Module : JAVA – Programmation Orientée Objet.
Encadré par : **Pr. Aniss MOUMEN.**
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Semestre 7 Session Automne.
ENSA – Kénitra.

PROJECT REPORT.

Monitoring the state of production within a farm is a very tiring affair for farmers; in fact, the latter encounter difficulties in monitoring the state of their animals (weight, age, medical condition, etc.). as well as the follow-up of the state of production of these agricultural lands, and without forgetting the environmental problem by agriculture, such as the mismanagement of water and especially in this period which encounters a dangerous fall in the levels of water. For this, we as engineering students in the Electrical Engineering sector, Embedded System & Electronics Option, we proposed our mini-project which aims to carry out a prototyping linked to a **Smart-Farm** desktop application, using an Arduino programmable board with sensors for temperature, soil humidity, humidity, pumps, fans, etc. This application will allow the farmer to monitor his farm in an intelligent and well-organized way. It will allow farmers to monitor the state of their agricultural land in an autonomous and intelligent way, our application will allow the production of land and animals to be monitored and to propose corrective actions such as temperature regulation and d humidity to increase the production of the land, also the application has a control part of temperature & Humidity of the stables of the animals automatically according to the evolution of the latter.

Our application will be available on all operating systems (Windows, MacOs, Linux…), developed with the JAVA programming language. This desktop application allows you to record data from sensors, namely temperature, humidity, soil humidity sensors, etc. and save them in a database (MySQL in our case), the application will even allow you to draw graphs which will present the variations of these quantities

over time and compare them with nominal quantities already given to propose corrective actions in the event of an anomaly.

Smart-Farm allows farmers to first connect to the application (Log in), then consult all the data from the sensors and control irrigation, temperature, etc. If necessary, the application displays that login or password is incorrect. Once the user connects to the **Smart-Farm** application, the farmer can choose between several quantities to display in real time.

The **Smart-Farm** application is made up of 5 windows each with a predefined function, display of temperature & humidity of the ambient air of agricultural land, display of soil

humidity for intelligent control of irrigation of agricultural land, display of statics of production of agricultural land, production of animals, etc.

1. **Login window:** This interface asks you to connect to the application, by entering the login and the Password, and if these are incorrect a message appears "the login or the Password is incorrect", and at the bottom of this window, the application offers you a choice to recover your Password in case you forget it.

2. **Menu Window:** Once the information is correct, the user will log in, an icon will appear that contains the logged in user's information and a Menu will be displayed that contains three icons: Farmland, Animal Farm and an option to view Production Statistics. Each role of these icons will be explained in detail later.

3. **Agricultural land window:** After clicking on the Land icon, the system will display graphs. A graph that displays the evolution of the temperature, humidity of agricultural land in real time using a DHT11 sensor, another graph represents soil humidity, at the bottom of this each window there is a button from which you can control a pump for watering agricultural land. See all edits made by all users.

4. **Animal farm window:** In this window, the user can follow the temperature variation within the farm in the event of a rise in temperature, we have a cooling system using fans, the latter is automatically controlled by our application. . So in this window you can control the amount of feed for the animals. All this with the aim of producing good living conditions for their animals such as cows, sheep, etc.

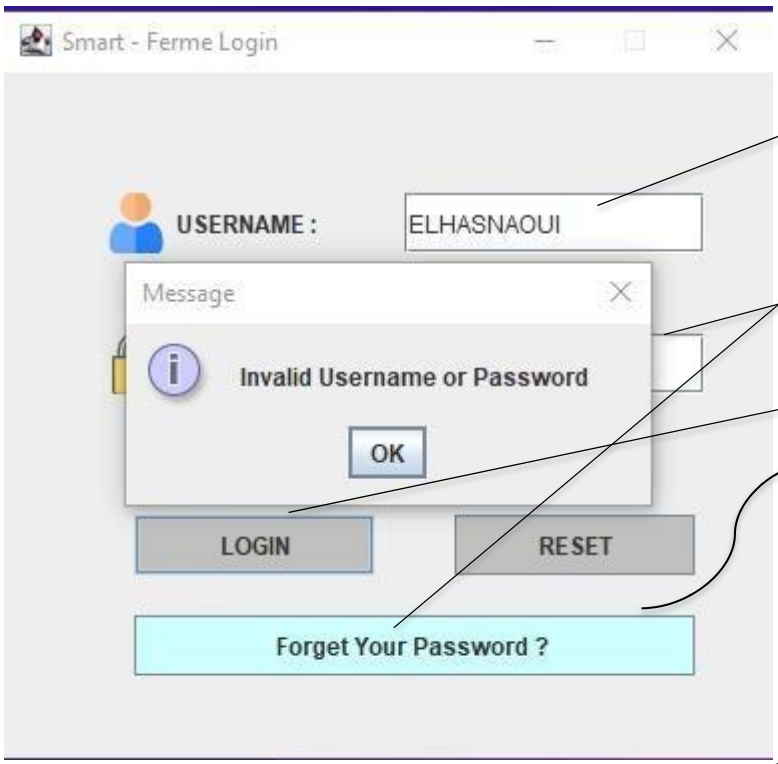
5. **Statistical window:** In this window, the user can have statistics each month on temperature variations, humidity, quantity of food used, etc. See all the modifications made by all the other contributors to the application.

✓ **Realized by:**

- BILAL ELHASNAOUI.
- ABDELOUAHAD FHAIL.
- MOUAD EL ANNAB.

✓ **Under the supervision**:

- Professor **ANISS MOUMEN.**

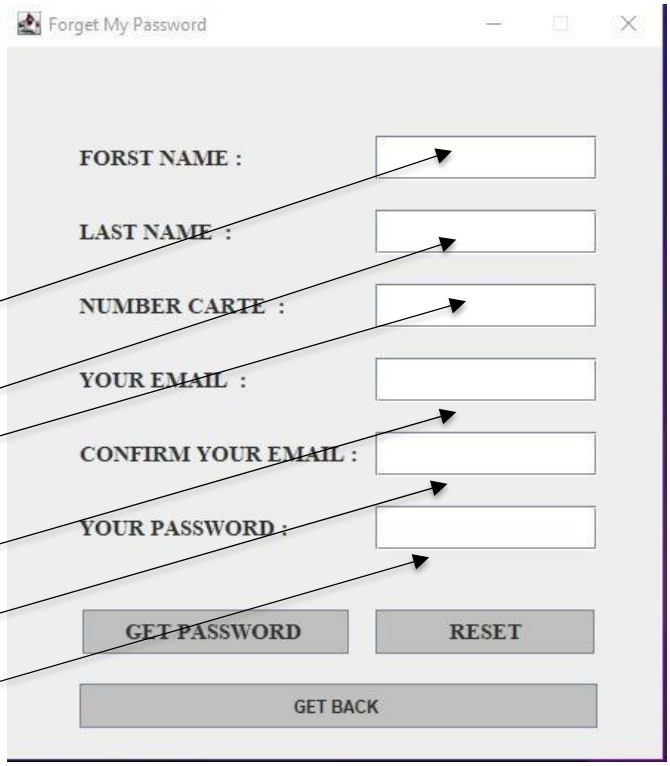


Here the user Enters his Username.

In case the user forgets his Password.

Here you enter your password.

The login Button.



The user enters his first Name.

The user enters his last Name.

The user enters his identity.

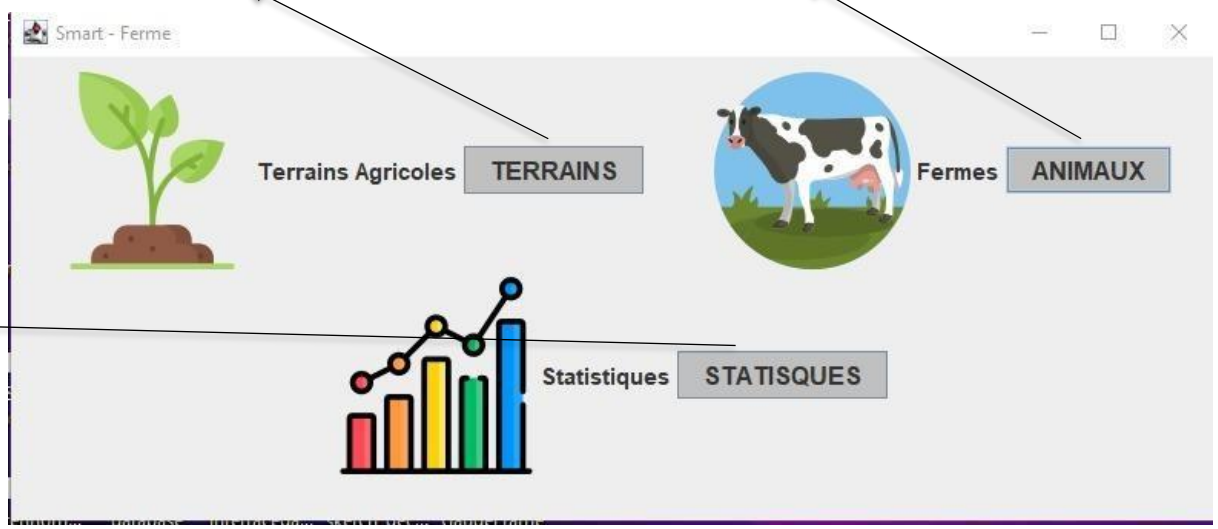
The user enters his Email.

The user Confirms his email.

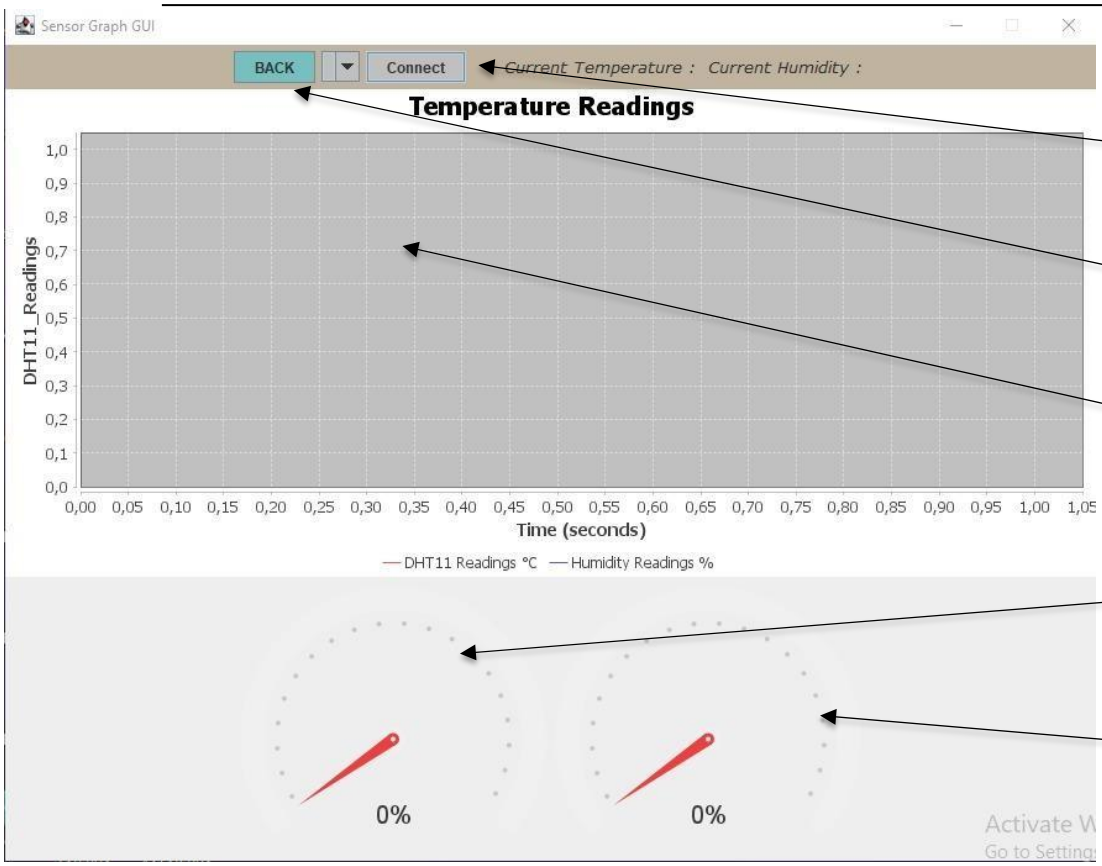
In case of all the information are true The password appears here.

To consult the terrains data. And weather.

To consult the animals' data and weather.



To consult the statistics concerning the Temperature, Humidity and soil humidity and propose some corrective actions.



To connect to the Arduino Microcontroller.

To get Back to the Menu frame.

To Visualize the Temperature and humidity in reel time.

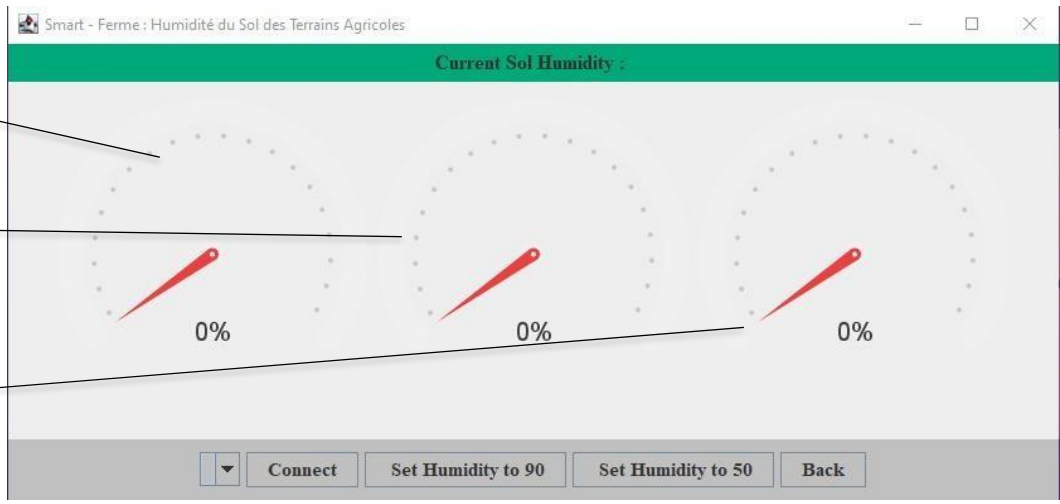
To Visualize the current temperature.

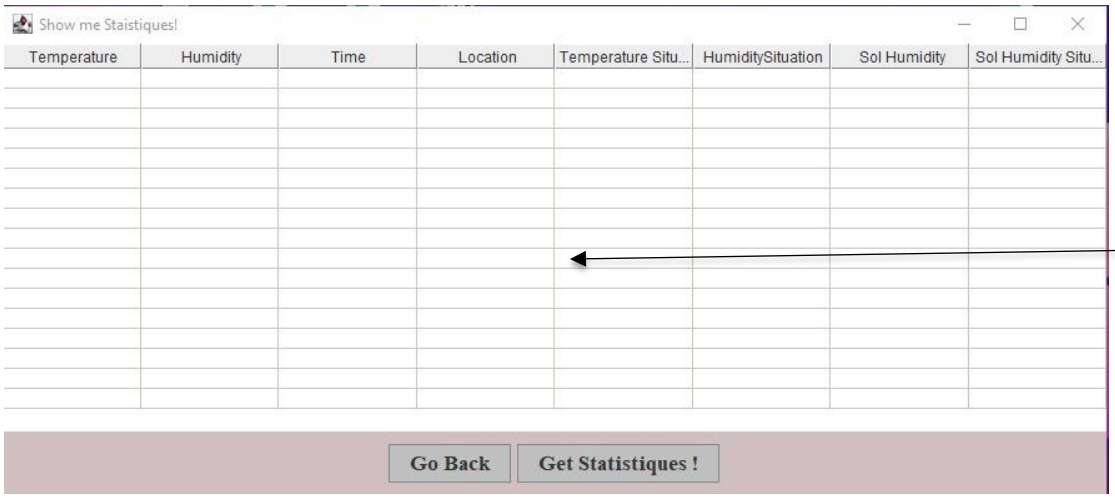
To Visualize the current Humidity.

To Visualize the current Temperature of the Terrains.

To Visualize the current Humidity of the Terrains.

To Visualize the current Soil Humidity of the Terrains.





To get the latest statistics of the temperature, Humidity and soil Humidity of the terrains.