

Announcements

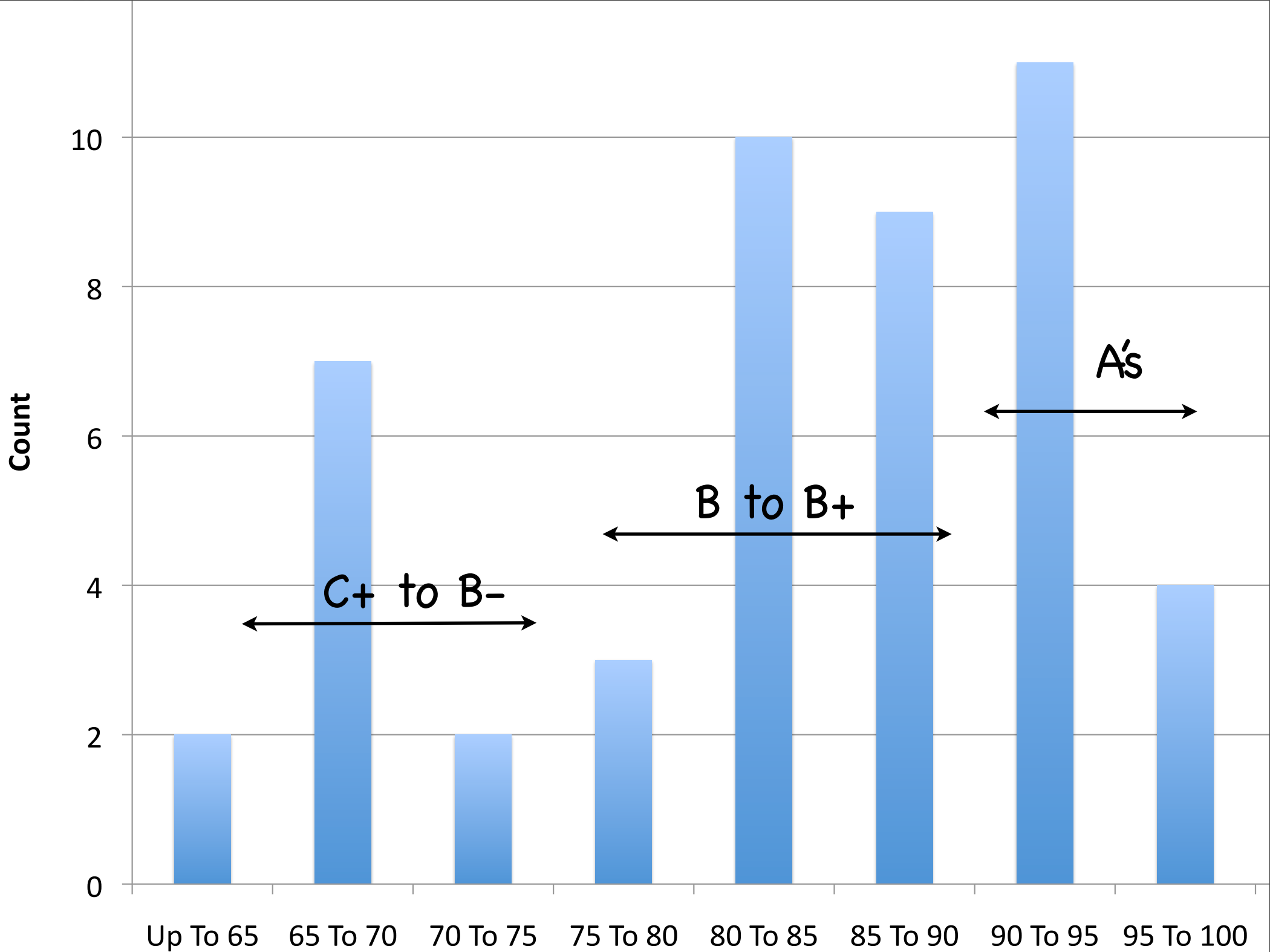
- Lab 7 -- Intro to Image Processing

 - * Don't try this at home?

- CS Course Info/Pizza Time

Tonight, 9PM lounge by TCL 303

- About that midterm...



Review

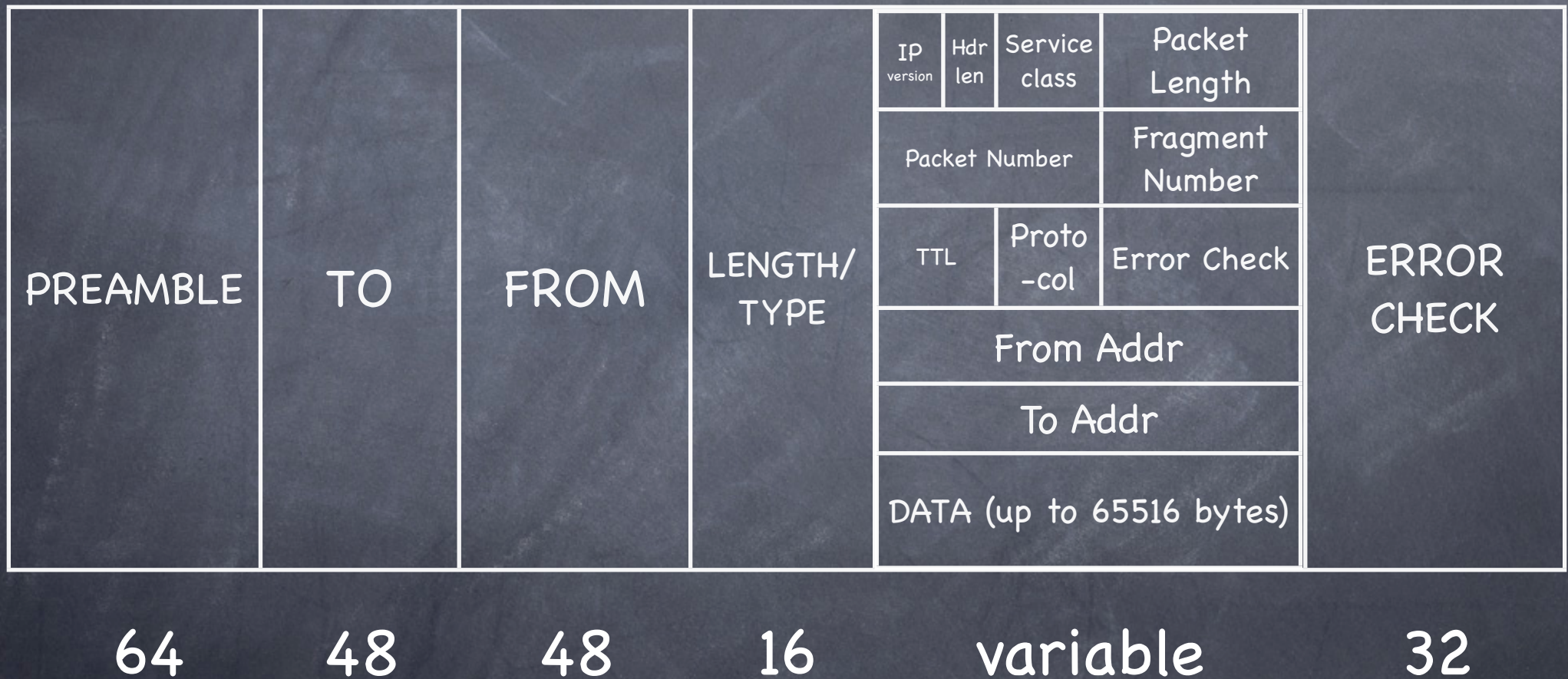
- iNternetworking
 - Too many networks
 - IP – a common language
 - Role of the Operating System
 - Encapsulation = Translation?

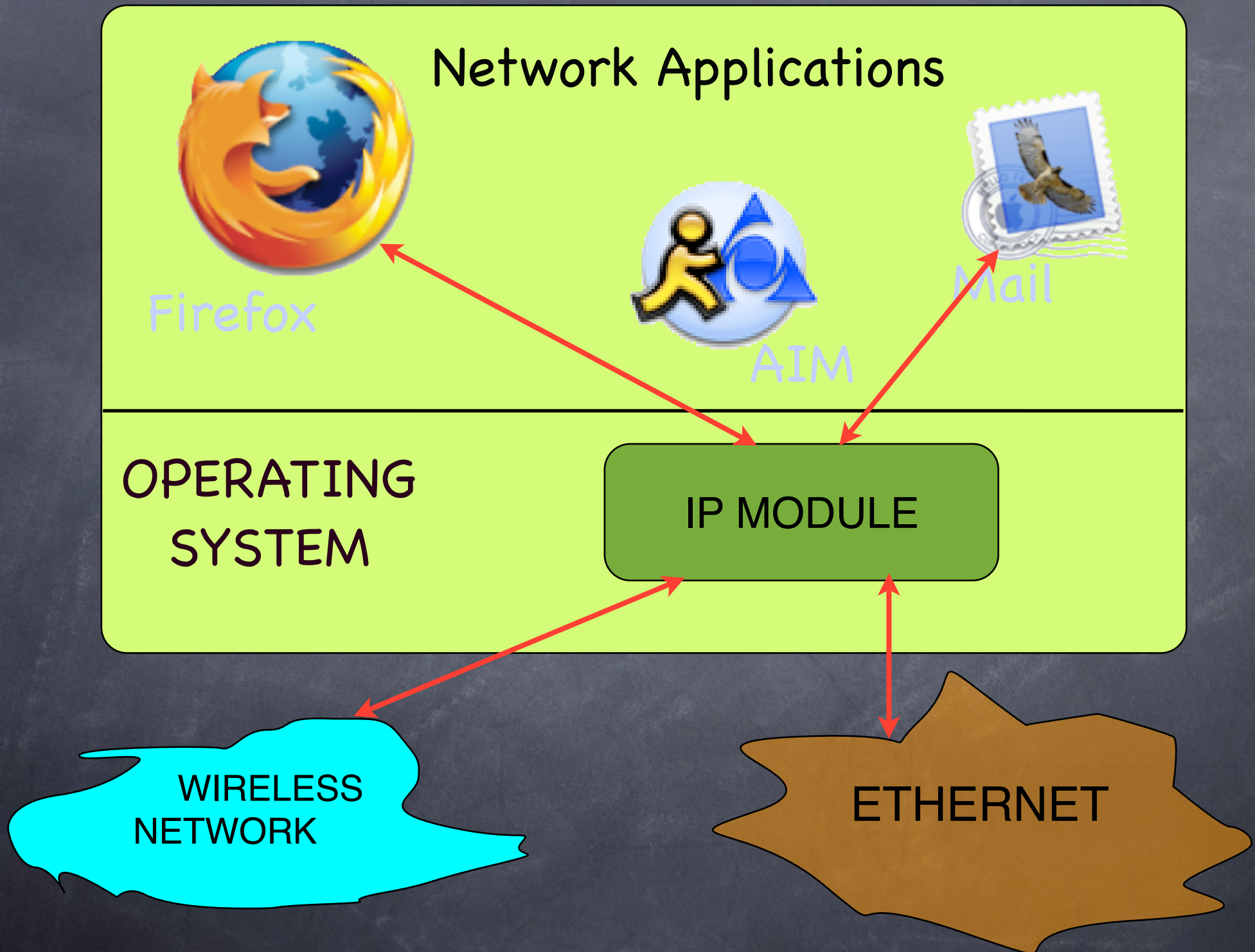
Today's Plan

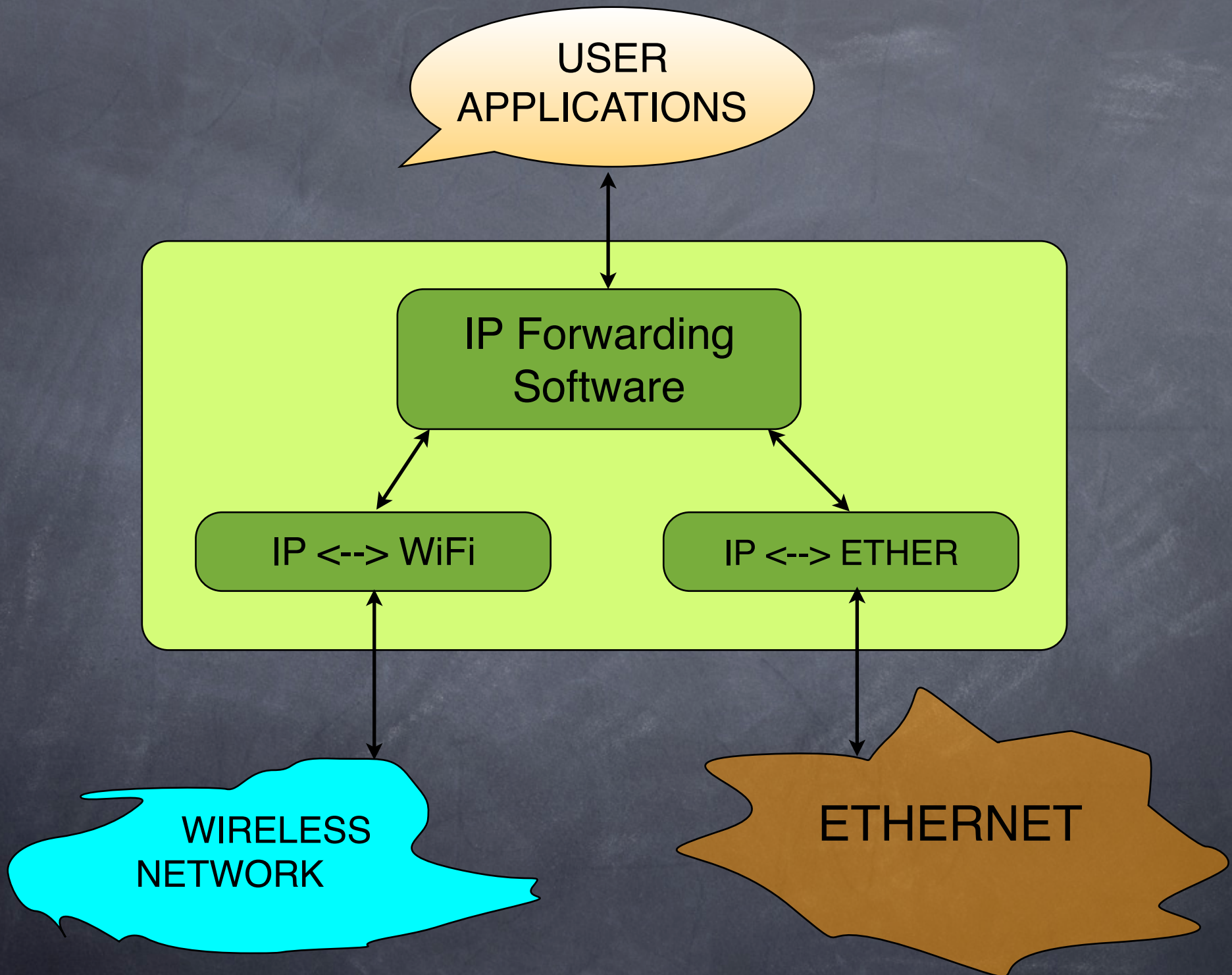
- IP implementation details:

- Addressing
- Forwarding
- Configuration

IP Encapsulation







IP Forwarding Algorithm

If this machine is the packet's destination

Deliver packet to correct application program

Else if destination is connected to one of my networks

Send packet directly to the destination machine

Else

Send packet to "good" router on one of my networks

IP Addresses

137.165.8.5

IP Addresses

137.165.8.5 = cortland.cs.williams.edu

IP Addresses

137.165.8.5

137 = 1000 1001 (= 128 + 8 + 1)

165 = 1010 0101

8 = 0000 1000

5 = 0000 0101

IP Addresses

137.165.8.5

137 = 1000 1001 (= 128 + 8 + 1)

165 = 1010 0101

8 = 0000 1000

5 = 0000 0101

137.165.8.5 = 1000 1001 1010 0101 0000 1000 0000 0101

Ethernet Addresses

00:22:41:2e:8e:73 = tomlap.cs.williams.edu

Ethernet Addresses

00:22:41:2e:8e:73 = tomlap.cs.williams.edu

00:22:41:2e:8e:73 =

0000 0000 0010 0010 0100 0001 0010 1110 1000 1110 0111 0011
=

0 = 0000	4 = 0100	8 = 1000	C = 1100
1 = 0001	5 = 0101	9 = 1001	D = 1101
2 = 0010	6 = 0110	A = 1010	E = 1110
3 = 0011	7 = 0111	B = 1011	F = 1111

Ethernet Addresses

00:22:41:2e:8e:73 = tomlap.cs.williams.edu

00:22:41:2e:8e:73 =

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0 = 0000	4 = 0100	8 = 1000	C = 1100
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Structured Addresses

4135973218

TCL306

Structured Addresses

4135973218

TCL306

413 597 3218

Structured Addresses

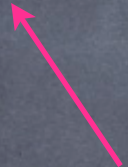
4135973218

TCL306

413 597 3218



AREA CODE = MA



EXCHANGE = Williams College

Structured Addresses

4135973218

413 597 3218

TCL306

TCL 3 06

Building

Floor

IP Address Structure?

137.165.8.5 = cortland.cs.williams.edu

137.165.8.83 = tomlap.cs.williams.edu

137.165.8.2 = www.cs.williams.edu

137.165.6.26 = www.williams.edu

137.165.6.23 = mail.williams.edu

IP Address Structure?

137.165.8. 5 = cortland.cs.williams.edu

137.165.8. 83 = tomlap.cs.williams.edu

137.165.8. 2 = www.cs.williams.edu

137.165.6. 26 = www.williams.edu

137.165.6. 23 = mail.williams.edu

IP Address Structure?

137.165.8. 5 = cortland.cs.williams.edu

137.165.8. 83 = tomlap.cs.williams.edu

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137.165.8 = TCL (CS) Ethernet

137.165.6 = JESUP (OIT) Ethernet

IP Address Structure?

137.165.8. 5 = cortland.cs.williams.edu

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137.165.8 = TCL (CS) Ethernet

137.165.6 = JESUP (OIT) Ethernet

137.165 = Williams?

IP Forwarding Algorithm

If this machine is the packet's destination

Deliver packet to correct application program

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else

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Prerequisites

If this machine is the packet's destination

else if destination is connected to one of my networks

MUST KNOW YOUR OWN IP ADDRESS

Send packet directly to the destination machine

MUST KNOW DESTINATION'S HARDWARE ADDR

Send packet to "good" router on one of my networks

MUST KNOW ROUTER'S HARDWARE ADDRESS

Boot Camp



Boot Camp

137.164.8.5

= cortland

= 00:0d:93:9e:87:9a



00:22:41:2e:8e:73



137.164.8.7

= dhcp.cs.williams.edu

= 00:1c:42:00:00:01



Boot Camp

137.164.8.5

= cortland

= 00:0d:93:9e:87:9a



00:22:41:2e:8e:73



TO:ALL

FROM

LENGTH

Who am I?

ERROR CK

137.164.8.7

= dhcp.cs.williams.edu

= 00:1c:42:00:00:01



Boot Camp

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TO:ALL

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Who am I?

ERROR CK



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Boot Camp

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TO:ALL

FROM

LENGTH

Who am I?

ERROR CK

137.164.8.7

= dhcp.cs.williams.

= 00:1c:42:00:00:01



00:22:41:2e:8e:73

=

137.165.8.83



Boot Camp

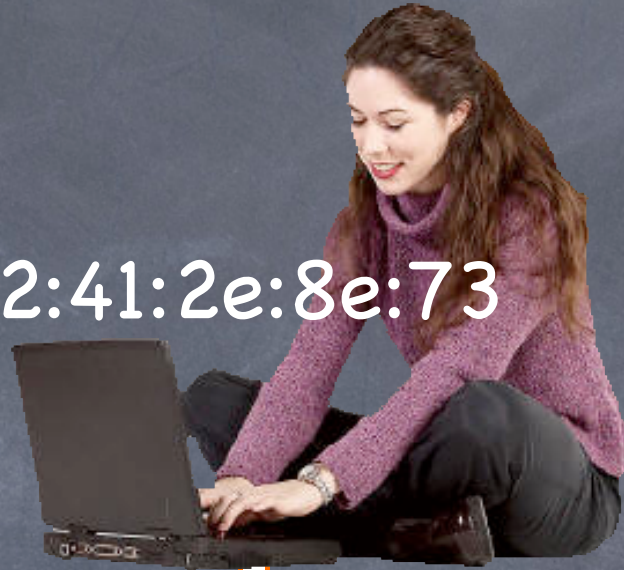
137.164.8.5

= cortland

= 00:0d:93:9e:87:9a



00:22:41:2e:8e:73



137.164.8.7

= dhcp.cs.williams.edu

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Boot Camp

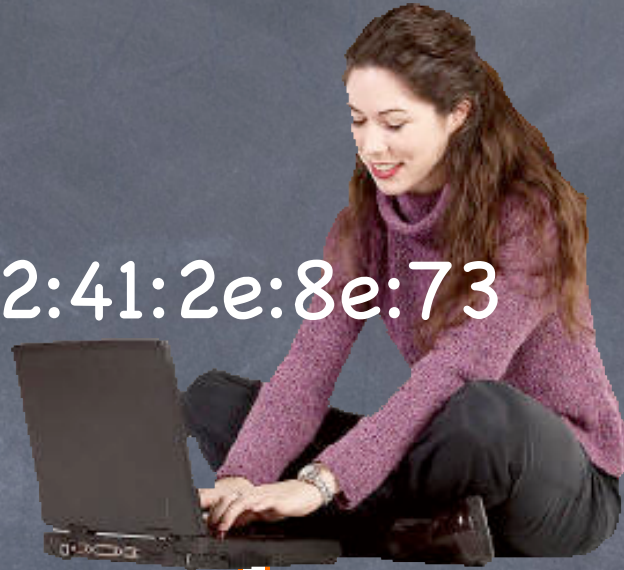
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137.164.8.7

= dhcp.cs.williams.edu

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Boot Camp

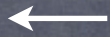
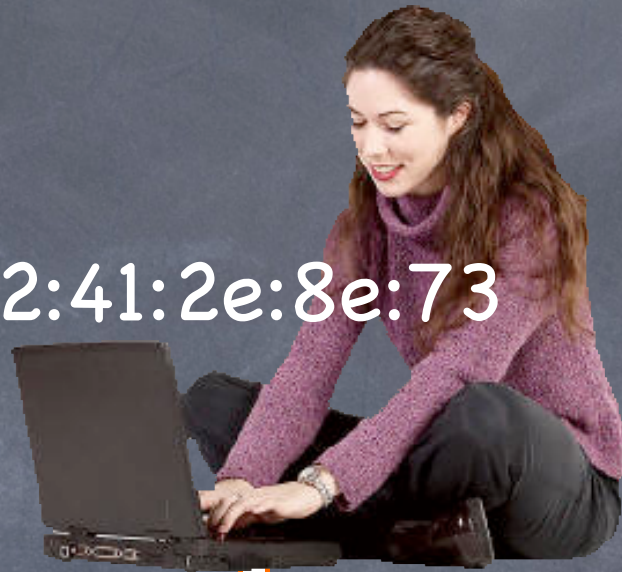
137.164.8.5

= cortland

= 00:0d:93:9e:87:9a



00:22:41:2e:8e:73



→	00:22:...	FROM	LENGTH	137.165.8.83	...	ERROR CK
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137.164.8.7

= dhcp.cs.williams.edu

= 00:1c:42:00:00:01



ARP



137.165.8.83 =
00:22:41:f8:3b:e3



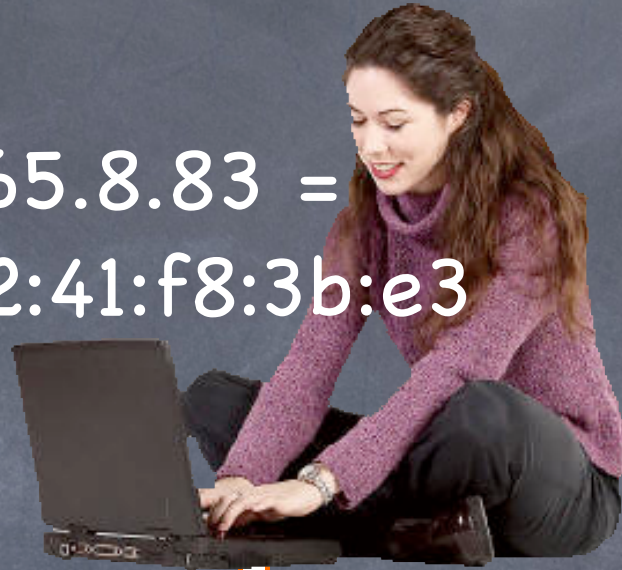
137.164.8.5
= cortland
= 00:0d:93:9e:87:9a



ARP



137.165.8.83 =
00:22:41:f8:3b:e3



137.164.8.5
= cortland
= 00:0d:93:9e:87:9a



TO:ALL

FROM

LENGTH

who is .8.5

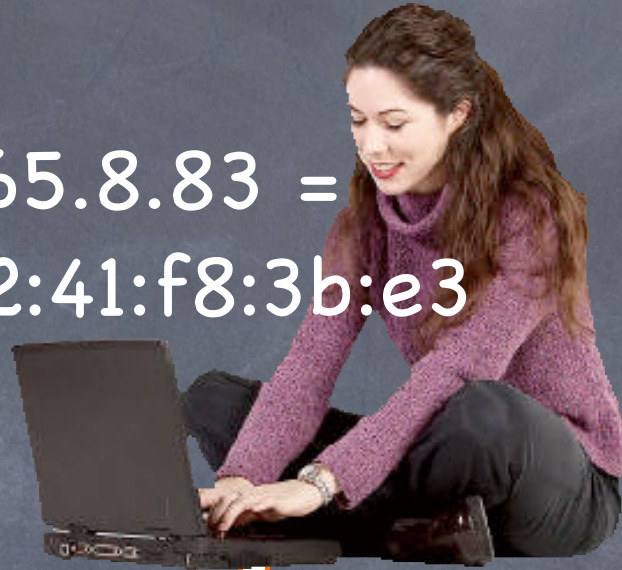
ERROR CK



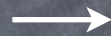
ARP



137.165.8.83 =
00:22:41:f8:3b:e3



137.164.8.5
= cortland
= 00:0d:93:9e:87:9a



00:22:...	FROM	LENGTH	.8.5 = 00:0d:...	ERROR CK
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