Longest prefix matching exercises solution
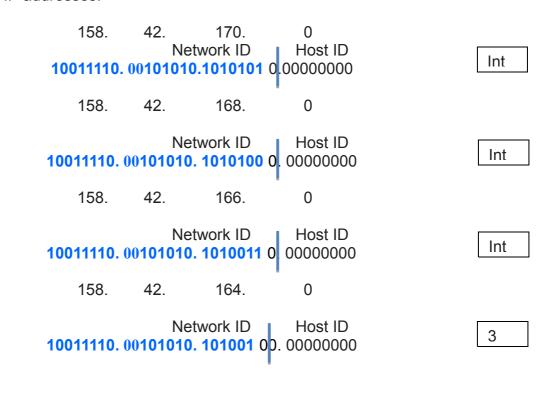
EXERCISE 1. A router has configured its forwarding table as it's shown below.

Destination	Netmask	Interface
158.42.170.0	/23	Int 0
158.42.168.0	/23	Int 1
158.42.166.0	/23	Int 2
158.42.164.0	/22	Int 3
0.0.0.0	/0	Int 4

Assuming that the router uses the entry with the longest prefix matching, indicate the interface that the router will choose to forward the packets destined to the following destination IP addresses:

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158.   42.   170.   0

Network ID | Host ID

10011110. 00101010.1010101 0.00000000

Int

158.   42.   168.   0

Network ID | Host ID

10011110. 00101010. 1010100 0. 00000000

Int

158.   42.   166.   0

Network ID | Host ID

10011110. 00101010. 1010011 0 00000000

Int

158.   42.   164.   0

Network ID | Host ID

10011110. 00101010. 101001 00. 00000000

3

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a) 158.42.171.92 → Int 0

b) 158.42.167.151 → Int 2

158.   42.   167.   151

1010011 1.

c) 158.42.163.151 → Int 4

158.   42.   163.   151

1010001 1.

d) 158.42.169.192 → Int 1

158.   42.   169.   192

1010100 1.

e) 158.42.165.121→ Int 3

158.   42.   165.   121

10100101.

EXERCISE 2. A router has configured its forwarding table as it's shown below.

Destination	Netmask	Interface
158.42.39.0	/25	Int 0
158.42.39.128	/25	Int 1
158.42.40.0	/25	Int 2
192.4.153.0	/26	Int 3
0.0.0.0	/0	Int 4

Assuming that the router uses the entry with the longest prefix matching, indicate the interface that the router will choose to forward the packets destined to the following destination IP addresses:

a) 158.42.39.10
b) 158.42.40.12
c) 158.42.40.151
d) 192.4.153.17
e) 192.4.153.90