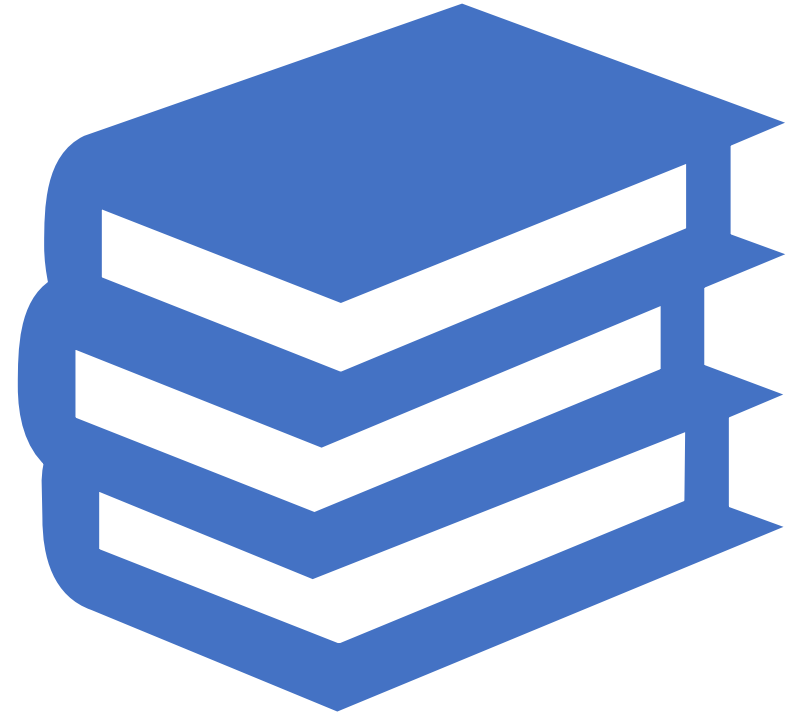


11th AUS High School Computing Camp

Made by: Mai Abdalgawad



Appreciation

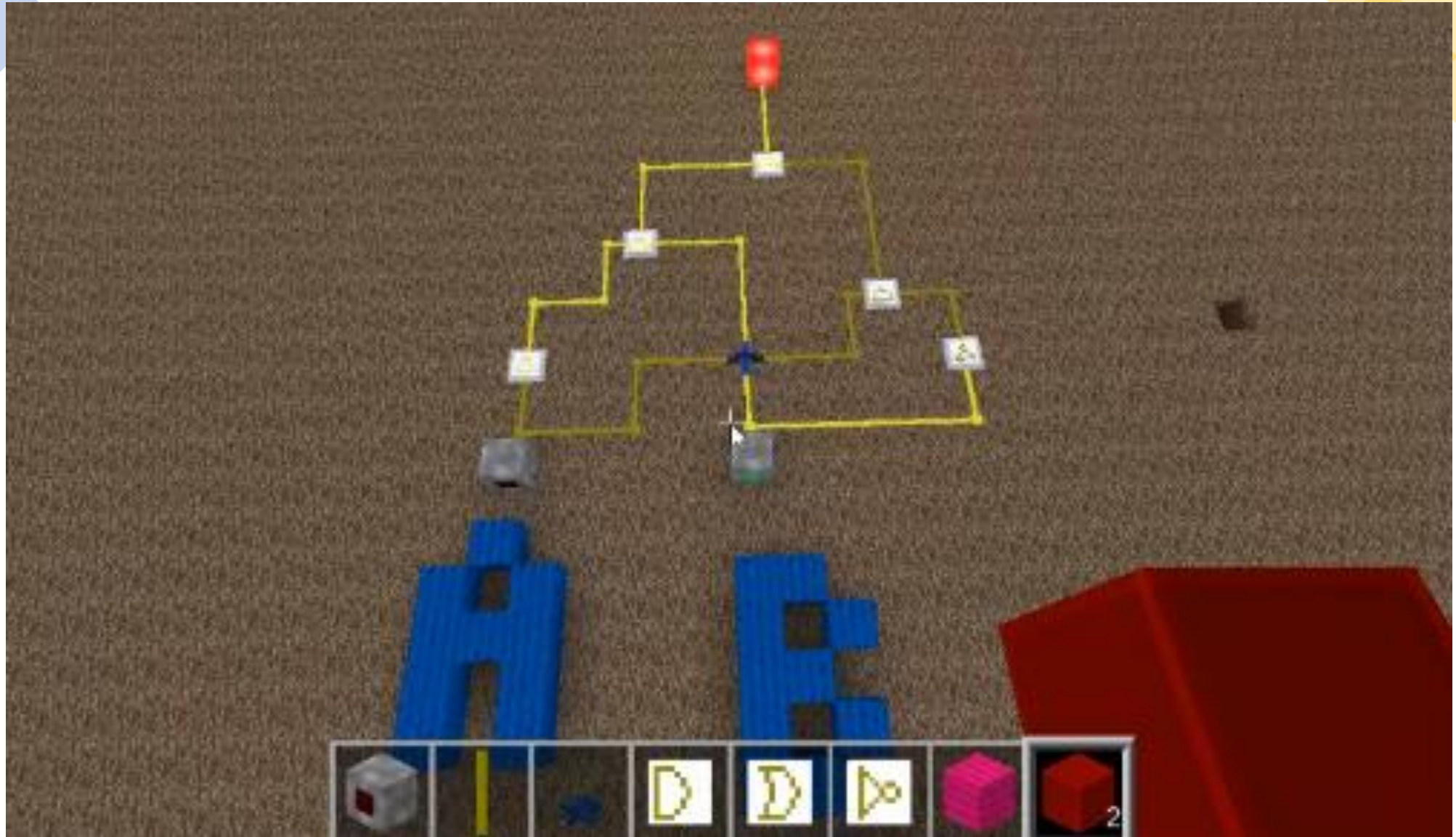
I'd like to express my sincere gratitude towards Dr. Fadi Aloul (Head of Department), Ms. Salsabeel Shapsough, Mr. Ahmad Al Nabulsi, Mr. Wissam Abou Khreibe, Mr. Mohammed Elnawawy, Mrs. Praveena Kolli, and Ms. Hend Elghazaly for an amazing camp and appreciated hard work on helping students expand their knowledge about Computing.

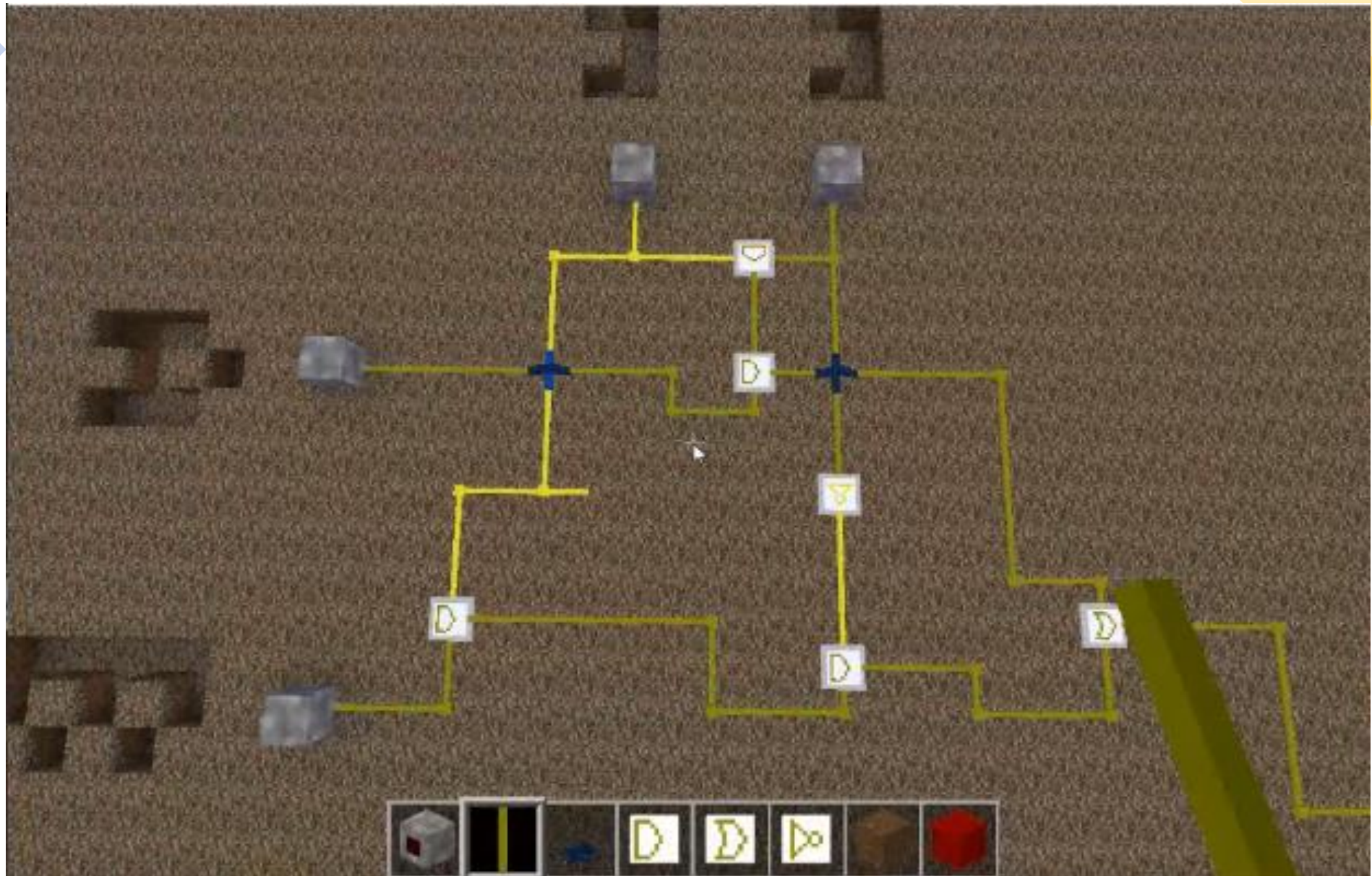




Day 1: Basics of Building a Computer (Minetest) with Ms. Salsabeel Shapsough

In this session, Ms. Salsabeel walked us through the basic understanding of logic gates: OR, AND, and NOT. We built a basic computer using minetest and mesecons.







Day 2: Python Programming with Mr. Ahmad Al Nabulsi

In this session, Mr. Ahmad took us through the world of Python programming where we studied about different functions, how to name our variables, if else statement, while loop, for loop and a lot more. We also expanded our knowledge by making patterns using for loops! He made the session interactive and fun.

Python Input

```
Grade=float(input("enter your grade: "))
if (Grade>=60):
    print("passed")
else:
    print("failed")
    print("You need to repeat this course")
```

```
enter your grade: 89
passed
>>>
```

```
enter your grade: 35
failed
You need to repeat the course
>>>
```

For loop

```
for n in range(10, -1, -1):  
    print(n)
```

```
10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
0  
>>>
```

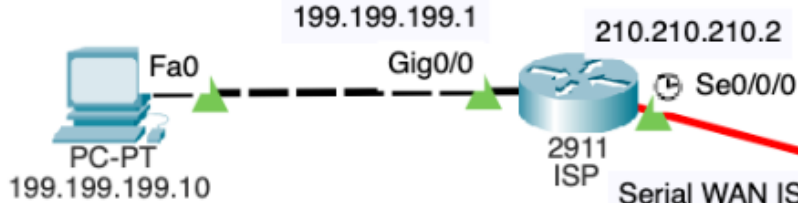



Day 3: Building a Computer Network with Mr. Wissam Abou Khreibe

Building a Computer Network was the most challenging session of the camp but as much as it was challenging, I learned new things I have never been across.

- 1) Changing from one number system to another.
- 2) Understood the difference between IPV6 and IPV4
- 3) Tested our understanding by playing quizziz
- 4) Used Cisco Packet tracer to build a computer network

Use Straight-Through (ST) cables to connect different devices
 Use Cross-Over (CO) cables to connect similar devices

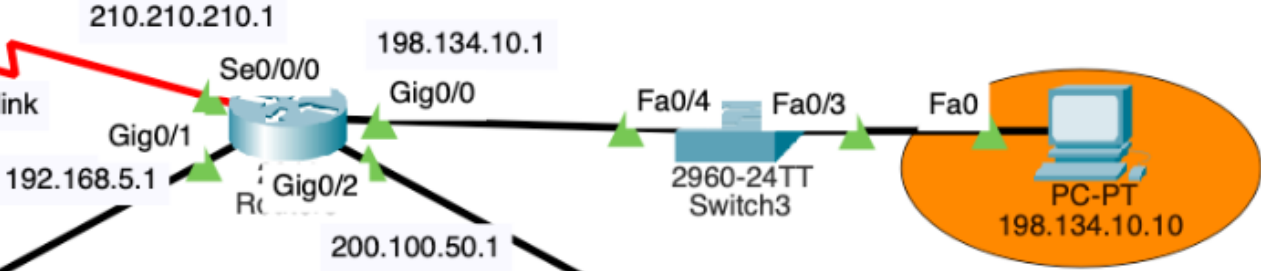
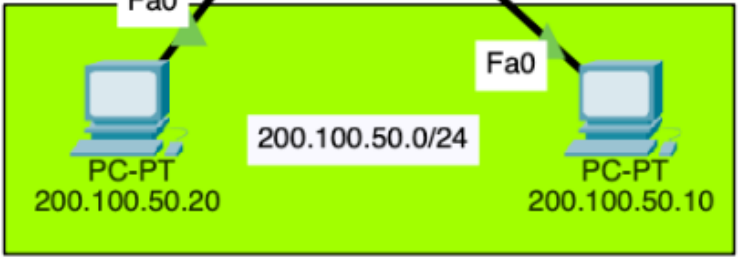
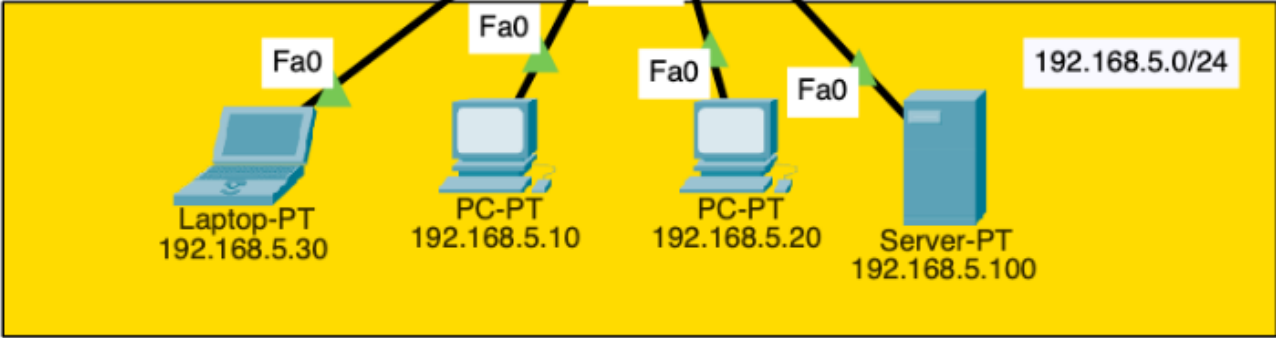


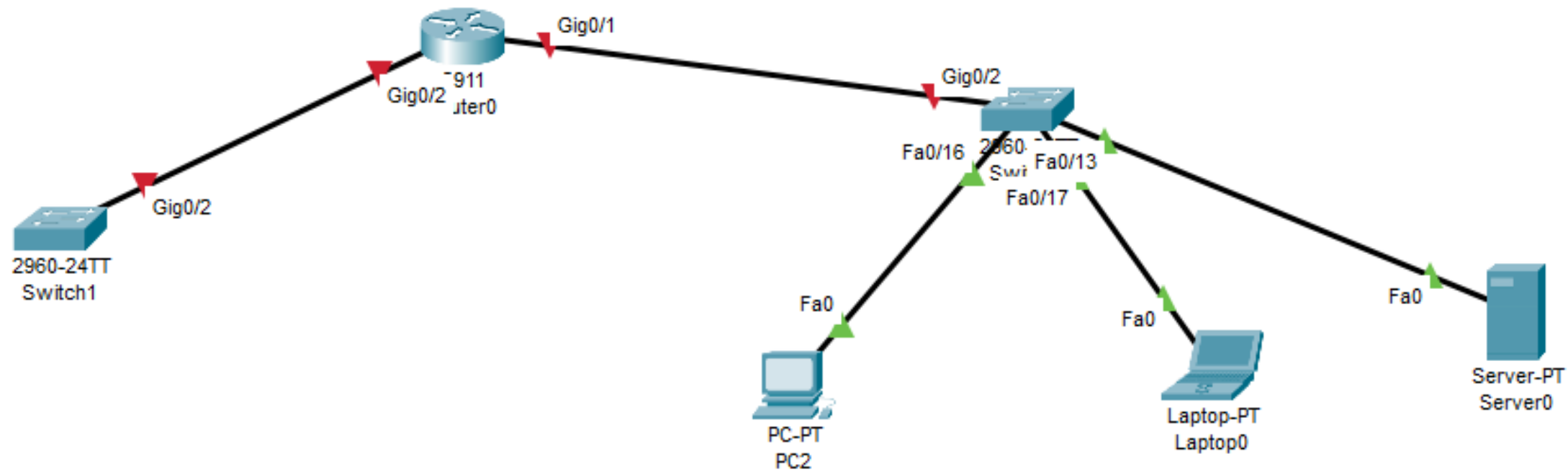
Switches allow hosts on same network to communicate
 Routers allow hosts on different networks to communicate

Every host needs IP and mask to communicate locally
 You need a gateway to communicate with remote networks

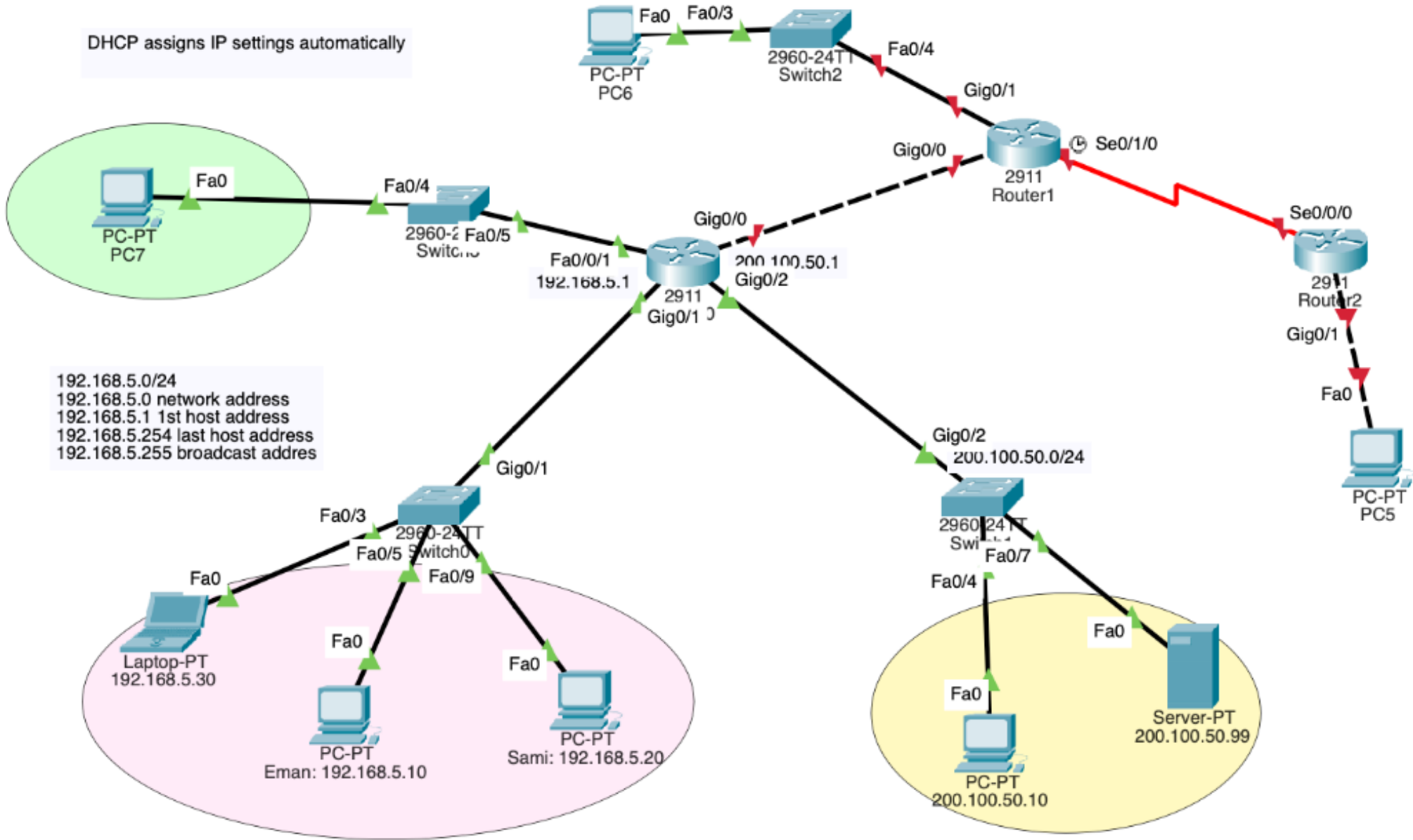
Routers require initial configuration

CO and ST connections are LAN connections.
 LAN connections use parallel transmission.
 Internet connections are WAN connections.
 WAN connections use serial transmission.





DHCP assigns IP settings automatically



192.168.5.0/24
192.168.5.0 network address
192.168.5.1 1st host address
192.168.5.254 last host address
192.168.5.255 broadcast address

Laptop-PT
192.168.5.30

PC-PT
Eman: 192.168.5.10

PC-PT
Sami: 192.168.5.20

PC-PT
200.100.50.10

Server-PT
200.100.50.99

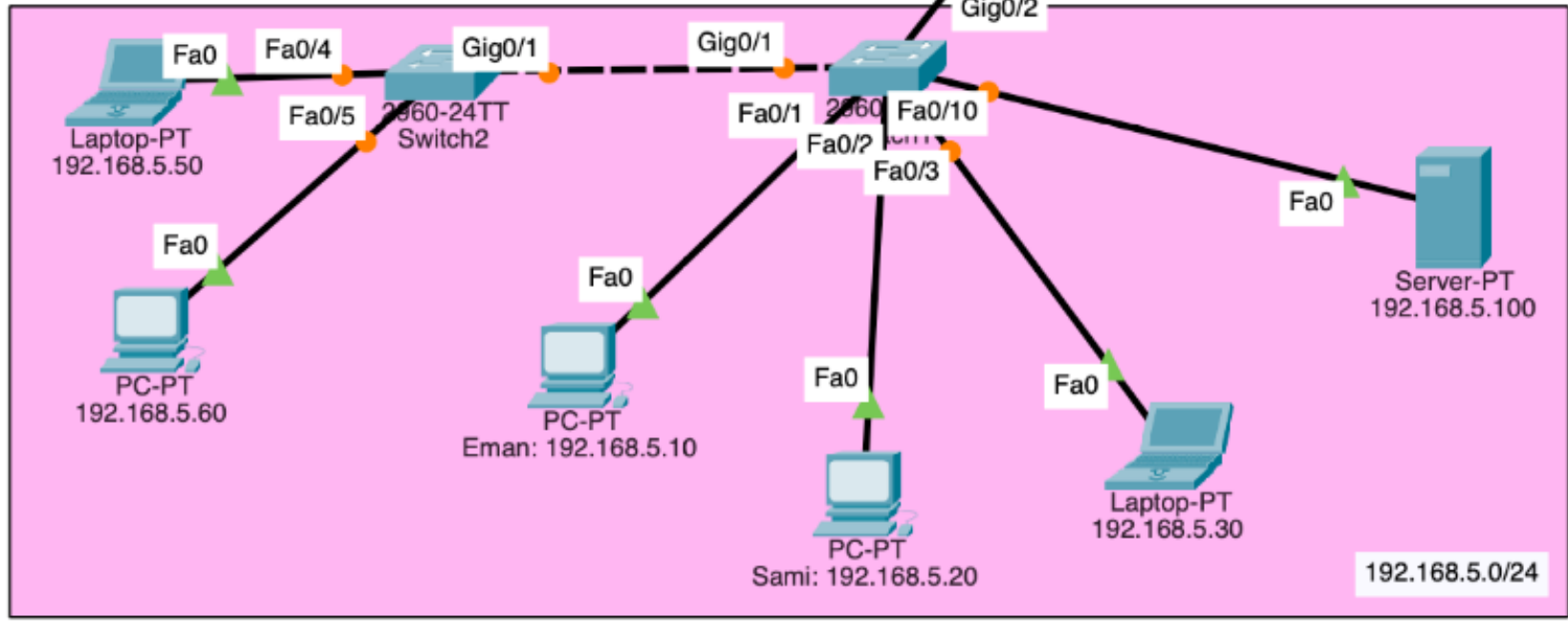
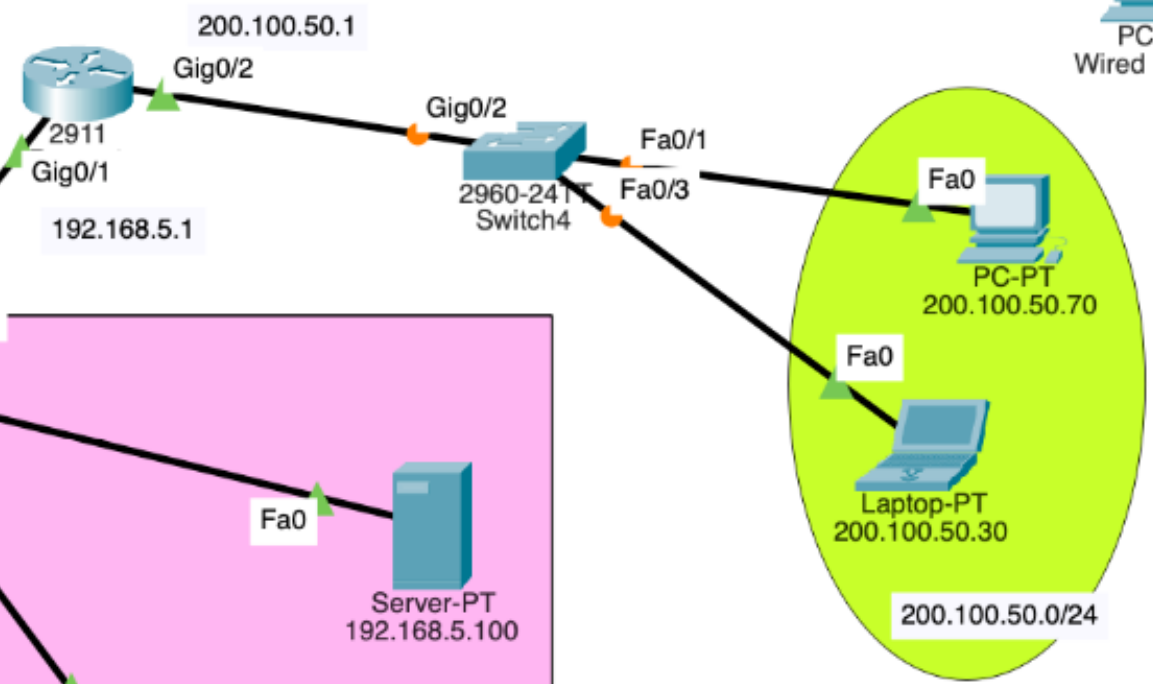
PC-PT
PC5

Switches do NOT require IP address to function.
Routers require IP address to function.

Cross-Over cable (dashed line) to connect similar devices.
Straight-Through Cable (line) to connect different devices.

ARP protocol maps MAC address to port numbers.
C:\> arp -a

Hubs are obsolete
Bridge is an advanced Hub
Switch is an advanced Bridge

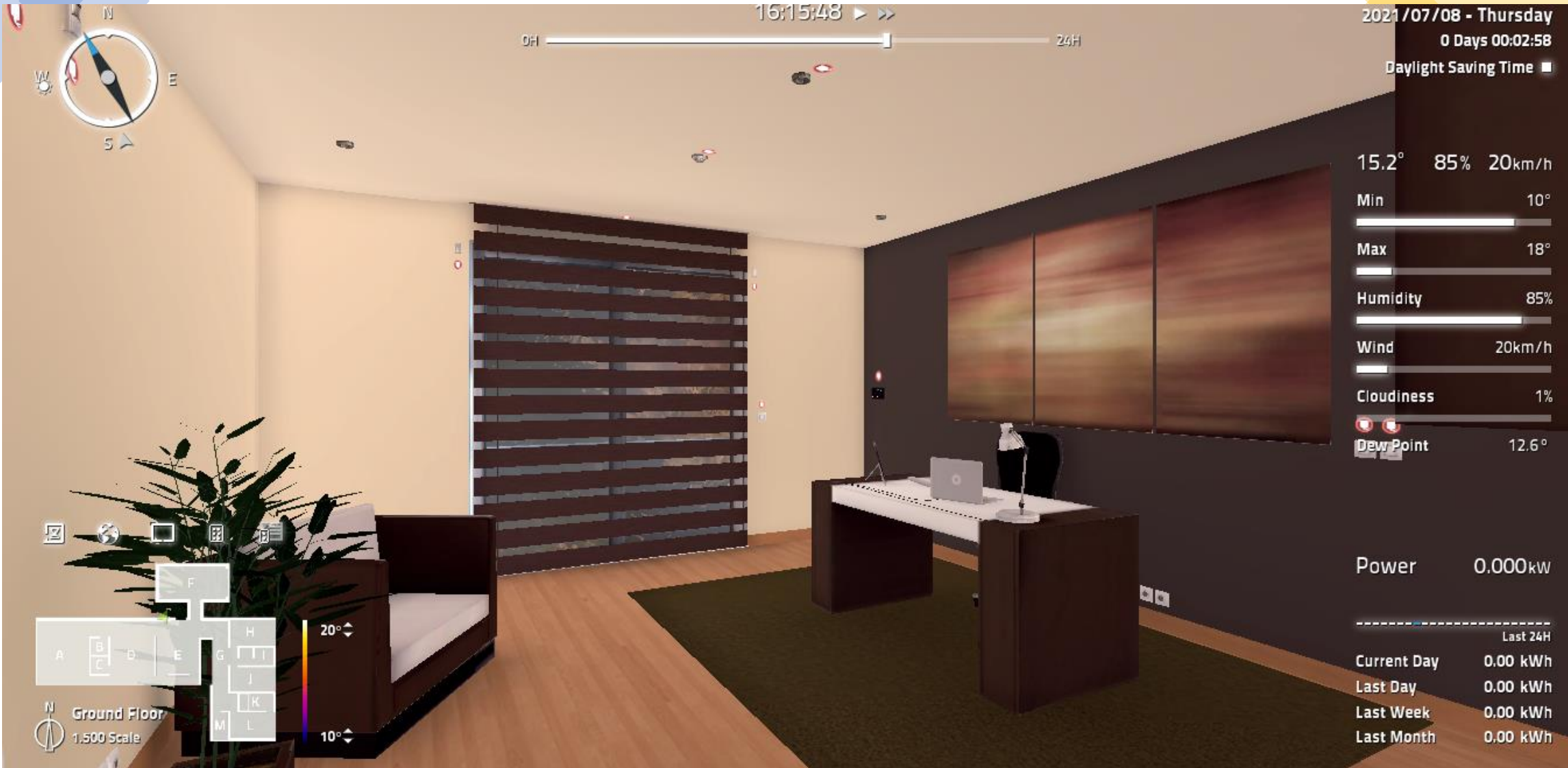




Day 4: IoT & Smart Homes with Mr. Mohammed Elnawawy

During the IoT and Smart Homes session, Mr. Mohammed explained the components of a smart home. For example: there can be a lighting control system, smart air conditioner, security system, and a smart door lock. We mainly focused on programming a garage door opener by three methods: a tablet, scratch and python programming.

Meaning of IoT: a system of interconnected computing devices, services, machines, objects, animals and people.





Programming the gate using a tablet

09:45:13

2021/07/08 - Thursday
1 Days 23:32:34
Daylight Saving Time

16.8° 85% 5km/h
Min 10°
Max 18°
Humidity 85%
Wind 5km/h
Cloudiness 1%
Dew Point 14.3°

Power 0.000kW
Last 24H
Current Day 0.29 kWh
Last Day 0.34 kWh
Last Week 0.00 kWh
Last Month 0.00 kWh

EDIT SCENARIO

Scenario Name: Open gate

Sensor: Sensor (None Selected)

Remote: Remote button (Button 1)
Action: On

Schedule: Add Item

At 12:00 Action On

Actuators: Select

Ground Floor 1,500 Scale

Home I/O-Programming the gate using scratch



```
forever
  if (entrance_gate_infrared_1 is detecting or entrance_gate_infrared_2 is detecting and not entrance_gate is open) then
    open entrance_gate
  else
    if (not entrance_gate_infrared_1 is detecting or entrance_gate_infrared_2 is detecting and not entrance_gate is closed) then
      close entrance_gate
    else
      stop entrance_gate
```




Day 5: Mobile Application with Mrs. Praveena Kolli

It seems that anything is possible when taking a session with Ms. Praveena. I was able to build an app called Car Parking tracker where I can locate and save the area where I have parked my car. After her session, I was able to use the app on daily basis which is the most successful thing I have done throughout the camp and I am truly proud of it.

Home



Record Car Location

Find My Car

Find Nearby Parking

Latitude

Longitude

Car Parking Tracker

```
when ButtonRecordCarLocation Click
do call Location_Sensor1's GetCurrentLocation
with outputs
error
latitude
longitude
location
then do
set LabelLatitude's Text to latitude
set LabelLongitude's Text to longitude
```

```
when Find Path Opens
do call Location_Sensor1's GetCurrentLocation
with outputs
error
latitude
longitude
location
then do
set Web_Viewer1's URL to
join
" https://www.google.com/maps/dir/"
latitude
" ,"
longitude
" /"
stored variable " latitude "
" ,"
stored variable " longitude "
```

```
when Map1 onMapReady
do
set Map1's Latitude to stored variable " latitude "
set Map1's Longitude to stored variable " longitude "
call Map1's addMarker
latitude stored variable " latitude "
longitude stored variable " longitude "
title " Car "
description " Your car is here "
call Location_Sensor1's GetCurrentLocation
with outputs
error
latitude
longitude
location
then do
call Map1's addMarker
latitude latitude
longitude longitude
title " You "
description " You are here "
```

```
when Map1 onMapReady
do
  set Map1's Latitude to stored variable "latitude"
  set Map1's Longitude to stored variable "longitude"
  call Map1's addMarker
    latitude stored variable "latitude"
    longitude stored variable "longitude"
    title "Car"
    description "Your car is here"
  call Location_Sensor1's GetCurrentLocation
    with outputs
      error
      latitude
      longitude
      location
  then do
    call Map1's addMarker
      latitude latitude
      longitude longitude
      title "You"
      description "You are here"
```

```
when ButtonFindPath Click
do
  navigate to Find Path
```

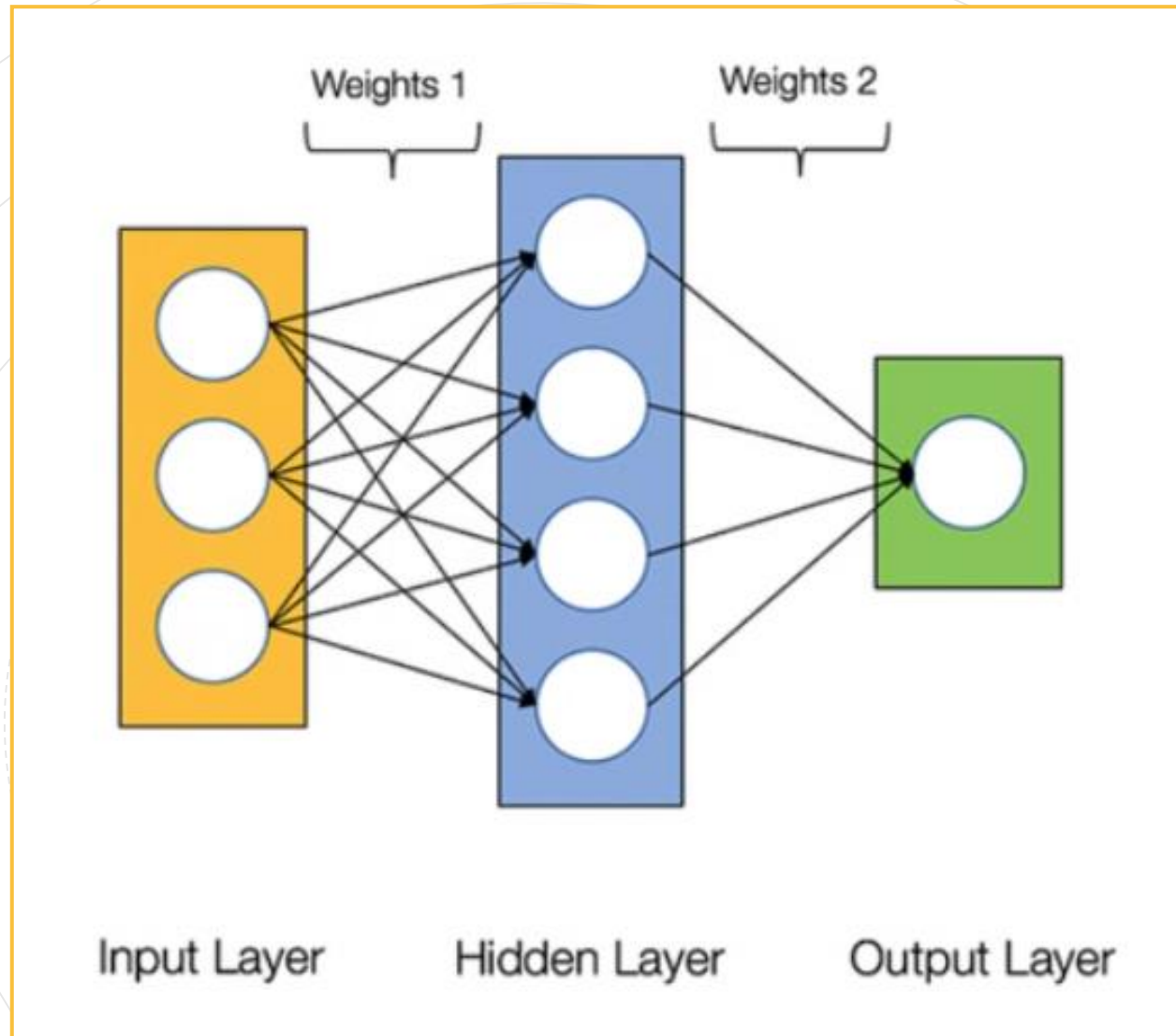
```
when Map1 onLongPress
  latitude
  longitude
  position X
  position Y
do
  call Map1's addMarker
    latitude latitude
    longitude longitude
    title "Extra location"
    description "You want to go here"
  set stored variable "latitude" to latitude
  set stored variable "longitude" to longitude
```

Day 6: Machine Learning with Ms. Hend ElGhazaly

In this session, Ms. Hend took us through the World of Machine learning where she showed us a timeline of interesting AI milestones over the decades, types of machine learning methods that include supervised learning, unsupervised learning and reinforcement learning. Moreover, we learned about neural networks, how machines learn to be intelligent and using a machine in an application. This was the most interesting session of all because I was able to relate to each slide she has shown.

Machine Learning: most popular subfield of AI, consists of techniques that enable computers to learn from provided data to make decisions.





Neural Networks

```

when clicked
  hide
  set y to 152
  set item to 0
  create clone of myself

when I start as a clone
  change item by 1
  if item < 23 then
    switch costume to item
    show
    go to front layer
    go to x: 0 y: 0
  if recognise image costume image (label) = car then
    glide 1 secs to x: pick random -210 to -100 y: y
  else
    glide 1 secs to x: pick random 100 to 210 y: y
  change y by -14
  create clone of myself

```

