2025

BRICS SKILLS COMPETITION

(BRICS+ FUTURE SKILLS & TECH CHALLENGE)

Intelligent Agriculture

BRICS-FS-32

Test Project

(International Finals-Offline)

August, 2025

Catalogue

Module A: Project Design (30 points)

Note: Complete the required design documents as specified in the task description. All result files from this module must be saved to the "D:\Submission Materials\Module A" folder on the server computer, and then copied to the root directory of the competition's unified USB drive. After the competition concludes, this USB drive will serve as the official submission for the competition results.

Task description

A vegetable cultivation base requires renovation (scenario: a 50-mu greenhouse complex primarily cultivating tomatoes and cucumbers). To address critical challenges including excessive water waste (30% above industry standards per mu) and delayed environmental regulation (increased disease incidence due to 15℃ temperature fluctuations between day and night), participants must develop a systematic renovation plan achieving "over 25% water conservation, 30% reduction in disease occurrence rates, and 40% decrease in labor costs".

For the above typical planting base, a complete engineering project scheme covering the intelligent irrigation system and greenhouse environmental control system is designed.

Mission requirements

1. Use WPS software to complete the "project design scheme-XX.docx".
2. Use WPS software to complete the "Equipment selection table-XX.xlsx".
3. Use Visio to complete the "System Architecture diagram-xx.vsd".
4. Use Visio to complete the "software prototype-xx.vsd".

Module B: Cloud platform environment construction and deployment (20 points)

Note: Complete the required design documents as specified in the task description. All result files from this module must be saved to the "D:\Submission Materials\Module A" folder on the server computer, and then copied to the root directory of the competition's unified USB drive. After the competition concludes, this USB drive will serve as the official submission for the competition results.

Task description

According to the provided files, in Ubuntu, set up the environment required to run the cloud platform and deploy software.

Mission requirements

1. Log in to the Ubuntu system and set the network IP address to 172.18.10.88.

2. Complete the configuration of JDK and environment variables, Mysql installation and configuration, Tomcat installation and configuration, nginx installation and configuration, platform access IP address and port setting, and start the cloud platform.

3. Use the terminal to query the IP address, and save the screenshot as B-1.jpg.

4. Use the terminal to query the JDK version, and save the screenshot as B-2.jpg.

5. Use the terminal to query the Mysql version information, and save the screenshot as B-3.jpg.

6. Start Tomcat with the terminal command and save the screenshot as B-4.jpg.

7. Open Navicat Premium, create a new connection to MySQL, enter the password and connect. Test login is successful, save the screenshot as B-5.jpg.

8. After successful connection, create a new database and import the SmartAgriculture.sql file. Open the user information table, query the account (password is 123456 by default) and save it as B-6.jpg.

9. Access the cloud platform through the browser on the web (http://170.18.10.88:8080/ngs/index.html/), take a screenshot and save it as B-7.jpg.

10. Log in to the cloud platform, add the smart agriculture gateway, take a screenshot and save it as B-8.jpg.

11. Add smart agriculture sensors and actuators to the cloud platform. Save screenshots as B-9.jpg

Module C: Embedded Application Software Development (30 points)

Task description

Develop related application software based on the package library and materials provided in the site. The software interface is required to display sensor data, control actual/simulation equipment, set relevant scenarios and upload data to the server.

Mission requirements

1. Complete software login and main interface construction.

2. Display the current system time, current IP and other information in the main interface.

3. Display real-time sensor data in the main interface, including but not limited to soil temperature and humidity, light intensity, CO2, etc.

4. The switch control of relay can be controlled in the main interface, and the real-time status can be fed back.

5. You can customize automatic irrigation scenarios and automatic temperature control scenarios in the main interface.

6. Upload the status of the device to the cloud platform in real time.