**King Saud University**

**College Of Computer & Information Sciences**

**Department Of Computer Sciences**

**Tutorial 1 Fall 15**

**(Computer Networks CSC 329)**

1. Define the concept of layer and protocol.

**Protocol** : set of rules and standards that basically define language that devices use4 to communicate

1. Explain the concepts of

* **Physical medium link**

Refers to the physical materials that are used to transmit information in datata communications.

* **Network node ( router , switch , hub)**

**Router** :

-small physical devices that joins multiple network together.

-Layer 3 gateway deices

**Hub:**

-packets are sent to all other hosts, receiver will accept the packets, others will ignore it.

- cheap, simple,

-waste of bandwidth.

**Switch**

Mac address, switch table, interface using mac adress

1. Explain the concepts of connection oriented and connectionless communication.
2. **OSI Model and its layers**

Application Layer : email, firfox.

Presentation layer : os

Session layer : communication .. session for data server

Transport: how much inf to communicate.

Network layer : router

Data link layer : switches

Physical layer : cable,.. if cable cut.. layer 1 problem.. 95% probles occurs here.

1. **Define router**

Small physical devices that joins multiple n/w together

Eg. Layer 3 gateway devices.

1. **Network names by Scale :**

**PAN ( personal area network , using Blue tooth ) < LAN ( for building , using wifi or ethernet) < MAN < WAN < INTERNET**

1. **Example of Networks:**

Wifi,, Mobile phone , blue tooth, telephone, satellite etc..

1. Explain the concept of communication latency between two communication entities through network.
2. Explain the concepts of :

* Packet transmission time ( sending time ).
* Packet transition delay ( in nodes ).
* Propagation delay.

1. Between A and B, the communication has these characteristics

500 m

B

A

Packet length - 1500 bytes

Channel speed - 10 Mbits/sec

Propagation delay - 5 msec/km ≡ 200.103 km/s

Given these parameters, calculate the:

* Packet transmission time
* **Propagation delay**

Time taken by from one end to other end of network.

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First bit is travelled but last bit is still at sender point

Propogation delay depends on the distance and velocity.

Tp = d / v

In case of Optical fiber : v = 3 \* 10 8  \* 0.7

= 2.1 \* 10 8 m/s

**Eg.**

**Distance = 21 km, v = 2.1 \* 10 8 m/s find Tp in sec, millisecond and Microsecond**

**Tp =( 2.1 \* 10 3 )/( 2.1 \* 10 8 ) = 10 -5  sec**

**= 10 -2  millisecond**

**= 10 Microsecond**

1. **Transmission delay :**

Time taken to transmit from a host to put the data packet on out going link.

Transmission delay = length of the packet / bandwidth = L / B

1. **. Bandwidth = 1 bps and Data = 10 bits find Transmission delay :**

Transmission delay = L / B = 10 / 1 = 10 sec

1. **. L = 1000 bits, BW = 1 kbps find Transmission time :**

Tt = L / B = 1000/ 1000 = 1 sec.

1. **L = 1 Kb, Bandwidth = 1 kbps find Tt :**

1 Kb = 1024 b

1 kbps = 1000 bps

Tt = L / B = 1024 b/ 1000 bps = 1.024

**Queuing Delay :**

Amount of time packet being seated in buffer before being processed.

Depends on the processing delay