

15-112 Fundamentals of Programming

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Announcements

- ☐ Homework 6 is due on Tuesday
- ☐ No readings for today's topic – so pay attention!

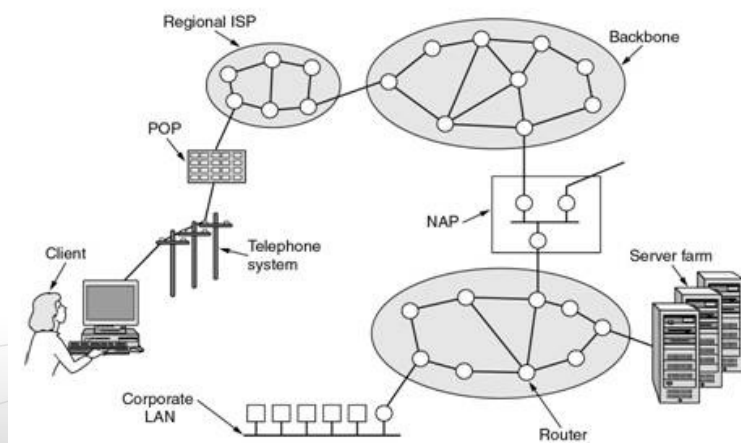
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What are we doing today

- ❑ Learn about Networking
- ❑ Learn about Sockets

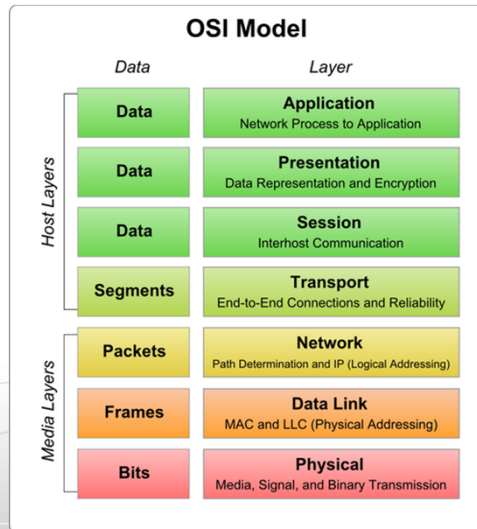
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Internet Architecture



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OSI model for Networking



Source: <http://www.tech-faq.com/osi-model.html>

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Network Addressing

❑ How do we identify phones?

- IMEI number – International Mobile Station Equipment Identity
 - + Dial ***#06#**
 - + Address of phone hardware
- Phone Numbers – how we identify subscribers
 - + This is how phones talk to each other

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Socket Programming

- ❑ Sockets are the plumbing for communications over a network
- ❑ Uses IP addresses and ports to make connections
 - Think of IP addresses as phone numbers and ports as the person you want to talk to

Creating a socket

```
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
```

What is s?

socket.socket(...) you are calling a function called socket from the socket library

Have to import socket

socket.AF_INET → a variable described in socket library,

Specifies that we will be using IPV4 addresses

socket.SOCK_STREAM → variable described in socket library

Specifies that we will be using TCP/IP

Connecting to a Server

```
s.connect(("86.36.46.10", 15112))
```

("86.36.46.10", 15112) → A tuple with two elements

Connect to IP address 86.36.33.81

Connect on Port 15112

Reading/Writing to the socket

```
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
```

```
s.connect(('86.36.34.21', 63401))
```

data = s.recv(512) → Reads max of 512 bytes

s.send(b'Hello\n') → Writes "Hello" as a line

Exercise

- ❑ First – Send me an email with a username and password of your choice. Please don't use your AndrewID or Andrew password

Exercise

- ❑ Connect to the server at “86.36.46.10” port 15112
- ❑ You can ask the server any question by writing a question to the socket followed by “\n”
- ❑ You can get the answer back from the server by reading from the socket

```
s = socket.socket(socket.AF_INET,
socket.SOCK_STREAM)
s.connect(('86.36.35.193', 15112))
data = s.recv(512) → Reads max of 512 bytes
s.send('Hello\n') → Writes “Hello” as a line
```