

การใช้งาน ThingsBoard IoTs Platform เพื่อสร้างและจัดการระบบอัตโนมัติของ
ThingsBoard IoTs Platform for smart system

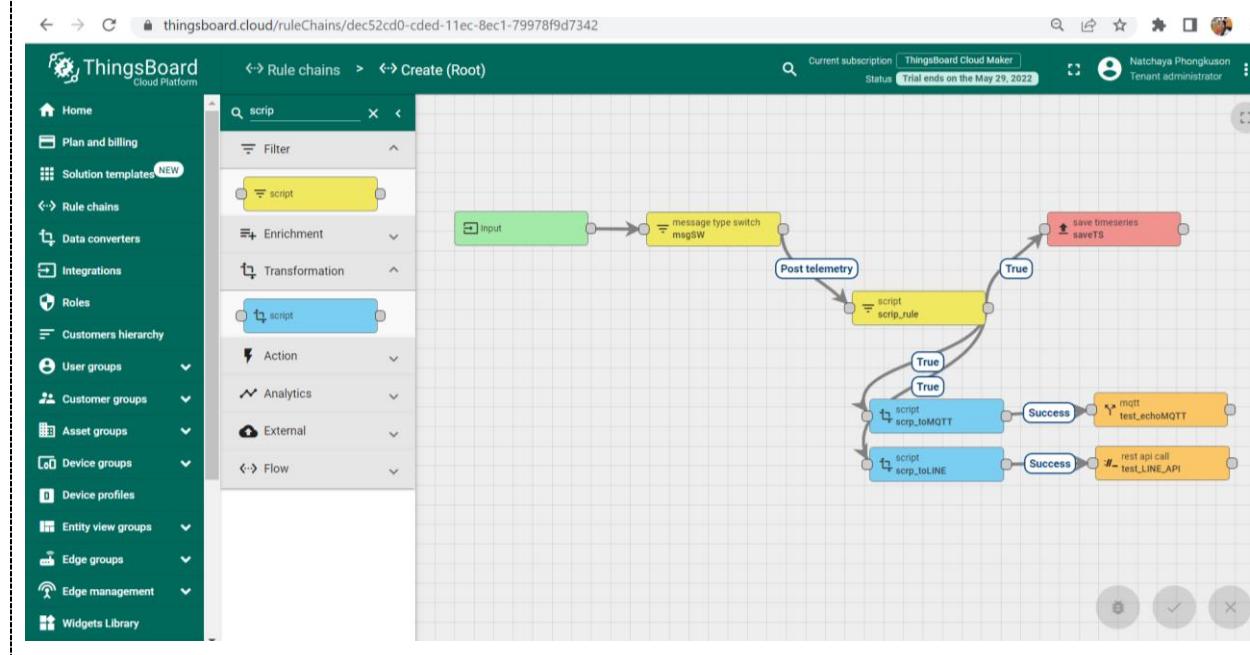
ชื่อ-สกุล : นางสาวณัฐชา ผ่องกุศล B6226718

5/5 -- คำถ้าท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_401 – ทดสอบการใช้งาน Rule Chain เพื่อแจ้งเตือนไปยัง LINE (ตาม Lab-401)

- ทำการทดสอบตามเอกสาร Lab-401

จุดทดสอบ 1 – Rule Chain



ภาษาที่ดีสกุล 2 – Dashboard

ภาษาที่ดีสกุล 3

การใช้งาน ThingsBoard IoTs Platform เพื่อสร้างและจัดการระบบอัลตริยะ
ThingsBoard IoTs Platform for smart system

ชื่อ-สกุล : นางสาวณัฐชา ผ่องกุศล B6226718

5/5 -- คำถ้ามท้ายบทเพื่อทดสอบความเข้าใจ

Quiz_301 – MAP Widgets and Multilayer Dashboard – 2 Point Data

- แสดงรูป โปรแกรม ของผลการทำงานตามหัวข้อ Lab304 – Using Rule Chains, MAP Widget and Multilayer dashboard

รูปการทดสอบ 1: Dashboard

Entity name	Entity type	humidity	temperature	station_name
TP_HOME	Device	87.18	42.47	TP HOME
TP SCHOOL	Device	78.25	33.09	Boonwattana School

รุ่นการทดสอบ 2: Display on Mobile device

The image contains three screenshots of the ThingsBoard mobile application interface, each showing different sensor data and station details.

Top Left Screenshot (TP_HOME):

- Map View:** Shows a satellite map of an area with three location markers labeled "TP_HOME", "TP SCHOOL", and "TP JME". A callout box for "TP_HOME" shows the following details:
 - Station: TP HOME
 - Temperature: 43.0 °C
 - Humidity: 89.98 %
 - Sensor Details
- Device admin table:**

Entity name	Entity type	humidity	temperature	station_name
TP_HOME	Device	89.98	43.0	TP HOME
TP SCHOOL	Device	79.34	31.38	Boonwattana School
- Powered by:** Thingsboard v.3.3.4PaaS

Top Right Screenshot (TP_HOME):

- Line Chart:** A "New Timeseries Line Chart" showing humidity and temperature over time. The chart shows a slight downward trend from approximately 85.37% humidity and 41.58°C temperature at 17:27:41 to 83.07% and 41.58°C at 17:28:40. The legend indicates "humidity" (blue line) and "temperature" (green line).
- Text Area:** Displays "station_name" followed by "TP HOME" in large white text on an orange background.
- Powered by:** Thingsboard v.3.3.4PaaS

Bottom Screenshot (TP SCHOOL):

- Line Chart:** A "New Timeseries Line Chart" showing humidity and temperature over time. The chart shows a slight downward trend from approximately 78.84% humidity and 37.94°C temperature at 17:28:41 to 77.64% and 38.84°C at 17:29:40. The legend indicates "humidity" (blue line) and "temperature" (green line).
- Text Area:** Displays "station_name" followed by "Boonwattana School" in large white text on an orange background.
- Powered by:** Thingsboard v.3.3.4PaaS

ឧបករណ៍ទី 3

The screenshot shows the ThingsBoard Cloud Platform interface. On the left, the navigation sidebar includes Home, Plan and billing, Solution templates (NEW), Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area displays a rule chain titled 'Data_AA' under 'Rule chains'. The rule chain consists of an 'Input' node followed by two 'generator' nodes: 'generator Data_AA' and 'generator Data_BB'. The 'generator Data_AA' node has a configuration panel where 'Name' is set to 'Data_AA', 'Message count (0 - unlimited)' is set to 0, and 'Period in seconds' is set to 60. The 'Device' dropdown is set to 'TP_HOME'. Below this, the 'Generate' section contains a function definition:

```

function Generate(prevMsg, prevMetadata, prevMsgType) {
    var msg = {
        station_name : "TP HOME",
        latitude : 14.952397937082447,
        longitude : 102.16413967294146,
        temperature: (Math.random()*10+40).toFixed(2),
        humidity: (Math.random()*10+80).toFixed(2)
    };
    var metadata = { data: 40 };
    var msgType = "POST_TELEMETRY_REQUEST";
    return { msg: msg, metadata: metadata, msgType: msgType };
}

```

ឧបករណ៍ទី 4

The screenshot shows the ThingsBoard Cloud Platform interface. The left sidebar is identical to the previous screenshot. The main area displays a rule chain titled 'save' under 'Rule chains'. The rule chain starts with an 'Input' node, followed by two 'generator' nodes: 'generator Data_AA' and 'generator Data_BB'. Both generators lead to a 'message type switch' node labeled 'TP_Msg'. This is followed by a 'Post telemetry' node, which then leads to a 'save-timeseries' node labeled 'TP_SaveTime'. The 'Transformation' sidebar on the left is expanded, showing options like save attributes, save timeseries, and save to custom table.

The screenshot shows the ThingsBoard IoT Platform interface. On the left, there is a sidebar titled "TP_dash2" containing a "Device admin table" with two rows: "TP_HOME" and "TP SCHOOL". The main area displays an "Add action" dialog box. The dialog has fields for "Icon" (set to "play_arrow"), "Show/hide action using function" (unchecked), and "Type" (set to "Custom action"). Below these is a code editor containing the following JavaScript code:

```
function ($event, widgetContext, entityId, entityName, additionalParams, entityLabel) {
    3+ deviceService.getDevice(entityId.id).subscribe(function(device) {
    4- if (device.name == 'TP_Station_AA') {
    5-     openDashboardState('Home_Data',device)
    6- }
    7- else if(device.name == 'TP_Station_BB') {
    8-     openDashboardState('Boonwattana_Data',device)
    9- }
    10- });
    11- function openDashboardState(stateId,device) {
    12-     var params = {
```

At the bottom right of the dialog are "Cancel" and "Add" buttons. The "Add" button is highlighted with a red circle.

ឧបករណ៍ទីលាប 5

The screenshot shows the ThingsBoard Cloud Platform interface. The left sidebar contains navigation links such as Home, Plan and billing, Solution templates (NEW), Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups (selected), All, TP01, Device profiles, Entity view groups, and Edge groups. The main content area shows a list of devices under 'All: Devices' with columns for Created time and Name. Three devices are listed: TP_SCHOOL (Created 2022-05-06 15:32:48), TP_HOME (Created 2022-05-06 15:32:15), and tpstest1 (Created 2022-04-30 00:14:33). The right side of the screen shows the 'TP_SCHOOL' device details page with tabs for Details, Attributes, Latest telemetry (selected), Alarms, Events, Relations, and Audit Logs. The 'Latest telemetry' section lists five data points:

Last update time	Key ↑	Value
2022-05-06 17:40:41	humidity	76.88
2022-05-06 17:40:41	latitude	14.95293072356967
2022-05-06 17:40:41	longitude	102.11751021569212
2022-05-06 17:40:41	station_name	Boonwattana School
2022-05-06 17:40:41	temperature	37.01

Items per page: 10 | 1 - 5 of 5

Manage dashboard states

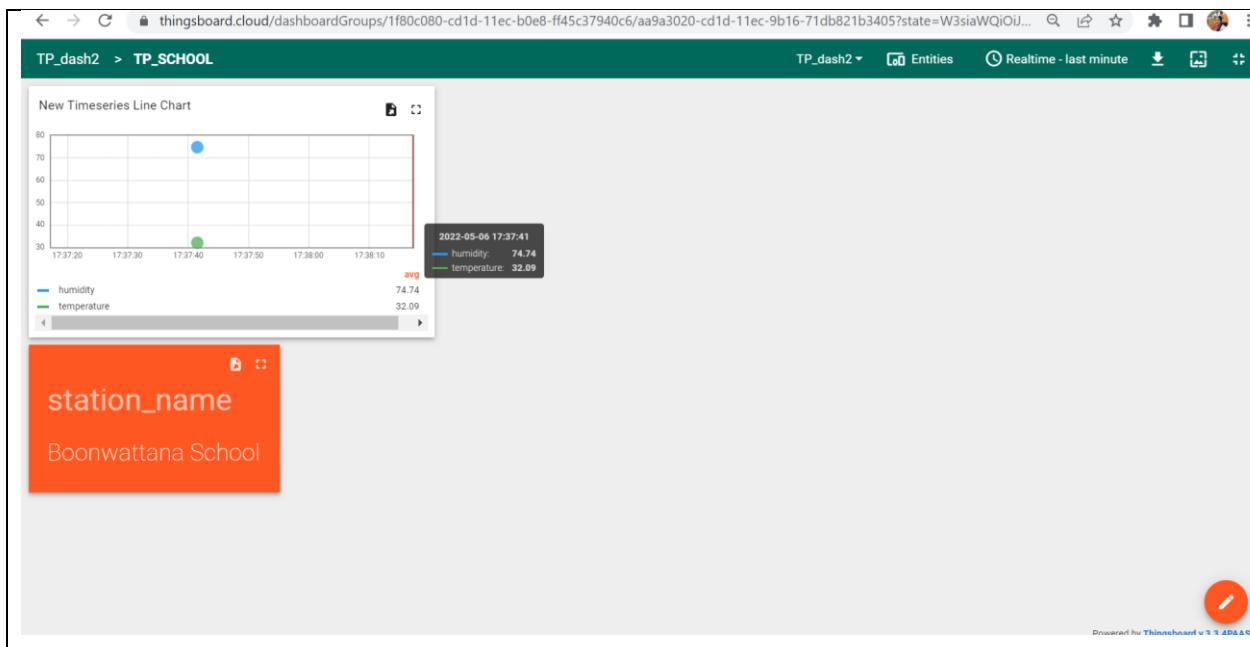
Name	State Id	Root state
\$entityName	Boonwattana_Data	<input type="checkbox"/>
\$entityName	Home_Data	<input type="checkbox"/>
TP_dash2	default	<input checked="" type="checkbox"/>

Items per page: 5 | 1 - 3 of 3 | < >

Entity aliases

Alias name	Entity filter	Resolve as multiple entities
TP_Station_AA	One device	<input type="checkbox"/>
TP_Station_BB	One device	<input type="checkbox"/>
All_Node	List of 2 devices	<input checked="" type="checkbox"/>

Add alias Cancel Save



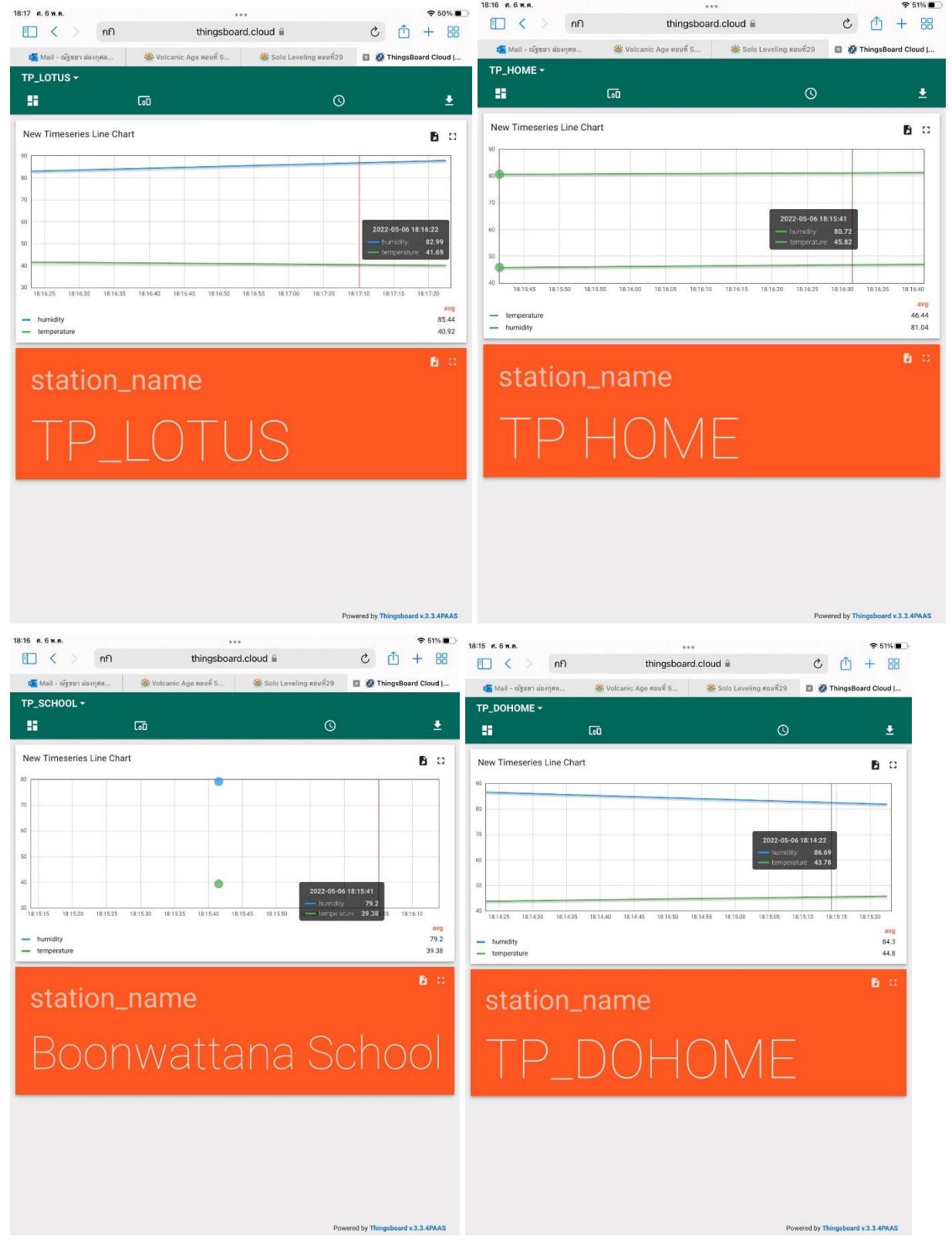
Quiz_302 – MAP Widgets and Multilayer Dashboard – 4 Point Data

- จากหัวข้อ Quiz_301 ลองปรับเพิ่มจุดข้อมูลจากสองจุด(STP,SUT) เป็นลี่จุดข้อมูล ตามแต่เรียนกำหนด

วิธีการทดสอบ 1: Dashboard

Entity name	Entity type	Humidity	temperature	station_name
TP_DOHOME	Device	82.51	48.71	TP_DOHOME
TP_HOME	Device	88.57	45.21	TP HOME
TP_LOTUS	Device	89.43	41.26	TP_LOTUS
TP_SCHOOL	Device	72.86	38.28	Boonwattana School

รูปการทดลอง 2: Display on Mobile device



Messenger 18:06 ศ. 6 พ.ค.

thingsboard.cloud

52%

TP_dash2

TP_SCHOOL

TP_HOME

TP_LOTUS

TP_DOHOME

Google

ภาพ ©2022, CNES / Airbus, Landsat / Copernicus, Maxar Technologies | ชื่อท่านในการใช้งาน

Device admin table

Entity name ↑	Entity type	humidity	temperature	station_name	
TP_DOHOME	Device	86.88	42.62	TP_DOHOME	⋮
TP_HOME	Device	84.99	49.72	TP HOME	▶ Cell_HTable
TP_LOTUS	Device	86.27	42.72	TP_LOTUS	⋮
TP SCHOOL	Device	75.4	31.96	Boonwattana School	⋮

Powered by [Thingsboard v.3.3.4PAAS](#)

รุ่นการทดลอง 3:

thingsboard.cloud/ruleChains/e8a90430-cd19-11ec-9b16-71db821b3405

thingsboard.cloud/deviceGroups/af745110-c7b0-11ec-9e40-4d9a3bf70f9d

The screenshot shows the ThingsBoard Device Groups interface. On the left, the navigation menu is visible, including sections like Home, Plan and billing, Solution templates, Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area displays a list of device groups under the heading "All: Devices". The list includes:

- TP_DOHOME (Created time: 2022-05-06 17:44:22)
- TP_LOTUS (Created time: 2022-05-06 17:43:31)
- TP_SCHOOL (Created time: 2022-05-06 15:32:48)
- tptest1 (Created time: 2022-04-30 00:14:33)

To the right, a detailed view for the TP_DOHOME device group is shown. The "Device details" tab is selected, displaying the "Latest telemetry" section. The table shows the following data:

Last update time	Key ↑	Value
2022-05-06 17:49:22	humidity	86.84
2022-05-06 17:49:22	latitude	14.935794385081737
2022-05-06 17:49:22	longitude	102.13603978970258
2022-05-06 17:49:22	station_name	TP_DOHOME
2022-05-06 17:49:22	temperature	41.46

At the bottom, there are pagination controls: "Items per page: 10" and "1 - 5 of 5".

ThingsBoard Cloud Platform

Dashboard groups > TP_dash > TP_dash2

Current subscription: ThingsBoard Cloud Maker
Status: Trial ends on the May 29, 2022

Realtime - last minute

Entity aliases

Alias name	Entity filter	Resolve as multiple entities
TP_Station_AA	One device	<input checked="" type="checkbox"/>
TP_Station_BB	One device	<input checked="" type="checkbox"/>
All_Node	List of 2 devices	<input checked="" type="checkbox"/>
TP_Station_CC	One device	<input checked="" type="checkbox"/>
TP_Station_DD	One device	<input checked="" type="checkbox"/>
IIAll_Node	List of 4 devices	<input checked="" type="checkbox"/>

Add alias Save

New Google Maps

Google Maps

Data Settings Advanced Actions

Datasources

Type Parameters

Entity alias * IIAll_Node

Entity

Filter

= humidity:humidity
= latitude:latitude
= longitude:longitude
= station_name:station_name
= temperature:temperature

+ Add Data settings

The screenshot shows the ThingsBoard Cloud Platform interface. The top navigation bar includes 'Home', 'Plan and billing', 'Solution templates' (marked as NEW), 'Rule chains', 'Data converters', 'Integrations', 'Roles', 'Customers hierarchy', 'User groups', 'Customer groups', 'Asset groups', 'Device groups', 'Device profiles', 'Entity view groups', 'Edge groups', 'Edge management', and 'Widgets Library'. The main dashboard group is 'TP_dash' and the specific dashboard is 'TP_dash2'. A modal window titled 'Entity aliases' lists six entries: 'TP_Station_AA', 'TP_Station_BB', 'All_Node', 'TP_Station_CC', 'TP_Station_DD', and 'IIAll_Node'. Below this is a 'New Google Maps' configuration window. It displays a map with three location markers labeled 'TP_SCHOOL', 'TP_LOTUS', and 'TP_DOHOME'. The 'Datasources' tab is selected, showing a table with columns 'Type' and 'Parameters'. Under 'Type', it says 'Entity'. Under 'Parameters', there are five entries: '= humidity:humidity', '= latitude:latitude', '= longitude:longitude', '= station_name:station_name', and '= temperature:temperature'. There are also tabs for 'Settings' and 'Advanced'.

ThingsBoard Cloud Platform

Dashboard groups > TP_dash > TP_dash2

Manage dashboard states

TP_dash2

New Google Maps

Dashboard states

Name	State Id	Root state
\$(entityName) Boonwattana_Data		
\$(entityName) Home_Data		
\$(entityName) Lotus_Data		
\$(entityName) Dohome_Data		
TP_dash2		<input checked="" type="checkbox"/>

Items per page: 5 | 1 - 5 of 5

Cancel Save

Add Widget: Timeseries Line Chart

Lotus_Data

Data Settings Advanced Actions

Use dashboard timewindow (checked)

Display timewindow

Timewindow: Realtime - last minute

Datasources

Type Parameters

Entity alias * TP_Station_CC

Entity = humidity:humidity
Entity = temper...:temper...

+ Add Cancel Add

ขั้นตอนที่ 4

ຮຽນการພດລວບ 5

The screenshot shows the ThingsBoard Cloud Platform interface. On the left is a sidebar with various navigation options: Home, Plan and billing, Solution templates (NEW), Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area shows a dashboard group named 'TP_dash' with one dashboard listed. A modal window titled 'Public dashboard link' is displayed, containing the message: 'Your public dashboard TP_dash2 is accessible via next public link:' followed by a URL: <https://thingsboard.cloud/dashboard/aa9a3020-cd1d-11ec-9b16-71db821b3405?publicId=a80aebo0-cd23-11ec-9cdb-5b8ff28e4445>. Below the URL is a note: 'Note: Do not forget to make related devices, assets and entity views public in order to access their data.' At the bottom of the modal are social sharing icons for Facebook, Twitter, LinkedIn, and Email, and an 'OK' button.

<https://thingsboard.cloud/dashboard/aa9a3020-cd1d-11ec-9b16-71db821b3405?publicId=a80aebo0-cd23-11ec-9cdb-5b8ff28e4445>

thingsboard.cloud/ruleChains

The screenshot shows the ThingsBoard Rule chains page. The left sidebar contains navigation links such as Home, Plan and billing, Solution templates (NEW), Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area displays a table titled "Rule chains" with columns for Created time and Name. The table lists four entries: "Create" (2022-05-07 17:10:07), "TP_STATION" (2022-05-06 15:52:50), "Root Rule Chain" (2022-04-29 18:37:01), and "Generate Report" (2022-04-29 18:37:01). A "Root" label is positioned to the right of the first three entries. The bottom right corner of the page shows pagination: "Items per page 10" and "1 - 4 of 4".

thingsboard.cloud/ruleChains/dec52cd0-cded-11ec-8ec1-79978f9d7342

The screenshot shows the ThingsBoard Create (Root) rule chain editor. The left sidebar is identical to the previous screen. The main area features a "save" search bar and a sidebar with categories: Filter, Enrichment, Transformation, Action, Analytics, External, and Flow. The "Action" category is expanded, showing options like save attributes, save timeseries, save to custom table, and a script block labeled "script = script". The central workspace displays a flow diagram starting with an "Input" node, followed by a "message type switch msgSW" node. This is followed by a "Post telemetry" node, which then branches into two paths: one leading to a "True" node and another leading to a "script = script" node. Finally, both paths converge at a "save timeseries saveTS" node.

Test script function

Message type * Post telemetry Message

Message

```
1+ {
2   "temperature": 99,
3   "humidity": 78
4 }
```

Tidy Mini Metadata

Metadata

deviceName	Test Device
deviceType	default
ts	1651918617875

Add

function Filter(msg, metadata, msgType) {
1 return typeof msg.temperature === 'undefined'
2 || (msg.temperature >= -40 && msg.temperature <= 80);
}

Filter Tidy Output

Output

```
1 False
```

Test Cancel Save

notify-bot.line.me/my/

ออก Access Token (สำหรับผู้พัฒนา)

เมื่อใช้ Access Token แบบนี้

ออก Token

Token ที่ออก

uepZtYC9OhlwSR5oIT4Ipby5TisjRAL.0mHw1HnPhr...

ถ้าออกจากหน้านี้ ระบบจะไม่แสดง Token ที่ออกใหม่แล้วต่อไป โปรดคัดลอก Token ก่อนออกจากหน้านี้

คัดลอก **ปิด**

ภาษาไทย

MQTTlens

Connections + ^ | Connection: tptph

Subscribe
monitorTB 0 - at most once

Publish
monitorTB 0 - at most once Retained

Message

Subscriptions
Topic: "monitorTB" Showing the last 5 messages — +
Time Topic QoS
8 12:17:47 monitorTB 0
Message: "Temp=56.7, Hudmid=76.5"
Time Topic QoS
9 12:17:47 monitorTB 0
Message: "Temp=56.7, Hudmid=76.5"

Messages: 0/13

แจ้งเตือน

ออก Personal Access Token แล้ว 17:25 น.
รันนี่

Test-TB: Overheat, Temperature = 56.7'C 00:38 น.

รายการทดสอบ 4

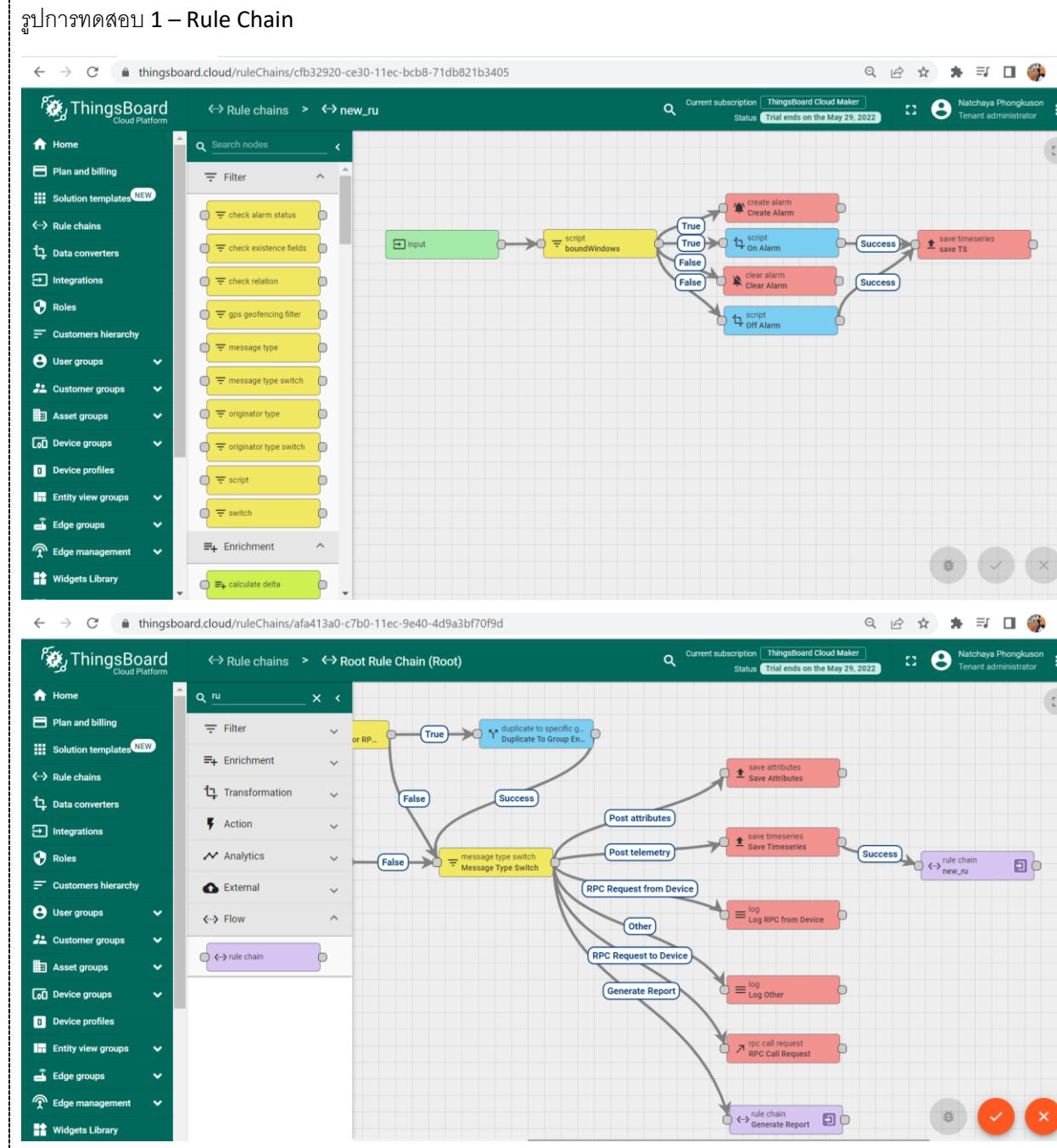
Test-TB: Overheat, Temperature = 56.7'C 00:44 น.

Test-TB: Overheat, Temperature = 56.7'C 00:44 น.

ได้ทดลองทำงานเอกสารแลป มีการปรับเปลี่ยนเล็กน้อยของ Token และค่า API ต่างๆให้เป็นของตนเอง เมื่อทดสอบการทำงานพบว่าสามารถทำงานได้ตามค่าที่กำหนดไว้

Quiz_402 – ทดสอบการทำงาน Alarm เมื่ออุณหภูมิอยู่นอกเขตที่กำหนด (ตาม Lab-402)

- ทำการทดสอบตามเอกสาร Lab-402 กำหนดเงื่อนไขในช่วงที่ยอมรับ คือ temperature = [-5,15] และ humidity = [40 – 60]%



ឧបករាណទី២ – Dashboard

The screenshot shows the ThingsBoard IoT Platform interface. On the left is a navigation sidebar with various options like Home, Plan and billing, Solution templates (NEW), Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area is titled 'TP_Ru'. It contains an 'Alarms' section with three entries: 'Realtime - last day', 'Created time ↓', 'Originator', 'Type', 'Severity', and 'Status'. The first two entries are 'TP_Do' with 'High Temperature' and 'Critical' severity, both marked as 'Active Unacknowledged'. The third entry is 'TP_Do' with 'High' temperature and 'Critical' severity, marked as 'Cleared Unacknowledged'. Below the alarms is a 'Timeseries Line Chart' showing 'temperature' and 'humidity' over time from 02:01:40 to 02:02:30. The chart shows temperature values around 36 and humidity values around 47.8. To the right of the chart is a 'XALARM' card with the value '0.00' and a red '0' icon.

ឧបករាណទី៣

The screenshot shows the ThingsBoard IoT Platform interface. The left sidebar is identical to the previous screenshot. The main area is titled 'TP_Ru'. A modal dialog box is open, titled 'Edit alias'. Inside the dialog, there is a form with fields: 'Alias name *' (set to 'new_ru'), 'Resolve as multiple entities' (checkbox), 'Filter type *' (set to 'Single entity'), 'Type *' (set to 'Device'), and 'Device *' (set to 'TP_Do'). At the bottom of the dialog are 'Cancel' and 'Save' buttons. The background of the main dashboard is dimmed.

thingsboard.cloud/ruleChains/cfb32920-ce30-11ec-bcb8-71db821b3405

The screenshot shows the ThingsBoard Rule chains interface. On the left, a sidebar lists various platform features: Home, Plan and billing, Solution templates (NEW), Rule chains (selected), Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main workspace displays a 'boundWindows' node configuration. The node has an 'Input' port connected to a 'Filter' node. The 'Filter' node has several child nodes: check alarm status, check existence fields, check relation, gps geofencing filter, message type, message type switch, originator type, originator type switch, script, and switch. The 'Details' tab is selected, showing the name 'boundWindows' and the following script:

```

function Filter(msg, metadata, msgType) {
    return msg.temperature < -40 || msg.temperature > 80;
}

```

A 'Test filter function' button is present at the bottom of the script area.

thingsboard.cloud/ruleChains/cfb32920-ce30-11ec-bcb8-71db821b3405

The screenshot shows the ThingsBoard Rule chains interface. The sidebar and workspace are identical to the first screenshot. A 'Create Alarm' node is selected. The 'Details' tab is selected, showing the name 'Create Alarm' and the following script:

```

function Details(msg, metadata, msgType) {
    var details = {};
    if (metadata.prevAlarmDetails) {
        details = JSON.parse(metadata.prevAlarmDetails);
        //remove prevAlarmDetails from metadata
    }
    //now metadata is the same as it comes IN this rule node
    return details;
}

```

A 'Test details function' button is present at the bottom of the script area. Below the script, the 'Events' tab is selected, showing the alarm type 'Critical Temperature' and a note: 'Hint: use \${metadataKey} for value from metadata, \${messageKey} for value from message body'.

The screenshot shows the ThingsBoard Cloud Platform interface. On the left, the sidebar includes options like Home, Plan and billing, Rule chains (selected), Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area displays a 'Rule chains' editor titled 'new_ru'. A 'Search nodes' dropdown is open. In the center, there's a grid of nodes, with one node highlighted in green labeled 'Input'. To the right, a detailed configuration panel for a 'Clear Alarm' rule is shown. It has tabs for Details, Events, and Help. The 'Name' field is set to 'Clear Alarm'. The 'Details' tab contains a code editor with the following JavaScript function:

```

function Details(msg, metadata, msgType) {
    var details = {};
    if (metadata.prevAlarmDetails) {
        details = JSON.parse(metadata.prevAlarmDetails);
        //remove prevAlarmDetails from metadata
        now metadata is the same as it comes IN this rule node
    }
    return details;
}

```

Below the code editor is a 'Test details function' button. The 'Events' tab shows an alarm type set to 'Critical Temperature'. A note at the bottom says 'Hint: use \${metadatakey} for value from metadata, \${messagekey} for value from message body'. The 'Help' tab is currently empty.

ឧបករាណទីសែចក្រកម្ពុជា 4

The screenshot shows the ReqBin online curl client interface. At the top, there are tabs for Curl, Python, JavaScript, PHP, Java, and JSON, with Curl selected. Below the tabs, there are buttons for File, Generate Code, Tools, Share, Generate Code, and Debug API. The status bar indicates Status: 200 (), Time: 27 ms, and Size: 0.00 kb. The main area contains a code editor with the following curl command:

```

curl -v -X POST -d '{"temperature":15,"humidity": 40}'
http://thingsboard.cloud/api/v1/JY0hAKKvRNw4Qkb9Q6TM/telemetry --header "Content-Type:application/json"

```

Below the code editor, there are tabs for Content, Headers (3), Raw (3), and Timings. The Content tab shows an empty response area.

The screenshot shows the ThingsBoard Cloud Platform interface. On the left is a sidebar with navigation links like Home, Plan and billing, Solution templates (NEW), Rule chains, Data converters, Integrations, Roles, Customers hierarchy, User groups, Customer groups, Asset groups, Device groups, Device profiles, Entity view groups, Edge groups, Edge management, and Widgets Library. The main area displays a dashboard titled 'TP_Ru'. It includes a section for 'Alarms' showing three entries: 'Realtime - last day', '2022-05-08 01:55:26 TP_Do High Temp', '2022-05-08 01:53:23 TP_Do Critical Temp', and '2022-05-08 01:40:06 TP_Do High'. Below this is a 'New Timeseries Line Chart' for 'temperature' from 01:59:40 to 02:00:20. To the right is a 'Digital gauges: select widget' panel with six options: Digital vertical bar, Horizontal bar, Mini gauge, Digital horizontal bar, Simple gauge, and Vertical bar. Each option has a preview and a brief description.

ແຄມກຣັງອຸນກົມສູງ

This screenshot shows the same dashboard 'TP_Ru' but with the 'Alarms' section expanded. It lists three alarms: '2022-05-08 01:55:26 TP_Do High Temperature' (Severity: Critical, Status: Active, Unacknowledged), '2022-05-08 01:53:23 TP_Do Critical Temperature' (Severity: Critical, Status: Active, Unacknowledged), and '2022-05-08 01:40:06 TP_Do High' (Severity: Critical, Status: Cleared). Below the alarms is a 'New Timeseries Line Chart' for 'temperature'. To the right is a large digital gauge labeled 'XALARM' with a value of '1.00'. At the bottom right are three circular buttons with '+' (orange), '✓' (green), and '✗' (red) symbols. The footer indicates the platform is 'Powered by Thingsboard v.3.3.4PaaS'.

ໄດ້ທຳອຸນຫຼຸມໃນຊ່ວງທີ່ຍ່ອມຮັບ ສື່ວນ temperature = [-5,15] ແລະ humidity = [40 – 60]% ໂດຍ
ຕັ້ງຄ່າຕາມເອກສານແຕ່ຈະເປີ່ນຄ່າທີ່ curl ຈະພບວ່າໜ້າ dashboard ຈະເປີ່ນໄປຕາມຄ່າທີ່ໄດ້ຮັບມາ
ແລະຈະມີການ Alarms ສາມາດ create ແລະ clear ໄດ້ດັ່ງຮູບດ້ານນີ້

Quiz_403 – ให้ตอบคำถาม แสดงแนวคิด อภิปรายในหัวข้อต่อไปนี้

1. ความรู้ที่ได้เพิ่มเติมเกี่ยวกับ IoT

แต่เดิมรู้ว่า IoT คืออุปกรณ์สื่อสารกันผ่าน Internet เมื่อได้ทำการทดลองทำพบร่วมกับ Internet สามารถช่วยในการสื่อสาร เช่น Thingboard ส่งข้อมูลไปยัง Line และ MQTTlens ได้ โดยการทำงานของมันสามารถกำหนดเงื่อนไขได้ตามผู้ใช้ต้องการ

2. ความรู้ที่ได้เพิ่มเติมเกี่ยวกับ ThingsBoard

ThingsBoard สามารถสื่อสารกับ MQTTlens และ Line ได้ เมื่อได้ลองใช้งานทราบว่ามันเป็น platform ที่ใช้ฟรีหรือเรียกว่า Opensource ใช้งานได้ค่อนข้างง่าย (แต่เริ่มใช้ยากๆจะยาก)

3. แนวทางการปรับใช้ ThingsBoard IoT Platform กับงานที่รับผิดชอบ

งานที่รับผิดชอบคือการส่งข้อมูลไป MQTT และ Line สามารถนำมารับใช้โดยการเอา ThingsBoard มาสื่อสารข้อมูลระหว่างพากมัน ได้ตั้งค่า device, Dashboard รวมไปถึง rule chain สามารถตั้งค่าสั่งเงื่อนไขได้หลากหลาย

4. คำแนะนำ ข้อเสนอแนะ จากผู้เรียน – ประเด็นเนื้อหาที่นำเสนอ (มากไป, น้อยไป, ลึกไป, อธิบายน้อยไป,
เอกสาร, ความหมายสมของเวลา)

เอกสารครั้งนี้ไม่ค่อยละเอียด(เมื่อเทียบกับเอกสารหลักสูตรก่อนหน้า) แต่พังค์คลิปสอนไปด้วยก็เลยทำได้ไม่ติดปัญหา
ปัญหาหลักๆที่เจอคือพิมพ์ผิดจึงทำงานไม่สำเร็จ ก็ใช้วิชาทางอยู่พอมควร ทึ้งนี้ค่อนข้างทำคล่อง เพราะเคยผ่านมา
ก่อนจึงประเมินว่า เนื้อหาที่นำเสนอค่อนข้างเยอะ อธิบายดีมาก เอกสารอย่างให้ละเอียดขึ้น ใช้เวลาได้เหมาะสมค่ะ

5. คำแนะนำ ข้อเสนอแนะ จากผู้เรียน – ประเด็นเนื้อหาที่อยากรู้หรือเปิดหลักสูตรเพิ่มเติม หรือต้องการให้อบรมแบบเข้าห้องเรียน

ไม่รู้เพิ่มเติมค่ะ ตอนนี้อยากรู้สักให้คล่องก่อน พอทำลายๆรบก្ដួលក្នុងវាត្រូវការ ใจร้ายๆ
กับความสนใจและทักษะการประยุกต์ใช้
