Homework 5

CH5 homework

Please complete these and submit to e-learning. All must be handwritten. Write, scan as pdf, submit.

1. Complete this table with the correct answer, either: BROADCAST, MULTICAST, UNICAST

	Situation	Transmission
a	The lecturer sends to all School of Computing students.	**BROADCAST**
b	The lecturer sends to year 2 SCSR students.	**MULTICAST**
c	A message sent to all hosts in the 192.168.1.0/24 subnet	**BROADCAST**
d	A message sent to hosts in the range of 192.168.1.1 – 192.168.1.100 of the 192.168.1.0/24 subnet	**MULTICAST**
e	A ping to hosts 192.168.1.1 of the 192.168.1.0/24 subnet	**UNICAST**

2. Communication channels that connect adjacent nodes along communication path are called ____. **Links**
3. What is another name for the datagram at link layer? **Frame**
4. At the link layer the _____ address is used. **MAC**
5. Set the correct parity bit in the table below.

	Data bits	Parity used	Parity bit
a	011110010101	even	**1**
b	011110010101	odd	**0**
c	01101100101	even	**0**
d	01101100101	odd	**1**
e	01101100100	even	**1**

6. The following are transmitted data received by the receiver. Using even parity, can you detect if there is a problem, and where? Show your workings.

a

10101111	**0**
11111010	**0**
01011100	**0**
00001001	**0**

All ok

b

01010001	**1**
10101010	**0**
11110101	**1**
00101110	**0**

Has error

7. You are given the following data, D and generator G;**Show your workings clearly*

D	G
110100	1010

a. with CRC calculate the message sent, D_{sent}. **D_{sent} = 110100110**

```
                1 1 1 1 1 1
1010 | 1 1 0 1 0 0 0 0 0
       1 0 1 0
       -------
         1 1 0 0
         1 0 1 0
         -------
           1 1 0 0
           1 0 1 0
           -------
             1 1 0 0
             1 0 1 0
             -------
               1 1 0 0
               1 0 1 0
               -------
                 1 1 0 0
                 1 0 1 0
                 -------
                   1 1 0
```

b. Check that your D_{sent} is correct. Is it correct? How do you know? **Getting remainder = 000 means there is no error. So it is correct.**

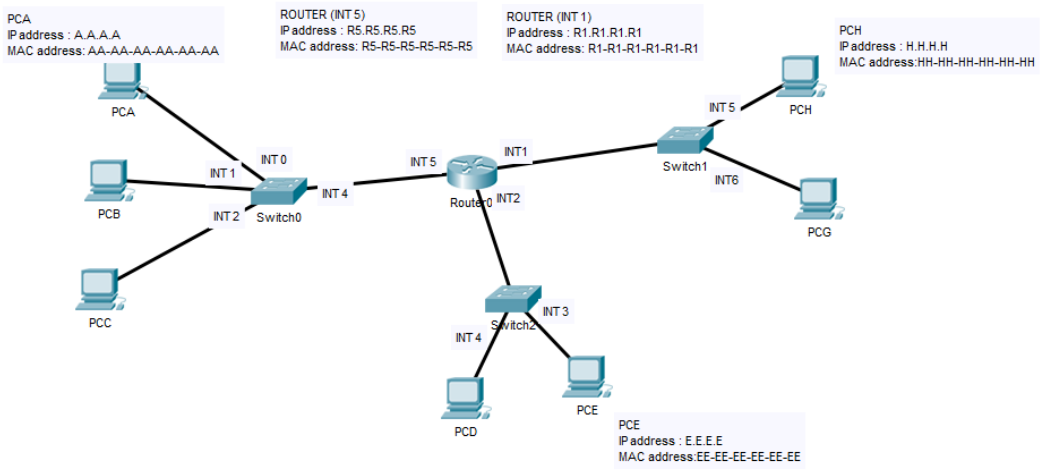
```
                1 1 1 0 1
1010 | 1 1 0 1 0 0 1 1 0
       1 0 1 0
       -------
         1 1 1 0
         1 0 1 0
         -------
           1 0 0 0
           1 0 1 0
           -------
             1 0 1 1
             1 0 1 0
             -------
               0 0 0
```

c. If receiver receives D = 110110110, show that there is error. **As remainder = 110, and not 000; it shows that there is error.**

```
                1 1 1 0 0 0
1010 | 1 1 0 1 1 0 1 1 0
       1 0 1 0
       -------
         1 1 1 1
```

1	0	1	0			
	1	0	1	0		
1	0	1	0			
				1	1	0

8. Using a mind map of your choice; explain, in general, how frames share the same media. Include all possible methods and what happens during collisions.
9. Refer to the figure below for the following questions. **Note: addressing conventions follows the example given. Also assume that TTL is 60 minutes.*



a. When it first boot, PCA ARP table is _____. **Empty**
b. Then PCC pings PCA. What will the ARP table look like at PCA? ***ignore TTL and Type for now.*

IP add	MAC add
C.C.C.C	CC-CC-CC-CC-CC-CC

c. Then PCG pings PCA. What will the ARP table look like at PCA now? ***ignore TTL and Type for now.*

IP add	MAC add
C.C.C.C	CC-CC-CC-CC-CC-CC
R5.R5.R5.R5	R5-R5-R5-R5-R5-R5

d. PCA wants to send a packet to PCB, but does not know PCB's MAC address. Explain how it will get it and finally send the packet.
e. PCA wants to send a packet to PCD, but does not know PCD's MAC address. Explain how it will get it and finally send the packet.

f. After the communications (at b and c) is done, what will the switch table (A.K.A MAC address table) content for Switch0? ***Assume it also starts empty.*

```
Switch#SH MAC-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0005.5e89.d9c7    DYNAMIC     Fa1/1
   1    000b.bee3.1852    DYNAMIC     Fa0/1
   1    00d0.bab6.3574    DYNAMIC     Fa3/1
Switch#
```

MAC add	Interface
CC-CC-CC-CC-CC-CC	INT2
AA-AA-AA-AA-AA-AA	INT0
R5-R5-R5-R5-R5-R5	INT4

--END - -

I hated every minute of training, but I said, 'Don't quit. Suffer now and live the rest of your life as a champion.'

Muhammad Ali