Introduction to Computer Systems COSC 2473 Assignment 2 - Project

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Video Link

Please excuse the phone recording - no webcam.

Link to video:
https://drive.google.com/file/d/1M2Jbx4ZufNR2KEVKtRp6Wc_RvR4TjeCC/view?usp=sharing

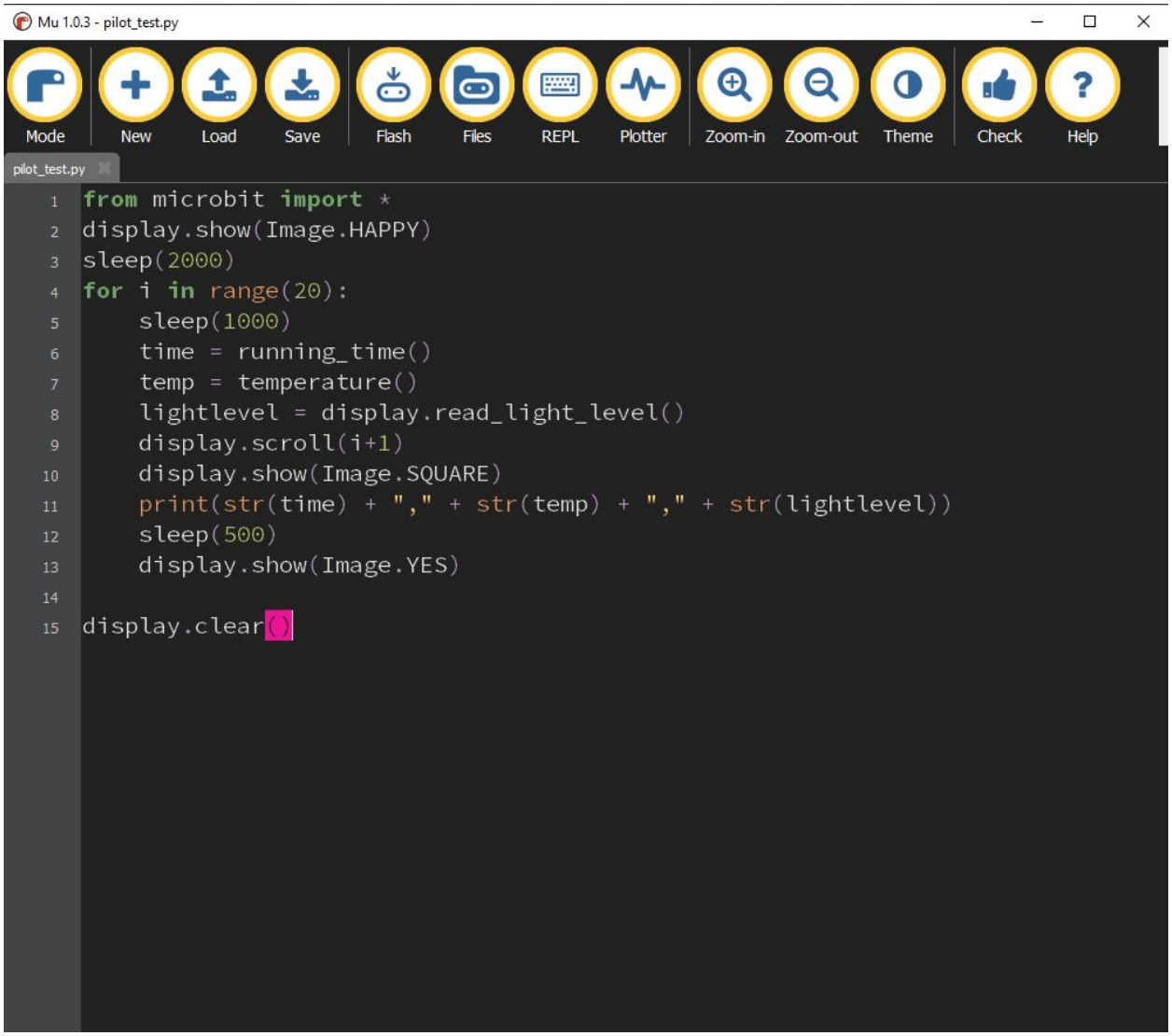
Steps to reproduce sampling

1. Copy “microbitprogram.py” to the microbit, in my case using Mu. The smiling face tells you it’s running and to start the PC program.

2. Run “PCprogram.py” on the PC.

3. The Microbit will then:

- Take a finite number of samples of temperature and light
- Send each sample to the PC program by printing a formatted comma separated string


Mu 1.0.3 - pilot_test.py
Mode
New
Load
Save
Flash
Files
REPL
Plotter
Zoom-in
Zoom-out
Theme
Check
Help
pilot_test.py
1 from microbit import *
2 display.show(Image.HAPPY)
3 sleep(2000)
4 for i in range(20):
5 sleep(1000)
6 time = running_time()
7 temp = temperature()
8 lightlevel = display.read_light_level()
9 display.scroll(i+1)
10 display.show(Image.SQUARE)
11 print(str(time) + "," + str(temp) + "," + str(lightlevel))
12 sleep(500)
13 display.show(Image.YES)
14
15 display.clear()

4. The PC program will

- Take the the formatted string from the microbit with running time, temperature and light reading
- Append the datetime from the PC
- Append to an existing txt file (headers already loaded) with a new line, following CSV convention

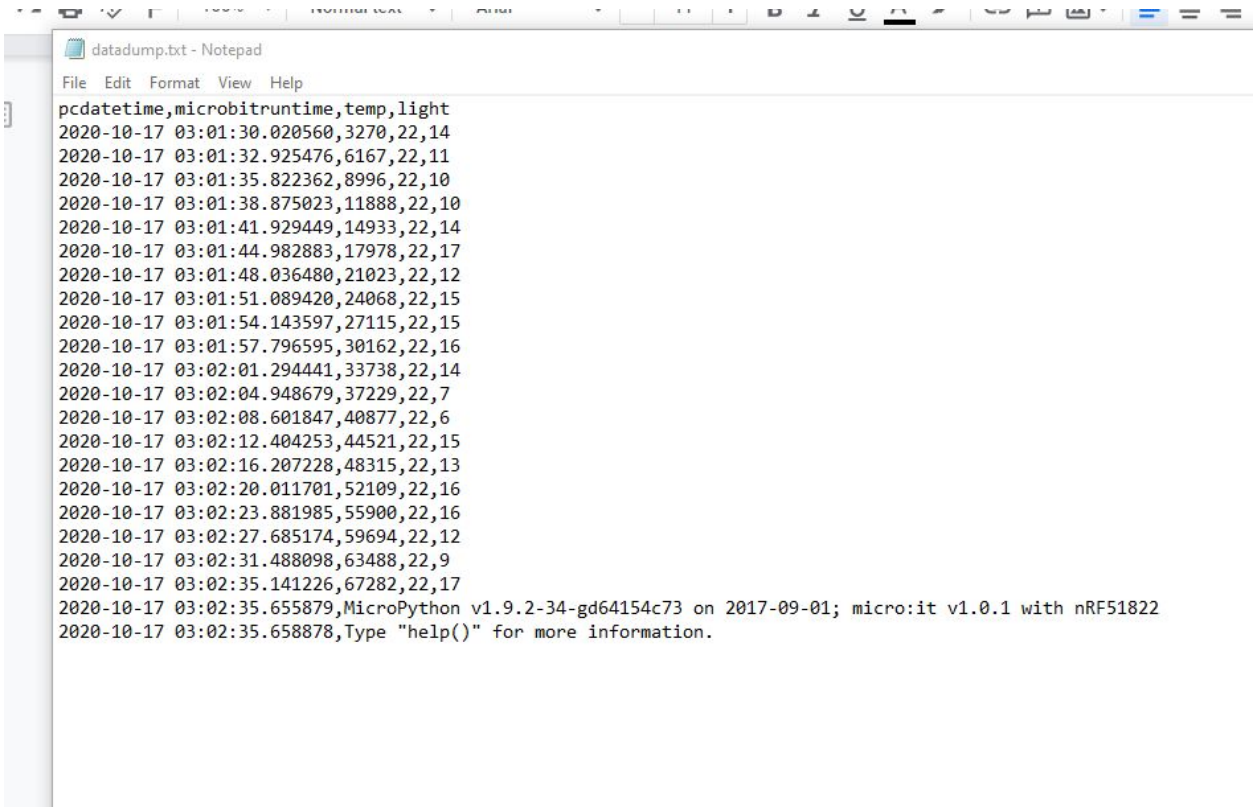
PCprogram.py | microbitprogram.py *

```python
import serial
import time
from datetime import datetime

ser = serial.Serial()
ser.baudrate = 115200
ser.port = "COM3"
ser.open()



while True:
    ## add the time
    data1 = str(ser.readline())
    data1 = data1.replace("b","")
    data1 = data1.replace("'","")
    data1 = data1.replace("\\r\\n","")
    if data1 is not None:
        with open("datadump.txt", "a") as myfile:
            myfile.write(str(datetime.now()) + "," + data1 + "\n")
    print(data1)

ser.close()
```

Shell

```
27115,22,15
30162,22,16
33738,22,14
37229,22,7
40877,22,6
44521,22,15
48315,22,13
52109,22,16
55900,22,16
59694,22,12
63488,22,9
67282,22,17
MicroPython v1.9.2-34-gd64154c73 on 2017-09-01; micro:it v1.0.1 with
nRF51822
Type "help()" for more information.
```

Example output



Output graphed (note, I put my hand over the device halfway through the sampling to demonstrate the light). This was demonstrated in the video.

	A	B	C	D
1	pcdatetim	microbitru	temp	light
2	01:30.0	3270	22	14
3	01:32.9	6167	22	11
4	01:35.8	8996	22	10
5	01:38.9	11888	22	10
6	01:41.9	14933	22	14
7	01:45.0	17978	22	17
8	01:48.0	21023	22	12
9	01:51.1	24068	22	15
10	01:54.1	27115	22	15
11	01:57.8	30162	22	16
12	02:01.3	33738	22	14
13	02:04.9	37229	22	7
14	02:08.6	40877	22	6
15	02:12.4	44521	22	15
16	02:16.2	48315	22	13
17	02:20.0	52109	22	16
18	02:23.9	55900	22	16
19	02:27.7	59694	22	12
20	02:31.5	63488	22	9
21	02:35.1	67282	22	17
22