscape, companies constantly seek innovative ways to enhance efficiency and streamline their operations. A fundamental aspect of achieving this is maintaining accurate and organized data. For many enterprises, employee data is a cornerstone of their operations, influencing decision-making, resource allocation, and workforce management. Migrating this data from unstructured Excel sheets to a robust database system like MySQL not only improves data integrity but also opens up opportunities for advanced analytics, reporting, and automation.

This internship project, undertaken with the aim of optimizing data management, required a comprehensive approach. Spring Boot, renowned for its simplicity, speed, and ability to streamline the development of Java applications, was chosen as the core technology stack for this endeavor. Its versatility and ease of integration with various data sources make it an ideal choice for data migration projects of this nature.

My report is structured into 2 chapters which reflect the approach I took in developing this report.

The first chapter "Presentation of the company", in which I will describe the company.

The second chapter is devoted to the description of the subject as well as the description of tasks.

CHAPTER I
PRESENTATION OF THE COMPANY

Since 2010, Primatec Engineering has become a prominent offshore outsourcing company, specialized in the test and development of electronic controllers. Headquartered in Sfax, Tunisia, it consists of the businesses of customized, innovative and cost-efficient IT solutions to the automotive industry. With most of its staff are an ISTQB certified, Primatec Engineering is helping to meet the world's well-known automotive companies growing demand for software and hardware testing as well as validation in economically, innovative and efficient responsible ways. Thanks to its partnership with Technica Engineering GmbH in Munich, they have established excellent relationships with German and international automotive companies like BMW, MAN, Lear Corporation, Valeo, etc.

Figure 1 : Company Headquarters

Primatec is compliant with **European GDPR regulations** which came into effect in May 2018. These regulations stipulate how companies and their employees must ensure that personal data has accurate protection measures in place when used by companies and other organizations. All Primatec employees, suppliers and clients are required to document all processes and to protect personal data when handling and sharing such data.

Figure 2 : Primatec's Team

CHAPTER II
1.DESCRIPTION OF THE SUBJECT

The focus of this internship project was to facilitate seamless data interaction and management for employee information within the company.

The company had recognized the limitations of their existing Excel-based employee data management system and sought to modernize and optimize the process. As part of this initiative, two critical functions were developed: retrieving employee data efficiently and adding new employee data seamlessly to ensure the accuracy and completeness of the database.

These functions formed the cornerstone of the Excel to MySQL Employees Data Migration project, which leveraged Spring Boot to enhance data quality and accessibility.

Figure 3 : MySQL Logo

Figure 4 : Excel Logo

Figure 5 : Spring Boot Logo

Figure 6 : Intellij Idea Logo

2.DESCRIPTION OF TASKS

Let's outline the tasks associated with these specific functionalities while still considering the broader project context:

Function: Retrieving Employee Data

1.Requirements Gathering:

Collaborating with stakeholders to understand the specific requirements for retrieving employee data, including the data fields and search criteria.

2. Development:

Developing the necessary logic and endpoints within the Spring Boot application to retrieve employee data based on specified criteria.

3.Testing and Optimization:

Conducting global testing to verify the accuracy and performance of the data retrieval function using Postman.

Optimizing the function for efficient and fast data retrieval, particularly when dealing with large datasets.
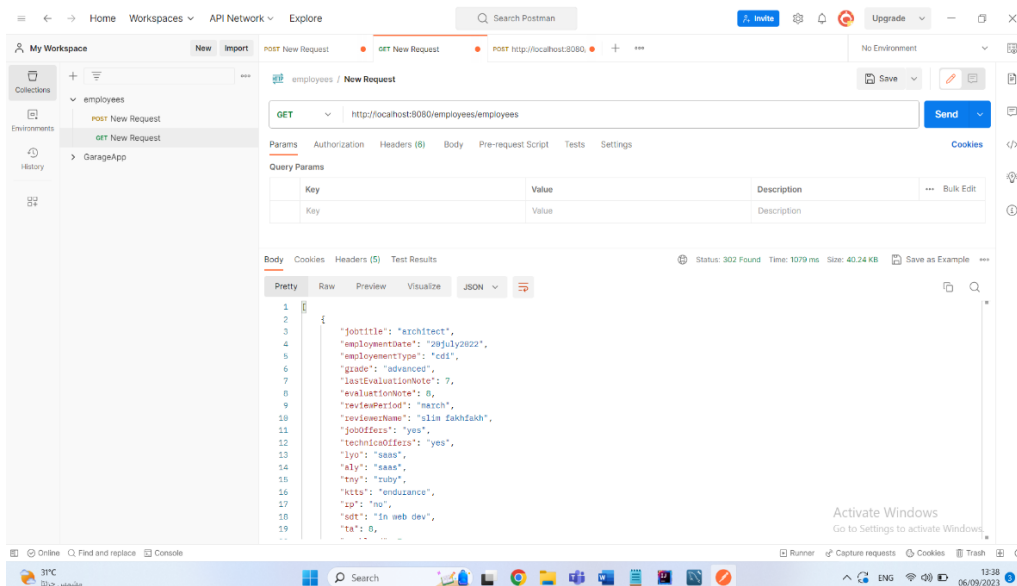
Figure 7 : Testing Getting Data With Postman

Function: Adding Employee Data

1.Requirements Definition:

Collaborating with HR to define the requirements for adding new employee data to the system.

Determining the data fields and validation rules for ensuring data integrity.

2.Data Integration and Database Interaction:

Developing the logic to interact with the MySQL database to add new employee records from excel sheets.

Ensuring that the added data conforms to the database schema and integrity constraints.

3.Testing and Quality Assurance:

Thoroughly testing the data addition function to identify and rectify any issues or discrepancies using Postman.

Ensuring that the function performs efficiently and reliably.

4.Documentation and User Training:

Creating comprehensive documentation and user guidelines for adding employee data.

Providing training to relevant staff members responsible for data entry.

Figure 8 : Filling Employees Data By HR Team

Figure 9 : Employees Data in Excel

Figure 10 : Excel Upload Service 1

Figure 11 : Excel Upload Service 2

CONCLUSION

The Excel to MySQL Employees Data Migration project, undertaken during the summer internship, represents a significant milestone in the company's journey towards modernizing and optimizing its data management processes. This project was initiated to address the challenges associated with maintaining employee data in Excel spreadsheets, and it leveraged the power of Spring Boot to transform data management practices.

As we conclude this report, it is worth noting that the benefits of this Excel to MySQL migration project extend beyond the technical improvements. It exemplifies the company's commitment to embracing technology as a means to enhance its operations, stay competitive, and better serve its employees. This project serves as a testament to the transformative power of technology and the capacity of individuals to drive change within their company.

Looking ahead, it is essential to maintain vigilance in ensuring the ongoing integrity of employee data and to continue leveraging the capabilities of Spring Boot and other modern technologies to adapt to future data management challenges. This project serves as a foundation upon which future data-driven endeavors can be built, and it underscores the importance of agile and innovative approaches to data management.

In one word, this internship has been an excellent and rewarding experience. I can conclude that there have been a lot I've learnt from my work at Primatec. Needless to say, the technical aspects of the work I've done are not flawless and could be improved provided enough time. As someone with no prior experience with Spring Boot whatsoever I believe my time spent in research and discovering it was well worth it. Two main things that I've learned : the importance of time-management skills and self-motivation.
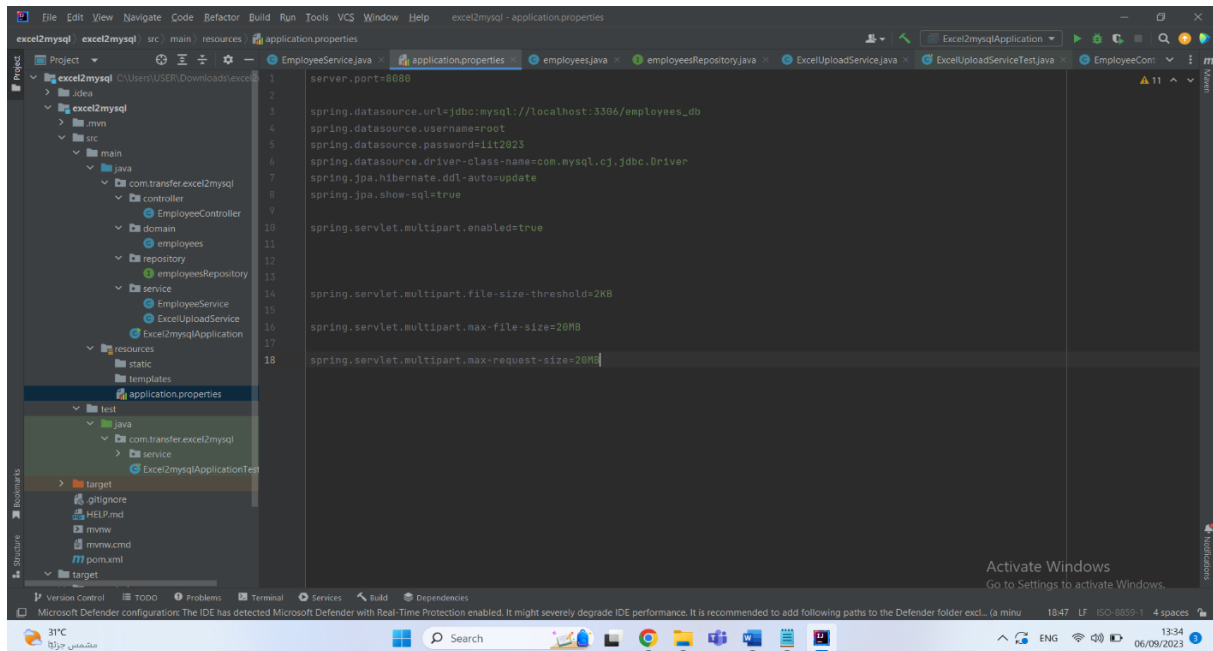
APPENDICES

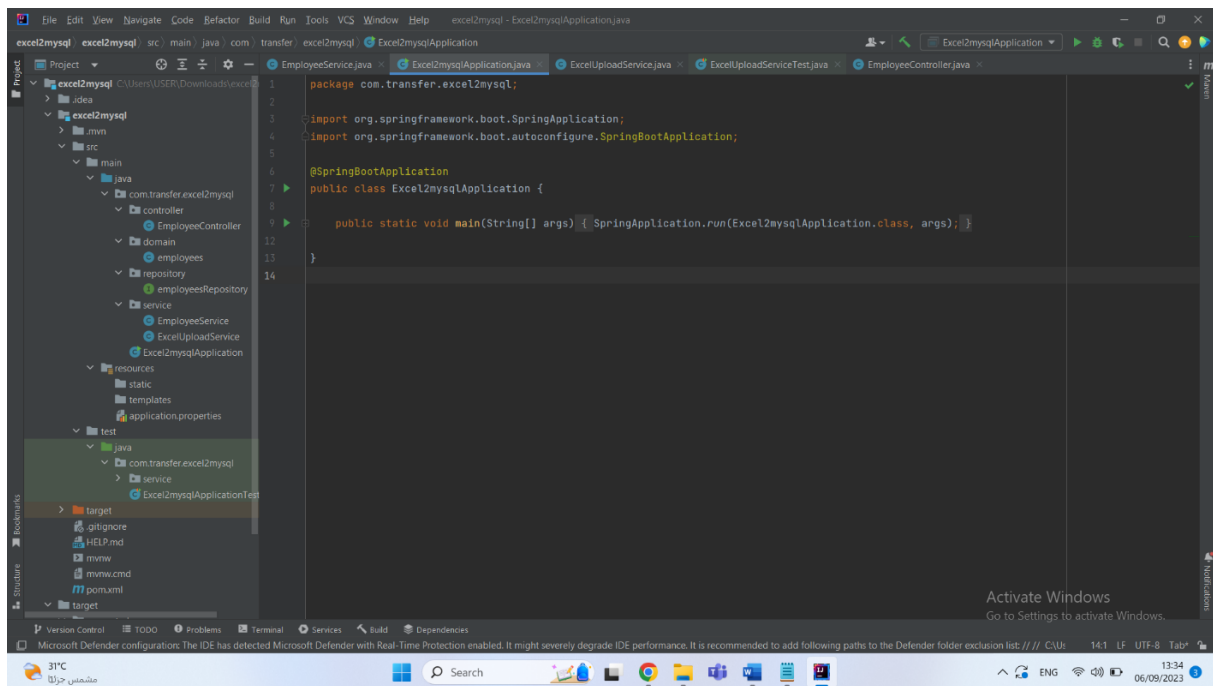**Figure 12 : Application Properties In Spring Boot**

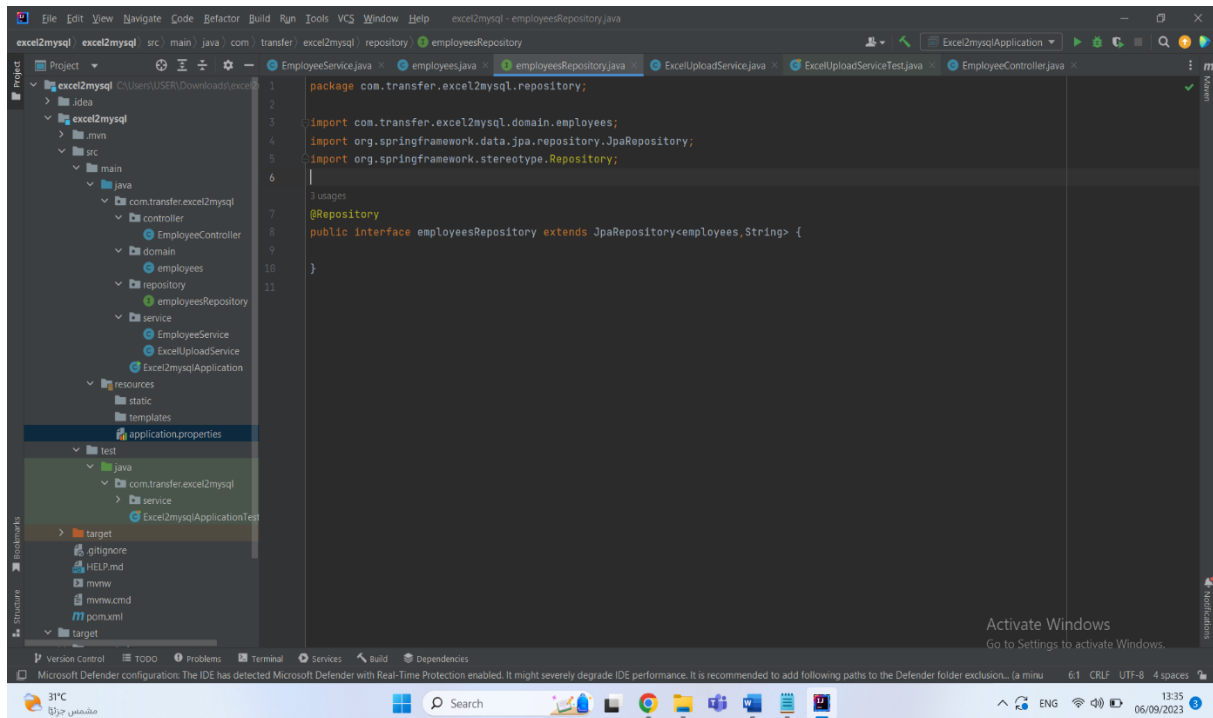**Figure 13 : The application In The SpringBoot's Project**
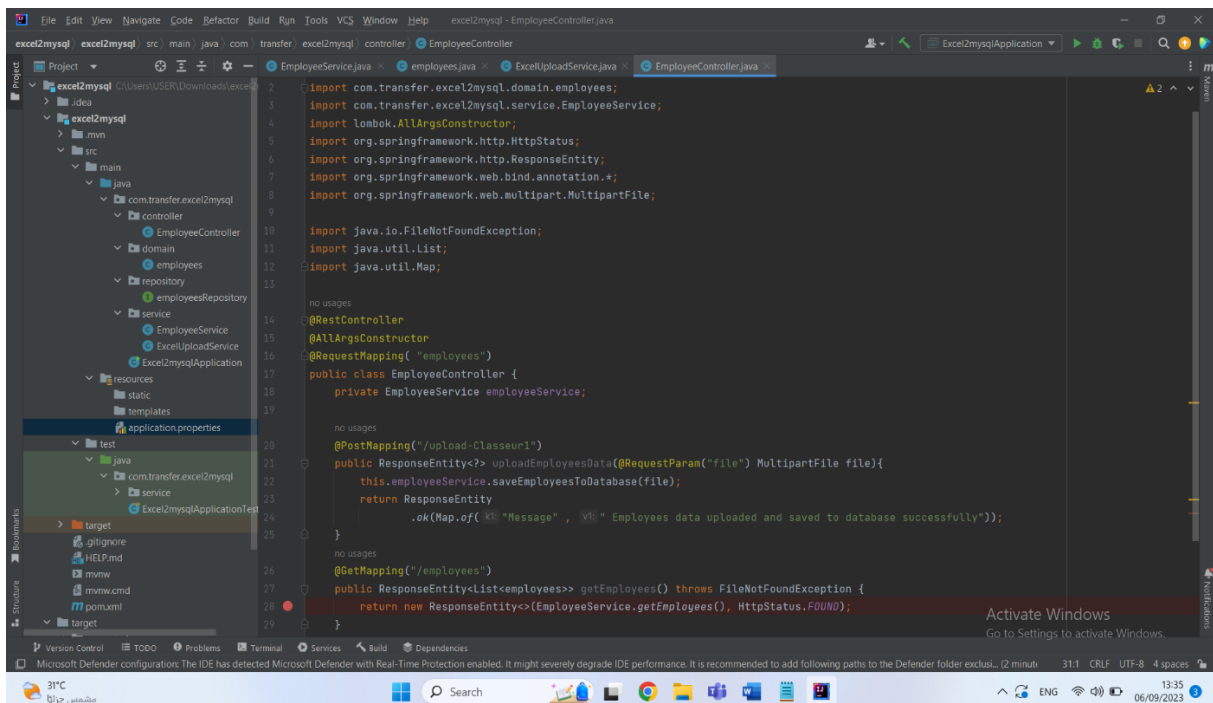
Figure 14 : Repository Of The Spring Boot Project

Figure 15 : EmployeeController

Figure 16 : Employee Service

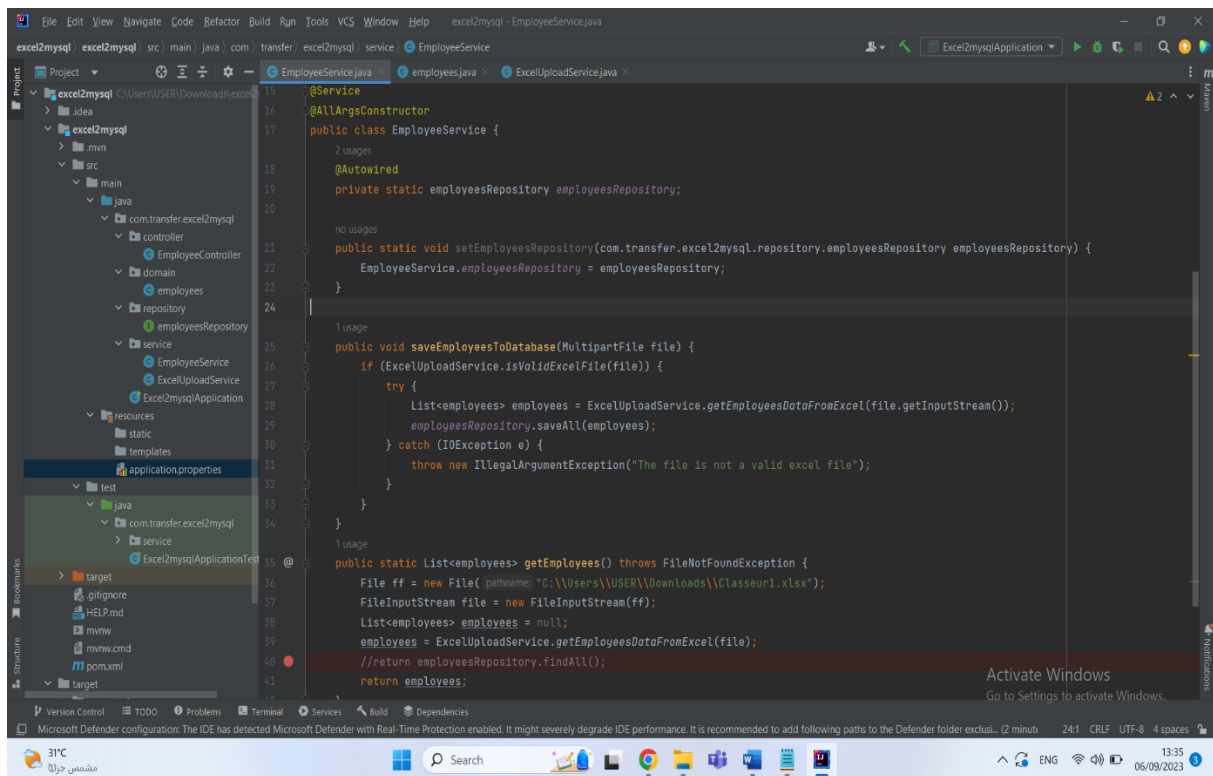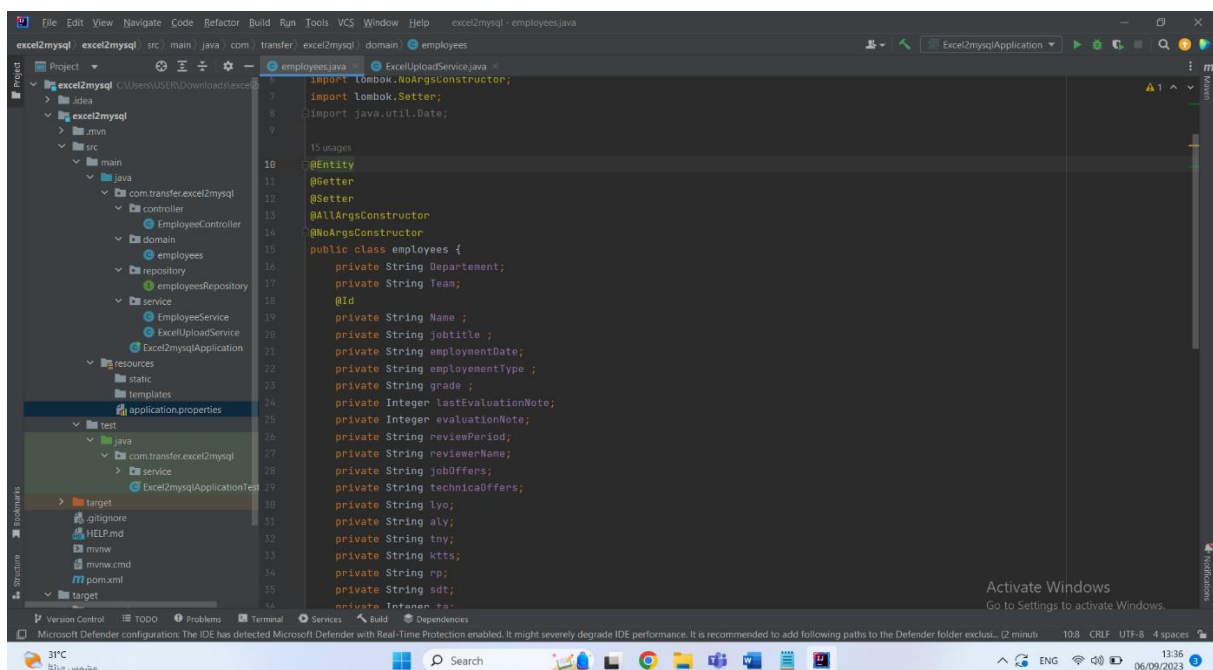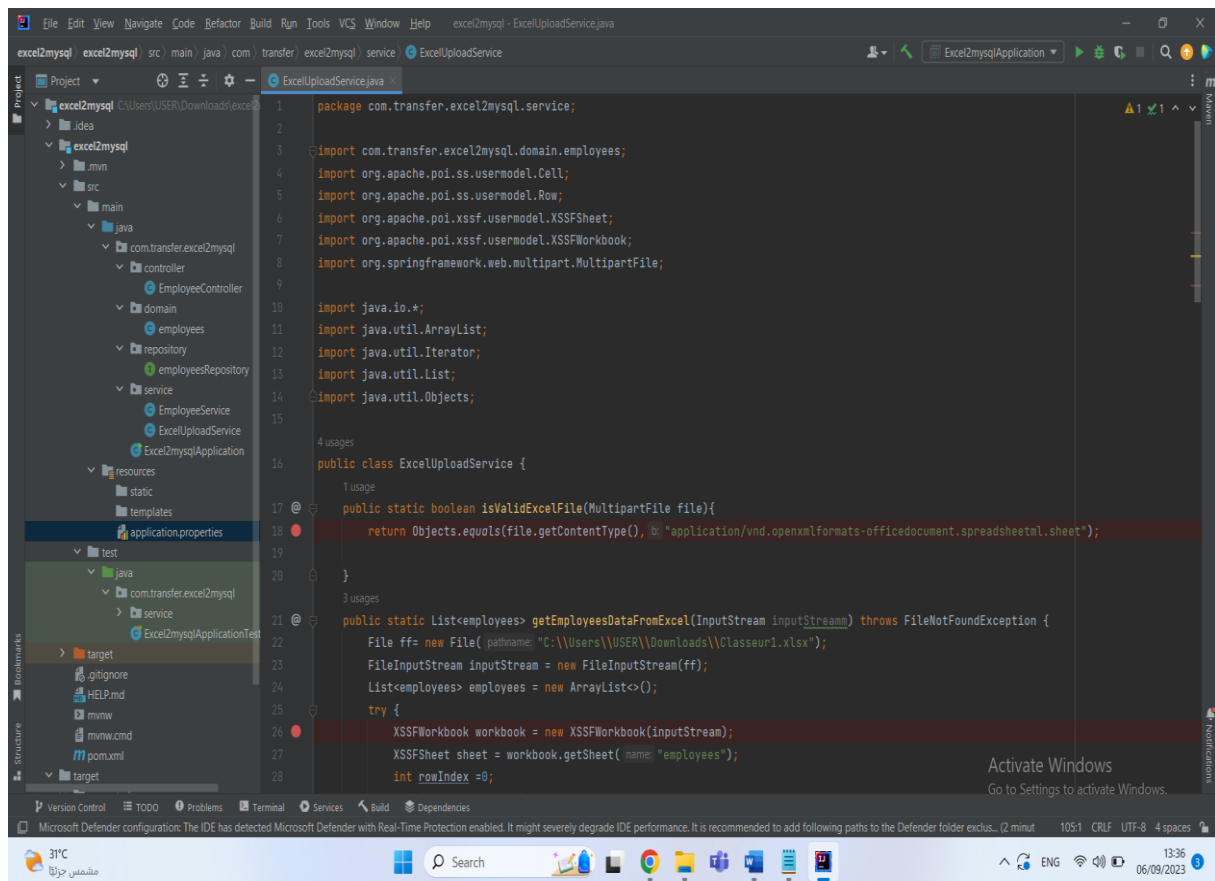**Figure 17 : Employee Variables**

Figure 18 : ExcelUploadService