Test Project

Module A – Intrusion and emergency alarm system installation

Intelligent Security Technology

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Introduction to Test Project

This Test Project is for Module A – Intrusion and Emergency Alarm System Installation.

Competition time: 180 minutes.

Module A – Intrusion and emergency alarm system installation

Competition time: 180 minutes

Competition tasks and requirements

Project task description

This module simulates the construction of an intrusion and emergency alarm system for a future community/intelligent park. The project focuses on key areas such as the park perimeter, equipment room, warehouse, and property room. Tension alarm fences, infrared detectors, door magnetic sensors, alarm control panels, and serial communication devices are deployed to build an integrated security system for perimeter anti-climbing, door and window intrusion prevention, and arming of key areas.

By completing device installation and wiring, network parameter configuration, serial protocol connection, zone division and arming, alarm rule setting, and linkage verification, the system realizes real-time detection of intrusion behavior, rapid alarm reporting of abnormal events, device linkage response, and closed-loop alarm handling. This ensures park boundary security, key asset security, and personnel safety, and forms a security management capability that is implementable, maintainable, and traceable.

Instructions to the Competitor

1. At the beginning of the Competition, Competitors shall browse and confirm all task requirements. Competitors shall complete the tasks in the order provided in this Test Project to better manage the Competition pace and ensure the completeness of answers.
2. On-site network cables: only part of the finished network cables will be provided on site. Competitors shall make additional network cables as required. All network cables must be checked according to the required standard. If a cable does not meet the standard, it shall be remade immediately.
3. Device configuration: during the Competition, Competitors shall not modify device usernames or passwords unless required by the Test Project.
4. Troubleshooting: Competitors shall have basic system troubleshooting and fault-location ability and shall be able to inspect and make necessary adjustments to the operating environment by checking system logs, service status, network connectivity, and related configuration files.
5. Material saving: all screenshots or videos generated during the Competition must be saved uniformly in the designated folder: "Desktop\Exam Materials\Module A\Screenshots". Competitors shall ensure that the materials are complete and accurately named for subsequent assessment.
6. Screenshot requirements: all submitted screenshots must show the complete current screen. Screenshots must not be cropped or obscured.
7. A screenshot tool is provided, with the file path: Desktop\Exam Materials\Configuration Tool\Snipaste\Snipaste.exe

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Initial information

Device initial information

DEVICE NAME	IP ADDRESS	USERNAME	PASSWORD
Anti-intrusion Device (Intrusion Alarm Control Panel)	192.168.3.68	/	/
Network Address Module (Infrared)	192.168.3.67	/	/

Platform initial information

PLATFORM NAME	ACCESS ADDRESS	USERNAME	PASSWORD
Digital Intelligent Security Platform	192.168.3.122	admin	vcom@2026

Global note

All devices in the global system must be configured with unique IP addresses. Duplicate IP addresses are not allowed. Duplicate entries may cause device IP conflicts and prevent devices from functioning properly.

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Competition tasks

Task A-1 – Equipment installation and planning and design of security systems

Task description

The project has entered the first stage: infrastructure construction. The construction team has completed the cable trunking installation.

According to the requirements of Equipment Installation Design Drawing.drawio located at Desktop\Exam Materials\Module A\Equipment Installation Design Drawing\Equipment Installation Design Drawing.drawio, complete the device installation on the assigned workstation.

Prior to cable routing and wiring construction, finish the System Connection Design Drawing. All cables shall be routed reasonably, neatly and orderly.

The entire installation process shall ensure that the equipment is securely fixed, accurately positioned, and correctly connected.

Requirement 1

1. Launch the drawing software. Navigate to Desktop\Exam Materials\Configuration Tool\draw.io\ and double-click draw.io.exe to start the program.
2. Import the equipment library. Navigate to File → Import Library, and select the file Desktop\Exam Materials\Module A\draw.io Equipment Library\Video Surveillance System.xml to complete the equipment library import..
3. Open the drawing project. Open the file System Connection Design Drawing.drawio for diagram editing.
4. Place all required devices on the canvas, all twelve (12) pieces of equipment as listed:

Tension Alarm Fence, Intrusion Alarm Control Panel, Infrared Beam Detector, Network Address Module (Infrared), Power Supply Cabinet,Switch, Serial Port Server, Door Magnetic Sensor, IO Controller, Audible and Visual Alarm, Rack PDU, Computer.

Ensure all devices are fully displayed with no omissions or incorrect model information. Capture a screenshot of this view and save it to `Desktop\Exam Materials\Module A\Screenshots` with the filename A-1-1.png.

Requirement 2

Complete the full editing and connection debugging of System Connection Design Drawing.drawio to ensure the system connection diagram is complete, standardized and compliant. Export the final finished diagram, and save it to the path Desktop\Exam Materials\Module A\Screenshots with the standard file name A-1-2.png.

Key Requirements and Notes

1. This module adopts a centralized wall-mounted installation method.
2. The equipment shall be installed in the corresponding positions shown in the equipment installation design drawing. Wiring shall be completed according to the requirements. Labels and cable ties shall be used for identification. Unused wire harnesses shall be insulated with electrical tape to prevent short circuits and equipment damage.

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Requirement 3

Fill out the Construction Scheme and Schedule Arrangement document.

File path: Desktop\Exam Materials\Module A\Construction Scheme and Schedule Arrangement\Module A-Construction Scheme and Schedule Arrangement

Requirement 4

Connect the intrusion alarm control panel to the switch and connect the power supply and network cable.

Requirement 5

Connect the tension alarm fence to the switch and connect the power supply and network cable.

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Task A-2 – Basic device configuration function

Task description

To build the core control capability of the park intrusion alarm system, Competitors shall complete the network access, parameter configuration, and system management of the anti-intrusion alarm control panel and verify stable communication between the device and the platform. At the same time, for the warehouse perimeter protection scenario, Competitors shall configure a network address module for the infrared beam detector that has no direct networking capability, complete module network parameter configuration, and set the correct zone number, realizing signal connection between the detector and the alarm control panel and ensuring stable collection and upload of intrusion alarm signals. This provides reliable support for perimeter anti-climbing and key area monitoring.

Configuration requirements

Device list

CONFIGURATION ITEM	ANTI-INTRUSION DEVICE	NETWORK ADDRESS MODULE (INFRARED)
Device Name	Anti-intrusion Device	Network Address Module (Infrared)
Device IP Address	192.168.3.68	192.168.3.67

Network configuration

CONFIGURATION ITEM	ANTI-INTRUSION DEVICE	NETWORK ADDRESS MODULE (INFRARED)
Device Name	Anti-intrusion Device	Network Address Module (Infrared)
Device IP Address	192.168.3.68	192.168.3.67
Subnet Mask	255.255.255.0	255.255.255.0
Gateway	192.168.3.1	192.168.3.1
Target IP/Domain Name	192.168.3.122	192.168.3.122
Device Serial number	123456	123457

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HARDWARE DEVICE IP CONFIGURATION	
Tension Alarm Fence	192.168.3.69
Intrusion Alarm Control Panel	192.168.3.68
Network Address Module (Infrared)	192.168.3.67

Requirement 1

Complete the IP address configuration for the Tension Alarm Fence, Anti-intrusion Device (Intrusion Alarm Control Panel), and Network Address Module (Infrared).

The Network Address Module (Infrared) is configured via a dedicated tool: run the configuration program at the path Desktop\Exam Materials\Configuration Tool\NetModuleConfig.exe, and set the device's IP address to 192.168.3.67.

Requirement 2

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Device Management > Device List. Use the Add function to complete the alarm control panel device configuration and save it. Set the device name as “Anti-intrusion Device” and the device IP address as 192.168.3.68. The screenshot shall clearly show the device name, device IP address, and offline status. Save the screenshot as A-2-1.png.

Requirement 3

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Device Management > Device List. Locate the “Anti-intrusion Device” entry and click the Network Configuration button in the operation column. In the pop-up configuration window, complete the full network parameter configuration, including subnet mask, gateway, target IP/domain name, and other parameters. Take a screenshot of the complete network configuration pop-up window. The screenshot shall clearly show the device basic information and all network configuration items. Save the screenshot as A-2-2.png.

Task A-3 – Communication interface device installation and configuration

Task description

To realize data communication between front-end alarm devices, such as door magnetic sensors, and the system platform, Competitors shall complete the hardware connection, network configuration, and system addition of the serial server (communication interface device). Competitors shall power and wire the serial server, configure network parameters, search and bind the device through the configuration tool, and then add the device in the alarm system. This establishes a reliable RS485 communication link between the front-end sensors and the platform, ensuring stable transmission of alarm data.

Configuration requirements

CONFIGURATION ITEM	CONTENT
Target Server	192.168.3.122
Target Port	10563
Communication Interface Device Type	RS485 - Eight Serial Port
Device Name	Serial Server
Device Serial Number	123456789
Serial Server IP	192.168.3.80
Subnet Mask	255.255.255.0
Gateway Address	192.168.3.1
Target IP Address	192.168.3.122

Requirement 1

Complete the hardware wiring construction of the serial server, connect the device power supply, connect the door magnetic sensor to the RS485 serial port channel of the device, and complete the front-end sensor hardware link setup.

Requirement 2

Launch the Serial Server Configuration Tool: run Desktop\Exam Materials\Configuration Tool\Serial Server Configuration Tool.exe;

In the tool interface, perform the Search Device operation, locate the serial server device whose Name contains 468, verify the local IP address, subnet mask, gateway, and other network parameters, complete the configuration, and verify that the device network communication is normal. Take a screenshot of the complete configuration tool interface. The screenshot shall clearly show the searched device entry and the complete network parameters. Save the screenshot as A-3-1.png.

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Requirement 3

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Device Management > Communication Interface Device. Click the Add button to open the device edit configuration page. According to the configuration parameter table, complete all required parameters, including device type, Model Number TAS-LAN-468, Device Name, Device Serial Number, Serial Server IP, Subnet Mask, Gateway Address, and other required items, and save the new device. Take a screenshot of the complete current communication interface device add configuration page. The screenshot shall clearly show all basic settings and communication configuration items. Save the screenshot as A-3-2.png.

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Task A-4 – Door magnetic sensor device installation and configuration

Task description

To realize intrusion monitoring of doors and windows in key areas of the park, Competitors shall complete the physical wiring, Python serial communication debugging, and device status verification of the door magnetic sensor. Competitors shall complete hardware connection and power debugging between the door magnetic sensor and the USB-to-RS485 module; use the Thonny Python development environment to write serial port code, configure standard serial parameters, and send the specified Modbus hexadecimal command to read the device status. This verifies that the sensor communication is normal and the status can be read normally, providing a hardware foundation for subsequent system access and alarm triggering.

Serial port configuration requirements

CONFIGURATION ITEM	CONTENT
Baud Rate	9600 bit/s
Data Bits（bytesize）	8 bits
Parity Bit	None
Stop Bits	1 bit
Error Check	CRC (Cyclic Redundancy Check)
Read Door Magnetic Device Status Separately (HEX_cmd)	01 02 00 00 00 01 B9 CA
Response When Device Is Normal	01 02 01 00 A1 88
Response When Device Is in Alarm	01 02 01 01 60 48

Requirement 1: Physical wiring

Connect the A/B terminals of the USB-to-RS485 module to the corresponding A/B terminals of the RS485 interface of the door magnetic sensor and ensure that the sensor is correctly powered. Insert the USB-to-RS485 module into the computer USB port to complete the physical link connection.

Requirement 2: Thonny script execution and function verification

1. Launch thonny.exe; run the file at the path: Desktop\Exam Materials\Configuration Tool\thonny\thonny.exe; Open the serial_port_verification.py script under Desktop\Exam Materials\Resource Package.
2. Check the script content and complete the serial port-related configuration parameters. After correcting the parameters, click Run to execute the script. In the Shell console, enter the corresponding COM port of the USB-to-RS485 module and press Enter to confirm.
3. The script automatically completes serial port initialization, sends the Modbus read command, receives the returned data from the door magnetic sensor, closes the serial port after communication is completed, and outputs the corresponding prompt according to the door magnetic sensor status.
4. Keep the Door Magnetic Sensor separated by a distance of more than 25 mm in advance. Wait until the console outputs Response when device alarms: 01 02 01 01 60 48, then capture the full Thonny interface (including the code area and all runtime logs). Save the screenshot as A-4-1.

Task A-5 – Security linkage control configuration – Door magnetic sensor device access configuration

Task description

To include the door magnetic sensor in the unified management of the intrusion alarm system, Competitors shall complete the channel mapping and system access configuration between the sensor and the serial server. Competitors shall bind the door magnetic sensor to the specified serial port of the serial server in the communication interface device management interface, complete configuration of device type, channel attributes, and other parameters, realize protocol connection and data communication between the door magnetic sensor and the system platform, and ensure that the sensor status can be monitored by the system in real time.

Configuration requirements

CONFIGURATION ITEM	CONTENT
Target Server	192.168.3.122
Target Port	10563
Communication Interface Device Type	RS485 - Eight Serial Ports
Device Name	Serial Server
Device Serial Number	123456789
Serial Server IP	192.168.3.80
Subnet Mask	255.255.255.0
Gateway Address	192.168.3.1
Serial Port	Serial Port 8
Working Mode	TCP Client
Local Port	509
Target IP Address	192.168.3.122
Target Port	10563
Baud Rate	9600 bps
Data Bits	8
Stop Bits	1
Parity Bit	None

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CONFIGURATION ITEM	CONTENT
Access Device Type	Door Magnetic Sensor
Access Device	Door Magnetic Sensor
Channel Type - Input RX	Door Magnetic Sensor
Channel Type - Output TX	None (reporting only)

Requirement 1

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Device Management > Communication Interface Device. Select the newly added serial server device and switch to the Serial Port 8 configuration tab. Enable the configuration status switch, strictly complete all target server, serial communication, and function mapping parameters according to the configuration requirements, and save the configuration. This completes the access binding configuration of the door magnetic sensor on Serial Port 8. Take a screenshot of the complete Serial Port 8 configuration interface. The screenshot shall clearly show all parameter configuration items, including parameter configuration, target server configuration, serial port parameters, and function mapping. Save the screenshot as A-5-1.png.

Task A-6 – Communication interface device – IO controller and audible and visual alarm device access and configuration

Task description

To realize linkage control of the audible and visual alarm device, the IO controller shall be connected to the communication interface device of the security management platform, and basic communication configuration shall be completed to provide hardware support for subsequent linkage control.

Configuration requirements

CONFIGURATION ITEM	CONTENT
Communication Interface Device Type	RS485 - Eight Serial Ports
Device Name	Serial Server
Device Serial Number	123456789
IP Address	192.168.3.80
Subnet Mask	255.255.255.0
Gateway Address	192.168.3.1
Serial Port	Serial Port 3
Local Port	504
Target Port	10563
Target Address	192.168.3.122
Baud Rate	9600 bps
Data Bits	8
Stop Bits	1
Parity Bit	None
Access Device Type	IO Controller
Access Device	IO Controller
Channel Type - Input RX	None
Channel Type - Output TX	Execute

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Requirement 1

1. Complete the RS485 bus physical connection between the IO controller and the RS485 eight-serial-port server.
2. Connect the control cable of the audible and visual alarm device to the corresponding output terminal of the IO controller and complete the power supply wiring of the audible and visual alarm device at the same time. The entire hardware link shall be completely wired and powered normally.

Requirement 2

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Device Management > Communication Interface Device. Select the created serial server device and switch to the Serial Port 3 configuration tab. Enable the configuration status switch, complete all target server, serial communication, and function mapping parameters according to the configuration specifications, and save the configuration. Take a screenshot of the complete Serial Port 3 configuration interface. The screenshot shall clearly show all parameter configuration items, including parameter configuration, target server configuration, serial port parameters, and function mapping. Save the screenshot as A-6-1.png.

Task A-7 – Arming system construction

Task description

To build a hierarchical and zoned security protection network for the park, Competitors shall complete zone division and arming parameter configuration for the tension fence, infrared detector, and door magnetic sensor. Competitors shall divide independent zones according to regional security levels and configure parameters including associated device, zone name, and arming status for each zone. This completes arming settings for key areas such as the perimeter fence, warehouse, and property room, forming a full-coverage, independently controllable intrusion alarm arming system and meeting differentiated security protection requirements.

Configuration requirements

Anti-intrusion device setting

CONFIGURATION ITEM	CONTENT
Arming Type	Perimeter Fence Arming
Device Name	Anti-intrusion Device
Zone No.	1
Zone Name	Equipment Room Key Area
Zone Type	Tension Alarm Fence
Arming Status	Enabled

Infrared device setting

CONFIGURATION ITEM	CONTENT
Arming Type	Perimeter Fence Arming
Device Name	Anti-intrusion Device
Zone No.	2
Defense Zone Name	Warehouse Key Area
Zone Type	Bus Address Device
Arming Status	Enabled

Door magnetic sensor setting

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CONFIGURATION ITEM	CONTENT
Zone No.	3
Zone Name	Property Room
Access Device Type	Door Magnetic Sensor
Associated Communication Interface Device	Serial Server
Associated Serial Port	Serial Port 8
Arming Status	Armed

Requirement 1

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Arming Management > Arming Settings. Switch to the Perimeter Fence Arming tab and click Add to complete the zone configuration of the anti-intrusion device and save it. Take a screenshot of the complete page. The screenshot shall clearly show: device name "Anti-intrusion Device", zone No. 1, zone name "Equipment Room Key Area", zone type "Tension Alarm Fence", Save and arming status as Armed.

After successful creation, capture the complete list page and save the screenshot as A-7-1.png.

Requirement 2

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Arming Management > Arming Settings. Switch to the Perimeter Fence Arming tab and click Add to complete the zone configuration of the Network Address Module (Infrared) and save it. The screenshot shall clearly show: device name "Anti-intrusion Device", zone No. 2, Defense zone name "Warehouse Key Area", zone type "Bus Address Device", Save and arming status as enabled.

After successful creation, capture the complete list page and save the screenshot as A-7-2.png.

Requirement 3

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Arming Management > Arming Settings. Switch to the Door/Window Magnetic Arming tab and click Add to complete the door magnetic sensor zone configuration and save it. Take a screenshot of the complete page. The screenshot shall clearly show zone No. 3, Defense Zone Name "Property Room", Access DeviceType "Door Magnetic Sensor", associated communication interface device "Serial Server", associated serial port "Serial Port 8 (COM8)", and all other parameters.

After successful creation, capture the complete list page and save the screenshot as A-7-3.png.

Task A-8 – Alarm response verification

Task description

To verify the alarm triggering and real-time reporting capability of the Intrusion and Emergency Alarm System, Competitors shall sequentially simulate three (3) abnormal intrusion conditions: tension fence slack, infrared detector line disconnection, and indoor door magnetic opening. On the system Alarm Record page, Competitors shall verify that each alarm record contains complete information and correct status identification, confirming that the platform can collect abnormal signals from front-end detection devices in real time and generate corresponding alarm logs. This ensures that security intrusion events can be quickly identified and traced.

Configuration requirements

CONFIGURATION ITEM	ARM PERIMETER FENCE	ARM PERIMETER FENCE	DOOR/WINDOW MAGNETIC DEVICE ALARM
Device Name/Access Device Type	Anti-intrusion Device	Anti-intrusion Device	Door Magnetic Sensor
Zone No.	1	2	3
Zone Name	Equipment Room Key Area	Warehouse Key Area	Property Room
Zone Type	Tension Alarm Fence	Bus Address Device	/
Alarm Details	Relaxation alarm	Open circuit alarm	Door Magnetic Open
Status	Pending	Pending	Pending

Requirement 1

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Alarm Management > Alarm Record and switch to the Perimeter Fence Arming tab. Take a screenshot of the complete page containing the anti-intrusion device alarm record. The screenshot shall clearly show Device Name “Anti-intrusion Device”, Zone No. 1, Zone Name “Equipment Room Key Area”, Alarm Details “Relaxation alarm”, and Status “Pending”.
Ensure there is at least one alarm record corresponding to the Zone Name "Equipment Room Key Area".
Save the screenshot as A-8-1.png.

Requirement 2

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Alarm Management > Alarm Record and switch to the Perimeter Fence Arming tab. Take a screenshot of the complete page containing both Alarm Record of the anti-intrusion device.

The screenshot shall clearly show Device Name “Anti-intrusion Device”, Zone No. 2, Zone name “Warehouse Key Area”,Alarm Details “Open circuit alarm ”, and Status “Pending”.
Ensure there is at least one (1) alarm record corresponding to the Zone Name "Warehouse Key Area".
Save the screenshot as A-8-2.png.

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Requirement 3

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Alarm Management > Alarm Record and switch to the Door/Window Magnetic Arming tab. Ensure there is at least one alarm record corresponding to the Zone Name "Property Room".Take a screenshot of the complete page containing the door magnetic sensor alarm record.

The screenshot shall clearly show access Device Type “Door Magnetic Sensor”, Zone No. 3, Zone Name “Property Room”, Alarm Details “Door Magnetic Open”, and Status “Pending”. Save the screenshot as A-8-3.png.

Task A-9 – Operation and maintenance management – Alarm handling

Task description

To standardize the full-process closed-loop management of intrusion alarms, Competitors shall check, enter processing remarks, and retain evidence for various intrusion alarms generated in the system. Competitors shall sequentially handle three (3) types of alarms, including tension fence, infrared detector, and door magnetic sensor alarms, fill in unified processing remarks, and open the alarm details pop-up window to retain records. This preserves complete alarm handling evidence, realizes traceability and reviewability of each intrusion event, and standardizes the park security event handling process.

Configuration requirements

CONFIGURATION ITEM	TENSION FENCE	INFRARED DEVICE ALARM	DOOR MAGNETIC SENSOR ALARM
Device Name/Access Device Type	Anti-intrusion Device	Anti-intrusion Device	Door Magnetic Sensor
Zone No.	1	2	3
Zone Name	Equipment Room Key Area	Warehouse Key Area	Property Room
Alarm Details	Relaxation alarm	Open circuit alarm	Door Magnetic Open
Processing Content	Test	Test	Test

Requirement 1

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Alarm Management > Alarm Record and switch to the Perimeter Fence Arming tab. Locate the “Anti-intrusion Device” alarm entry,click Handle, enter “Test” as the processing content, and then open the alarm details pop-up window. Take a screenshot of the complete details interface. The screenshot shall clearly show Device Name “Anti-intrusion Device”, Zone No. 1, Zone Name “Equipment Room Key Area”, Alarm Details “Relaxation alarm”, and Processing Content “Test”. Save the screenshot as A-9-1.png.

Requirement 2

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Alarm Management > Alarm Record and switch to the Perimeter Fence Arming tab. Locate the “Anti-intrusion Device” alarm entry,click Handle, enter “Test” as the processing content, and then open the alarm details pop-up window. Take a screenshot of the complete details interface.

The screenshot shall clearly show Device Name “Network Address Module (Infrared)”, Zone No. 2, Zone Name “Warehouse Key Area”, Alarm Details “Open circuit alarm”, and Processing Content “Test”. Save the screenshot as A-9-2.png.

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Requirement 3

Log in to the backend of the Intrusion and Emergency Alarm System. Go to Alarm Management > Alarm Record and switch to the Door/Window Magnetic Arming tab. Locate the door magnetic sensor alarm entry,click Handle, enter “Test” as the processing content, and then open the alarm details pop-up window. Take a screenshot of the complete details interface. The screenshot shall clearly show access Device Type “Door Magnetic Sensor”, Zone No. 3, Zone Name “Property Room”, Alarm Details “Door Magnetic Open”, and Processing Content “Test”. Save the screenshot as A-9-3.png.

Task A-10: Security Platform Alarm Data API Reading and Log Archiving

Task description

A smart security system project for an industrial park has entered the completion acceptance stage. In the earlier stage, the hardware deployment of the perimeter tension fence, infrared detector, and door/window magnetic sensor has been completed, as well as platform zone configuration and joint commissioning of the alarm triggering function. According to the project acceptance specifications and the operation and maintenance traceability system, the platform alarm data API must be checked for connectivity and data consistency, and the verification process and results must be generated as local log files and included in the acceptance delivery materials. This provides a data baseline for subsequent integration with the park integrated security management platform.

Competitors shall act as security operation and maintenance engineers. Through Thonny, Competitors shall run a Python script to call two (2) GET alarm query APIs of the platform and batch-read all Alarm Record of the perimeter fence and door/window magnetic sensor. Competitors shall verify that fields such as zone information, alarm content, processing status, and alarm time returned by the API are completely consistent with the platform interface display. At the same time, the script shall automatically generate standardized local logs with timestamps, completely retaining the API request status, alarm details, and runtime nodes. This completes the closed-loop API verification process and ensures that the alarm data link is traceable and auditable and meets the project acceptance standards.

Configuration requirements

CONFIGURATION ITEM	CONTENT
Running Software	Thonny
Dependency Library Name	requests
Perimeter Fence Alarm API (GET)	http://192.168.3.122:48090/admin-api/intrude/alarm/page?type=1&pageNo=1&pageSize=10
Door/Window Magnetic Alarm API (GET)	http://192.168.3.122:48090/admin-api/intrude/alarm/page?type=2&pageNo=1&pageSize=10
Script and Library Storage Path	Desktop\Exam Materials\Package
Automatic Log Archive Path	Desktop\Exam Materials\Module A\Logs
Screenshot Archive Path	Desktop\Exam Materials\Module A\Screenshots

Requirement 1: Script parameter verification

Navigate to the system backend Tool Configuration page[1]

[1]*Launch: [thonny.exe] Execution path: Desktop\Exam Materials\Configuration Tool\thonny\thonny.exe*

and start the Thonny development tool. After completing the requests dependency library configuration and runtime environment validity verification, open the preset alarm_read.py script under Desktop\Exam

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Materials\Module A\Resource Package. Verify one by one that the perimeter fence alarm API, door/window magnetic alarm API address, platform IP and port, log archive path, and other core parameters in the script are completely consistent with the configuration requirements and confirm that there are no syntax errors in the script.

Requirement 2: Script execution and screenshot

Click the Run button on the toolbar to execute the script. The Shell console will first output the run result summary information, clearly showing the script running status, total number of perimeter fence alarms, and total number of door/window magnetic alarms.

Each of the two (2) types of alarms shall contain at least one (1) valid record.

It will then fully output detailed data of the two (2) types of alarms, including key fields such as Zone Information, Alarm Content, Alarm Status, and Alarm Time.

When the script is fully executed without errors, the console summary area will display the fixed identifier "Script Running Status: Success". After the script finishes execution, take a screenshot of the complete Thonny full-screen interface. The screen shall simultaneously include the code editing area and all Shell console output and clearly show the three (3) core items: "Script Running Status: Success", total number of perimeter fence alarms, and total number of door/window magnetic alarms. Cropping the window border or covering key information is prohibited. Save the screenshot as A-10-1.png.

Requirement 3: Result archiving

After the script is executed, a log file will be automatically generated.

Save Log file to Desktop\Exam Materials\Module A\Logs.

The log content shall be completely consistent with the Shell console output and include the following four (4) core modules. No core field may be missing:

1. Running Basic Information Module: includes the alarm data reading completion prompt, running start time, running end time, and complete log archive path.
2. Running Status Summary Module: includes the fixed identifier "Script Running Status: Success", total number of perimeter fence alarms, and total number of door/window magnetic alarms.
3. Perimeter Fence Alarm Details Module: includes the module title and total number of alarms. When the total number is greater than 0, each alarm record must include six (6) core fields: Device Name, Zone Number, Zone Name, Alarm Content, Alarm Status, and Alarm Time. When the total number is 0, it shall clearly display "No perimeter fence alarm data".
4. Door/Window Magnetic Alarm Details Module: includes the module title and total number of alarms. When the total number is greater than 0, each alarm record must include six (6) core fields: access Device Type, Zone Number, Zone Name, Alarm Content, Alarm Status, and Alarm Time. When the total number is 0, it shall clearly display "No door/window magnetic alarm data".