Cisco Packet tracer

INDEX

5-B.

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Blood Group. Birth Day.

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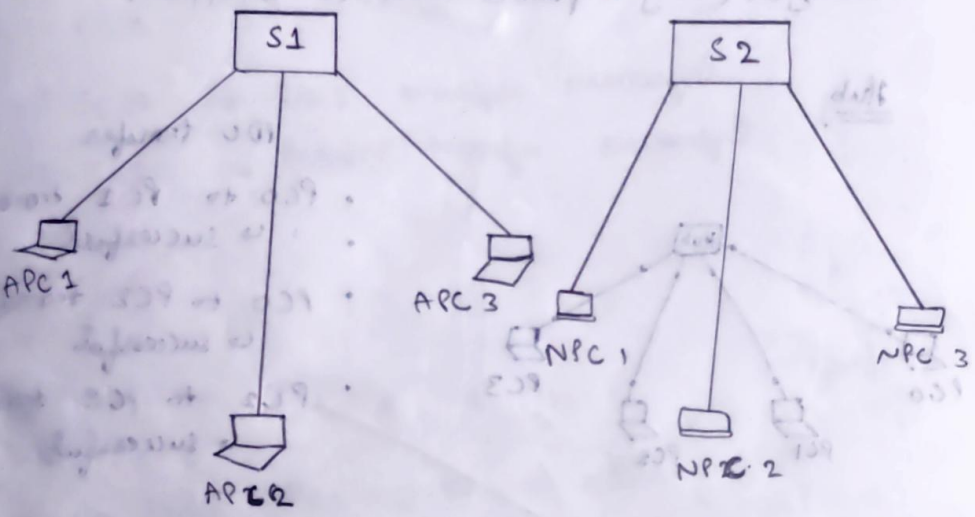
13/08/25

1) Introduction to cisco Packet Tracer

Simple System connections



Cables - Connections - Automatically choose Connection Type

End devices - 3 Laptops - Fast ether i) 192.168.10.1
2) 192.168.10.2
3) 192.168.10.3

13/8/25 - 3 PCS - Fast ether i) 192.168.20.1
2) 192.168.20.2
3) 192.168.20.3

Switch - PT - empty - 2

1. PDU - APC1 to APC2
   - Status - Successful
   - Reason - Because both of them are connected to same switches, meaning they have the same local network.

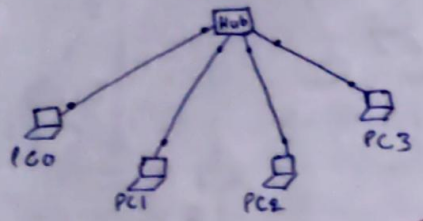
2. PDU - APC3 to NPC 3
   - Status - failed
   - Reason - Because both of them are connected to different switches - different networks.

20/08/2025

Lab 1

1. Create a topology and simulate sending a simple PDU from source to destination using hub and switch as connecting devices and demonstrate a ping message. (ping - packet internet dropper)

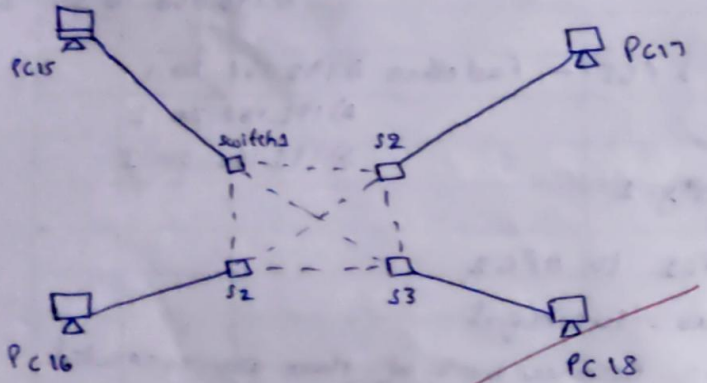
Hub



PDU transfer

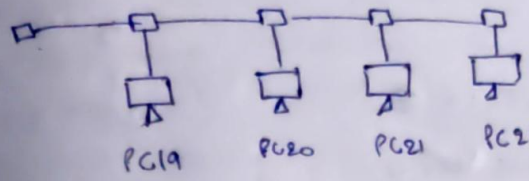
- PC0 to PC1 transfer
  - ↳ successful
- PC0 to PC2 transfer
  - ↳ successful
- PC2 to PC3 transfer
  - ↳ successful.

Mesh



- PC15 to PC16 transfer successful
- PC18 to PC17 transfer successfull.

Bus topology.



→ PC19 to PC23 transfer successful.

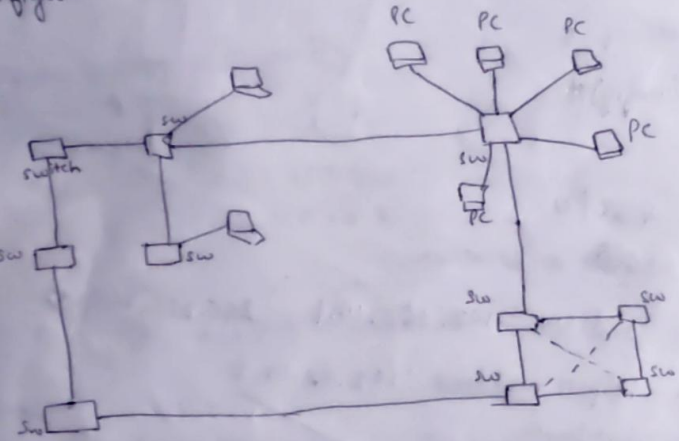
→ PC22 to PC20 transfer successful

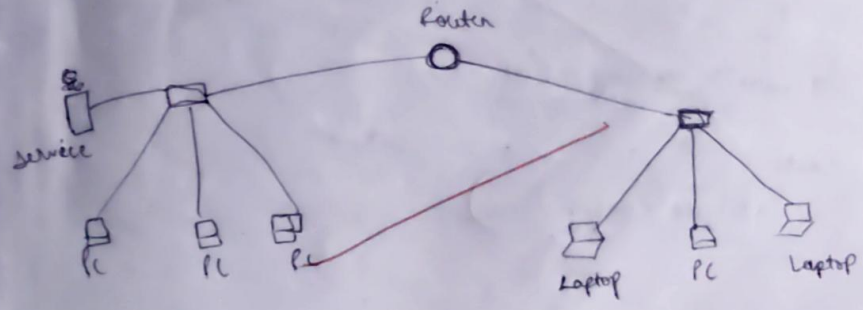
thi solo sir

03/09/2025

Experiment 1

→ Configure DHCP within a LAN and outside a LAN





Server → Services → DHCP

	Switch 1	Switch 2
Default gateway	192.168.10.1	20.1
DNS Server	0	0
Start IP →	192 168 10 3	20 2
Subnet	255 255 255 0	
Max user	20	

Add

~~Switch 2~~

Before switches
DHCP → Desktop IP config →
static → 192.168.10.2
Gateway 192 168 10 1

Router

→ CLI → conf. → no → enter

Router> enable

Router# conf t

Router(config)#

CLI fa0/0

int ~~Fa0/0~~ or whatever

→ ip address 192.168.10.1 255.255.255.0

→ ip helper-address 192.168.10.2

→ no shutdown

do write memory

exit

(1 first interface config done)

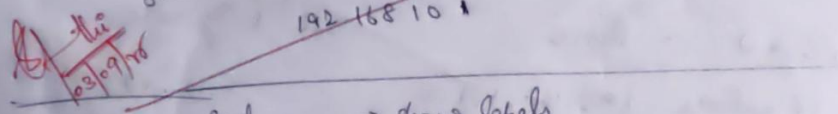
next

- int Fa1/0
- ip address 192.168.20.1 255.255.255.0
- ip helper-address 192.168.10.2
- no shutdown
- do write memory
- exit
- exit
- write memory

→ Laptop
Desktop
IP configuration
DHCP

Server → Desktop → ip config

IP address 192 168 10 2
gate 255 255 255 0
192 168 10 1



Options → Preferences → Show Labels

Observation
→ ~~we could transfer from~~, DHCP successful for both the LANs.

8. Configure webserver, DNS, PNS within a LAN | 10/09/25

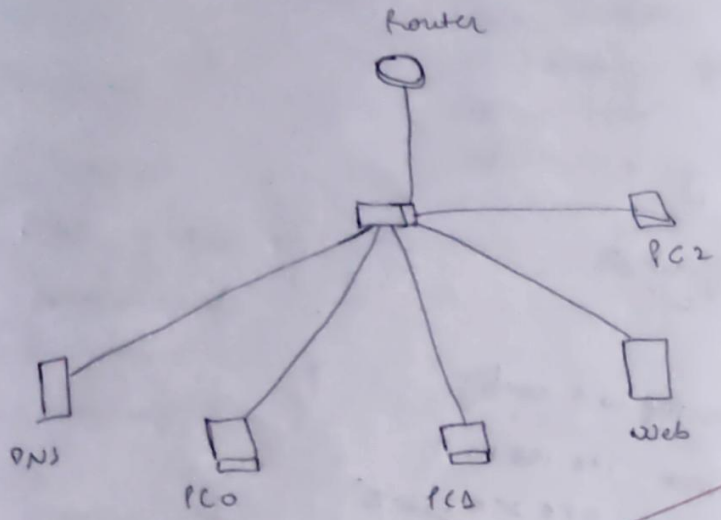
→ Configure IP addresses to routers in packet tracer, explore the following messages.

i) Ping response, ✓

ii) Destination unreachable

iii) Request time out ✓

iv) reply ✓



PC → 0 - Static

IP address - 192.168.1.100

DNS server - 192.168.1.5

PC - 1 - Static

1.101

1.5

Gateway → if dealing with 2 LAN's Router config

Web

Server - Services - HTTP - edit

Desktop → ip config - 192.168.1.6

DNS server

Services - DNS - on

Name : any url

ex : www.letslearn.com

Address: IP of web server

192.168.1.6

IP config → 192.168.1.5

DNS - 192.168.1.5

PC 0

Desktop → command prompt

ping 192.168.1.5 (Pinging DNS server)

ping 192.168.1.6 (—— web ——)

} if we get reply then connection is successful.

→ web browser

URL. www.letslearn.com

GO → small page

output : Hello, world! ....

tue 10/09/25

request timed out

PC2 → static

IP address - 192.168.1.102

DNS server - 192.168.1.5

Desktop → command prompt

ping 192.168.1.0

Request timed out.

3. Configure IPV4 static and default route

Router – 1841 router (all routers)
physical → off power.
HWIC-2T (drag drop)
Turn on

wires → Serial dce → from router to router
→ post (serial to serial)

between PC & switch
switch & router } automatic

R1

CLI

→ no
→ enable
→ config t
→ int Se0/1/0
→ ip address 172.16.1.1 255.255.255.252
ip address of R2 (to configure R_2 to R1)
→ no shutdown
→ exit
(configure second interface for switch)
→ int Fa0/0 (the wire connected for router through switch)
→ ip address 192.168.10.1 255.555.255.0
↳ local network ip address
→ no shutdown
→ exit
→ ~~do write memory (start int config)~~
→ exit (exited from config)
→ write memory

R2

→ no
→ enable
→ conf t
→ hostname R2
→ int Se0/1/0 (towards R1)
→ ip address 172.16.1.2 255.255.255.252
→ no shutdown
→ exit

→ int Fa0/0 (toward switch)
→ ip address 192.168.20.1 255.255.255.0
→ no shutdown
→ exit

→ int Se0/1/1 (towards R_3)
→ ip address 172.16.2.1 255.255.255.252
→ no shutdown
→ exit
→ exit
→ write memory

PC2	PC0	PC1
30.10	192.168.10.10	20.10
	255.255.255.0	
30.1	192.168.10.1	20.1

R3

→ no
→ enable
→ conf t
→ hostname R3
→ int Se0/1/1 (towards R2)
→ ip address 172.16.2.2 255.255.255.252
→ no shutdown
→ exit

- int Fa 0/0
→ ip address 192.168.30.1 255.255.255.0
→ no shutdown.
→ exit
→ exit
→ write memory

R1

enable
conf t
ip route 192.168.20.0 255.255.255.0 172.16.1.2
ip route ~~192.16~~
172.16.2.0 255.255.255.252 172.16.1.2

ip route 192.168.30.0 255.255.255.0 172.16.1.2
exit
write memory

R2

enable
conf t
ip route 192.168.10.0 255.255.255.0 172.16.1.1
ip route 192.168.30.0 172.16.2.2
exit
write memory

R3 → making it as default

→ enable
→ conf t
→ ip route 0.0.0.0 0.0.0.0 Se 0/1/1 (towards R2)
→ exit
→ write memory

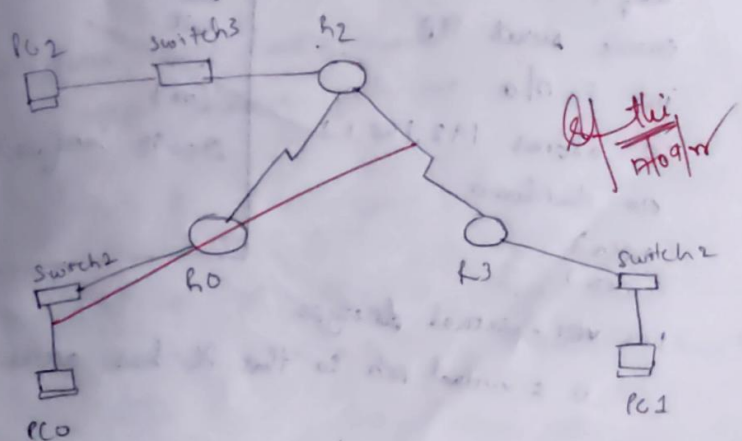
R1 R2 R3
show ip route

PC 0
terminal

ping 192.168.10.1 (local)
ping 192.168.20.1
ping 192.168.30.1

Output

→ Static gateway connection successful
→ Default gateway connection successful
→ PC0 to PC2 message successful.



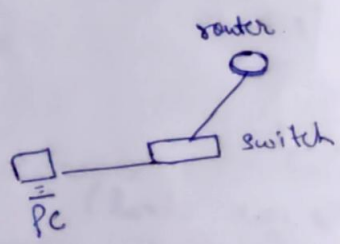
08/10/25

6) Telnet

Configure Telnet to access router remotely

i) It is used to access remote server. It is a simple command line tool that runs on computer & it allows you to send command remotely to a server and administrator.

ii) It is also used to manage other devices like router, switch to check if ports are opened or closed on the server.



PC → IP config

IP - 192.168.1.2

Gateway - 192.168.1.1

Router
↳ CLI
↓
no
enable
conf t
enable secret cp
int fa 0/0
ip address 192.168.1.1
no shutdown
(enter)
(enter)
line vty - virtual deletetype.
↳ a virtual path so that PC has access.

login
(disabled login)
password tp → (login password)
exit
exit
wr
[ok]
show ip interface brief

PC
↳ command prompt
ping 192.168.1.1
reply success

Now, access / edit router from PC
telnet 192.168.1.1
user access verification
password : tp
R1 #enable
password: cp
show ip interface brief
fa 0/0 192.168.1.1 yes manual up up
1/0 unassigned. yes. unset

R1 # enable
R1 # conf t
R1(config)## int Fa1/0 (choose any which is not assigned)
→ ip address 192.168.1.2 255.255.255.0
show ip interface brief

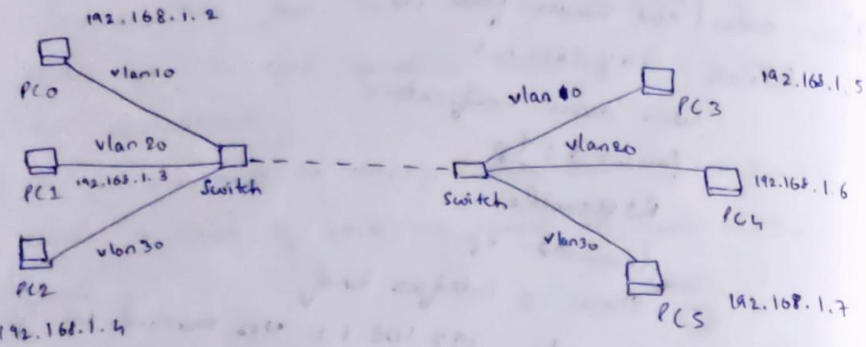
2) Configure OSPF routing protocol

open shortest path first.
R0 → CLI
conf t.
router OSPF 1
network 192.168.55.0 0.0.0.255 area 0
network 176.16.0.0 0.0.255.255 area 0
exit

IPv4

7) To construct a vlan and make the PCs communicating among a vlan

15/10/25



VLan10		VLan20		vlan30	
Fa0/1	PC0	Fa1/1	PC1	Fa2/1	PC 2
Fa2/1	PC3	Fa1/1	PC4	Fa0/1	PC5

Config switch 0.

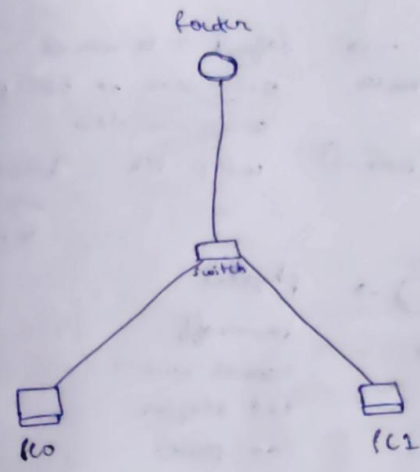
>enable
config t
int Fa0/1
switchport access vlan 10
int fa1/1
switchport access vlan 20
int Fa2/1
switchport access vlan 30
int Fa3/1
Switchport mode trunk.
exit

Config switch 1

>enable
Config t
int Fa2/1
switchport access vlan 10
int Fa1/1
switchport access vlan 20
int fa0/1
switchport access vlan 30
int Fa3/1
switchport mode trunk
exit

8) Demonstrate the life of a packet

ttl → time to live.



Router
Config
fastethan 0/0
Port status On
IP - 192.168.1.1
Subnet. 255.255.255.0

IP config

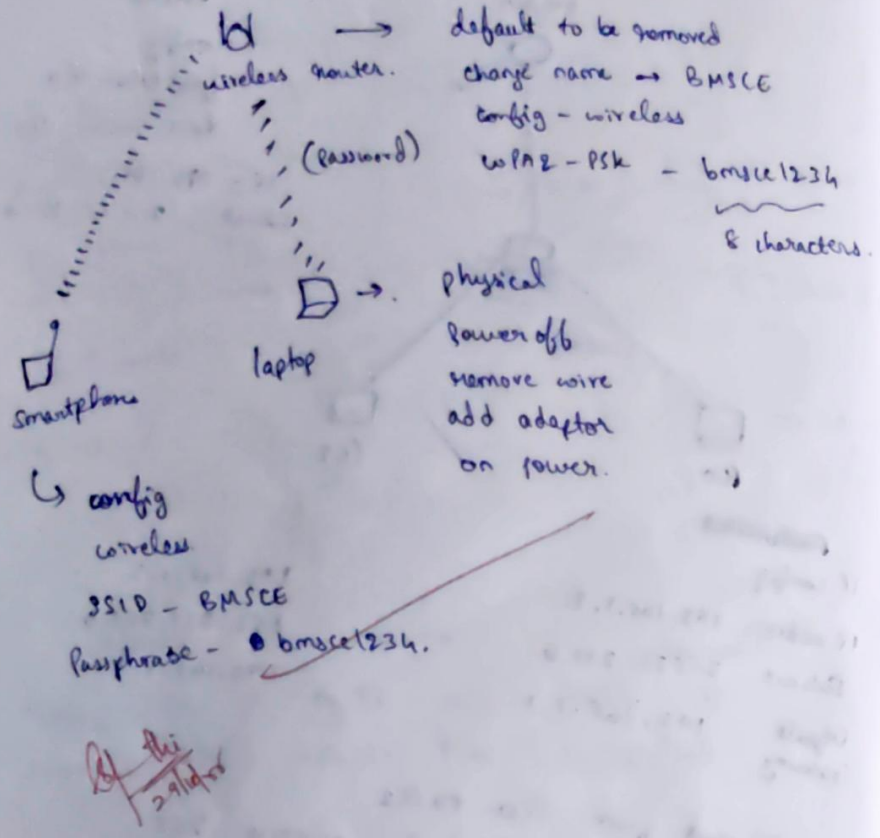
IP address	192.168.1.2	192.168.1.3
Subnet	255255.255.0	255 255 255.0
Default Gateway	192.168.1.1	192.168.1.1.

PDU sent from PC0 to PC1.
TTL at outbound during progress 255
After progress - successfull - 128.

Reasoning.

In cisco packet tracer, the outbound ttl of 255 represents the default max value before the packet is transmitted The ttl of 128 reflects the actual value set by the source device's operating system, which is what get embedded in packet header.

9) To construct a wlan and make the nodes communicate wirelessly



Part B

1) Leaky Bucket

→ Start with an empty bucket
→ Set the bucket's maximum capacity and the rate at which packets can be processed
→ for each second
  → Check how many packets arrive
  → add them to the bucket
  → if bucket exceeds its capacity:
    → Drop the extra packets
    → keep only up to the max. capacity
→ Send out packets at intervals.
→ After all seconds are processed
  → Continue sending pckts until bucket is empty
→ End simulation.

```
int process(int, incoming, int buck, int cap, int rate){
int dropped = 0;
bucket += in
```

Output

```
Enter the bucket size: 5
Enter the processing rate: 3
Enter the number of seconds you want to simulate : 4
Enter the size of packet entering at 1 sec: 4
                                    2 sec: 3
                                    3 sec: 5
                                    4 sec: 5
```

second	Packet Recieved	Packet Sent	Packet left	Dropped
1	4	3	1	0
2	3	3	1	0
3	5	3	2	1
4	5	3	2	2
5	0	2	0	0

2) CRC.

Generator - 10011

F = 1101011011

Remainder = 1110 or CRC.

in Sender.

[F|CRC]

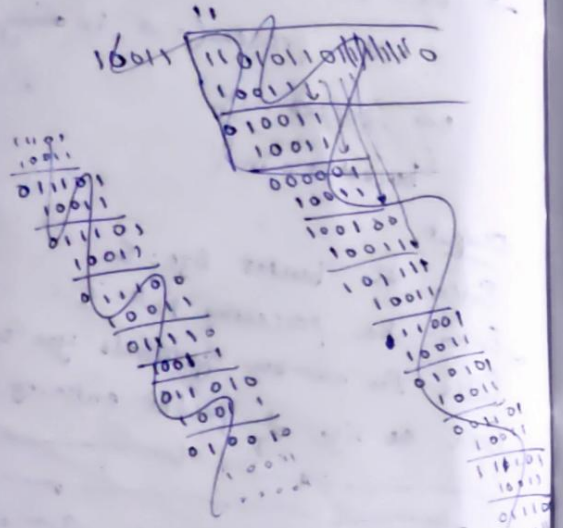
11010110111110

done ✓

Zero got.

Reciever

[F|CRC] divide with generator (do exor)



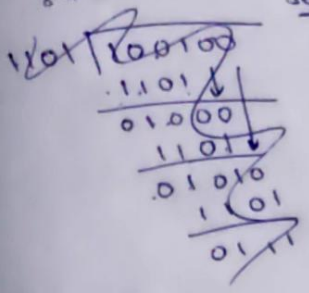
3) F = 100100

G = $x^3 + x^2 + 1$.

↳ 1101

8 4 2 1

Sender

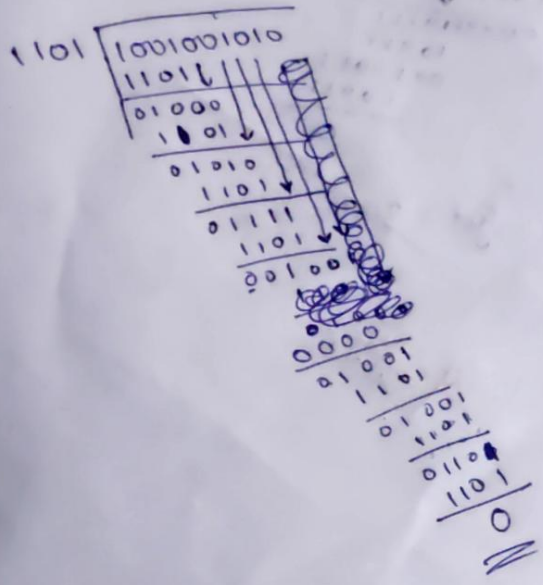


CRC = 1010

[F|CRC]

100100 1010

Reciever.



got zero.

64 32 16 8 4 2 1

1 0 0 1 0 0

32 4

36

13

3) F = 11010110011

G = 10011

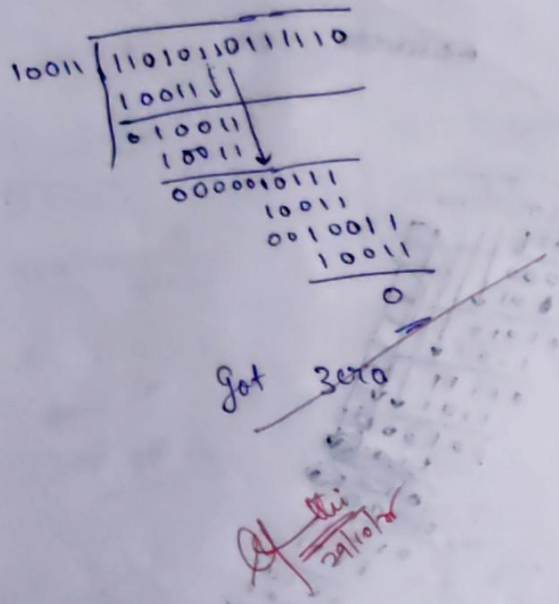
If F = 1101011011

G = 10011

CRC = 111

F|CRC

11010110111110



ARP | OSPF | in class.

Part B → wireshark.

Lab exam
→ only algorithm for part B is enough

Client Server Communication

P1 → send msg from client to server & send it back from server (use tcp & udp)

P2 → send file. & save as .txt.

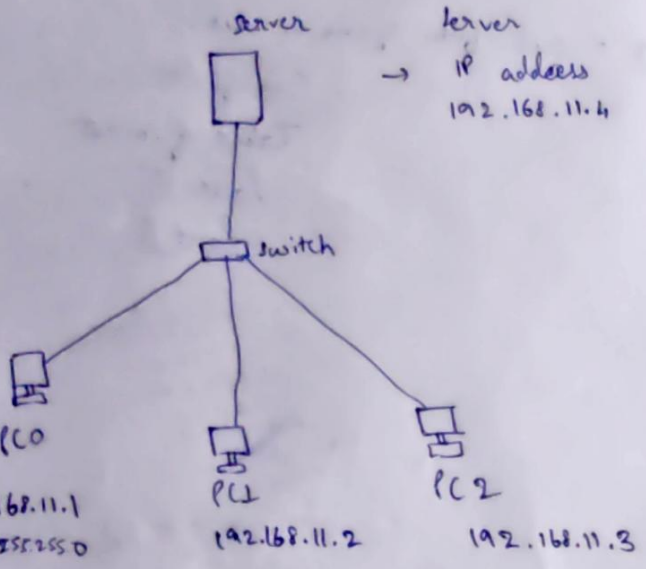
Certificate
Table of content
Part A
Part B

19/11/2025

ARP → address resolution protocol.

→ ARP is used to map an ip address ~~through the~~ to a MAC address.

→ ARP is used to get data link layer address, mac address with the help of ip address.

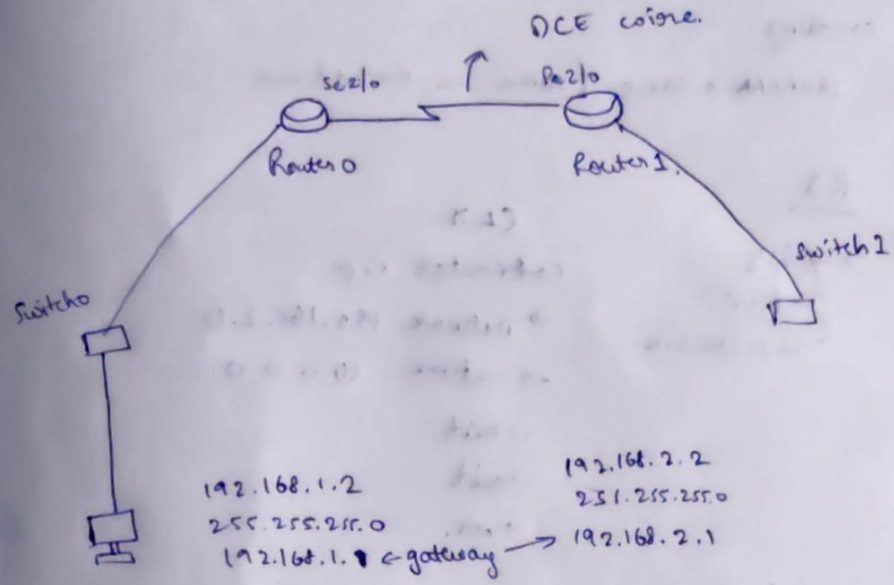


ARP table. PC0

IPaddress Hardware address Interface.

RIP →

→ Configure RIP routing protocol in routers to transfer packet from node A to node B.



Router 0

Interface

~~Se2/0~~, FA0/0 → power on

IP → 192.168.1.1

Se 2/0

↳ on

↳ clock rate 64K (64000)

↳ ~~Rest~~ life time → no gam)

IP → 10.10.0.2

R1

fa 0/0 → power on

IP → 192.168.2.1

Se 2/0

↳ on.

↳ clock rate → 64000

↳ IP 10.10.0.3

Router 0

↳ Config
  ↳ RIP
  ↳ Network → 192.168.1.0 → self
  ↳ add.
  ↳ 10.0.0.0
  ↳ add

↳ settings
  NVRAM → save (same as noshutdown

R1

↳ config
  ↳ RIP
    ↳ Network

CLI

↳ router rip
→ network 192.168.2.0
→ network 10.0.0.0
→ exit
→ exit
→ wr.

Pckt from PC0 to PC1
now successfull after RIP settings change.

thi
14/11/25