

Lab 7 – ThingSpeak and Google Sheet

The screenshot shows a Visual Studio Code editor with a file explorer on the left, a code editor in the center, and a terminal at the bottom. The file explorer shows a project named 'LESSON7' with various Python files. The code editor displays a script named 'thingspeak_cpu_loop.py' which uses the 'psutil' library to monitor CPU and memory usage and sends this data to the ThingSpeak API via an HTTP POST request. The terminal shows the command to run the script using 'conda' and the resulting output, which includes the current CPU percentage, available memory, and a timestamp.

```
File Edit Selection View Go Run Terminal Help lesson7
EXPLORER LESSON7
  adafuit_bmp180.py
  API_KEY.pickle
  beebotte_feed.py
  bmp_spreadsheet.py
  bmp280_normal_mod...
  bmp280_simpletest.py
  carriots_feed.py
  config.json
  cpu_spreadsheet.py
  cpu_worksheet.py
  dht_simpletest.py
  dht_spreadsheet.py
  dht_time_calibration...
  DHT22.py
  grovestreams_feed.py
  readadc.py
  README.md
  rpi_spreadsheet.py
  rpi_worksheet.py
  smartcore_feed.py
  system_info.py
  thingspeak_cpu_loop...
  thingspeak_feed.py
  tmp36_plotly.py
  tmp36.py

thingspeak_cpu_loop.py > |
1 import http.client, urllib.request, urllib.parse, urllib.error
2 from time import localtime, strftime
3 import psutil
4 import time
5 def doit():
6     cpu_pc = psutil.cpu_percent()
7     mem = psutil.virtual_memory()
8     mem_avail_mb = mem.available/(1024*1024)
9     params = urllib.parse.urlencode({'field1': cpu_pc, 'field2':
10                                     mem_avail_mb, 'key': 'QNAOS1VHZLAS0TYC'})
11     headers = {"Content-type":
12               "application/x-www-form-urlencoded", "Accept": "text/plain"}
13     conn = http.client.HTTPConnection("api.thingspeak.com:80")
14     try:
15         conn.request("POST", "/update", params, headers)
16         response = conn.getresponse()
17         print(cpu_pc)
18         print(mem_avail_mb)
19         print(strftime("%a, %d %b %Y %H:%M:%S", localtime()))
20
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Chris Longo\iot\lesson7> & "C:/Users/Chris Longo/.conda/envs/Pandas/python.exe" "c:/Users/Chris Longo/iot/lesson7/thingspeak_cpu_loop.py"
0.0
46732.73828125
Mon, 17 Mar 2025 12:24:45
200 OK
```

Ln 12, Col 75 Tab Size: 4 UTF-8 CRLF {} Python 3.11.5 (Pandas)

2025S CPE xECE-322-7 xiot/lesson xcp - IAM x

console.cloud.google.com/iam-admin/serviceaccounts/detail...

WorkdayCanvasGmailQuizletMy DriveSynchrony Bank - A...

Free trial status: \$300.00 credit and 70 days remaining. Activate your full account to get unlimited access to all of Google Cloud—use any remaining credits, then pay only for what you use.

DismissActivate

Google Cloudcpudata

4C

IAM & Admin / Service accounts / Service account: 102016956509689001858 / Keys

← cpi

DetailsPermissionsKeysMetricsLogs

Keys

Service account keys could pose a security risk if compromised. We recommend you avoid downloading service account keys and instead use the [Workload Identity Federation](#). [Learn more about the best way to authenticate service accounts on Google Cloud](#).

Google automatically disables service account keys detected in public repositories. You can customize this behavior by using the 'iam.serviceAccountKeyExposureResponse' organization policy. [Learn more](#)

Add a new key pair or upload a public key certificate from an existing key pair.

Block service account key creation using [organization policies](#).
[Learn more about setting organization policies for service accounts](#)

Add key

Type	Status	Key	Creation date	Expiration date
	Active	2ec186c31441900b34edc6bf3e4837cbb2466a54	Mar 19, 2025	Dec 31, 9999

<https://cloud.google.com/blog/products/identity-security/how-to-authenticate-service-accounts-to-help-keep-applications-secure>

cpudata - Google Sheets

docs.google.com/spreadsheets/d/1vfe9LQcuTu405S4QB...

Workday

Canvas

Gmail

Quizlet

My Drive

Synchrony Bank - A...

cpudata

File Edit View Insert Format Data Tools Extensions Help

100%

\$ % .0 .00 123

Defaul...

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G4

	A	B	C	D	E	F	G	H
1	Date / Time	CPU Usage %	Memory Availiable GB					
2	2025-03-19 11:0	18	43.91553116					
3	2025-03-19 11:0	8.8	43.90747452					
4	2025-03-19 11:0	3.2	43.98415375					
5	2025-03-19 11:0	4.1	43.89811325					
6	2025-03-19 11:0	2.6	43.97860718					

Add

1000

more rows at the bottom

Sheet1