Cognitive Home using Bluemix Watson IoT and Intel Edison kit

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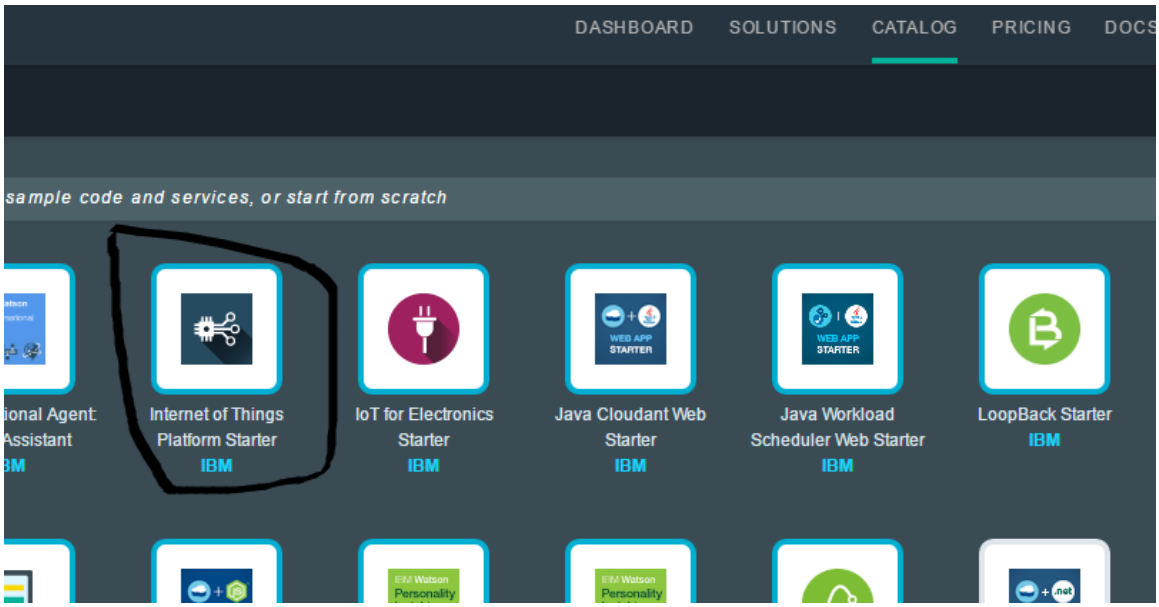
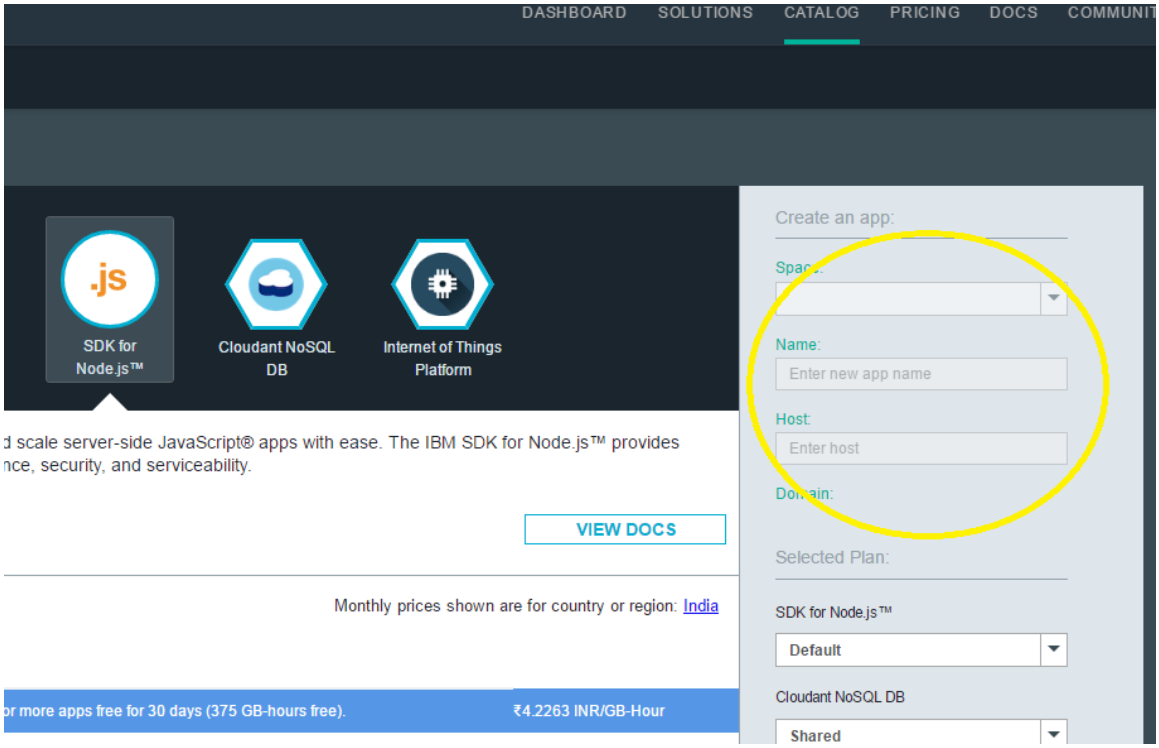
Step 1: Intel Edison kit registration with IBM Bluemix

Deploy IoT Boilerplate

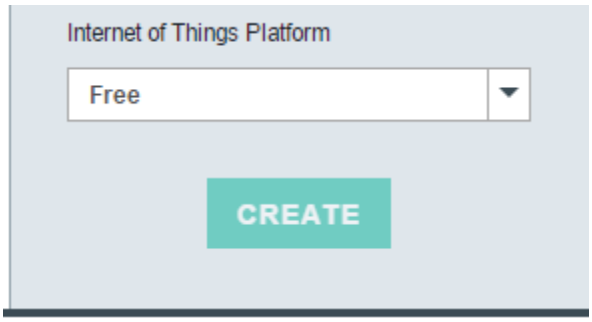
Go to Bluemix catalog page and select “Internet of Things Platform Starter” as shown below:



Provide an unique name for your application as shown:



Procced to create



<u>Register the device with the Bluemix IoT platform.</u>

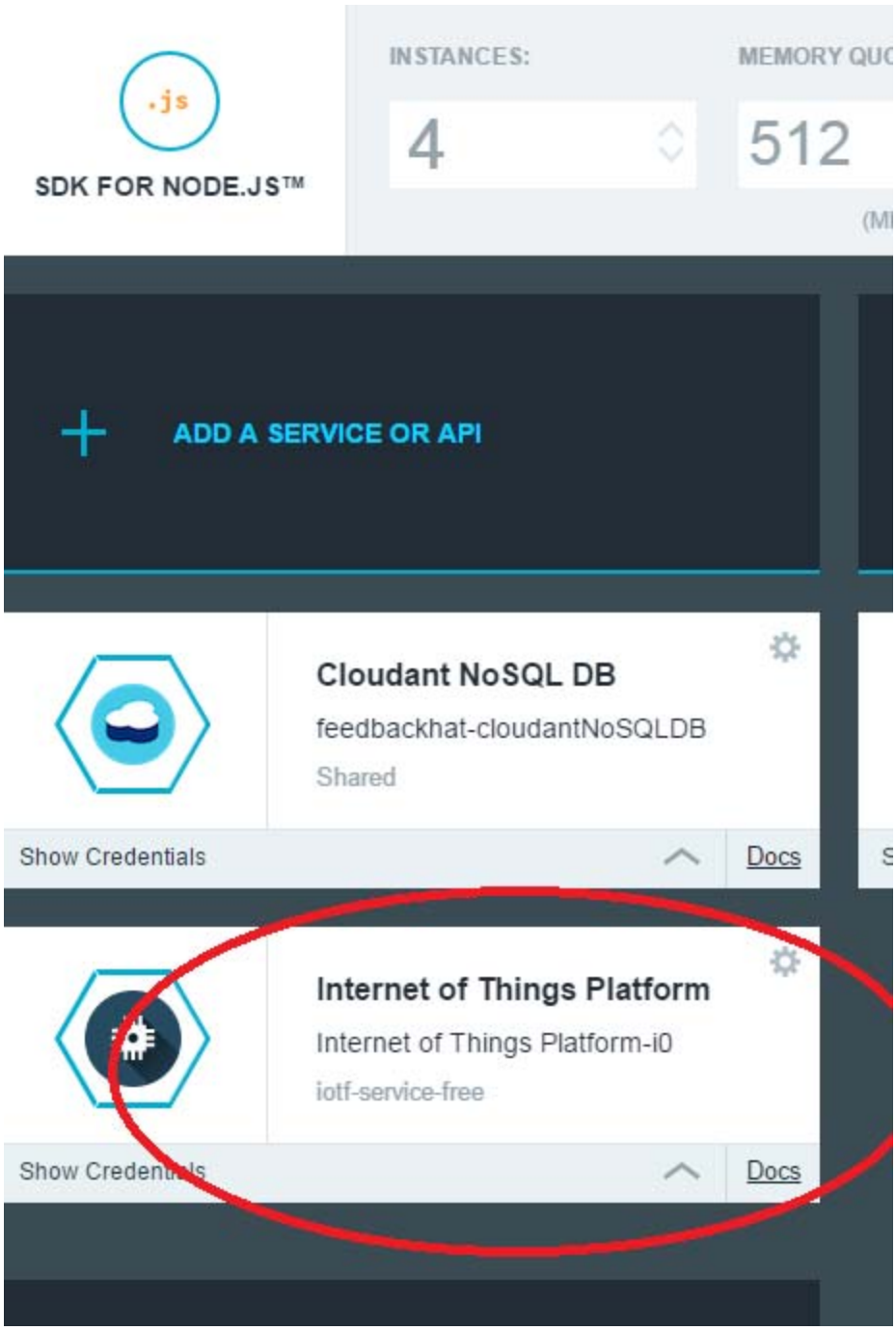
You need to provide

(i) Device name and

(ii) DeviceID

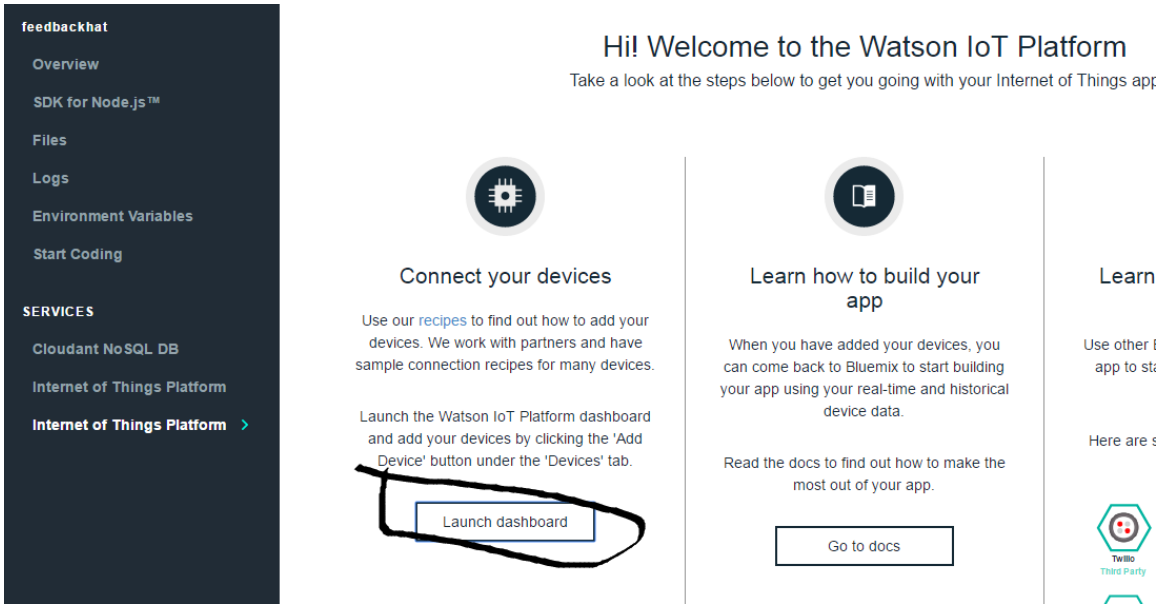
to identify the device. In return Bluemix IoT platform will return the auth credentials which can be used for data communication from the device to the Bluemix IoT Platform

Go back to Dashboard and select the application that got deployed just now as shown

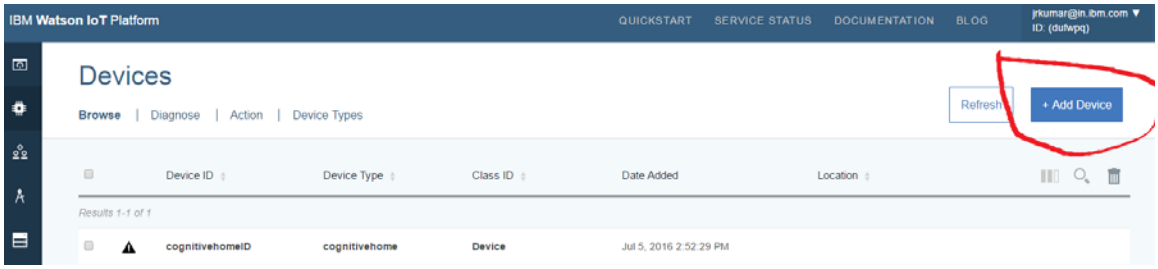


Click on “Internet of Things Platform” as shown above

IoT Platform console page is reached. Click on Launch Dashboard as shown below:

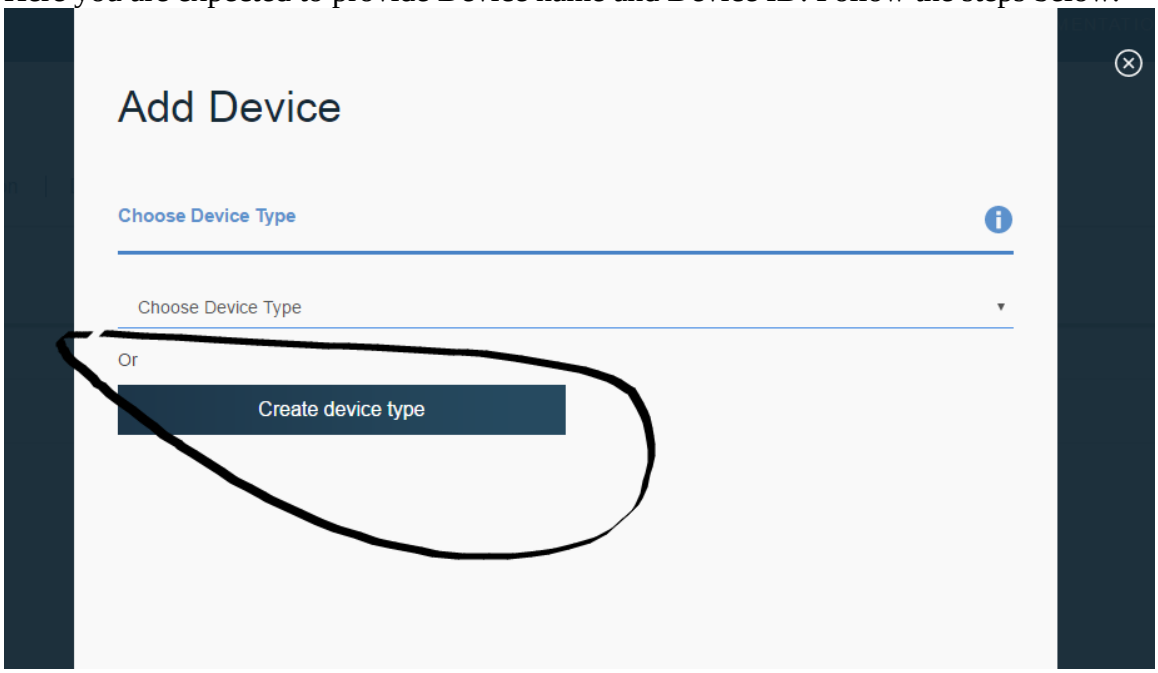


Now its time to Add Device. Follow the screen shot below:



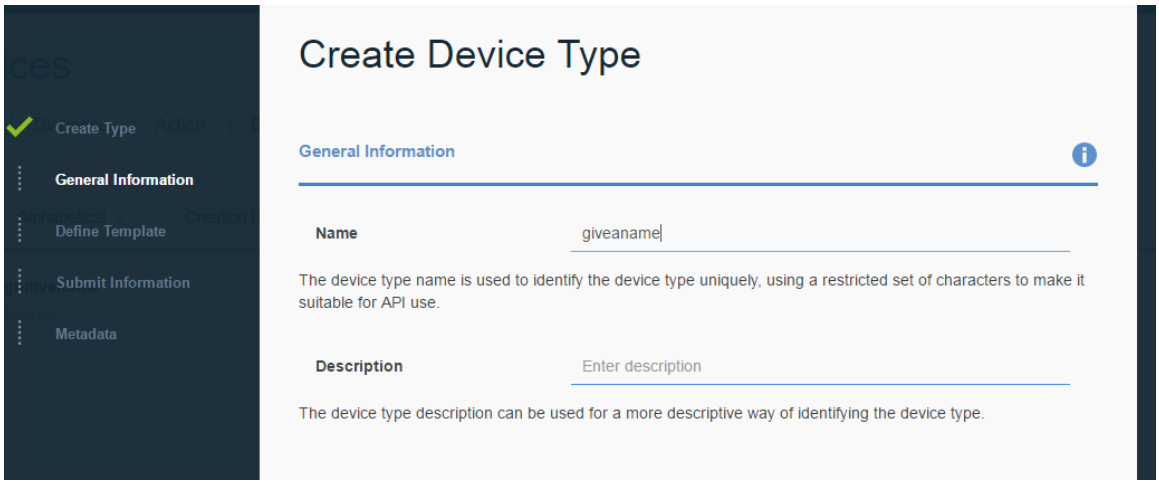
Click on Add Device

Here you are expected to provide Device name and Device ID. Follow the steps below.

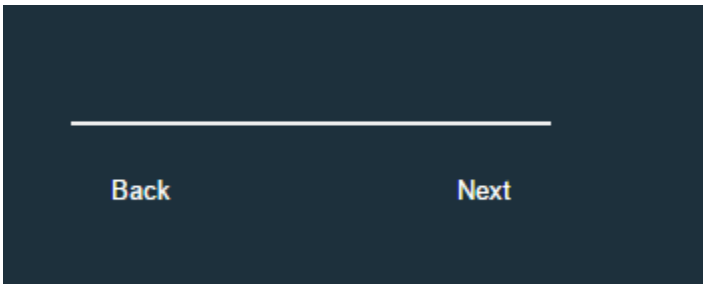


Click on “Create Device Type” and give a name to the device type. Pls .note that this will be used while connecting from Bluemix node. Hence provide any unique name which is easy to remember.

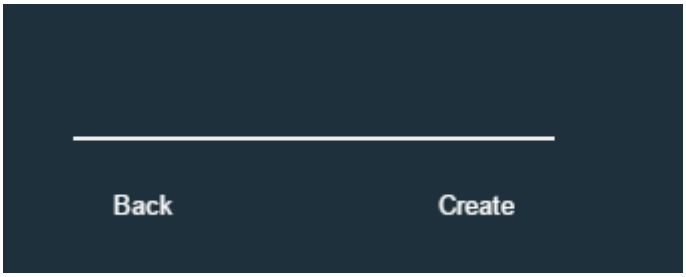
Note: A device type is intended to represent a group of devices that are identical.



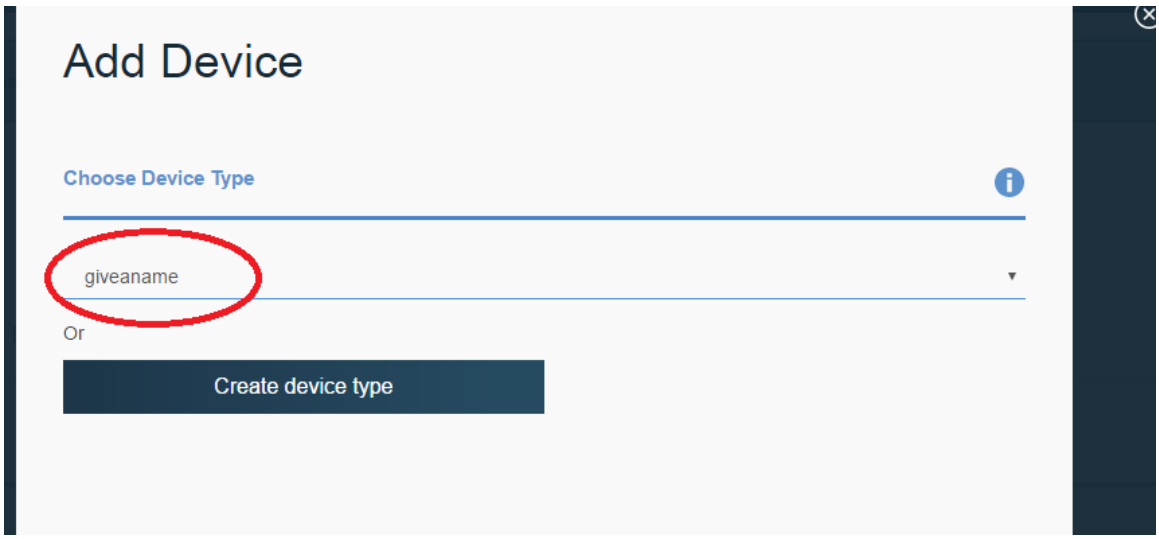
Procced with Next…



Take the default values for rest of the screens and complete it with create..

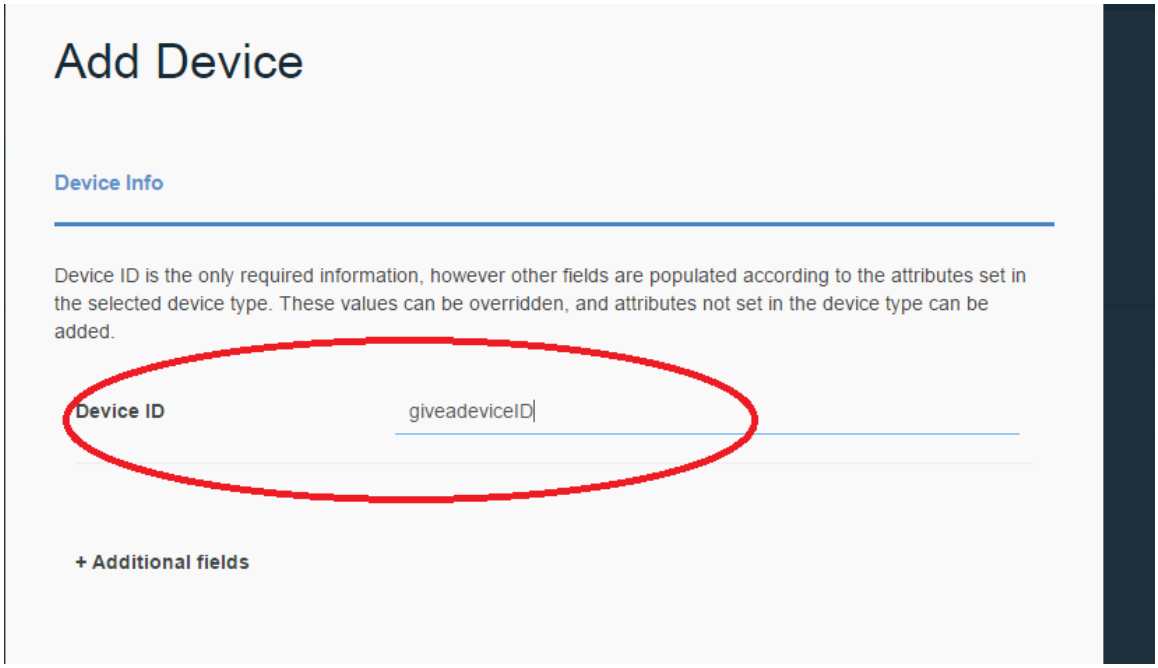


You will be back to create Device with the device type just created been listed as shown below..



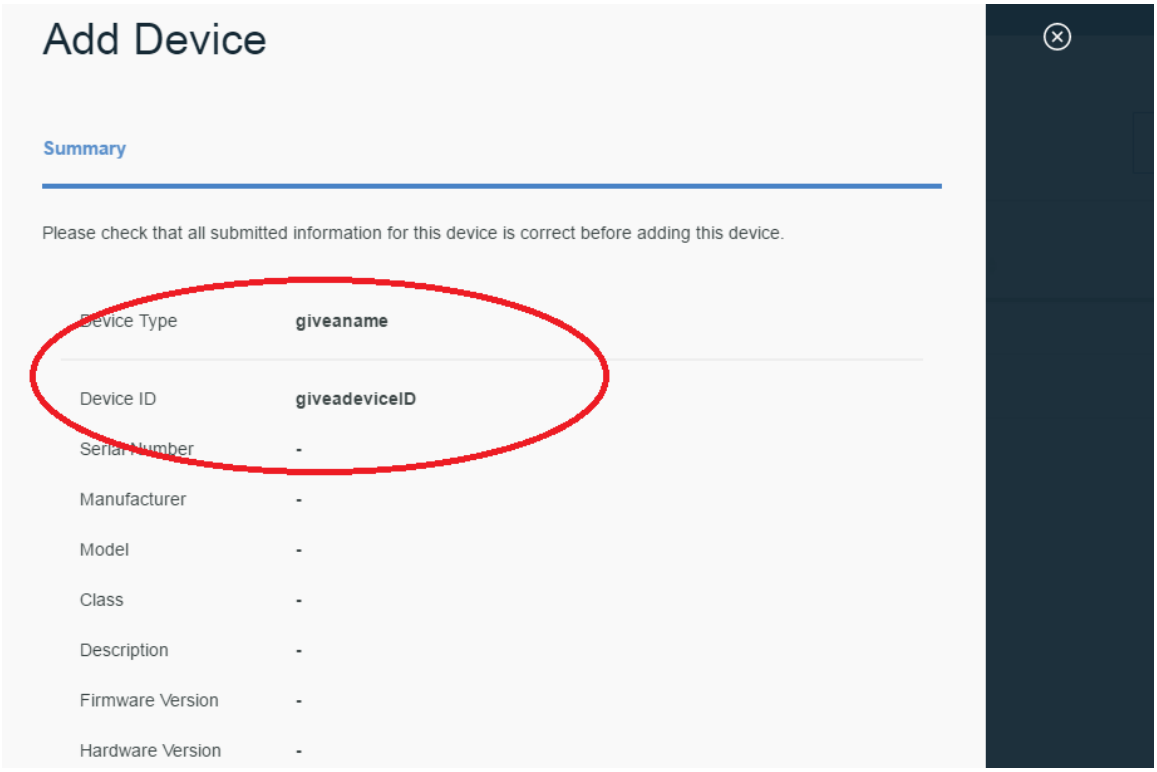
Proceed with

Give a deviceID for the devicetype just created. Let it be an unique easy to remember ID. This ID will be used at the Bluemix side while sending commands back to the device from Bluemix.



Procced with 

Take the default for the subsequent screens till you reach the following page:

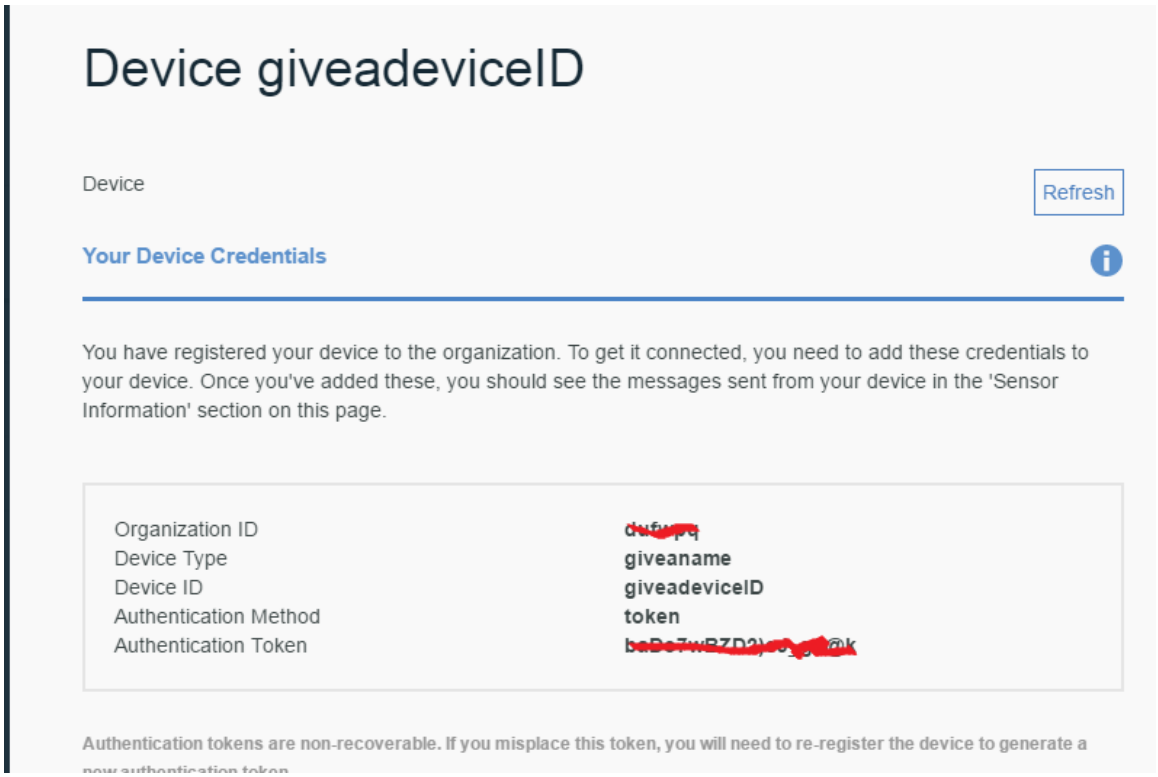


Procced with Add… 

Tthe device is been created. Bluemix returns back with auth credentials, as shown below:

Pls. save this as **device.json**. This is required to connect with the Bluemix Watson IoT platform.Once lost, to retrieve, need to re-register the device again.

Note: In our Lab, we refer it in the client program which runs on the Intel Edison board



Congratulations !! your step 1 is over

Proceed to **step 2** with Intel configuration

- ➔ Install the Intel drivers
- ➔ https://software.intel.com/en-us/iot/hardware/edison/downloads

Step 2: Get Started with Intel Edison Board

1) Configure Intel Edison kit - https://software.intel.com/en-us/get-started-edison-windows-32

(i) Install the USB and Serial drivers
   a. https://software.intel.com/en-us/get-started-edison-windows-32-step2
(ii) Install XDK tool kit
   a. https://software.intel.com/en-us/iot/software/ide
(iii) Flash the Intel chip firmware
   a. https://software.intel.com/en-us/get-started-edison-windows-32-step3

2) connect the Intel kit using the USB and chk that the kit is been recognized as a filesystem at windows (say D:/Edison)

3)Use putty – connect to the device using the static IP : 192.168.2.15 with “root” as user

Congratulations !! now you are connected with the Intel device…proceed to next step in executing the code in making mqtt connection with Bluemix Watson IoT platform

Step 3: Download the code and run it

- Code available at github.com/EcoDIndia/cognitivehome
- Dwonload the files:
    - Cognitivehome.js
    - Device.json
- Modify the device.json file to replace it with your organization and auth token details as created in step1
- Run it as **node cognitivehome.js**

Congratulations !! Now your client program is ready to receive commands from Bluemix Watson

Step 4: Train Watson with your selfie

-Follow the lab instruction

```
    https:// ECoDIndia/cognitivehome/Cognitive Home
- Watson Visual Recognition Lab.pdf
```

Step 5: Sending commands from Bluemix:

So far:

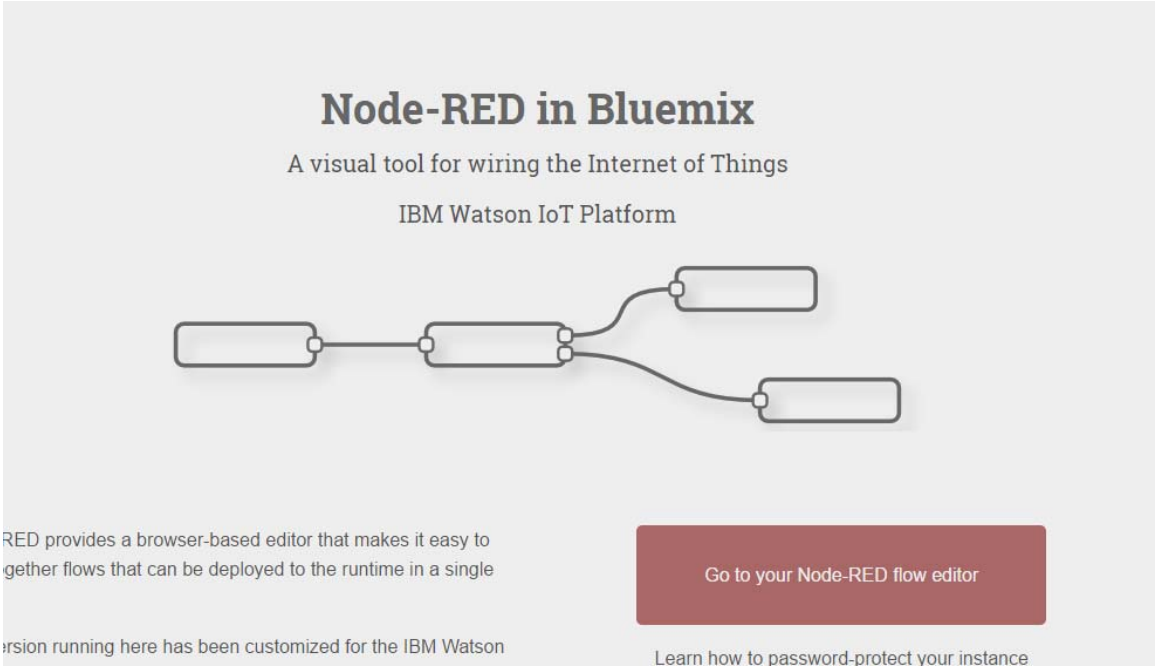
- ➔ Device is registered with Bluemix Watson IoT
- ➔ Device is configured and powered on
- ➔ Device client is ready to receive the command
- ➔ Watson is trained to recognize you

In this step, we give your image to Watson and based on the response from Watson, the commands will be sent back to device for further action .

Execute the application created as in step1:

For example: myiotexample.mybluemix.net

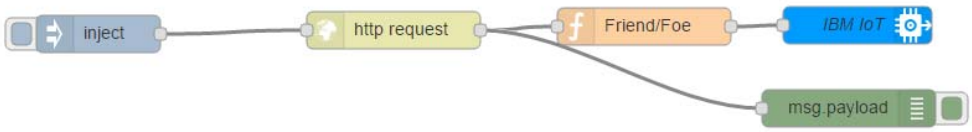
Proceed with “Go to your Node-RED flow editor”



Create a new flow as shown below:

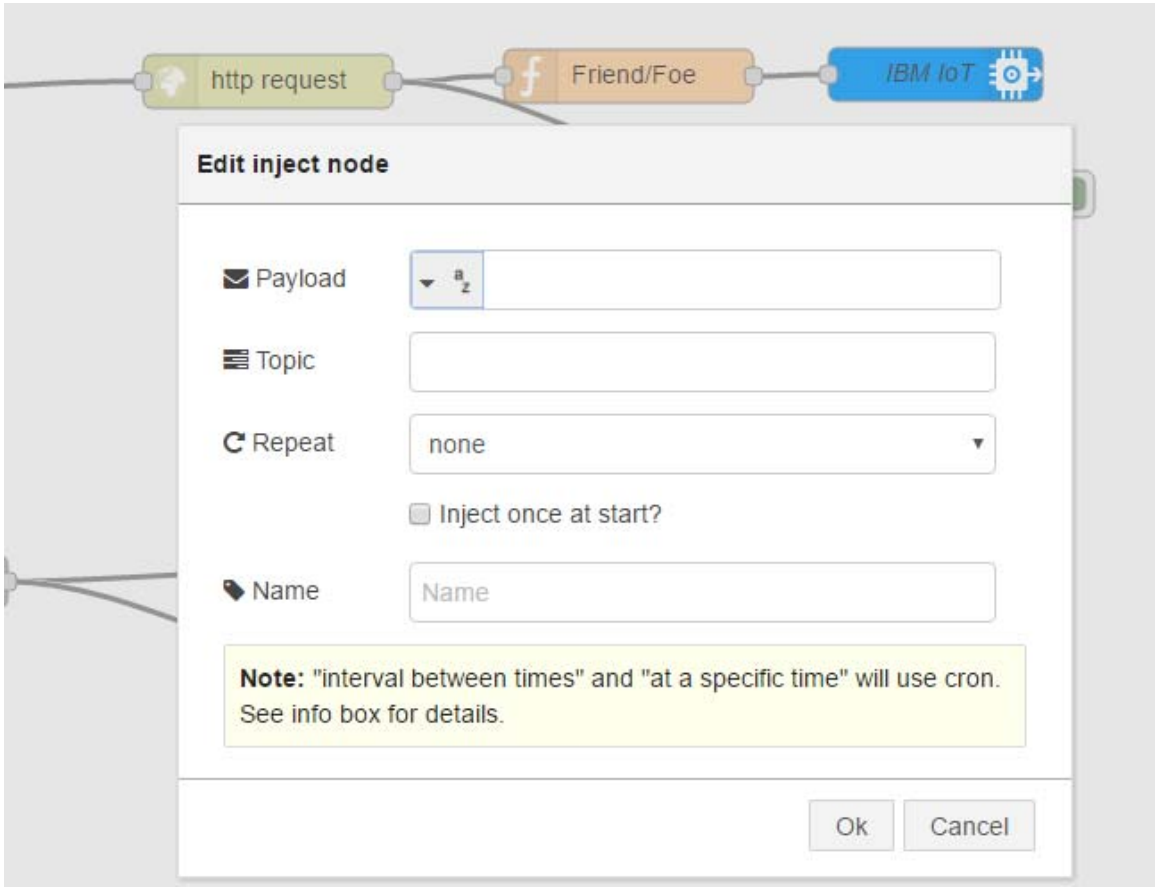
(i) select “Inject “ node from Input

(ii) select “http request” node from function
(iii) select “function” node from function (in this case Friend/Foe)
(iv) select “IBM IoT” node from output
(v) select “debug node” from output



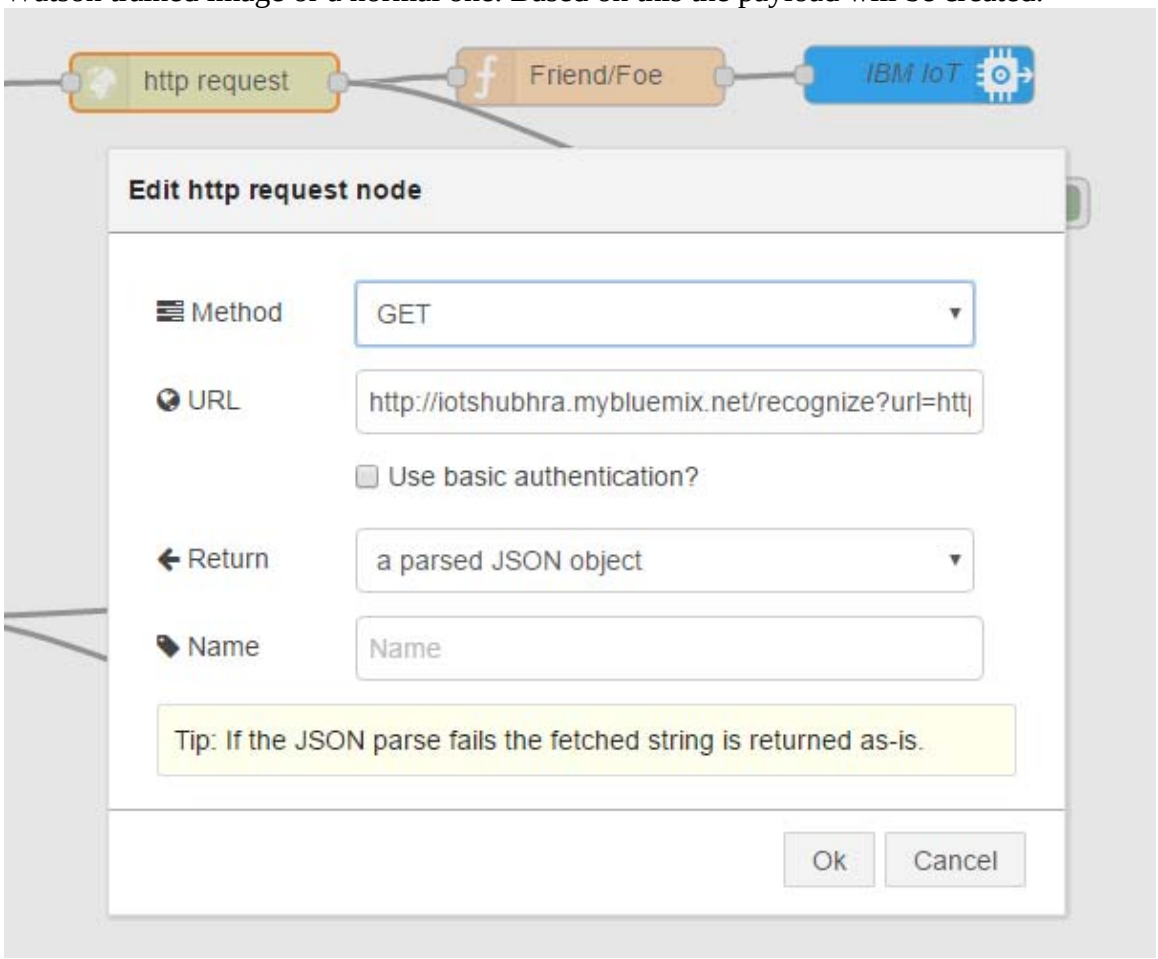
Inject node”

No additional input required. Leave it as default. We use this to inject a request to http request node



http request node:

In this node, provide the URL where the image of selfie is uploaded. This could be a Watson trained image or a normal one. Based on this the payload will be created.



Sample URL:

http://iotshubhra.mybluemix.net/recognize?url=https://s31.postimg.org/q68nw62p7/rajesh.jpg

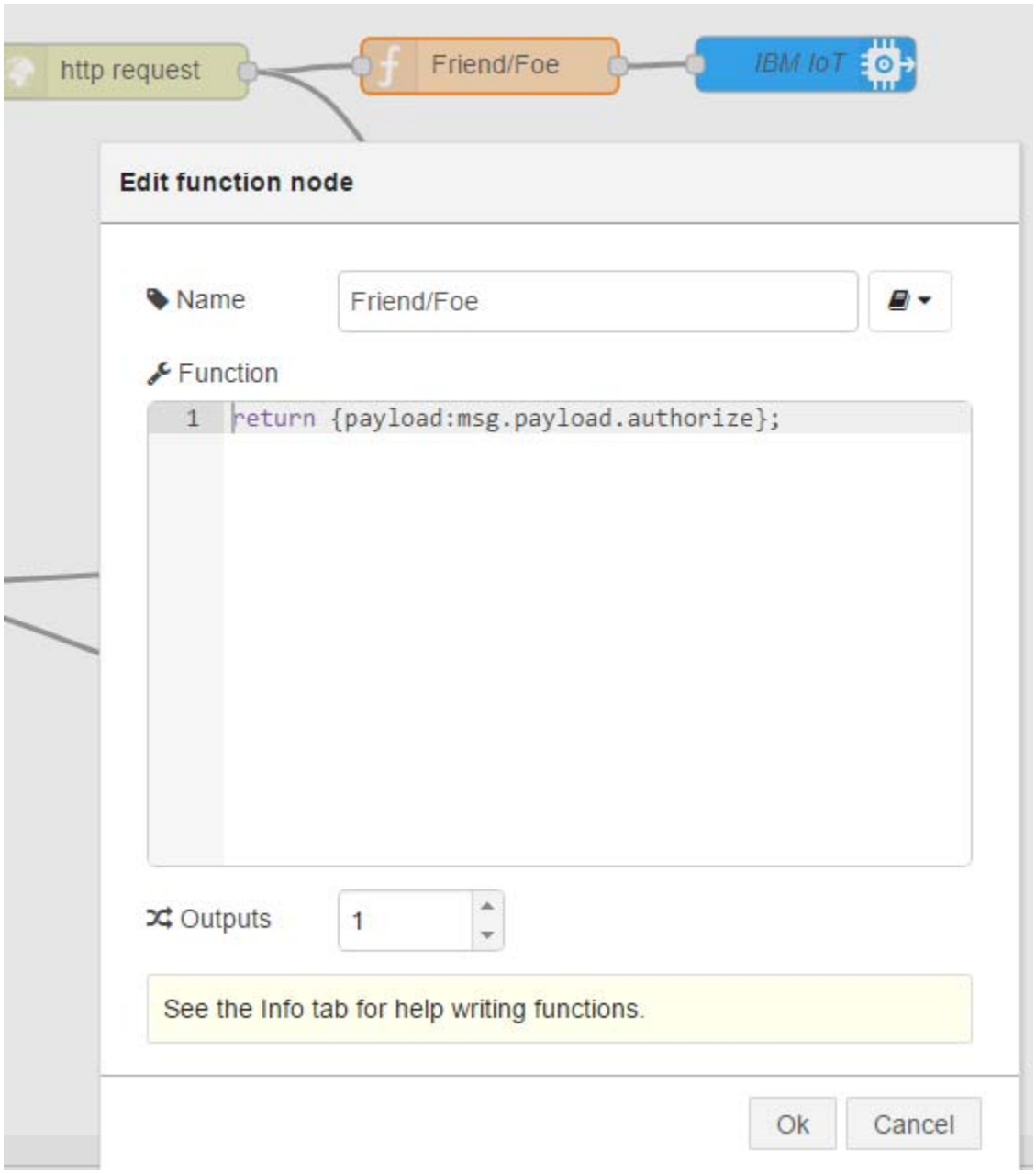
Note:

- ➔ iotshubhra.mybluemix.net in the above link is the URL of the Watson application which is trained to recognize the image. If your case use the application you had deployed or reuse the above link. Go with Instructors advice.
- ➔ https:/s31.postimg…..is the link where the image is been uploaded

Function node:

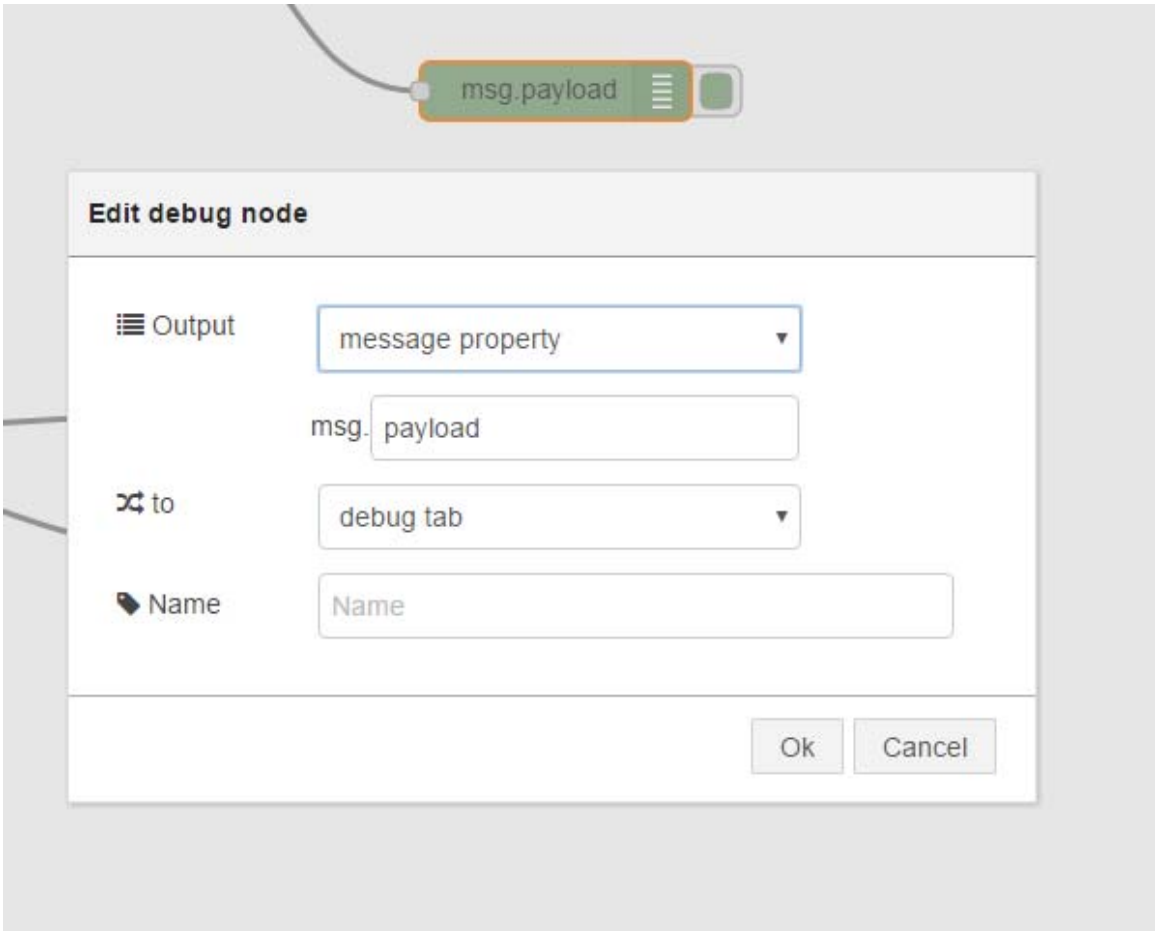
Add the following function “return {payload:msg.payload.authorize};” as shown below.

This returns the payload “authorize” from the http URL from the previous node



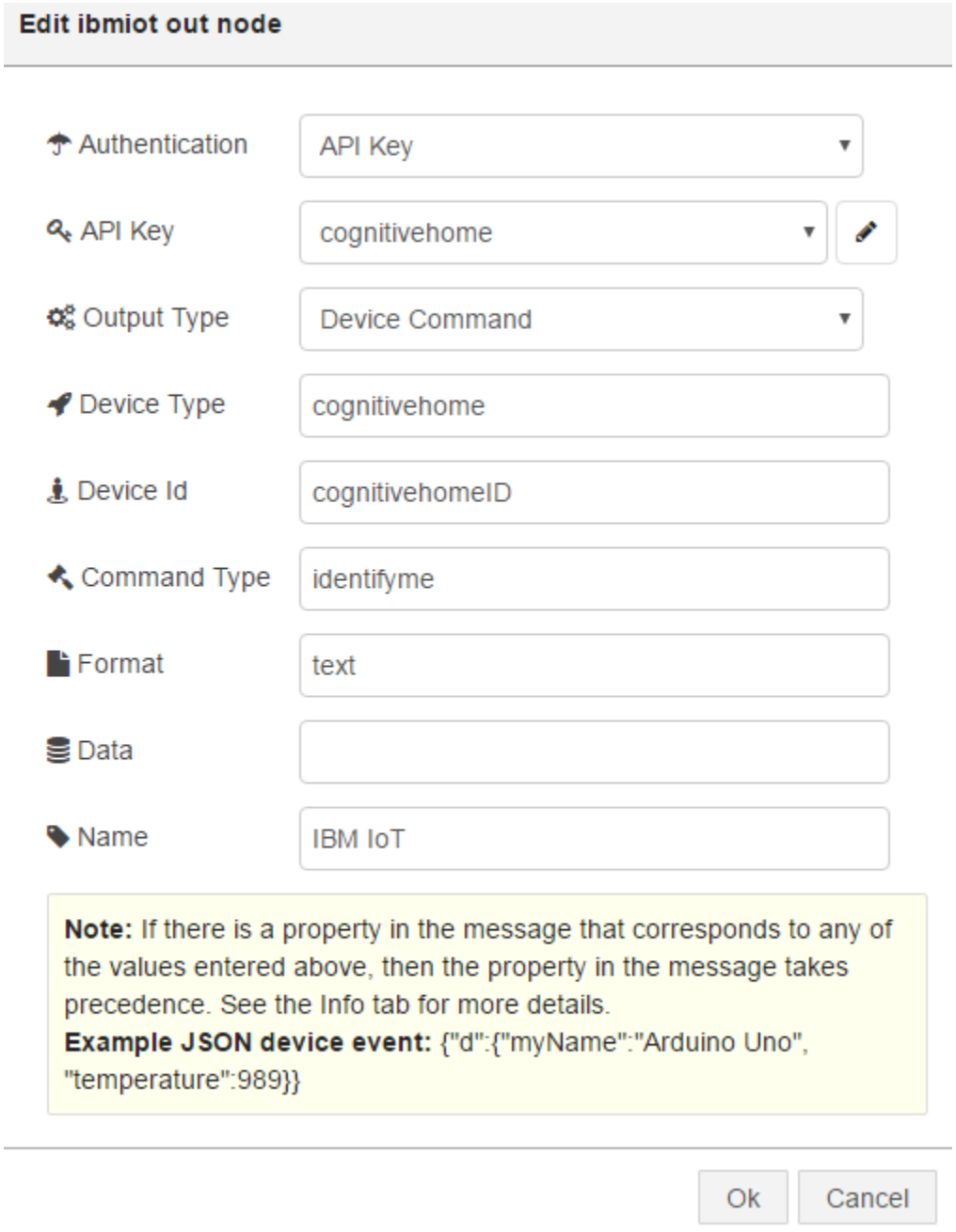
Debug node:

This is a debug node to understand the output from payload

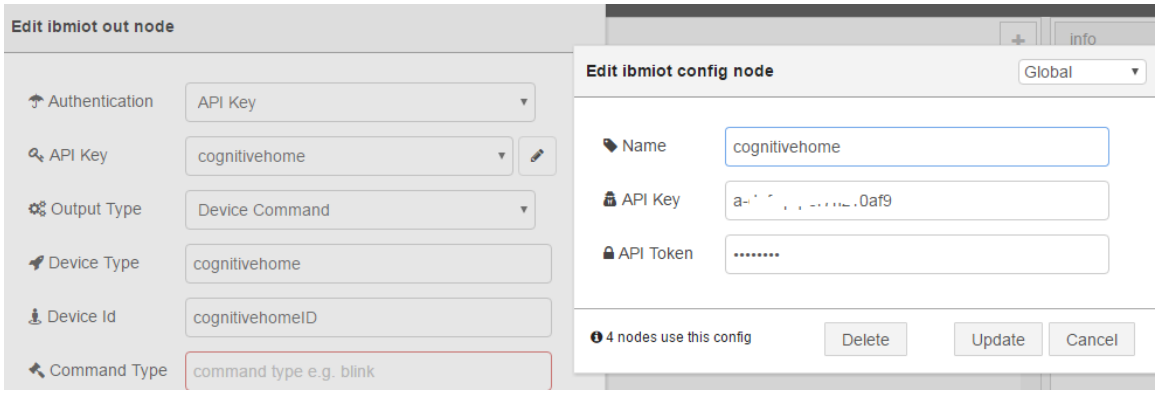


IBM IoT Node:

->select "API Key" as Authentication. Thus we use the key provided by Bluemix (as in step1) for device authentication. The following screen shot demonstrates from where the API key should be taken



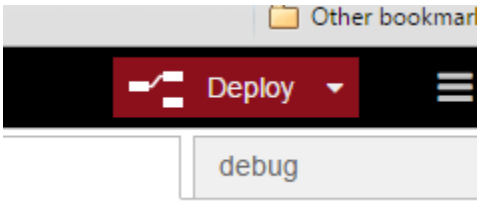
->



Take the api key credentials from

Then proceed to provide the Device name and Device ID as created in step 1:

Good to send the command through node..



→Watch out the debug monitor for the payload…Watch out the response from the Intel device ..

If the payload is “1” -> Watson identifies the known person as friend LED glows)
If the payload is “0” ->Watson identifies as an unknown person (Buzzer sound)

Congrats !! you have completed the **Cognitive home** Lab !!
