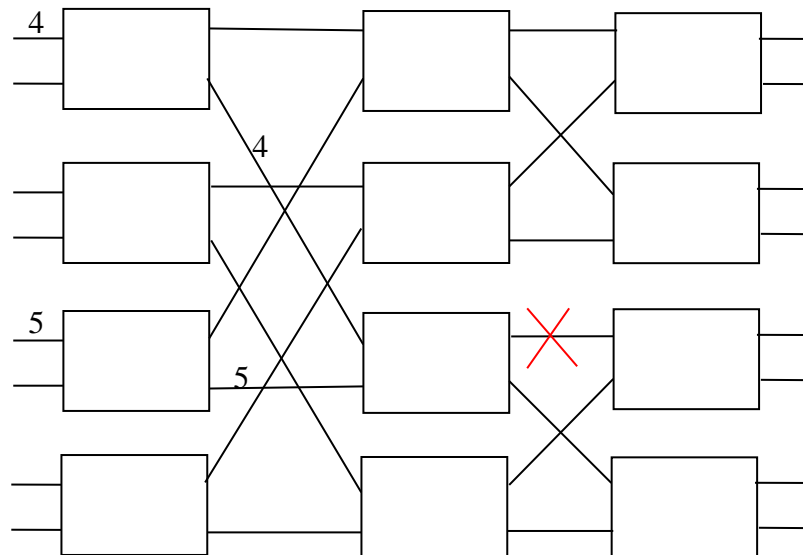


City University of Hong Kong
Department of Electrical Engineering

EE3009 Data Communications and Networking

Solution to Tutorial 2

1. ii) As shown below, blocking occurs at stage 2.



2.

a.

Prefix Match	Link Interface
11100000 00000000	0
11100000 00000001	1
11100000 0000001	2
11100010	3
otherwise	3

b.

Prefix match for first address is 5th entry: link interface 3
Prefix match for second address is 1st entry: link interface 0
Prefix match for third address is 5th entry: link interface 3

3. Given:

IP packet = 600 data bytes

MTU = 200 bytes

IP header = 20 header bytes

Maximum possible data length per fragment = MTU – IP header = 200 – 20 = 180 bytes.

The data length of each fragment must be a multiple of eight bytes; therefore the maximum number of data bytes that can be carried per fragment is $22 \times 8 = 176$.

The data packet must be divided into 4 frames, as shown by the following calculations:

$$\begin{array}{r} 176 + 176 + 176 + 72 = 600 \\ \underline{20 \quad + 20 \quad + 20 \quad + 20} \\ 196 \quad 196 \quad 196 \quad 92 \end{array}$$

The sequence of frames and packet headers is shown below:

Total length	Id	Mf	Fragment Offset
Original Packet 620	x	0	0
Fragment 1 196	x	1	0
Fragment 2 196	x	1	22
Fragment 3 196	x	1	44
Fragment 4 92	x	0	66

4. 200.58.20.165 – Class C
 128.167.23.20 – Class B
 16.196.128.50 – Class A
 150.156.10.10 – Class B
 230.10.24.96 – Class D

5. 200.58.20.165 – 11001000 00111010 00010100 10100101
 128.167.23.20 – 10000000 10100111 00010111 00010100
 16.196.128.50 – 00010000 11000100 10000000 00110010
 150.156.10.10 – 10010110 10011100 00001010 00001010
 230.10.24.96 – 11100110 00001010 00011000 01100000

6. Class A: 1.0.0.0 to 126.0.0.0
 Class B: 128.0.0.0 to 191.255.0.0
 Class C: 192.0.0.0 to 223.255.255.0
 Class D: 224.0.0.0 to 239.255.255.0