Ignition 8.1 Core Certification Test

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Instructions

Welcome to the Ignition Core Certification test. It covers the basics of Ignition: architecture, realtime status and control, historical data logging, UDTs and templates, and alarming. It is designed to test your understanding and knowledge of Ignition.

Required Prerequisites: The 8.1 Ignition credential from the Inductive University.
Recommended Prerequisites: Completing the Ignition 5-day Core training class.

You can only utilize the Ignition user manual, Inductive University, or training@inductiveautomation.com email for help with the test. You CANNOT receive any help from the IA Tech Support group on the test. Collaboration with other participants taking the test is strictly prohibited: **participants that share work or otherwise collaborate will immediately fail, with no chance to retake the test**.

Inductive Automation will provide a link to download the test ZIP file. The ZIP file contains:

1. PDF Instructions
2. Ignition Gateway backup for Troubleshooting Section
3. A formatted text file for your Troubleshooting answers

You will also receive a 20 character test number that identifies you and your test. You will use the test number to submit the test on the Inductive Automation website.

The test itself consists of 2 parts and must be completed using Ignition version **8.1.x.** You must use a stable version of Ignition, nightly builds and release candidates are not allowed.

1. Troubleshooting Prompts - Consists of correcting issues with a project that has already been created. Your task will be to load the Ignition Gateway backup provided, identify and fix the issues. Each prompt works off of the same Ignition Gateway backup. A formatted text file is provided for your answers. For each prompt, you need to explain how to fix the problem. Submit the text document using the existing format for all prompts. You do NOT need to submit an Ignition Gateway backup for this section.
2. Development & Implementation - Requires you to implement a project according to a given specification. You will submit a single Ignition Gateway backup (.gwbk). This backup will contain one project that includes all resources for the test.

How to Submit

Once you have completed all sections, upload the Troubleshooting answers text file and your Gateway Backup online at:
https://inductiveautomation.com/training/upload

Please wait until you have completed the entire test to submit your answers. After submitting your answers, Inductive Automation will review your test. You will receive a pass or fail grade along with a complete status report that details what was incorrect. It is highly recommended that you review your status report to see what to look out for in future projects. If you don't pass on the first try, you can resubmit any incomplete or incorrect answers. When you pass, Inductive Automation will change your status to "Core Certified" and a certificate will be emailed to you soon.

If you have any questions about this test please email training@inductiveautomation.com

Troubleshooting

What to Submit: Submit the included text document with a description of the resolution for all prompts. You do not need to submit an Ignition Gateway backup for this section.

For each of the prompts below you will work off of the same Ignition backup. Load the backup named **Ignition8.1CoreTroubleshooting.gwbk** into Ignition version **8.1.x**. You must use a stable version of Ignition, nightly builds and release candidates are not allowed. The default Ignition username and password for the Gateway and Designer are admin and password. Once loaded, follow the prompts below to identify the issues and fix them. Reset the Ignition trial timeout as many times as needed to complete the test, the trial timer is not a part of any answers. Using outside resources such as third party modules or any Ignition Exchange projects is also not allowed.

1. Operators at ACME Inc. have noticed that when they view the window named “Refrigeration” in their Vision Client, the template for Compressor 2 is working, but the template for Compressor 1 is not showing any data.

   Figure out what is wrong with the Compressor template, and describe the problem and resolution.

2. When the ACME Inc. operators look at the window named “Alarm Status” in their Vision Client, they’ve noticed that the Discharge Valve alarm doesn’t say whether it’s open or closed. It should say “Discharge Valve Closed” or “Discharge Valve Open” when the valve closes.

   Figure out what is wrong with the alarm, and describe the problem and resolution.

3. ACME Inc. has designed a window named “User Management” to allow Managers to control all user details, and Users to control their own details. However, Users have complained that they are unable to change their own details.

   Figure out what’s wrong with the User Management window, and describe the problem and resolution.

4. Operators at ACME Inc. have noticed that the Tower popup window in the Vision Client (accessible by clicking on the Tower template on the window named “Refrigeration”) is showing data for Tower 2, even when the Tower 1 template is clicked.

   Figure out what is wrong with the popup, and describe the problem and resolution.

5. ACME Inc. has designed a window named History in their Vision Client to show a recent collection of Tower data in a table. For clarity, they’ve also arranged to show a different background color for each row based on the pH level. However, operators have complained that when they sort the data the colors break.

   Figure out what is wrong with the table colors, and describe the problem and resolution.

6. ACME Inc. has a report that shows Refrigeration details over time. Whenever they generate a report, they are seeing the average level and temperature for each tank is broken.
   ****this example uses static CSV data but that is not the issue****

   Figure out what is wrong with the report, and describe the problem and resolution.

7. Operators have several gauges on the window named “Templates” in the Vision Client that they rely on daily to monitor refrigeration levels, temperature and humidity. They have noticed that all the gauges have been replaced with broken compressors recently.

   Figure out what is wrong with the gauges, and describe the problem and resolution. Building a new gauge template is not the correct answer.

8. ACME Inc. wanted their project’s users to be able to get real-time information about their plant on their mobile devices, so they designed Perspective pages that the users should be able to access. However, it seems that the Project’s users (from the “Troubleshooting Users” user source) are locked out of the Perspective Session.
   ****you can use the username “mary” and the password “password” to test****

   Figure out why users are unable to log in, and describe the problem and resolution.

9. ACME Inc. has created Compressors and Map pages that should be accessible from the Perspective project, by selecting the items in the Menu view. However, users have noticed that when they select the Map item, nothing seems to happen.

   Figure out why the Map view is not being opened, and describe the problem and resolution.

10. ACME Inc. has created a view named “Header” in their Perspective project, with a built-in button that opens the Navigation menu. However, the Header view disappears when users navigate away from the Towers page. The Header should be open at all times.

    Figure out what is wrong with the Header view, and describe the problem and resolution.

11. ACME Inc. has configured a label on their view named “Header”, which should show different text based on which project resource is currently open. However, the label does not seem to work when operators look at the Compressors in a session.

    Figure out what is wrong with the label, and describe the problem and resolution.
    **** Note: the previous 2 problems must be corrected to answer this question ****

12. ACME Inc. has configured a view named “Towers” in their project, consisting of a tab root container type with data for each tower. However, operators have noticed that the tower tabs seem to show the same data for each tower.

    Figure out what is wrong with the Towers view, and describe the problem and resolution.

Development & Implementation

What to Submit: Single Ignition Gateway backup (.gwbk) using Ignition version **8.1.x**. You must use a stable version of Ignition, nightly builds and release candidates are not allowed. Your gateway backup must only contain resources that are a part of the test.

Requirements: Your gateway backup must meet these requirements laid out here. **Failure to meet any of these requirements will result in an immediate failure.**

- The Gateway must have the following login information:
  Username: admin
  Password: password
- The Gateway must have no more than 1 user created project, called “Acme Inc”. The Global and Troubleshooting projects may also be on the backup.
- Using outside resources such as third party modules or any Ignition Exchange projects is not allowed.
- The Vision section must include no more than 8 windows. It is possible to only use 6 windows to complete the prompts.
- There must be only one report.
- The Perspective section must include no more than 3 views. It is possible to only use 2 views to complete the prompts.
- The Perspective section must have only one style class.

Problem: ACME Inc. has started monitoring their Sensors and wants to create HMI/SCADA applications to allow their operators to access it. Your task is to build the application using Ignition.

1. Gateway Setup - Create a database connection and OPC device connections using the built-in simulator.
   - Create an OPC device connection named “CoreSim” using the Programmable Device Simulator and load the included SimulatorProgram.csv file.
   - Create a database connection using an MSSQL (Microsoft SQL) or MySQL connection type. ****You must use this connection throughout the test. We will use this database connection to connect to our database to verify your results****

2. User Source - Create a new user source named “CoreTest” to be used in your project. It needs to be an “Internal” type with the following user information:

Username	Password	Email Address	Roles
admin	password	admin@acme.com	Administrator
trillian	password	tricia.mcmillian@acme.com	Operator
ford	password	ford.prefect@acme.com	Operator
guest	password		

   Create an Identity Provider named “CoreIdP” that uses this user source.
   Create Security Levels to match the roles in this User Source.

3. Project - ACME Inc. wants a single project that holds all of their screens. Create a new project to complete the following prompts. Add a navigation window using a “Tab Strip” component that opens on startup. Use the CoreTest user source and CoreIdP you have created.
   **** You may use a Vision project template if it includes a window with the Tab Strip component for navigation.****

4. UDT - Create a UDT from the connected CoreSim simulator device. There are 10 identical sensors in this device, create a UDT definition called “Sensor” and 10 instances with the following Tags:

Sensor Name	Mode tag (short)	Reading tag (double)
Sensor 1	N7:10	F8:10
Sensor 2	N7:11	F8:11
...	...	...
Sensor 10	N7:19	F8:19

   Overrides are not allowed on any of the instances.

5. Vision Template - Create a single Template that shows the Sensor Name, Reading, a picture, and a way to view and control the Mode value. Use the following value mappings for the Mode: 0=Off, 1=On, 2=Calibrate. The template must only contain a single parameter which is used to make it dynamic.
   ****security will be added later****

6. Vision Overview Window - They want a way for users to see all 10 Sensors at a glance. Create an “Overview” window that displays all Sensors using the Sensor template. This window should open automatically when the Client starts and users need a way to navigate back to the Overview window using your existing navigation.

7. Vision Parameterized Popup - ACME Inc. wants to click on a template to open a Sensor Details popup window. They want only one popup window that will show the Sensor that was clicked in the Overview window. The popup must display the template, as well as historical and alarming information on it.
   ****See later prompts for historical and alarming information****

8. Alarming - They want a way to store, display, and acknowledge alarms on the Reading and Mode tags for all Sensors. Sensors must have dynamic high and low setpoint Tags for each Reading tag and alarm display names must match a specific format. They want the following alarms:

Tag	Alarm	Setpoint	Display Path
Reading	High	Dynamic: Default >= 75	Sensor X High Alarm ****where X is the Sensor number****
Reading	Low	Dynamic: Default <= 0	Sensor X Low Alarm ****where X is the Sensor number****
Mode	Calibrate	= 2	Sensor X Faulted ****where X is the Sensor number****

In addition to creating alarms, they want:

- The ability to change the High and Low setpoints from the popup window.
- Alarm status on the existing Sensor popup window showing all alarms for the selected Sensor.
- A main window that shows the most recent 4 hours of alarm history. This window should update every 30 seconds. Users need a way to navigate to this window.

9. Alarm Notification - ACME Inc. needs a way to alert users when alarms happen on these Tags. Create a way to notify groups of users by email when an alarm happens. They want to use Rosters to manage these groups. Use the email addresses from the prior users prompt. Users must be able to acknowledge alarms from the notification email.
   ****your email server connection is not required to work for grading, but we will create a new connection when grading to verify results****

Alarm	Users to Notify
Reading High	Trillian and Ford
Reading Low	Trillian and Ford
Mode Faulted	Admin and Trillian

10. History - They want to store and display history for all 10 Sensors. Configure all OPC and Setpoint tags in the Sensor UDT to record history using your existing database connection. They require the following to display history:
    - An Easy Chart on the existing Sensor Popup window which dynamically displays all tags for the selected Sensor.
    - The Reading tag must be shown in the same subplot as the high and low setpoints. All must use the same axis.
    - The Mode tag must be on a separate subplot of the chart with an axis that shows the Mode names instead of numbers.

11. Project Security - ACME Inc. requires security to be added to the Client with the following rules:
    - Only Operators are allowed to change the Sensor Mode.
    - They require a main window that allows Administrators to modify users and roles, as well as alarm notification rosters.

12. Transaction Groups - ACME Inc. has a strict regulation to store data every 10 seconds while the refrigeration system is running. Refrigeration folder can be found in the TroubleshootingSimulator device connection. The company is required to store data for ambientHum, ambientTemp, valveDischarge, and valveKing. They have determined that the refrigeration system is running whenever the valveDischarge is greater than zero.
    ****This data will be used in the Reporting Prompt****

13. Reporting - ACME Inc. needs a report generated twice a day (at 8am and 8pm) and automatically saved to the C:\Reports folder with the last 12 hours of data they collected in the previous prompt. It has specific requirements for what data is being shown. The report must have:
    - A Header with the start and end dates, and the title “Compliance Report”.
    - A chart at the top of each page that shows a trend of the humidity, temperature, and valve values.
    - A table that lists each tag value stored, with timestamps.

    They also want a main window in the project that allows them to display a report by selecting a start and end date to see all data from that period.

14. Perspective Dynamic Views - ACME Inc. wants to have a mobile version of the project for their operators to use on their phones. They want to follow the same design as the Vision project by creating a dynamic view for a Sensor that acts like a template. The view must show the Sensor Name, Reading, a picture, and a way to view and control the Mode value. Use the following value mappings for the Mode: 0=Off, 1=On, 2=Calibrate. The components on the view must grow or shrink with changing screen sizes.
    ****The Perspective Views must be in the same project as the Vision windows. Use a Flex root container type to create this Sensor view****

15. Perspective Page - They require a single page in their Perspective Session that shows some of the Sensors in a mobile friendly way. The root page ("/") must have a view named "Overview" designed to fit a phone. The Overview view should have a header with the company name and allow the users to swipe through some different Sensor views. Only certain Sensors will be shown on this view, use a Carousel component for users to swipe through the following Sensors: 2, 3, 6, and 9. The components on the view, as well as the views loaded in the carousel, must grow or shrink with changing screen sizes.
    ****Use a Flex root container type to create this Overview view****

16. Style Class - ACME Inc. will be adding to the project over time and want all Sensor headers to match exactly. Create a Style Class named "Header" and apply it to the Sensor name label on the Sensor View from prompt 14. They want a 35 point Italic font, with the text centered in the Label.

17. Session Security - In order to be secure, ACME Inc. is requiring that the Perspective session must require a login to access the Overview page. Use the Existing User Source from prompt 2.