

What is the OSI (Open Systems Interconnection) Model?

OSI Model				
Layer	Data unit	Function	Examples	
Host layers	7. Application	Data	High-level APIs, including resource sharing, remote file access, directory services and virtual terminals	HTTP, FTP, SMTP
	6. Presentation		Translation of data between a networking service and an application; including character encoding, data compression and encryption/decryption	ASCII, EBCDIC, JPEG
	5. Session		Managing communication sessions, i.e. continuous exchange of information in the form of multiple back-and-forth transmissions between two nodes	RPC, PAP
	4. Transport	Segments	Reliable transmission of data segments between points on a network, including segmentation, acknowledgement and multiplexing	TCP, UDP
Media layers	3. Network	Packet/Datagram	Structuring and managing a multi-node network, including addressing, routing and traffic control	IP4, IP6 IPv4, IPv6, IPsec, AppleTalk
	2. Data link	Bit/Frame	Reliable transmission of data frames between two nodes connected by a physical layer	PPP, IEEE 802.2, L2TP
	1. Physical	Bit	Transmission and reception of raw bit streams over a physical medium	DSL, USB

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

User Datagram Protocol

{ packet bound  
connectionless  
no encryption

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

Transmission Control Protocol

↓  
stream based  
connection based

optimal use of  
changing bandwidth

Which one uses handshaking? TCP keep

Which one requires more system resources? TCP

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

Which one encrypts the data payload? Neither encryption is hard!

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

UDP (DNS)

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

Hyper Text Transfer Protocol

↓ answer is yes!

GET /cat.jpg HTTP /1.0

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

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

What is the purpose of

getaddrinfo

struct addrinfo

Why memset

AF\_INET

SOCK\_STREAM

default for unencrypted  
HTTP

"80"

```
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;
};
```

will change this

```
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);
```

we cast!

```
01 int main() {
02     struct addrinfo _____, _____;
03     memset(&hints, 0, sizeof(_____));
04     hints.ai_family = _____;
05     hints.ai_socktype = _____;
06     int s = getaddrinfo("illinois.edu", _____, _____, _____);
07     if (s != 0) {
08         fprintf(stderr, "getaddrinfo: %s\n", gai_strerror(s));
09         exit(1);
10     }
11     int sock_fd = socket(_____, _____, 0);
12     if(sock == -1) { perror("socket"); exit(1);}
13
14
15
16
17
18
19     int ok = connect(sock_fd, _____, _____);
20     if( ok == -1) {perror("connect"); exit(1);}
21 }
```