CS241 #25 Simple TCP Client Example + HTTP

What is the OSI (**Open Systems Interconnection)** Model?

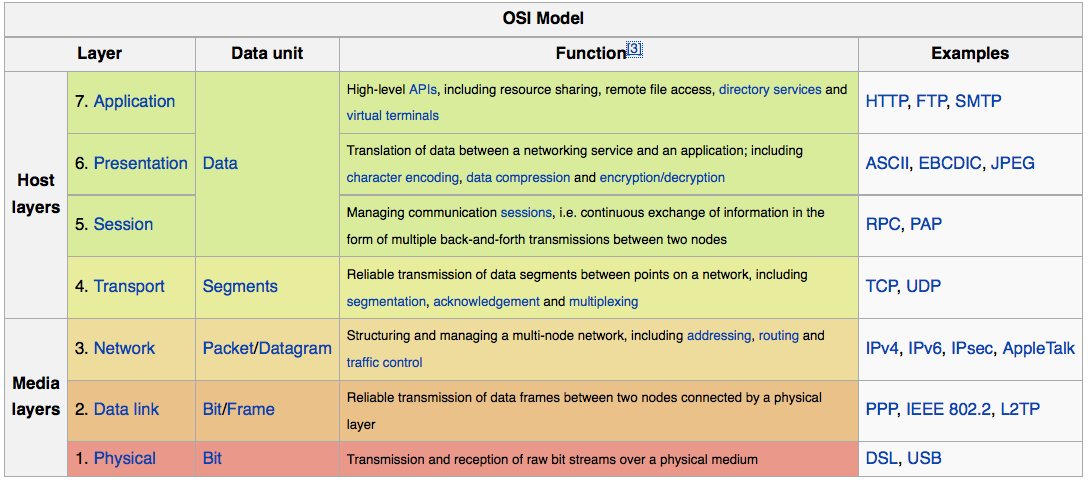


Image Attribution: http://en.wikipedia.org/wiki/OSI\_model

What is "U.D.P." and what are its main characteristics?

What is T.C.P. and what are its main characteristics?

Which one uses handshaking?

Which one requires more system resources?

Which one can be used with read and write system calls?

Which one encrypts the data payload?

If your application preferred to handle missing packets over late packets, which one would you use?

What is HTTP? Does it run over TCP or UDP?

Is HTTP version 1.0 and version 1.1 a text or binary protocol?

struct addrinfo {

int ai\_flags;

int ai\_family; int ai\_socktype; int ai\_protocol; socklen\_t ai\_addrlen; struct sockaddr \*ai\_addr;

char \*ai\_canonname; struct addrinfo \*ai\_next;

};

*How do you make a TCP connection to a server?*

What is the purpose of

getaddrinfo

struct addrinfo

Why memset

AF\_INET

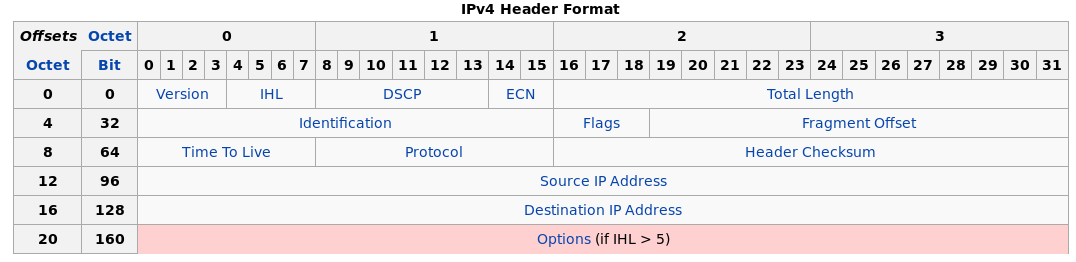
SOCK\_STREAM

int getaddrinfo(char\*host,char \*service, addrinfo\* hints, addrinfo \*\*res);

int socket(int domain, int type, int protocol);

int connect(int socket, struct sockaddr \*address, socklen\_t address\_len);

1. int main() {
2. struct addrinfo \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_;
3. memset(&hints, 0, sizeof(\_\_\_\_\_\_\_\_\_\_\_,) );
4. hints.ai\_family = \_\_\_\_\_\_\_\_\_\_\_;
5. hints.ai\_socktype = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_;
6. int s = **getaddrinfo**("illinois.edu", \_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_);
7. if (s != 0) {  
    fprintf(stderr, "getaddrinfo: %s\n", gai\_strerror(s));  
    exit(1);
8. }
9. int sock\_fd = **socket**(\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_ , 0);
10. if(sock == -1) { perror("socket"); exit(1);}
11. int ok = **connect**(sock\_fd, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_);
12. if( ok ==-1) {perror("connect"); exit(1);}



TCP header:

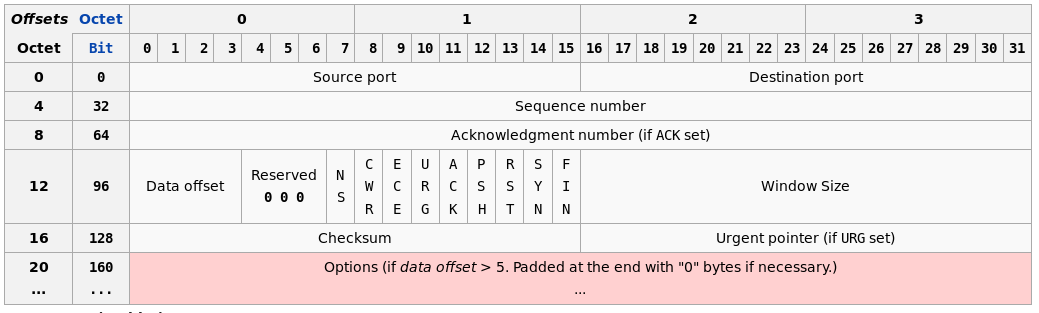
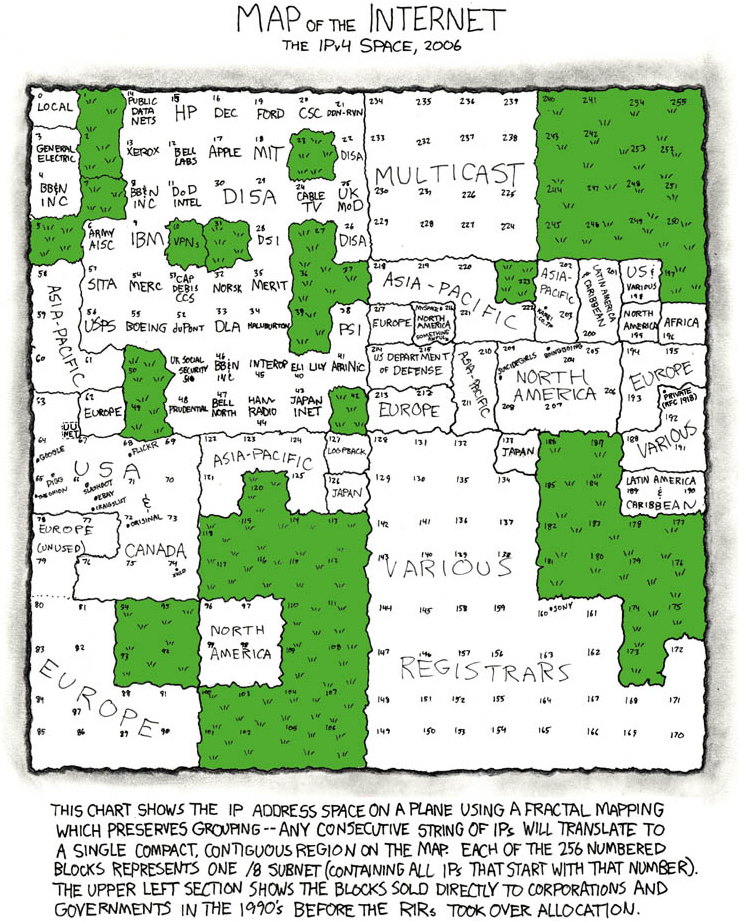


Image attribution – wikipedia.com

https://xkcd.com/195/



socket

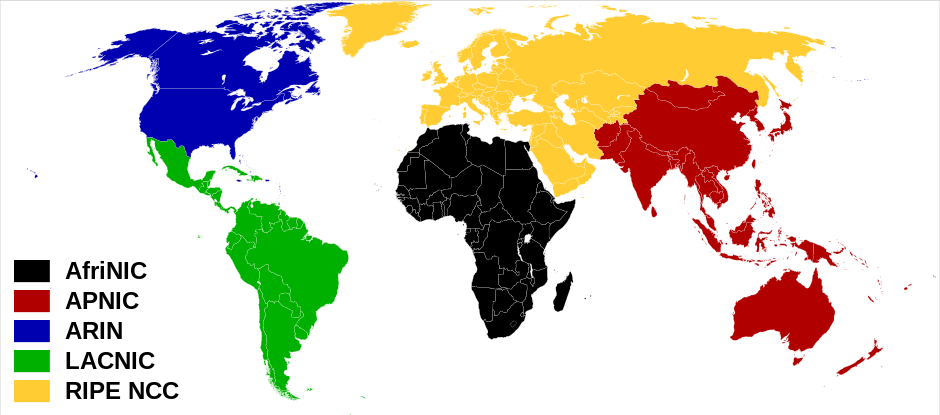
listen

accept

Exhaustion of IPv4 for each of the 5 regional authorities.

ARIN exhausted 24 September 2015

commons.wikimedia.org/wiki/File:Regional\_Internet\_Registries\_world\_map.svg



https://www.arin.net/resources/request/ipv4\_countdown.html