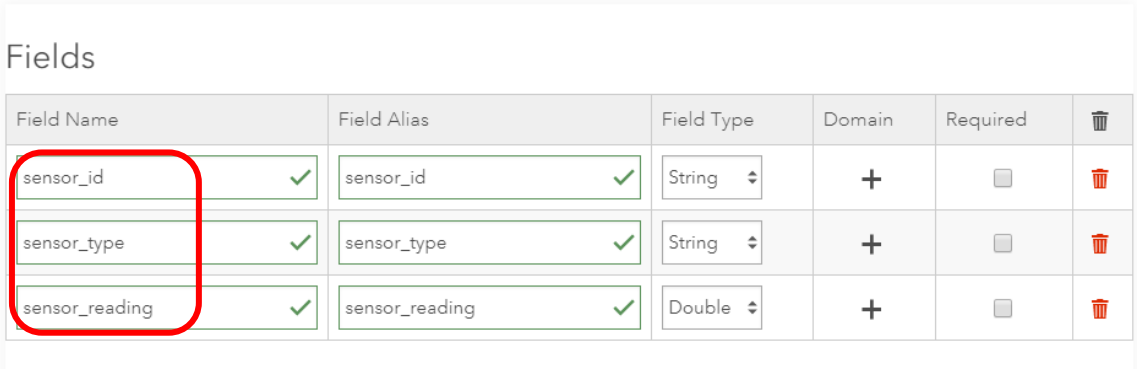
***Before you go, please make sure you have the updated OS version for wifi shield (higher than v1.22)**

ArcGIS Online (https://www.arcgis.com/) is an online, collaborative web GIS that allows you to use, create, and share maps data for analytics and visualization. One of the very interesting features of ArcGIS is the ability to collecting live sensor data via its RESTful API and publish data as a visual web layer. Below are the 7 steps needed to add new or update data from Muselab Wifi shield to the ArcGIS system. It is also good to know that there are free trial accounts for anyone. ArcGIS does provide free non-commercial license and discount for schools and developers thereafter. Please contact a local Esri representative for further detail.

Step 1. Sign up the ArcGIS online services. Go to developer.arcgis.com and log in with your ArcGIS Online account.

Step 2. Create the layer for the Arcgis map. There should be 3 fields*.

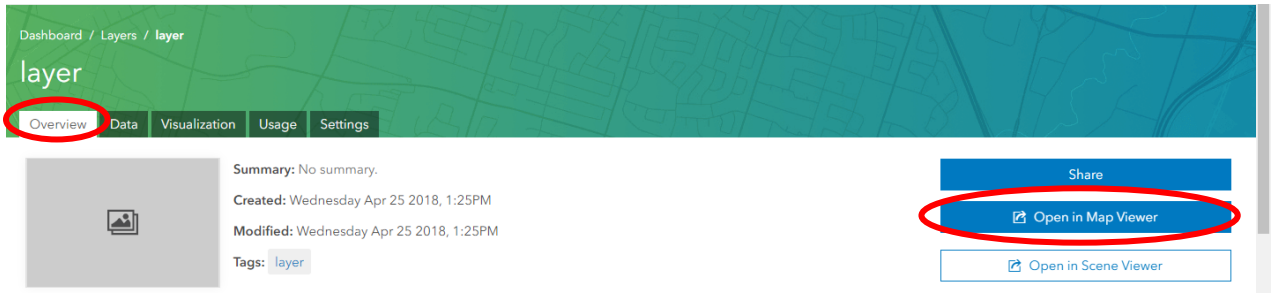
- sensor_id
- sensor_type
- sensor_reading

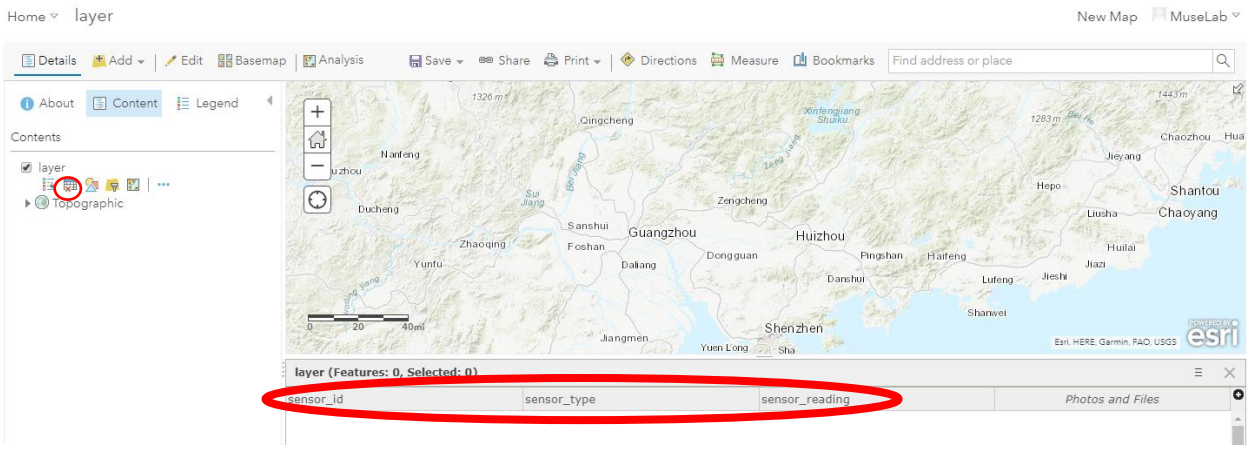


* Be aware that these 3 fields are case-sensitive (capital letter or small letter must be the same).

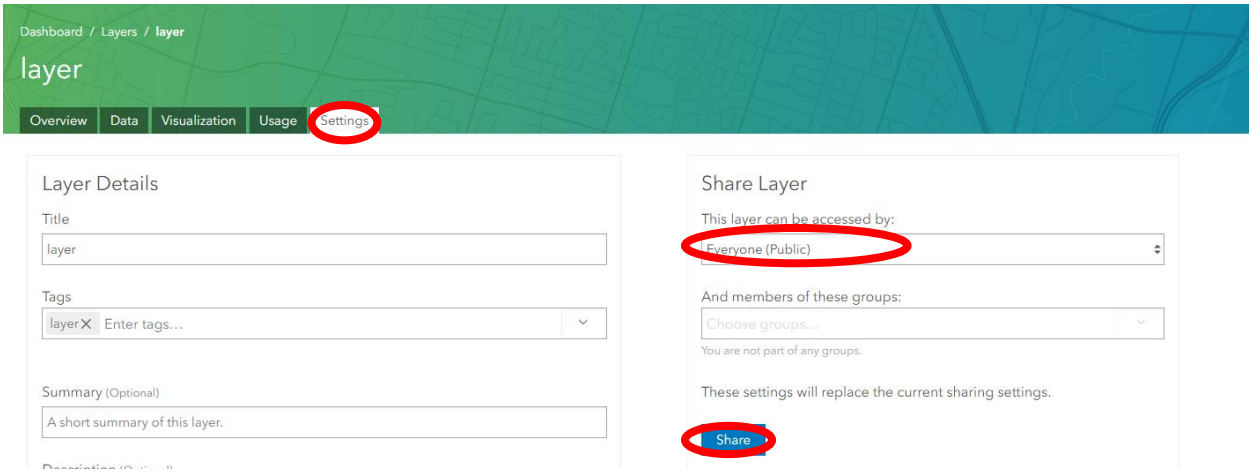
**Detail for create the account, please go to this link. XXXXXX

Step 3. By clicking (Overview -> Open in Map Viewer), you will get the map that contains a table which have these 3 fields (sensor_id, sensor_type, sensor_reading).

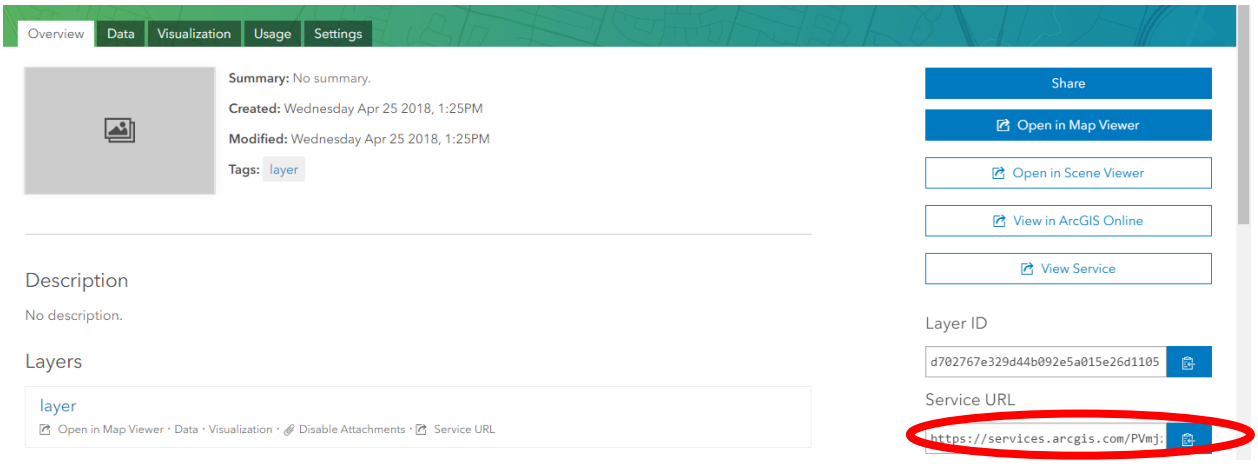




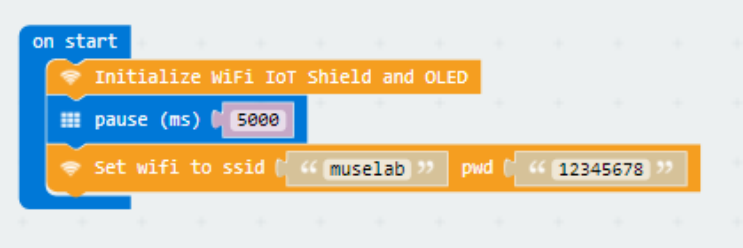
Step 4. Make sure your created layer is open to public. (Settings -> Share Layer -> Everyone)



Step 5. Go to the Overview tab, copy the Service URL.

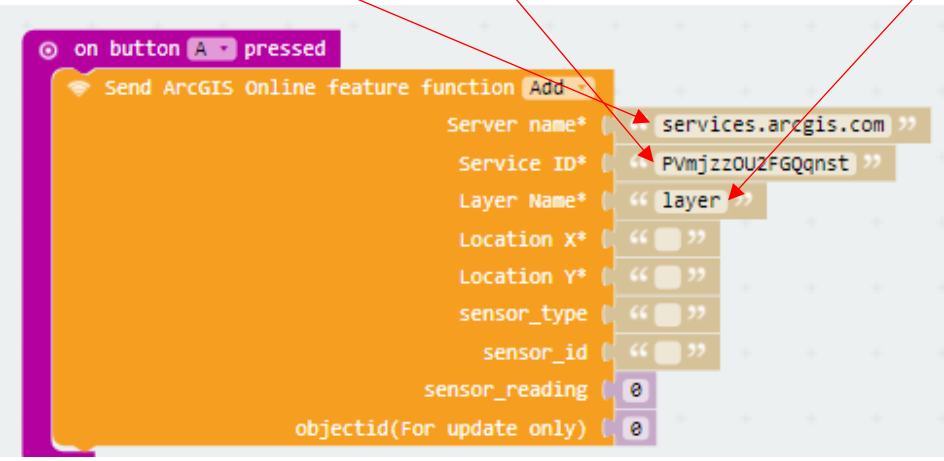


Step 6. Go back to block editor, firstly, you have to set up your network connection on the MuseLab WiFi IoT Robotic Shield. If you have already done so, please continue with “Step 2”, otherwise click below link and follow the instructions.

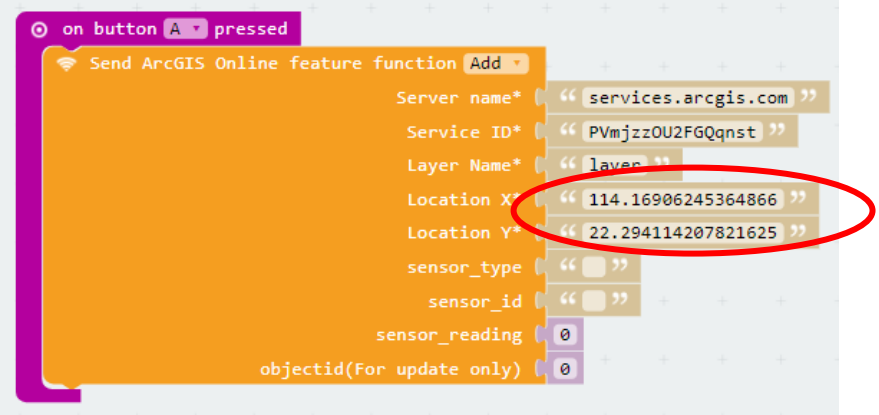


Step 7. For this function, we try to add the data to the map first. Take the URL you have just copied.

https://services.arcgis.com/PVmjzzOU2FGQqnst/arcgis/rest/services/layer/FeatureServer

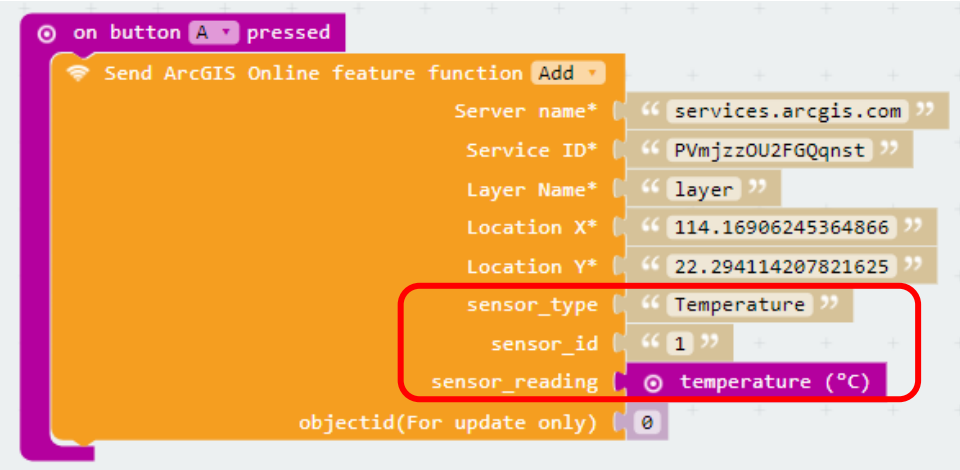


Step 8. Find your location x-coordinate and y-coordinate. For this example, it is the location for “Tsim Sha Tsui STAR FERRY” in Hong Kong.

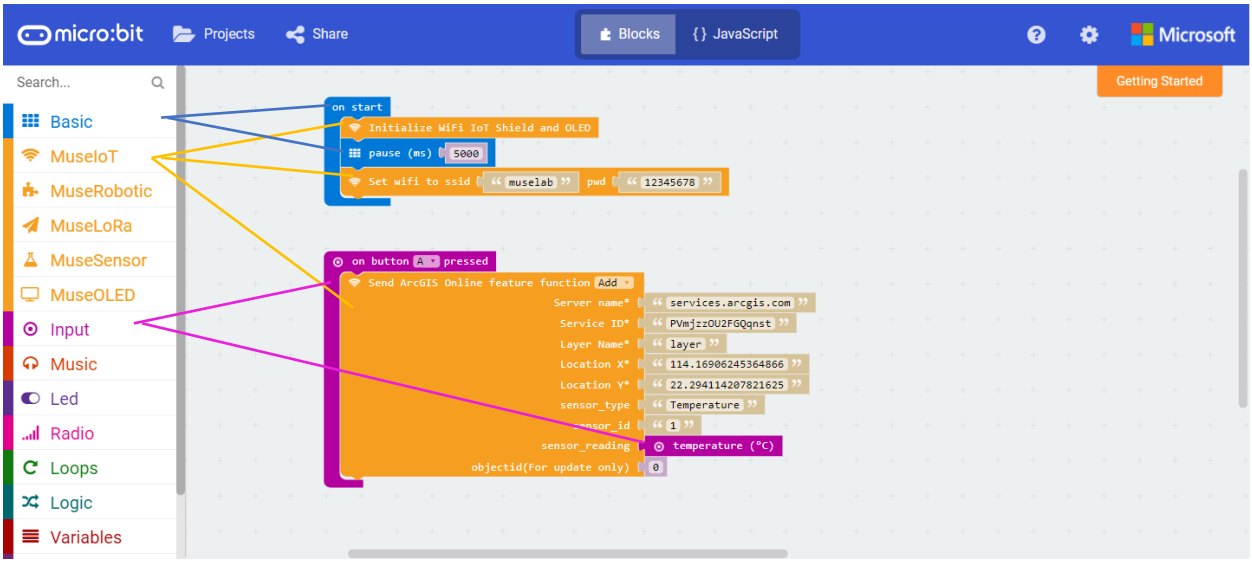


Step 9. Input the data you want to upload. For this example, we upload the temperature.

- sensor_type: Temperature (It is your sensor type, you can define your sensor type)
- sensor_id: 1 (it is sensor id, here we just define it is 1)
- Sensor_reading: microbit temperature

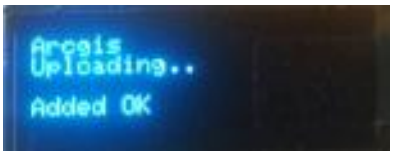


The full initialize script would be as follow



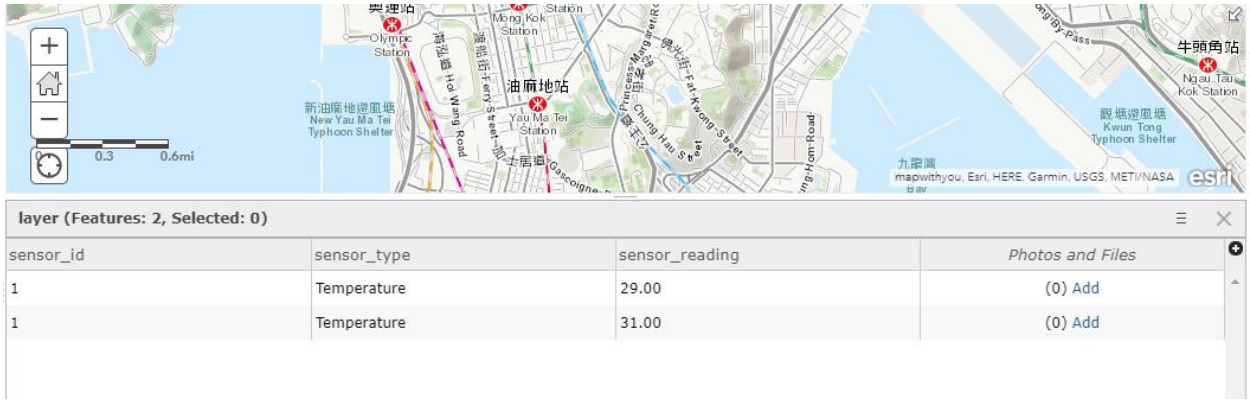
After the shield has been connected to the Internet.

Press the button A on the microbit. You will get the below message on the screen.



Go to the map viewer and check, you got the data uploaded!

If you press one more time button, it will be uploaded one more time!



Done! Please enjoy your digital geographic adventure!

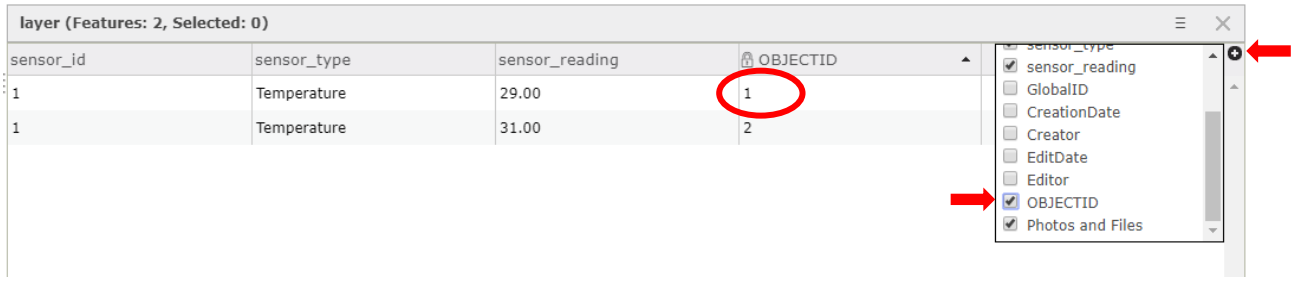
UPDATE FEATURE

If you want to update the data you have uploaded before, it is also possible! For example, you want to update the **first data** to another location, with different sensor_id.

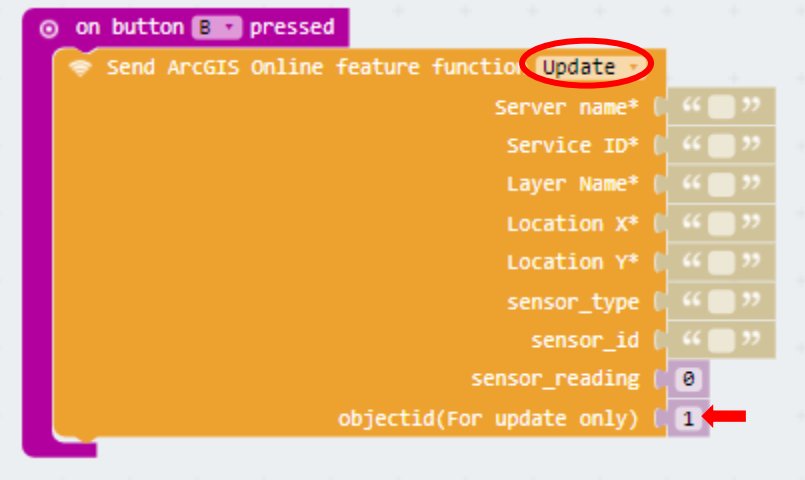
	From	To
sensor_id	1	2
Location X,Y	“Tsim Sha Tsui STAR FERRY” (114.16906245364866,22.294114207821625)	“PRINCE EDWARD RAILWAY STATION” (114.16986641456171,22.32415906970101)

Before you do that, you need to know the “OBJECTID” of the row data that you are going to update.

STEP1: Click the “+” button and tick the “OBJECTID”. You can find the “OBJECTID” for the first data.

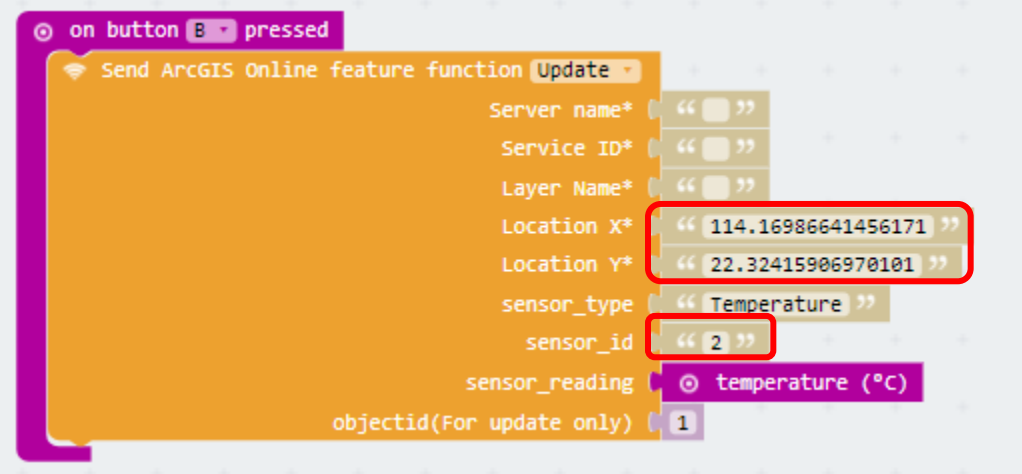


STEP2: for this example, we change the first data (OBJECTID = 1) and choose Update.



STEP3: Input the new information you just want to update. For sensor_type and sensor_reading, they are still the same.

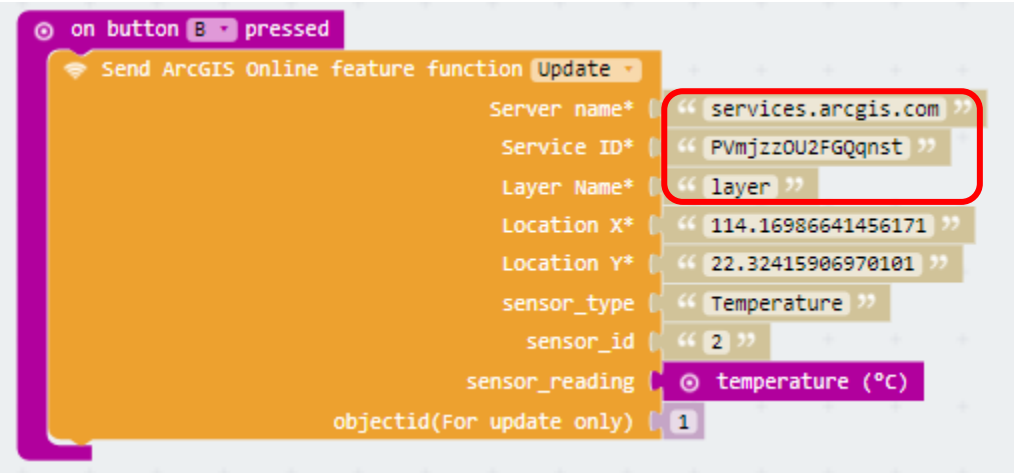
	From	To
sensor_id	1	2
Location X,Y	“Tsim Sha Tsui STAR FERRY” (114.16906245364866,22.294114207821625)	“PRINCE EDWARD RAILWAY STATION” (114.16986641456171,22.32415906970101)



STEP4: Put the required basic information.

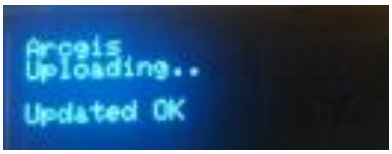
https://services.arcgis.com/PVmjzzOU2FGQqnst/arcgis/rest/services/layer/FeatureServer

Server name Service ID Layer name

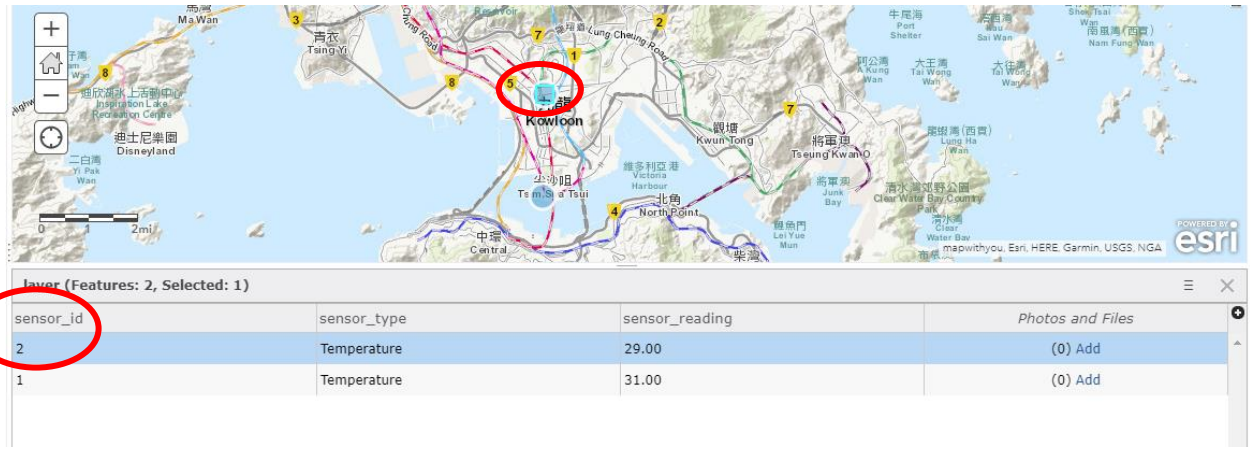


After the shield has been connected to the Internet.

Press the button A on the microbit. You will get the below message on the screen.



Go to the map viewer and check, you got the data updated! Location and sensor_id are also updated.



For more information, you can tick “CreationDate” and “EditDate”. Then, you can see the “EditDate” is just few minutes ago!