Ch 15
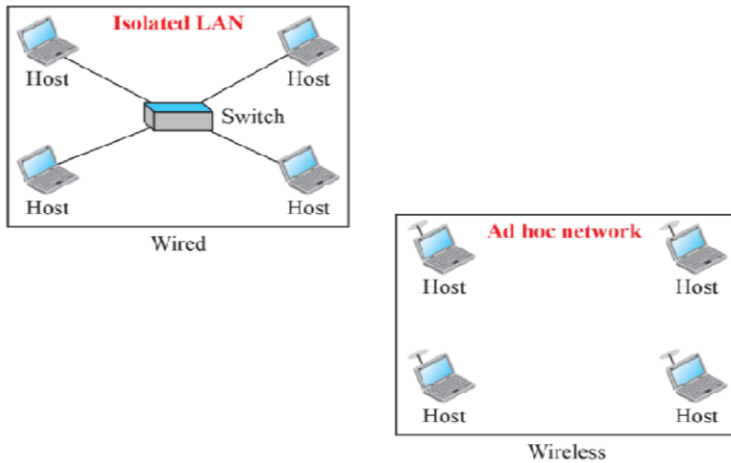
Wireless LANs

Wireless LANs can be found on college campuses, in office buildings, and in many public areas.
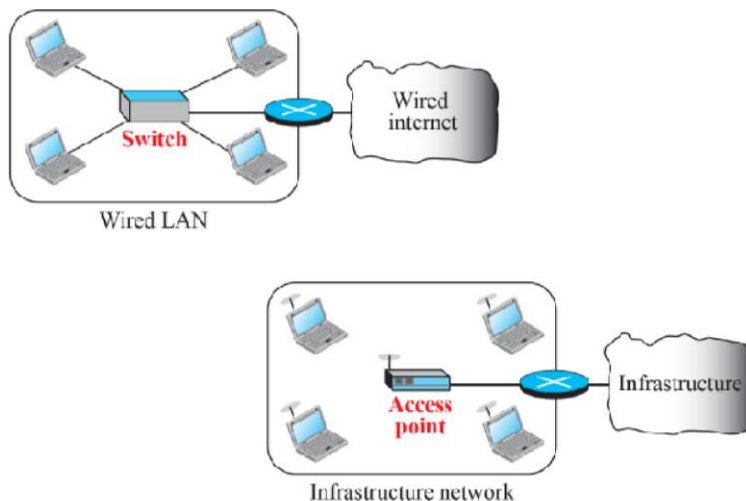
Wired and wireless هنا ركزت على الفرق بين

Figure 15.1: Isolated LANs: wired versus wireless

Wired	wireless
Connect between the host and switch through the wired.	There is no wired called ad hoc network

Figure 15.2: Connection of a wired LAN and a wireless LAN to other networks

اذا عندي wireless وداخلها Access Point تسمى **Infrastructure network**

Connect between LAN and outside through router , often wired communication

The CSMA/ CD algorithm does not work in wireless LANs for three reasons :

- **Wireless hosts do not have enough power to send and receive at the same time.**
- **The hidden station problem prevents collision detection**
- **3.The distance between stations can be great**

ممكن يجي خيارات

Extended service set (ESS) connecting by Distribution system '

What are MAC sublayers in IEEE.802.11 standard?

1- **Point coordination function (PCF)**
2- **Distributed coordination function (DCF)**

Frame format (IP address مهم فقط للـ)

Table 15.3: *Addresses*

To DS	From DS	Address 1	Address 2	Address 3	Address 4
0	0	Destination	Source	BSS ID	N/A
0	1	Destination	Sending AP	Source	N/A
1	0	Receiving AP	Source	Destination	N/A
1	1	Receiving AP	Sending AP	Destination	Source

أقارن بينهم جدا مهم مع الجدول اللي فوق ضروري تفهمونها

Figure 15.11: Addressing mechanisms
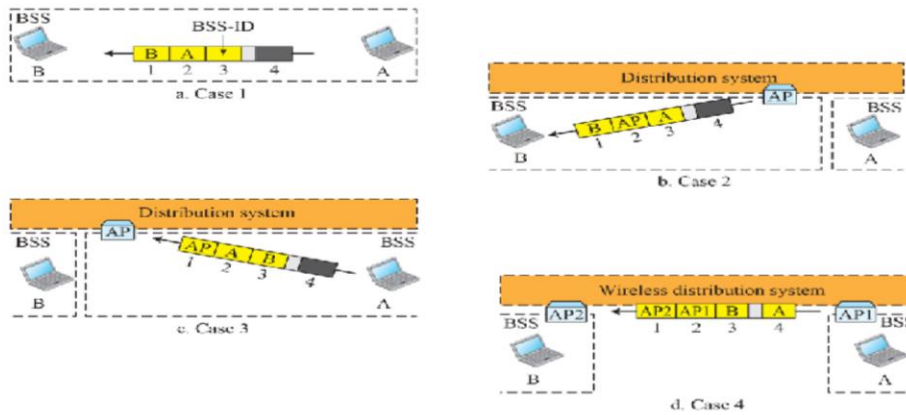
Physical layer of IEEE 802.11 تعرفون انواعها

مب مهم تعرفون **Modulator** اللي تستخدمها أهم شي تعرفون **single**

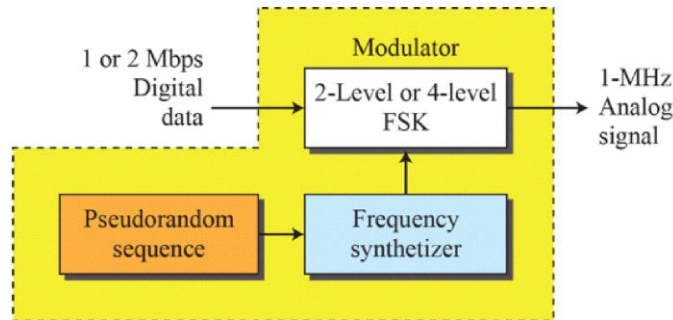Figure 15.13: Physical layer of IEEE 802.11 FHSS

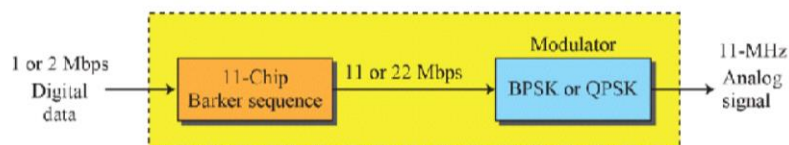Figure 15.14: Physical layer of IEEE 802.11 DSSS

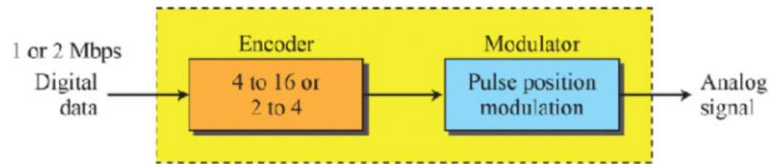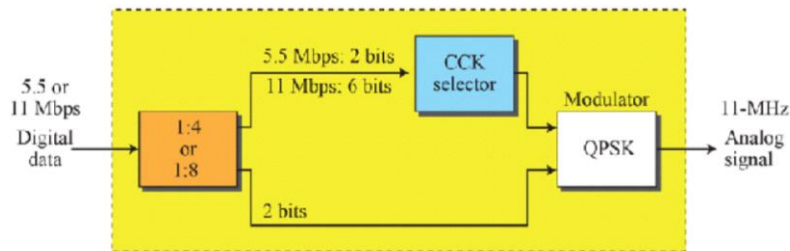Figure 15.15: Physical layer of IEEE 802.11 infrared

Figure 15.16: Physical layer of IEEE 802.11b

BLUETOOTH

A Bluetooth LAN is an ad hoc network. The devices, sometimes called gadgets, find each other and make a network called a piconet.

**connect devices of different functions when they are at <u>a short distance from each other</u>**

Bluetooth defines two types of networks: piconet and scatternet.

Piconet	Scatternet
Primary and the other device secondary	Tow piconet and one from the secondary be primary for another piconet.

فيه رسمة توضحها بالسلايد

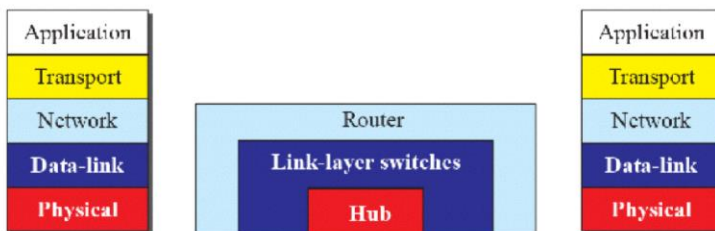**What are several architecture of Bluetooth?** ممكن يجي سؤال تعداد أو رسم وجاء ايضا بالواجب مهم

Figure 15.19: *Bluetooth layers*
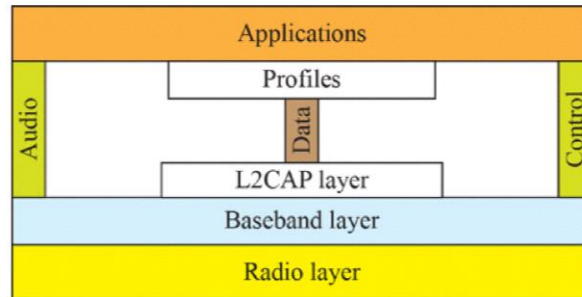
Ch 17

What are the three kinds of connecting devices and the difference between them?

Figure 17.1: *Three categories of connecting devices*

مهم نعرف اللير بكل نوع والبروتوكول

What are the Loop problem in a learning switch?
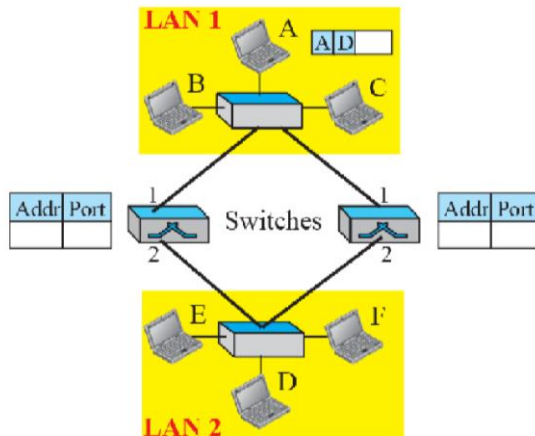
تظهر في حال

Tow switching connected in to tow LAN ⟶ **Packet doubleted** (راح تظهر لي مشكلة التكرار)
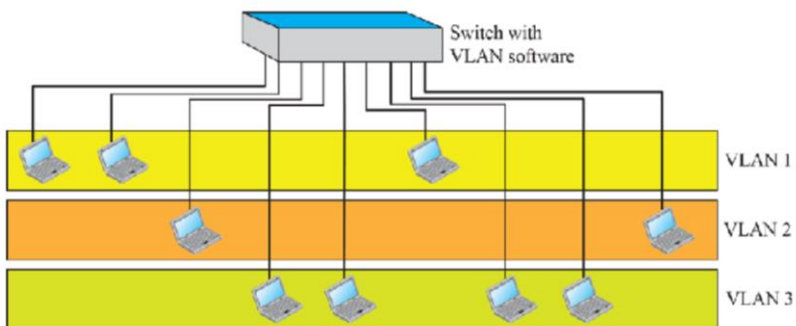
a. Station A sends a frame to station D

Routers

From the Advantages the router [to the rest of internet](#)

VIRTUAL LAN

Figure 17.11: A switch using VLAN software

هنا يكون عندي مثلا 3 شبكات LAN
واشارك Host من شبكة لشبكات ثانية
وتكون فيجوال.

What are the Membership link VIRTUAL LAN?

port numbers, MAC addresses, IP addresses, IP multicast addresses, or a combination of

How are the stations grouped into different VLANs?

Stations are configured in one of three ways: **manually**, **semi-automatically**, **and automatically.**

وصف او تعريف

Ch 18

NETWORK-LAYER SERVICES

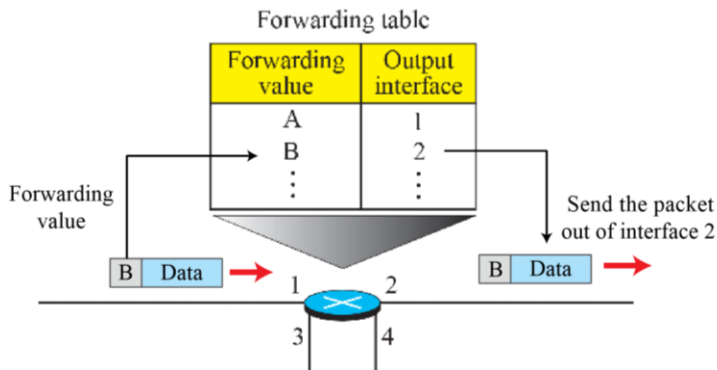**Packetizing**

Routing

Forwarding

Figure 18.2: Forwarding process

Forwarding table

موجودة بالرواتر يساعدني اذا
جاني باكت ايش البورت
المستخدم لها

What the different between connectionless and connection oriented?

connectionless	connection oriented
اقسمها لباكيت وتنرسل من باث مختلفة وتوصل out of order	نقسم الباكت وبتنرسل من نفس الباث وبتنرسل الباكبت مرتبه.

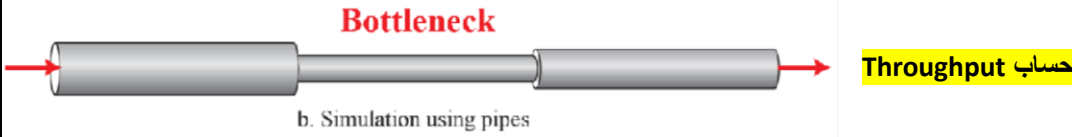**Figure 18.7:** *Sending request packet in a virtual-circuit network*
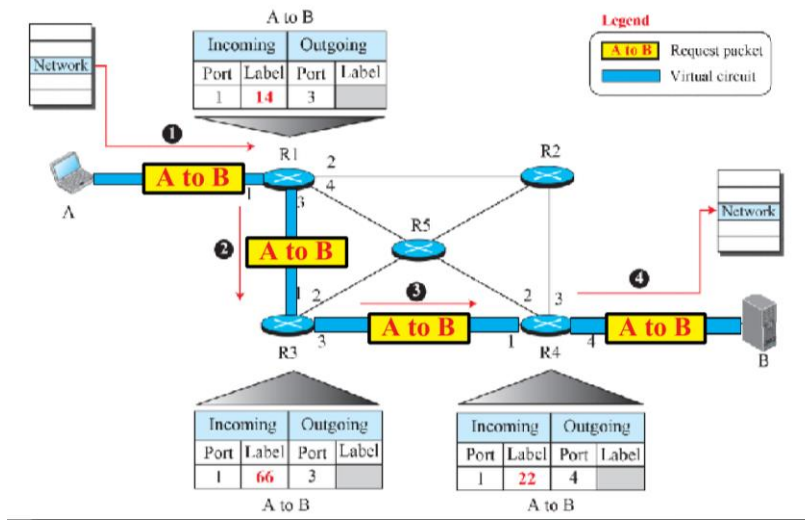
NETWORK-LAYER PERFORMANCE

The performance of a network can be measured in terms of delay, throughput, and packet loss. Congestion control is an issue that can improve the performance.

Delay	Throughput	Packet loss	Congestion Control
a packet, from its source to its destination, encounters delays The delays in a network can be divided into four types: transmission delay, propagation delay, processing delay, and queuing delay.	number of bits passing through the point in a second, which is actually the transmission rate of data at that point. In a path from source to destination, a packet may pass through several links (networks), each with a different transmission rate	is the number of packets lost during transmission	Congestion control is a mechanism for improving performance. Congestion at the network layer is related to two issues, throughput and delay

TR: Transmission rate

TR: 200 Kbps   TR: 100 Kbps   TR: 150 Kbps
Link1   R1   Link2   R2   Link3
Source   Destination

a. A path through three links

Bottleneck

Throughput حساب

b. Simulation using pipes

What are the method for alleviating congestion?

1- **Backpressure**
2- **Choke packet**

IPv4 ADDRESSES

classful addressing schema	classless addressing schema
three fixed-length prefixes were designed instead of one (n = 8, n = 16, and n = 24). The whole address space was divided into five classes (class A, B, C, D, and E),	In classless addressing, the whole address space is divided into variable length blocks that belong to no classes, a block of 1, 2, 4, 128 addresses, a block needs to be power of 2,

What is used DHCP (Dynamic Host Configuration Protocol)?

DHCP is an application-layer program, using the client-server paradigm, that actually helps TCP/IP at the network layer

What is the Network Address Translation (NAT)?

Network Address Translation (NAT). The technology allows a site to use a set of private addresses for internal communication and a set of global Internet addresses (at least one) for communication with the rest of the world - mapping between private and universal addresses, and support virtual private networks-. Through the use of NAT-capable router that runs NAT software

What the different between IPv4 and ICMPv4?

IPv4	ICMPv4
IPv4, is responsible for packetizing, forwarding, and delivery of a packet.	The ICMPv4 helps IPv4 to handle some errors that may occur in delivery. The IGMP is used to help IPv4 in multicasting.
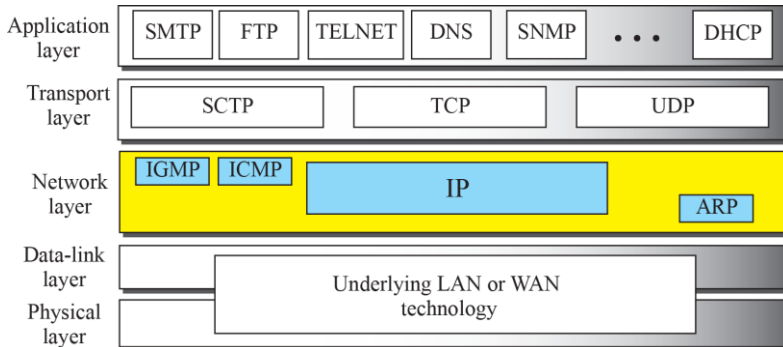
هذي الصورة مهمة وراح تجي على شكل صح وخطأ

Ch 20

UNICAST ROUTING PROTOCOLS

UNICAST ROUTING from hub to hub communication or from host to host communication.

we discuss three common protocols used in the Internet:

 Routing Information Protocol (RIP)

Open Shortest Path First (OSPF)

Border Gateway Protocol (BGP)

هنا نبهت على اننا نعرف فكرة القوريثم فقط بالمسمى وكل بروتوكل يعتمد على أي قورثيم وبالشابتر 3 القوريثم و3 بروتوكول.

Ch 23
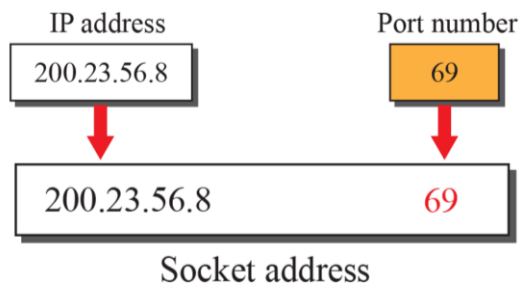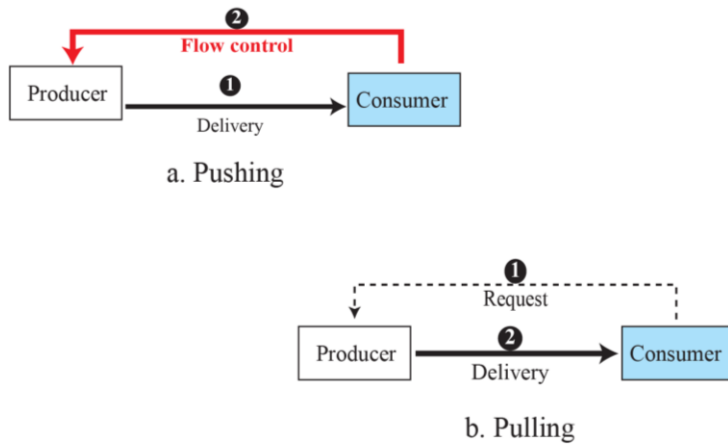
Port Number identify the process

IP address   Port number

200.23.56.8   69

200.23.56.8   69

Socket address

Figure 23.9: Pushing or pulling

❷

Flow control

Producer   ❶   Consumer

Delivery

a. Pushing

❶

Request

Producer   ❷   Consumer

Delivery

b. Pulling

مهم جداً طريقة الإرسال **Simple Protocol**

a simple connectionless protocol

immediately handle

مهم مفهومها مع البروتوكول المستخدم*Stop-and-Wait Protocol*

connection-oriented protocol

Go-Back-N Protocol (GBN)

multiple packets must be in transition while the sender is waiting for acknowledgment.

مشت على الصفحة الأولى بالشابتر وتعريف بس المواضيع الأساسية المحددة بالصورة

Chapter 26: Outline

26.1 WORLD-WIDE WEB AND HTTP

26.2 FTP

26.3 ELECTRONIC MAIL

26.4 TELNET

26.5 SECURE SHELL (SSH)

26.6 DOMAIN NAME SYSTEM (DNS)

ملاحظة :السؤال الأول والرابع في الأسايمنت الثالث مهم جداً

في جميع الأسايمنت مكتوب على جنب Learning Outcome بمثابة الستدي قايد فيها العناوين المهمة.