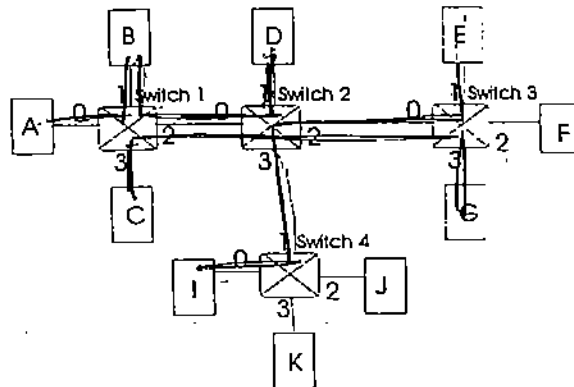# Problems

1. The WAN presented in the figure below uses virtual circuits.

Give the virtual circuit switching tables in each switch (1 to 4) after each of the following connections is established

1. Host *A* connects to host *B*.
2. Host *C* connects to host *G*.
3. Host *E* connects to host *I*.
4. Host *D* connects to host *B*.

Assume that the connections stay up during the period of observation. Also assume that the virtual circuit identifier (VCI) allocation always picks the lowest unused identifier on each outbound link. If a particular connection does not affect a particular switch, leave the corresponding row empty.

Switch 1	Input port	Input VCI	Output port	Output VCI
A to B	0	1	1	1
C to G	3	1	2	1
E to I	—	—	—	—
D to B	2	1	1	2

Switch 2	Input port	Input VCI	Output port	Output VCI
A to B	—	—	—	—
C to G	0	1	2	1
E to I	2	2	3	1
D to B	1	1	0	2

Switch 3	Input port	Input VCI	Output port	Output VCI
A to B	—	—	—	—
C to G	0	1	3	1
E to I	1	1	0	2
D to B	—	—	—	—

Switch 4	Input port	Input VCI	Output port	Output VCI
A to B	—	—	—	—
C to G	—	—	—	—
E to I	1	1	0	1
D to B	—	—	—	—

2. Consider the following network consisting of two three-station Ethernets attached via an IP router. Host A through F have MAC addresses of aaa, bbb, ..., fff respectively. Router port 1 has MAC address yyy, port 2 has MAC address zzz. The host id is shown above each host, the netid below the Ethernet.

- Give the ARP cache for station C assuming that C has recently communicated with all other stations.

- Give the routing table for the router.

- If A sends a packet to D, explain what takes place and sketch the packet. Identify the contents of the "important" address fields.

001	002	003	Router	004	005	006
A	B	C	(yyy) zzz	D	E	F.
aaa	bbb					

001.128.123   001.128.124
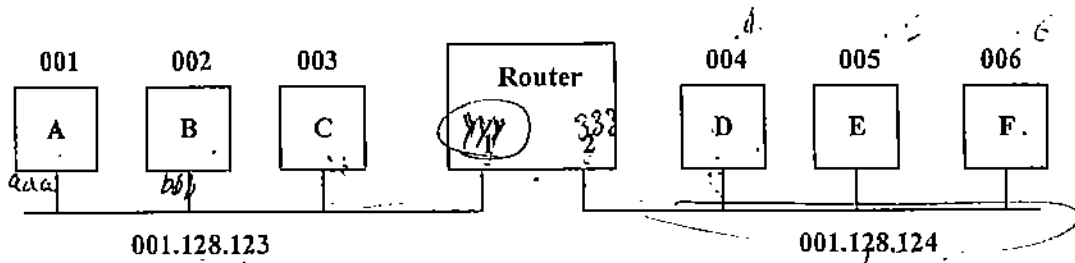
ARP Table for C

IP	MAC
1.128.123.1	aaa
1.128.123.2	bbb
1.128.124.4	yyy
1.128.124.5	yyy
1.128.124.6	yyy

Net IP	Port
1.128.124.0	2
1.128.123.0	1

A sends to D

Dest. IP	Source IP	Dest MAC	Source MAC
1.128.124.4	1.128.123.1	yyy	aaa

@ Router

1.128.124.4	1.128.123.1	ddd	zzz