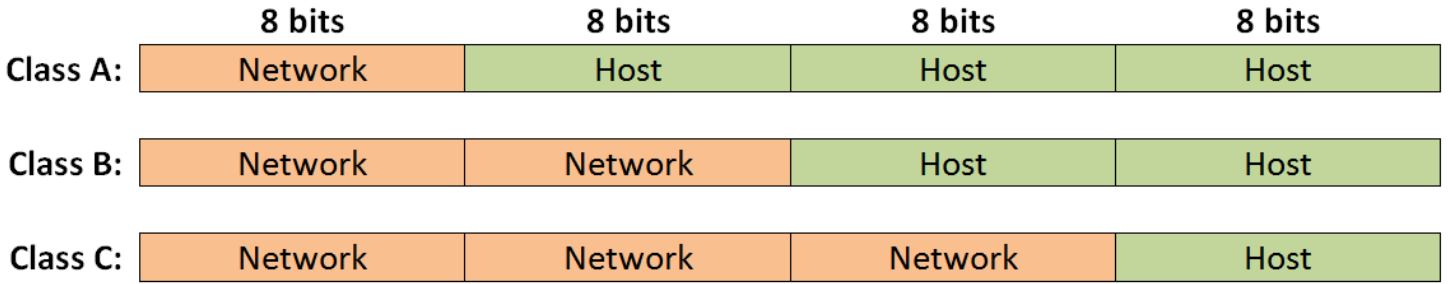
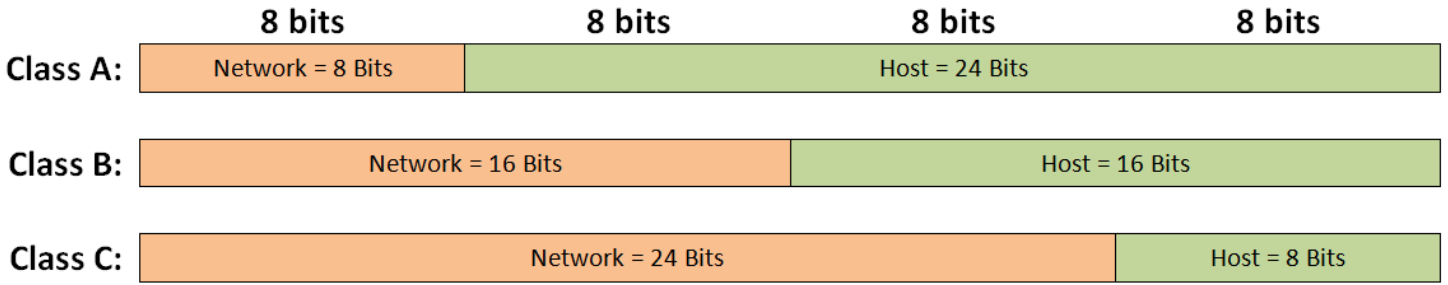
IPv4 Address Classes (Simplified)

Class	Network Bits	Host Bits	Address Range
A	8	24	1.0.0.0 – 126.255.255.255
B	16	16	128.0.0.0 – 191.255.255.255
C	24	8	192.0.0.0 – 223.255.255.255

INSTRUCTOR
ALTON

Network and Host Bits





INSTRUCTOR
ALTON

IPv4 Address Classes (Detailed)

Class	Leading Bits	Network Bits	Remaining Bits	Number of Networks	Hosts Per Network	Default Subnet Mask
Class A	0 (1-126)	8	24	128 (2^7)	16,777,216 (2^{24})	255.0.0.0
Class B	10 (128-191)	16	16	16,384 (2^{14})	65,536(2^{16})	255.255.0.0
Class C	110 (192-223)	24	8	2,097,152 (2^{21})	256(2^8)	255.255.255.0
Class D (multicast)	1110 (224-239)	Not Defined	Not Defined	Not Defined	Not Defined	Not Defined
Class E (reserved)	1111 (240-255)	Not Defined	Not Defined	Not Defined	Not Defined	Not Defined

Default Subnet Masks

- The Subnet Mask tells you which portion of the IP address identifies the network and which portion identifies the host.
- Below are default Class A, B, and C Subnet Masks.

	8 bits	8 bits	8 bits	8 bits
Class A:	Network	Host	Host	Host
IP Address	10.	0.	0.	15
Subnet Mask	11111111.	00000000.	00000000.	00000000
	255.	0.	0.	0
Class B:	Network	Network	Host	Host
IP Address	172.	16.	0	.110
Subnet Mask	11111111.	11111111.	00000000.	00000000
	255.	255.	0.	0
Class C:	Network	Network	Network	Host
IP Address	192.	168.	1.	50
Subnet Mask	11111111.	11111111.	11111111.	00000000
	255.	255.	255.	0

Let's Practice

What class are the following IP Addresses?

- **IP Address**: 9.10.40.15
- **Subnet Mask**: 255.0.0.0

- **IP Address**: 135.240.110.100
- **Subnet Mask**: 255.255.0.0

- **IP Address**: 196.200.10.5
- **Subnet Mask**: 255.255.255.0

CIDR Notation

- **CIDR**: Classless Inter-Domain Routing
  - A methodology for subnetting
  - “Slash” Notation tells you how many bits are associated with the Subnet Mask

- A shortcut way of telling us what the Subnet Mask is:
  - /8 = 11111111.00000000.00000000.00000000
  - /8 = 255.0.0.0

- 192.168.1.0 /24 = 255.255.255.0
- 10.1.0.0 /16 = 255.255.0.0
- 196.10.10.0/25 = 255.255.255.128