

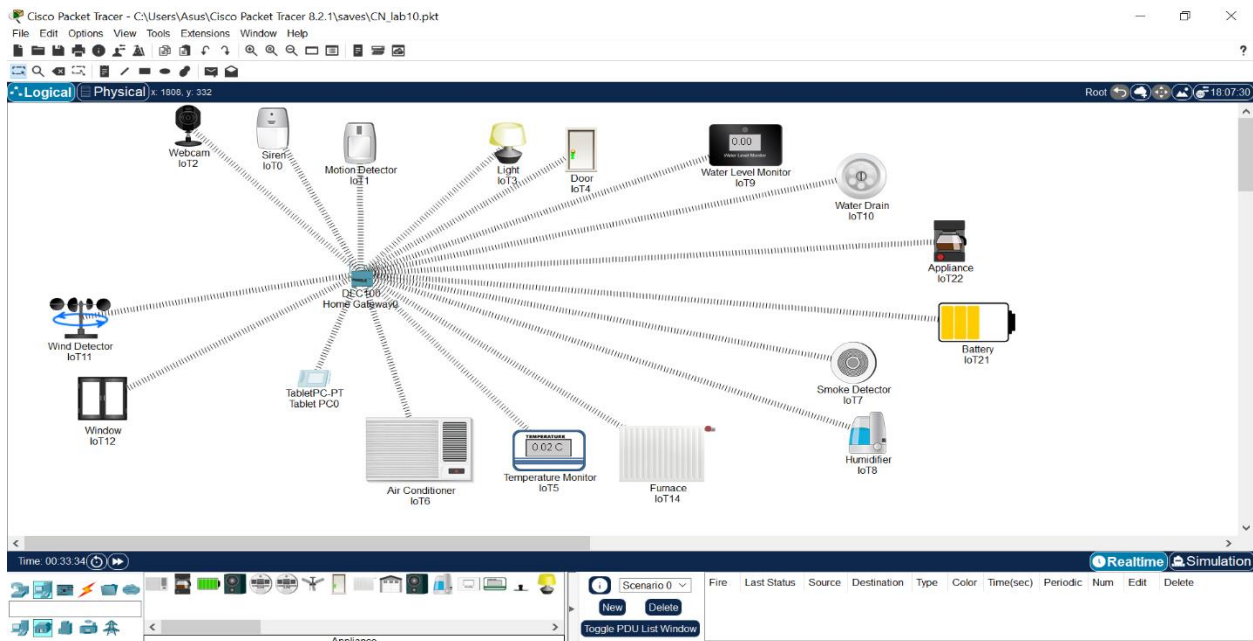
# Computer Networks

## CS361 Lab10

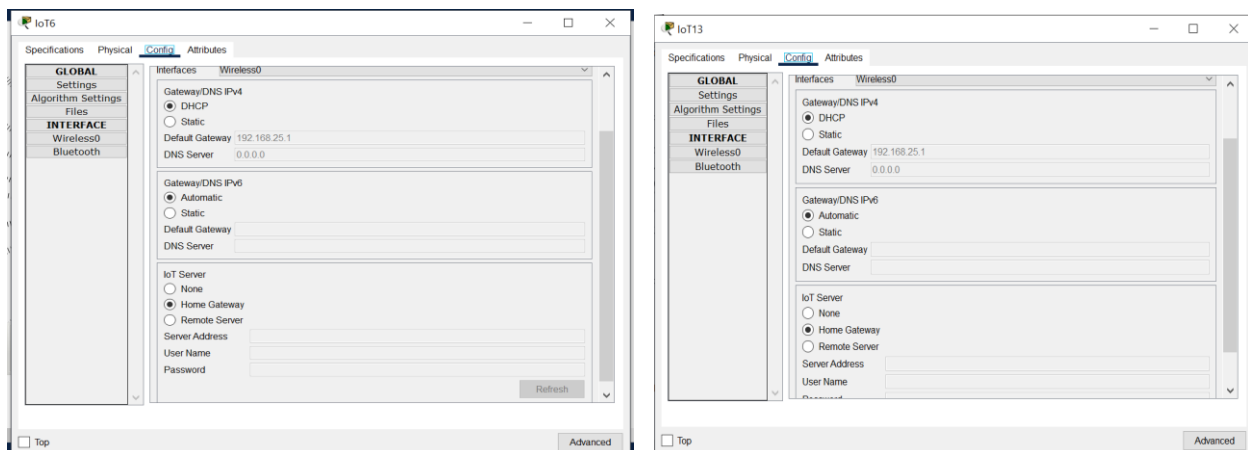
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**TASK:** Create an IOT environment where you need to connect your home gateway and connect total of 10 IOT devices and create a total of 15 conditions where each condition should be affecting at least 5 IOT devices.



Configuring IOT devices...



All IOT devices are to be connected to HomeGateway IOT server.

## Configuring Tab...

The screenshot shows the 'Tablet PC0' configuration window with the 'Config' tab selected. The left sidebar shows a tree view with 'GLOBAL' and 'INTERFACE' sections. Under 'INTERFACE', 'Wireless0' is selected. The main area displays the 'Wireless0' configuration. The 'Port Status' is set to 'On'. The 'Bandwidth' is '300 Mbps'. The 'MAC Address' is '000B.BEE3.9118' and the 'SSID' is 'HomeGateway'. The 'Authentication' section has 'Disabled' selected. The 'Encryption Type' is 'Disabled'. The 'IP Configuration' section has 'DHCP' selected. The 'IPv4 Address' is '192.168.25.111' and the 'Subnet Mask' is '255.255.255.0'. The 'IPv6 Configuration' section has 'Automatic' selected. The 'IPv6 Address' is 'FE80::20B:BEFF:FEE3:9118' and the 'Link Local Address' is 'FE80::20B:BEFF:FEE3:9118'. A 'Top' button is at the bottom left.

Wireless0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	300 Mbps
MAC Address	000B.BEE3.9118
SSID	HomeGateway
Authentication	
<input checked="" type="radio"/> Disabled	<input type="radio"/> WEP
<input type="radio"/> WPA-PSK	<input type="radio"/> WPA2-PSK
<input type="radio"/> WPA	<input type="radio"/> WPA2
<input type="radio"/> 802.1X	Method:
Encryption Type	
<input checked="" type="radio"/> Disabled	<input type="radio"/> WEP Key
<input type="radio"/> Static	<input type="radio"/> PSK Pass Phrase
User ID	
Password	
MD5	
User Name	
Password	
Disabled	
IP Configuration	
<input checked="" type="radio"/> DHCP	
<input type="radio"/> Static	
IPv4 Address	
192.168.25.111	
Subnet Mask	
255.255.255.0	
IPv6 Configuration	
<input checked="" type="radio"/> Automatic	
<input type="radio"/> Static	
IPv6 Address	
FE80::20B:BEFF:FEE3:9118	
Link Local Address	
FE80::20B:BEFF:FEE3:9118	

## Logging in to IOT server...

The screenshot shows the 'Tablet PC0' configuration window with the 'Desktop' tab selected. The 'IoT Monitor' window is open, displaying the login screen. The 'IoT Server Address' is '192.168.25.1'. The 'User Name' is 'admin' and the 'Password' is 'admin'. A 'Login' button is at the bottom.

IoT Monitor	
IoT Server Address: 192.168.25.1	
User Name: admin	
Password: admin	
Login	

So, here logging in to IOT server 'HomeGateway' through IOT monitor/web browser.

## After Logging in...

Tablet PC0

Physical Config **Desktop** Programming Attributes

IoT Monitor

IoT Server - Devices

Home | Conditions | Editor | Log Out

▶ ● IoT0 (PTT08107NX1-)	Siren
▶ ● IoT2 (PTT0810VQNP-)	Webcam
▶ ● IoT1 (PTT081019U6-)	Motion Detector
▶ ● IoT5 (PTT0810718N-)	Temperature Monitor
▶ ● IoT6 (PTT08109998-)	AC
▶ ● IoT11 (PTT08106UBU-)	Wind Detector
▶ ● IoT12 (PTT0810NQZ3-)	Window
▶ ● IoT8 (PTT08100VJ3-)	Humidifier
▶ ● IoT7 (PTT0810N7IG-)	Smoke Detector
▶ ● IoT10 (PTT0810LJ4M-)	Water Drain
▶ ● IoT4 (PTT0810KNJC-)	Door
▶ ● IoT3 (PTT0810HSUD-)	Light
▶ ● IoT14 (PTT0810OPS8-)	Furnace
▶ ● IoT21 (PTT08102M10-)	Battery
▶ ● IoT22 (PTT0810829U-)	Appliance
▶ ● IoT13 (PTT0810J50Z-)	Humidity Sensor
▶ ● IoT18 (PTT0810BF9L-)	Lawn Sprinkler
▶ ● IoT16 (PTT08107SHP-)	Carbon Monoxide Detector
▶ ● IoT15 (PTT0810MXR9-)	Carbon Dioxide Detector

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## Setting up conditions...

Tablet PC0

Physical Config **Desktop** Programming Attributes

IoT Monitor

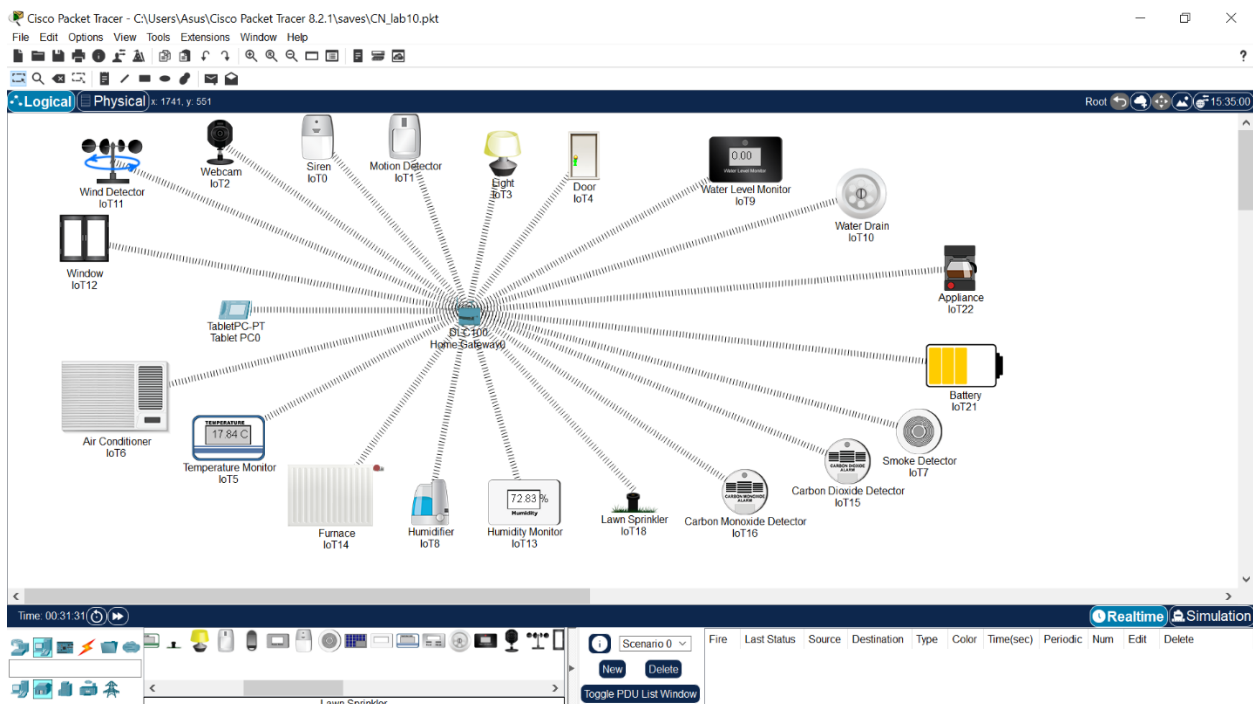
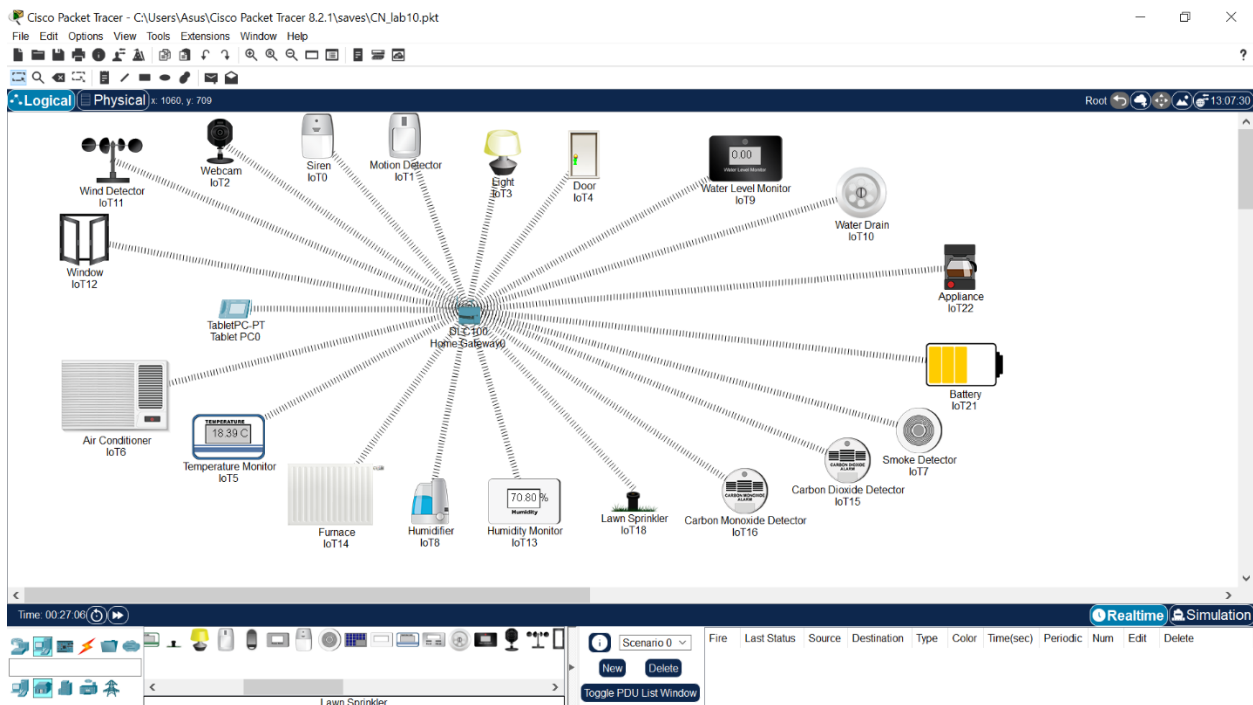
IoT Server - Device Conditions

Home | Conditions | Editor | Log Out

Actions		Enabled	Name	Condition	Actions
Edit	Remove	Yes	When motion detected	IoT1 On is true	Set IoT0 On to true Set IoT2 On to true
Edit	Remove	Yes	when motion not detected	IoT1 On is false	Set IoT0 On to false Set IoT2 On to false
Edit	Remove	Yes	When Strong Wind	IoT11 Wind is true	Set IoT12 On to false
Edit	Remove	Yes	when less wind	IoT11 Wind is false	Set IoT12 On to true
Edit	Remove	Yes	When Temp High	IoT5 Temperature > 18.0 °C	Set IoT6 On to true Set IoT14 On to false
Edit	Remove	Yes	When temp Low	IoT5 Temperature < 18.0 °C	Set IoT14 On to true Set IoT6 On to false
Edit	Remove	Yes	When humidity less	IoT13 Humidity < 20 %	Set IoT8 Status to true
Edit	Remove	Yes	When humidity more	IoT13 Humidity > 20 %	Set IoT8 Status to false
Edit	Remove	Yes	Water level above	PTT081062MD- Water Level >= 100	Set IoT10 Status to true
Edit	Remove	Yes	Water level low	PTT081062MD- Water Level <= 99	Set IoT10 Status to false
Edit	Remove	Yes	When door open	IoT4 Open is true	Set IoT3 Status to On
Edit	Remove	Yes	When door locked	IoT4 Lock is not Unlock	Set IoT3 Status to Off
Edit	Remove	Yes	When door closed	IoT4 Lock is Unlock	Set IoT3 Status to On
Edit	Remove	Yes	when battery level low	IoT21 Available power < 15 %	Set IoT22 On to false
Edit	Remove	Yes	When battery level high	IoT21 Available power > 15 %	Set IoT22 On to true
Edit	Remove	Yes	When smoke detected	Match all: • IoT15 Alarm is true • IoT16 Alarm is true • IoT7 Alarm is true	Set IoT18 Status to true
Edit	Remove	Yes	when smoke not detected	Match all: • IoT15 Level < 5 • IoT16 Level < 5 • IoT7 Level < 5	Set IoT18 Status to false

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## After setting all conditions...some screenshots of all system running



So here we see,

As wind is detected, window is closed. If no wind is detected, window will be open.

Based on value in temperature, AC and furnace are being on and off. As in last image, temp is less than 18<sup>0</sup>, so furnace is on as per condition.

Then, light is on as door is open and unlocked. It will close if door is locked.

The appliance is running as battery is still in a good level. As it falls below 20%, appliance will stop.