

SISTEM KOMUNIKASI NIRKABEL

MODUL 6



PEMROGRAMAN API SINGLE BOARD COMPUTER (SBC) INTERNET OF THINGS BERBASIS PACKET TRACER

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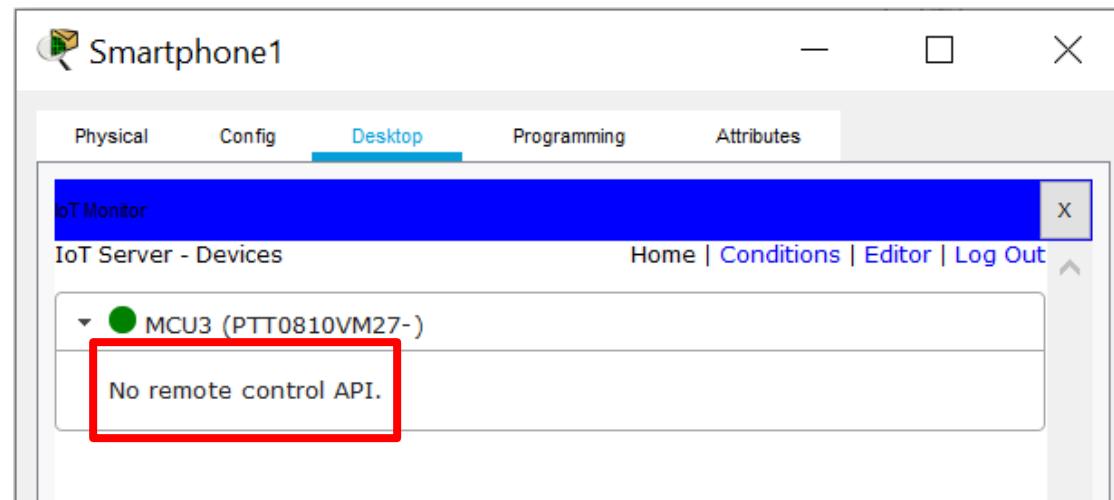
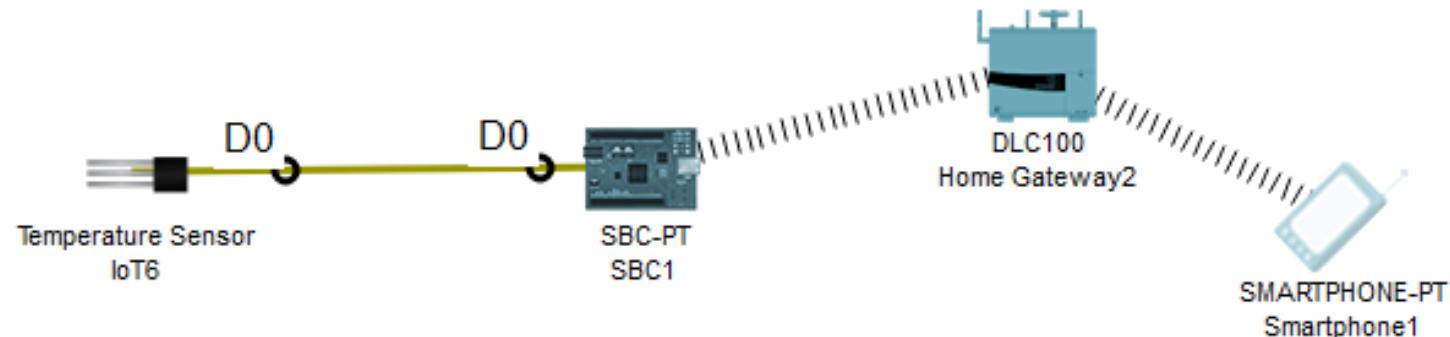
TOPIK BAHASAN

- SBC API PYTHON
- SETTING ENVIRONMENT

SBC API PYTHON

Topologi Jaringan

- Designlah jaringan seperti berikut:



Python Programming di SBC

The image shows a software interface for programming and monitoring a Single Board Computer (SBC). On the left, the 'Programming' tab is selected in a window titled 'SBC1'. It displays the Python code for a 'Blink' application named 'main.py'. The code uses the GPIO library to control a digital pin, reads a temperature sensor, and reports it via an IoT client. On the right, a window titled 'Smartphone1' shows a web-based IoT dashboard for the SBC. The dashboard includes a 'Web Browser' section with a URL to the SBC's home page, a 'Microcontroller' section listing the SBC1 device, and a 'Temperature' reading of 582 C.

```
from gpio import *
from time import *
from ioeclient import *

state = 0

def main():
    setup()
    global state
    while True:
        setState()
        delay(1000)

def setup():
    IoEClient.setup({
        "type": "Microcontroller",
        "states": [
            {
                "name": "Temperature",
                "type": "number",
                "unit": "C"
            }
        ]
    })

def setState():
    temp = digitalRead(0);
    print(temp);
    IoEClient.reportStates(temp)

if __name__ == "__main__":
    main()
```

Smartphone1

Physical Config Desktop Programming Attributes

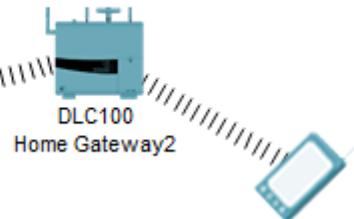
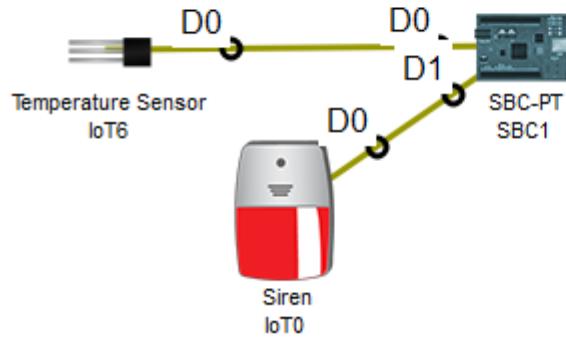
Web Browser

IoT Server - Devices

SBC1 (PTT0810GK52-) Microcontroller

Temperature 582 C

Dengan Aktuator



```
7 def main():
8     setup()
9     global state
10    while True:
11        setState()
12        delay(1000)
13
14    def setup():
15        IoEClient.setup({
16            "type": "Microcontroller",
17            "states": [
18                {
19                    "name": "Temperature",
20                    "type": "number",
21                    "unit": "C"
22                }
23            }
24
25    def setState():
26        temp = digitalRead(0);
27        print(temp);
28        if (temp>660):
29            customWrite(1,1)
30        else:
31            customWrite(1,0)
32        IoEClient.reportStates(temp)
33
34    if __name__ == "__main__":
35        main()
```

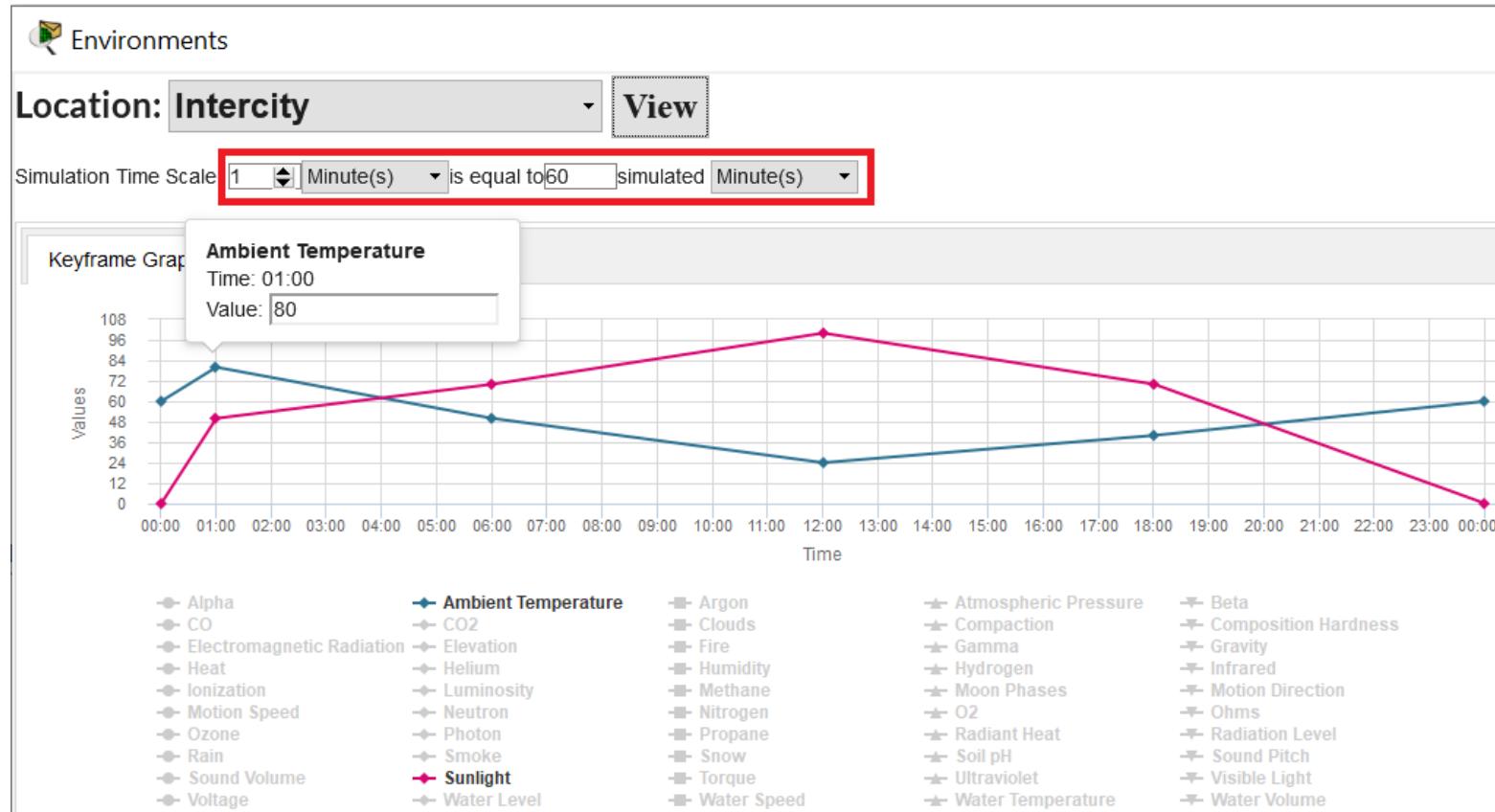
SETTING ENVIRONMENT

Setting Environment

The screenshot shows a software application window titled "Environments". The location is set to "Intercity". The current time is "00:24:00", with "Edit" and "Pause" buttons next to it. A red box highlights the "00:24:00" time display. Below the time, there is a message: "Select an environment to show its chart." There is a "Filter..." input field and "Search" and "Reset" buttons. The main area displays environmental data in a table format:

Earth Physical Features		Gravity		Other		Wind	
Elevation	22.00 m	Gravity	9.80 m/s ²	Atmospheric Pressure	101.3250 kPa	Direction	7.83 degre
Soil pH	7.00 pH	Light (Sun)	Electromagnetic Radiation	0.00 %	Radiation	Variance (gusts)	0.67 %
Gases		Infrared	0.00 %	Level	0.00 mrem	Speed	0.00 kph
Argon	0.9340 %	Radiant Heat	0.00 %	Temperature	Ambient Temperature	68.00 C	
CO	0.00 %	Sunlight	20.00 %	Water	Clouds	5.17 %	
CO ₂	0.0360 %	Ultraviolet	0.00 %		Humidity	79.67 %	
He	0.0005240 %	Visible	0.00 %		Rain	0.03 cm	
H	0.00050 %				Snow	0.00 cm	
Methane	0.000150 %				Water Level	0.00 cm	
Nitrogen	78.0840 %						
O ₂	20.9460 %						

Setting Temperature dan simulation time



TUGAS

- Project IoT:
 - Tidak boleh Smart Home
 - Smart Industri, Smart Agriculture, dll
 - Harus mencakup: Sensor, Aktuator, RFID/BLE dan SBC
 - Terintegrasi dgn cellular network
 - Buat IoT Server sendiri dan DNS untuk mengaksesnya
- Buatlah laporan dengan melampirkan:
 - Desain dan penjelasannya di file word
 - Desain di packet tracer
 - Terakhir pengumpulan: 6 November 2020, hari Jumát jam 23.59
- Demo setelah UTS
- Upload di google drive