

SISTEM KOMUNIKASI NIRKABEL MODUL 4

RFID BLUETOOTH INTERNET OF THINGS BERBASIS PACKET TRACER

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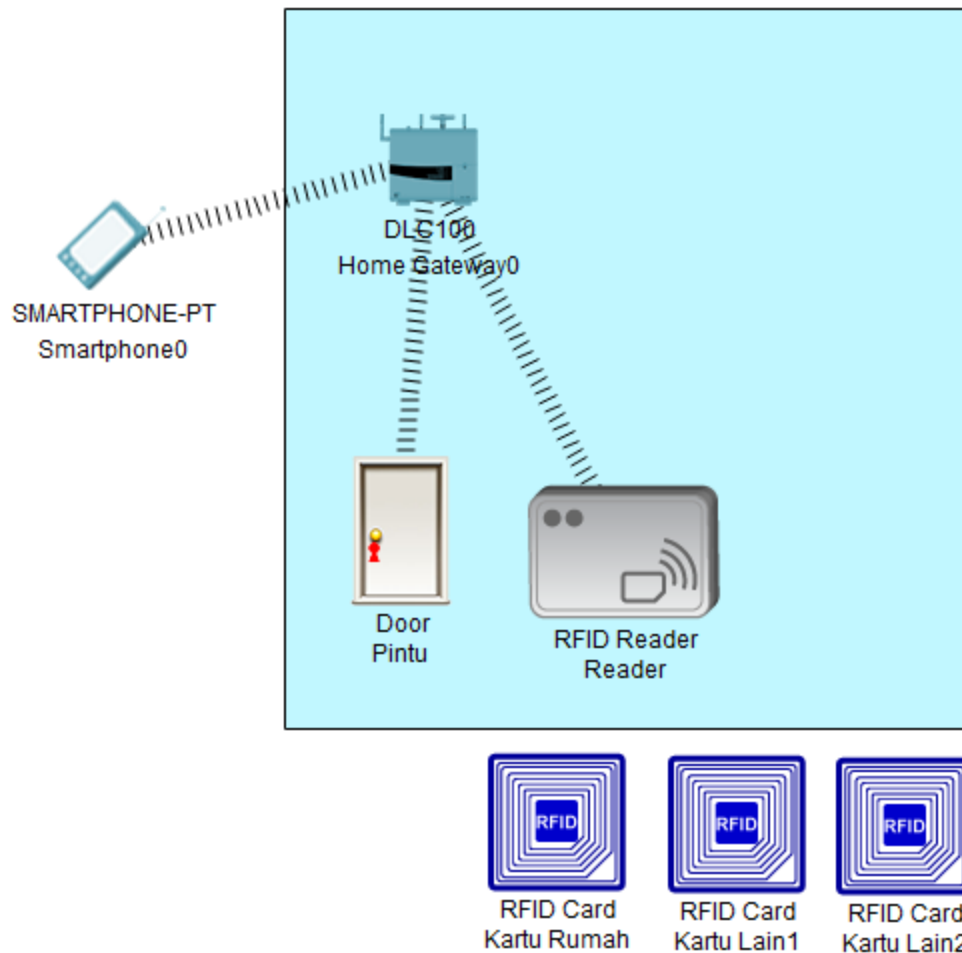
TOPIK BAHASAN

- RFID Sensor
- Bluetooth Pairing
- Bluetooth Beacon

RFID SENSOR

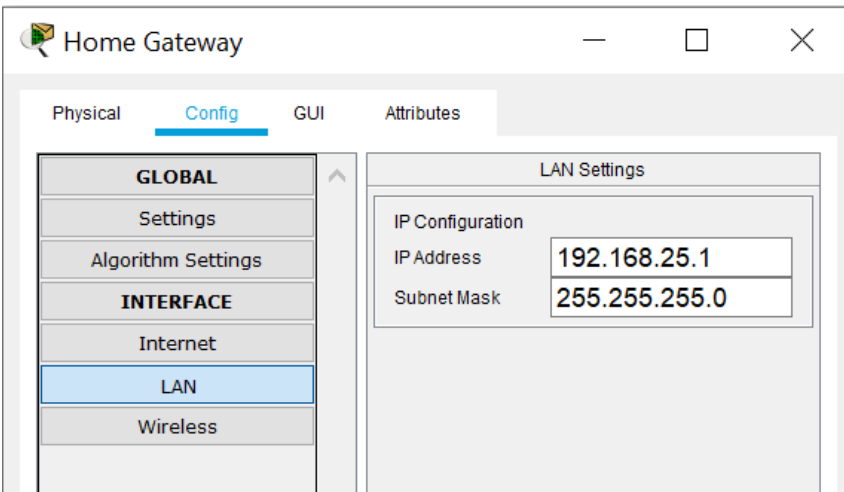
Topologi Jaringan

- Designlah jaringan seperti berikut:

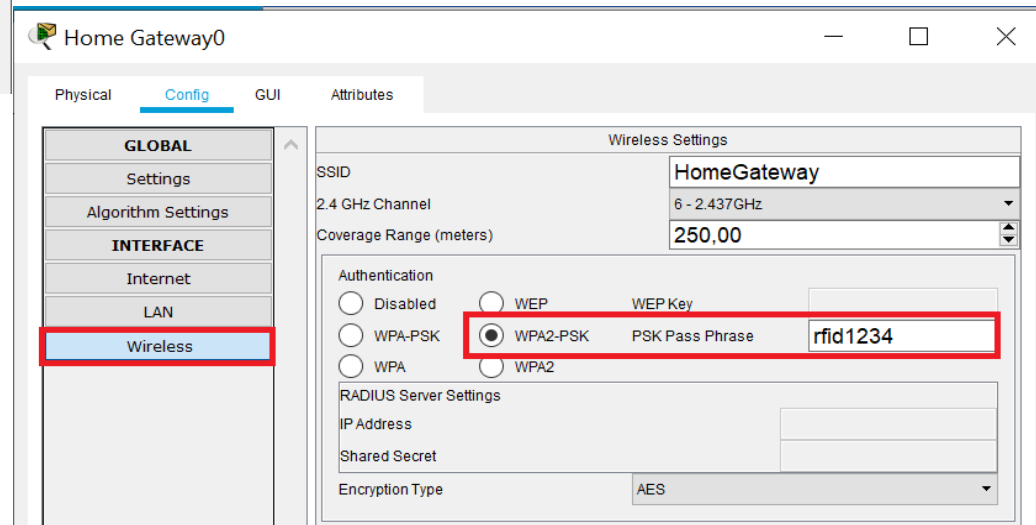


Setting pada HomeGateway

Setting IP Address (DHCP Server)

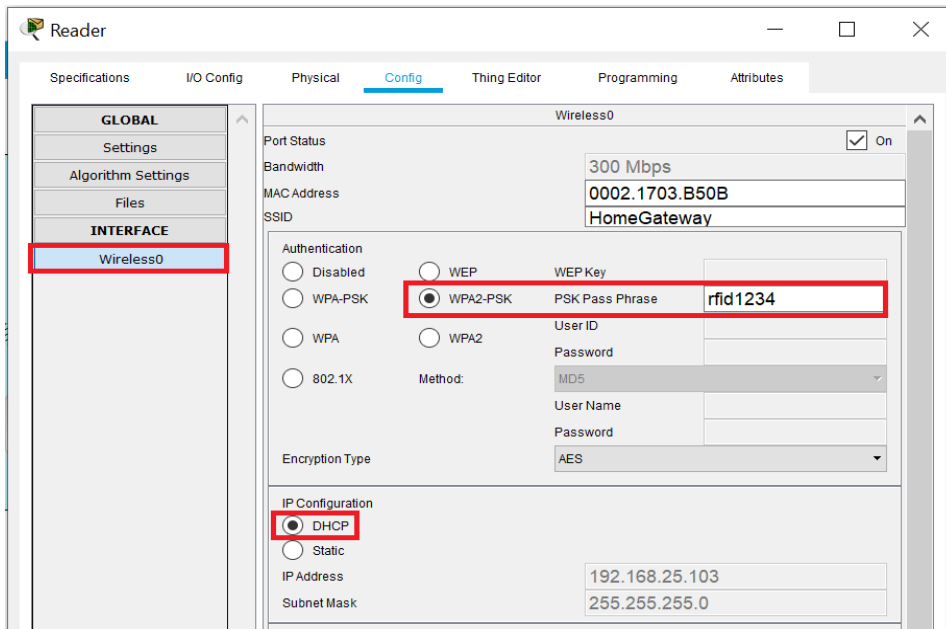


Setting WiFi & Security

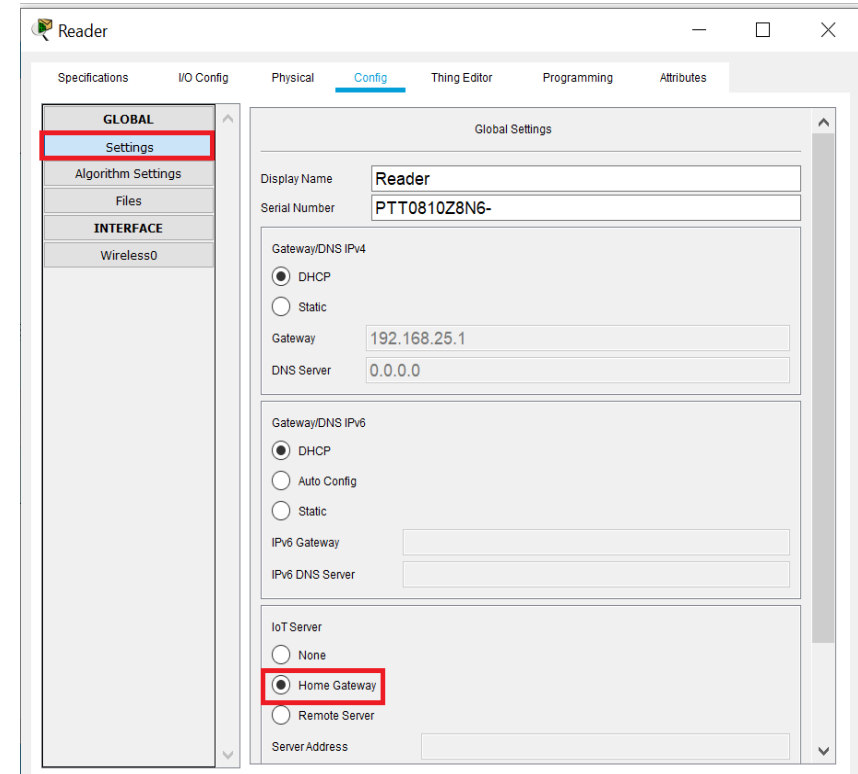


Setting pada Perangkat Sensor IoT

Setting SSID dan passcode



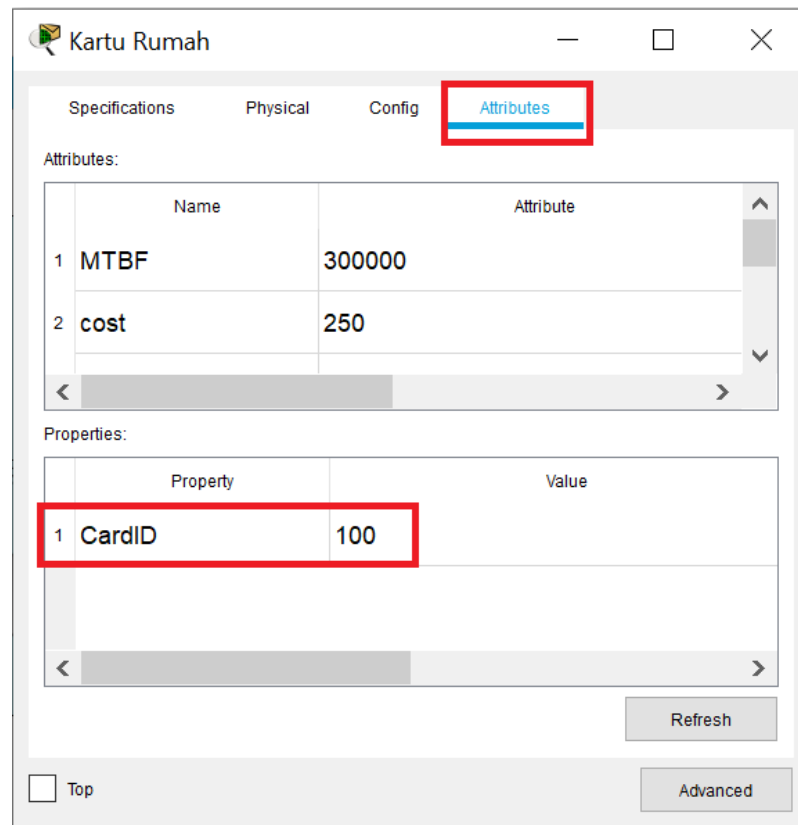
Setting DHCP dan koneksi ke IoT Server



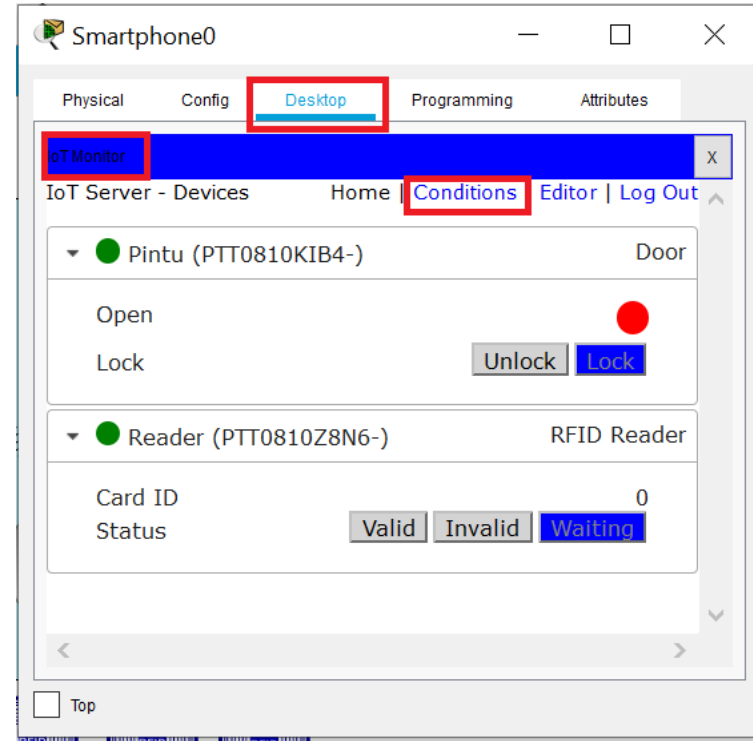
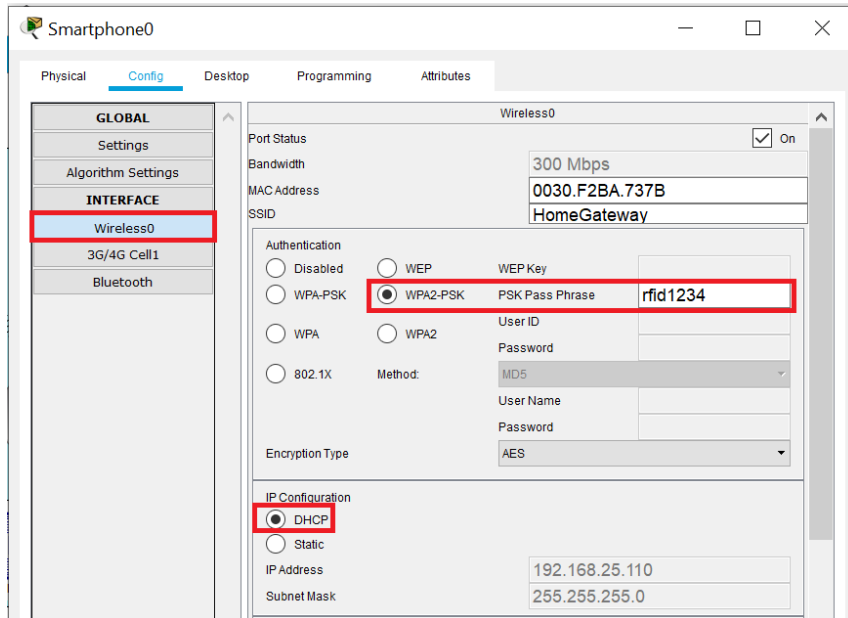
- Lakukan hal yang sama pada semua perangkat IoT

Setting RFID Card

- Pada Kartu Rumah untuk masuk, atur 100.
- Sedang lainnya gunakan default: 1001



Setting Aktuator (Kontrol) Perangkat IoT



Setting Aktuator (Kontrol) Perangkat IoT

Edit Rule [X]

Name

Enabled

If:

Match **All** [▼] + Condition + Group

[▼] -

Then set:

to [▼] + Action

Edit Rule [X]

Name

Enabled

If:

Match **Any** [▼] + Condition + Group

[▼] -

[▼] -

Then set:

to [▼] + Action

Edit Rule [X]

Name

Enabled

If:

Match **All** [▼] + Condition + Group

[▼] -

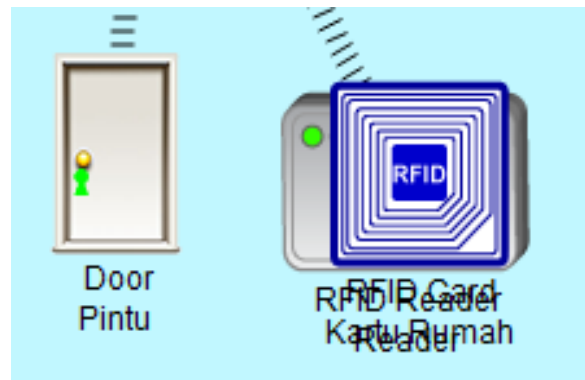
Then set:

to [▼] + Action

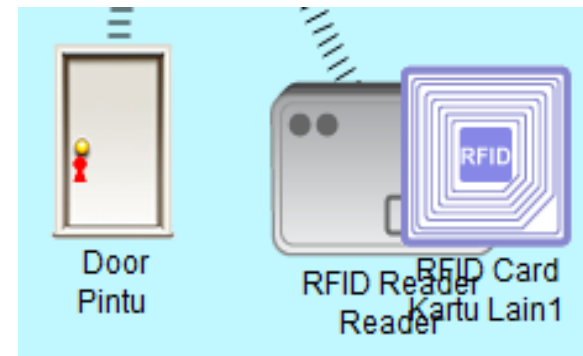
Pengujian Kontrol Perangkat IoT

Gunakan Kartu Rumah untuk membuka pintu, dan uji dengan kartu lainnya.

Kartu Rumah

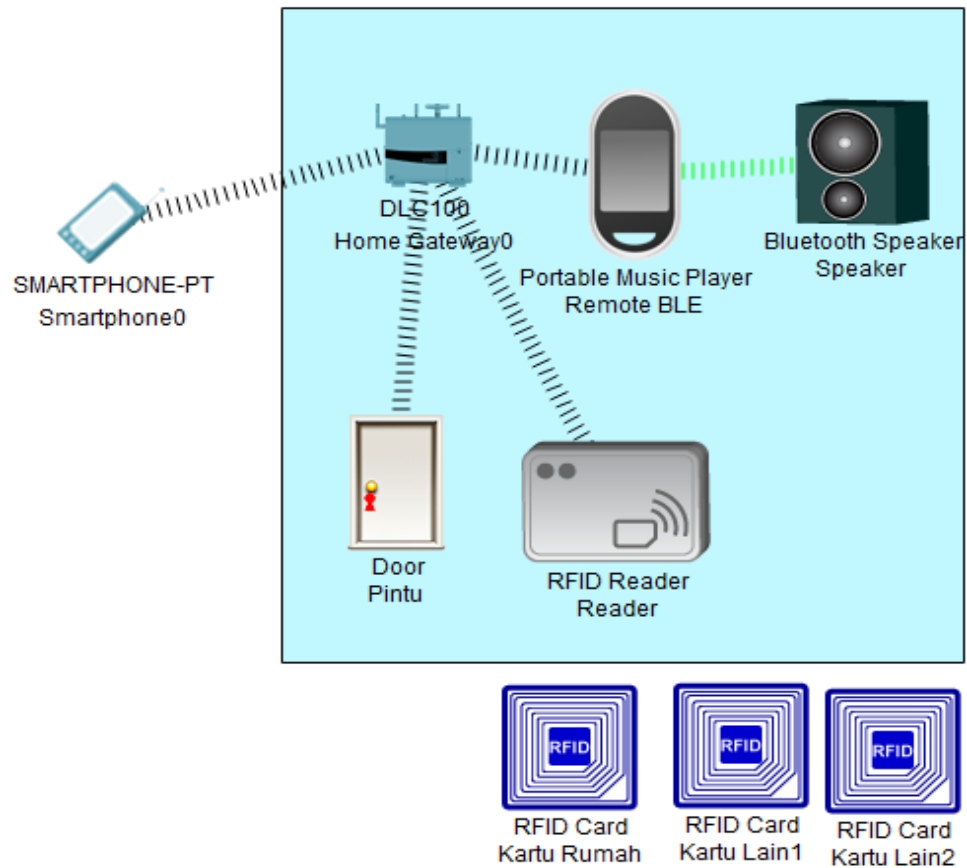


Kartu Lainnya



BLUETOOTH PAIRING

Topologi Jaringan



Pairing

Remote BLE

Specifications I/O Config Physical **Config** Thing Editor Programming Attributes

GLOBAL

- Settings
- Algorithm Settings
- Files

INTERFACE

- Wireless0
- Bluetooth**

Bluetooth

Port Status On

MAC Address 0001.4227.82D2

Coverage Range (meters) 10,00

Discoverable On

Devices

Name	MAC Address	Status
Speaker	0060.5C28.1598	Unpaired

Discover Pair Unpair Tether Untether

Beacon Broadcasting Broadcast On

Frequency (seconds) 10

UUID {31-eae3-4dde-b605-8fc779a03180}

Data

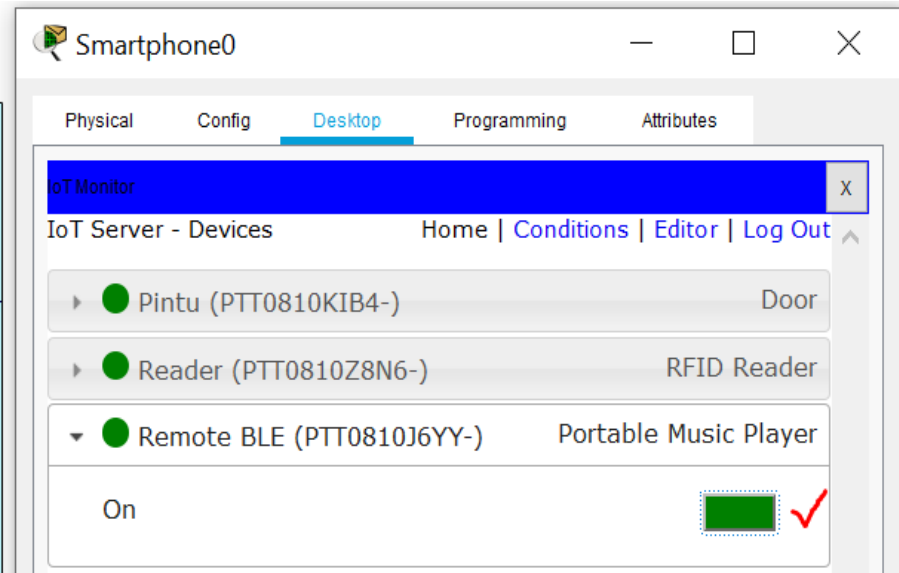
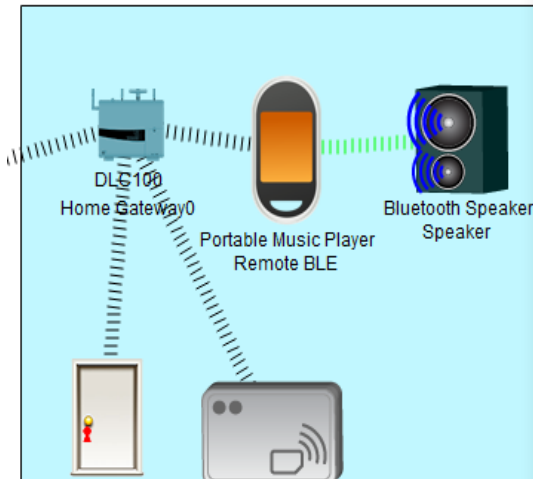
Devices

Name	MAC Address	Status
Speaker	0060.5C28.1598	Paired, Connected

Discover Pair Unpair Tether Untether

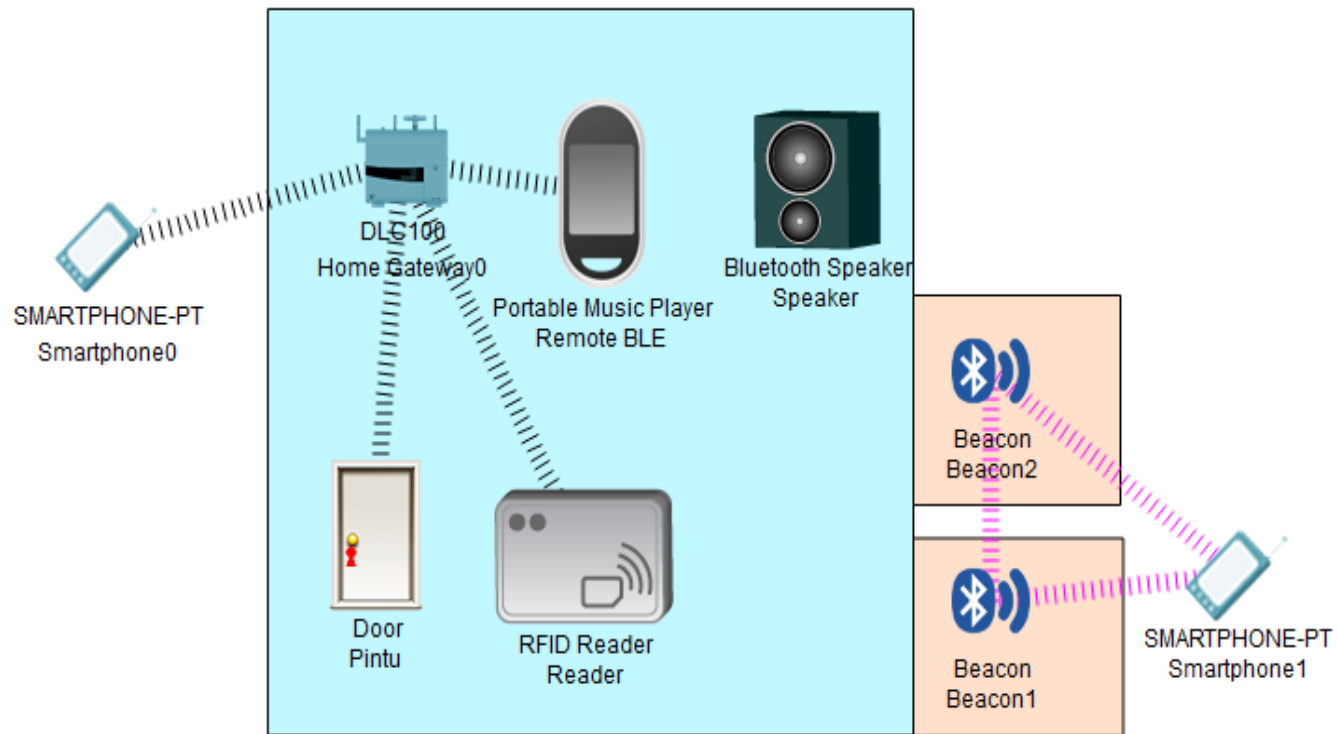
Pengujian

Tekan tombol On untuk membunyikan Bluetooth Speaker



BLUETOOTH BEACON

Topologi Jaringan



Pengaturan Beacon

Beacon1 configuration window showing attributes and properties.

Name	Attribute
1 MTBF	300000
2 cost	250
3 power source	1
4 rack units	2

Property	Value
1 beaconData	Location 1
2 beaconUuid	{00000000-0000-0000-0000-000000000001}

Buttons: Refresh, Advanced, Top

Beacon1 configuration window showing attributes and properties.

Name	Attribute
1 MTBF	300000
2 cost	250
3 power source	1
4 rack units	2

Property	Value
1 beaconData	Kedai Coffee Aisha Diskon 30%
2 beaconUuid	{00000000-0000-0000-0000-000000000001}

Buttons: Refresh, Advanced

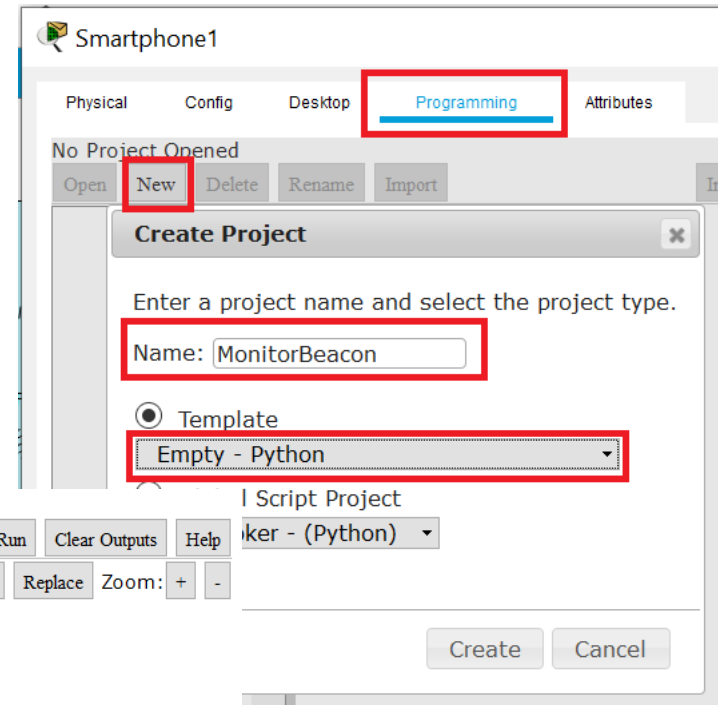
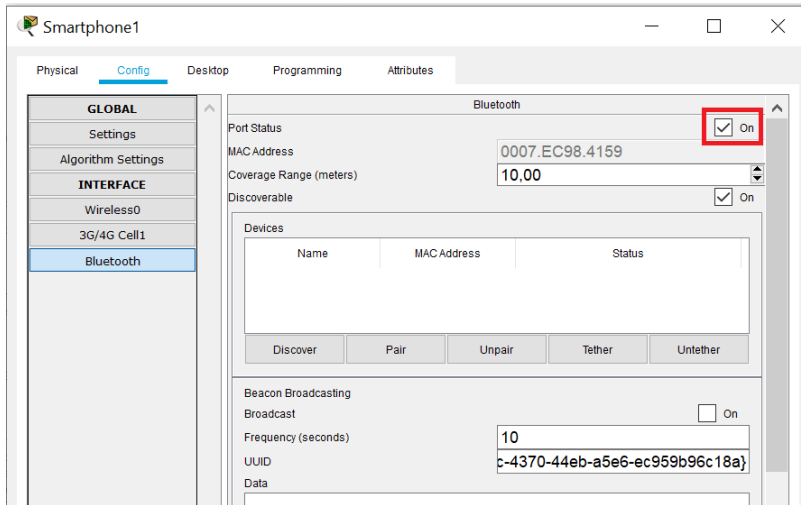
Beacon2 configuration window showing attributes and properties.

Name	Attribute
1 MTBF	300000
2 cost	250
3 power source	1

Property	Value
1 beaconData	Kedai Roti Nafisa (Diskon 40%)
2 beaconUuid	{00000000-0000-0000-0000-000000000002}

Buttons: Refresh, Advanced, Top

Pengaturan Smartphone



MonitorBeacon (Python) - main.py

```
Open New Delete Rename Import
Reload Copy Paste Undo Redo Find Replace Zoom: + -
..
main.py
1 from bluetooth import *
2 from time import *
3
4 dstService = "{00000000-0000-0000-0000-000000000001}"
5 dstMac = "FFFF.FFFF.FFFF"
6
7 def onBluetoothReceive(srcMac, srcService, dstMac, dstService, data):
8     print("received from " + srcMac + ":" + srcService + ":" + data)
9
10 def main():
11
12     Bluetooth.init()
13
14     service = BluetoothService()
15     service.onReceive(onBluetoothReceive)
16     print(service.start(dstService))
17
18     while True:
19         delay(5000)
20
21 if __name__ == "__main__":
22     main()
```

Pengujian

The screenshot shows the Beacon1 application interface. The code editor displays the following Python code:

```
1 from physical import *
2 from bluetooth import *
3 from time import *
4
5 DEFAULT_BEACON_UUID = "{00000000-0000-0000-000000000001}"
6 DEFAULT_BEACON_DATA = "Location 1"
7
8 def setup():
9     Bluetooth.init()
10    Bluetooth.enableBroadcast(True)
11    global DEFAULT_BEACON_UUID
12    global DEFAULT_BEACON_DATA
13    uuid = getDeviceProperty(getName(), "beaconUuid")
14    if uuid == None:
15        setDeviceProperty(getName(), "beaconUuid", DEFAULT_BEACON_UUID)
16
17    data = getDeviceProperty(getName(), "beaconData")
18    if data == None:
19        setDeviceProperty(getName(), "beaconData", DEFAULT_BEACON_DATA)
20
21
22 def main():
23     setup()
24     while True:
25         uuid = getDeviceProperty(getName(), "beaconUuid")
26         data = getDeviceProperty(getName(), "beaconData")
27         print "Broadcasting to " + str(uuid)
28         Bluetooth.broadcastBeacon(uuid, data)
29         delay(5000)
30
31 if __name__ == "__main__":
32     main()
```

The console output shows the following messages:

```
Broadcasting to {00000000-0000-0000-0000-000000000001}
Beacon (JavaScript) stopped.
Starting Beacon (Python)...
Broadcasting to {00000000-0000-0000-0000-000000000001}
Broadcasting to {00000000-0000-0000-0000-000000000001}
```

The screenshot shows the Smartphone1 application interface. The code editor displays the following Python code:

```
1 from bluetooth import *
2 from time import *
3
4 dstService = "{00000000-0000-0000-0000-000000000001}"
5 dstMac = "FFFF.FFFF.FFFF"
6
7 def onBluetoothReceive(srcMac, srcService, dstMac, dstService, data):
8     print("received from " + srcMac + ":" + srcService + ":" + data)
9
10 def main():
11
12     Bluetooth.init()
13
```

The console output shows the following messages:

```
Starting MonitorBeacon (Python)...
True
received from 00E0.B082.4E84:{00000000-0000-0000-0000-000000000000}:Kedai Coffee Aisha
Diskon 30%
received from 00E0.B082.4E84:{00000000-0000-0000-0000-000000000000}:Kedai Coffee Aisha
Diskon 30%
received from 00E0.B082.4E84:{00000000-0000-0000-0000-000000000000}:Kedai Coffee Aisha
Diskon 30%
received from 00E0.B082.4E84:{00000000-0000-0000-0000-000000000000}:Kedai Coffee Aisha
Diskon 30%
received from 00E0.B082.4E84:{00000000-0000-0000-0000-000000000000}:Kedai Coffee Aisha
Diskon 30%
```

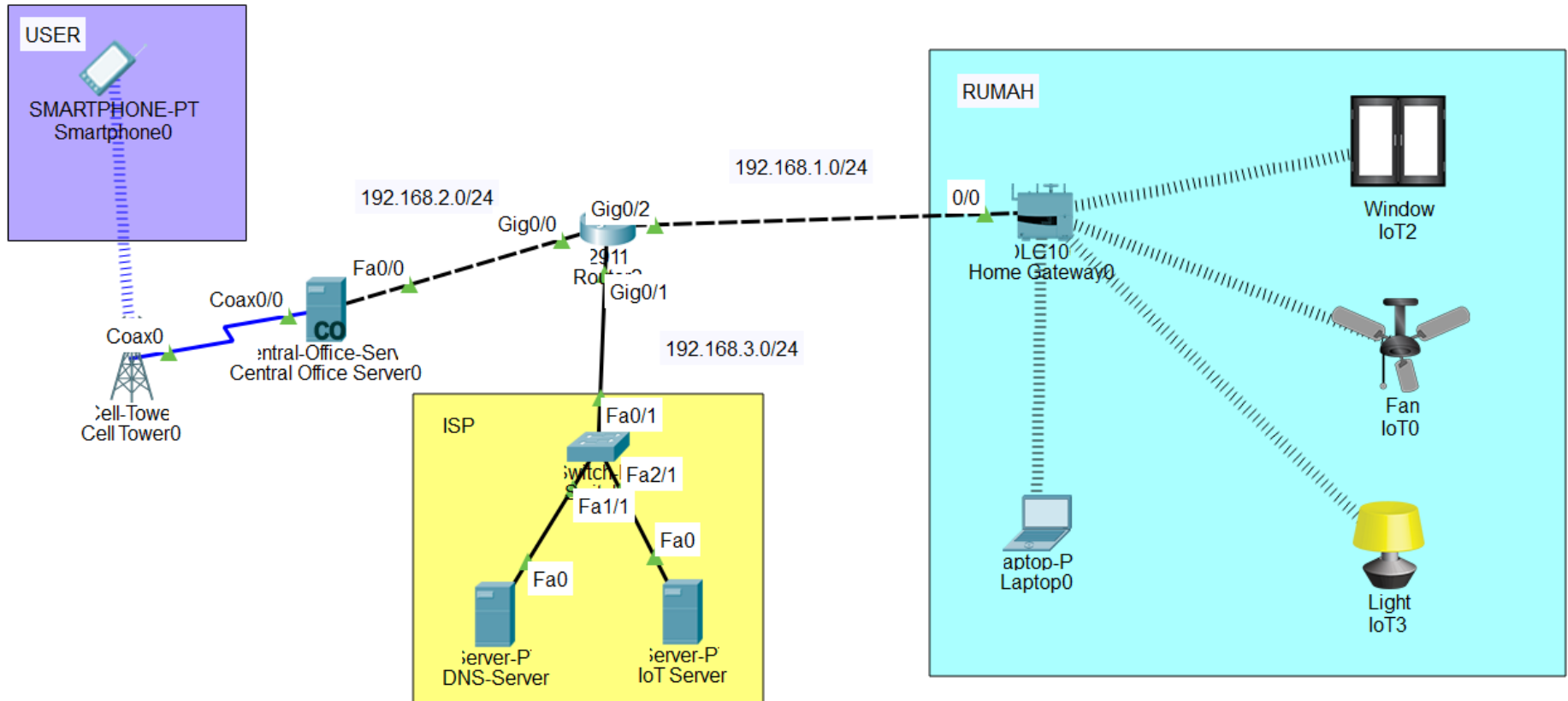
The screenshot shows the Smartphone1 application interface. The code editor displays the following Python code:

```
1 from bluetooth import *
2 from time import *
3
4 dstService = "{00000000-0000-0000-0000-000000000002}"
5 dstMac = "FFFF.FFFF.FFFF"
6
7 def onBluetoothReceive(srcMac, srcService, dstMac, dstService, data):
8     print("received from " + srcMac + ":" + srcService + ":" + data)
9
10 def main():
11
12     Bluetooth.init()
13
```

The console output shows the following messages:

```
Starting MonitorBeacon (Python)...
True
received from 00D0.587B.20D5:{00000000-0000-0000-0000-000000000000}:Kedai Roti Nafisa (Diskon
40%)
received from 00D0.587B.20D5:{00000000-0000-0000-0000-000000000000}:Kedai Roti Nafisa (Diskon
40%)
received from 00D0.587B.20D5:{00000000-0000-0000-0000-000000000000}:Kedai Roti Nafisa (Diskon
40%)
```

Integrasi Network



TUGAS

- Buatlah aplikasi berbasis RFID atau BLE Card
- Buatlah laporan resmi dengan melampirkan:
 - Desain dan penjelasannya di file word
 - Desain di packet tracer
 - Terakhir pengumpulan: hari Sabtu jam 23.59
- Upload di google drive