Building a Web Server

HTTP
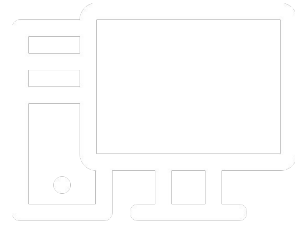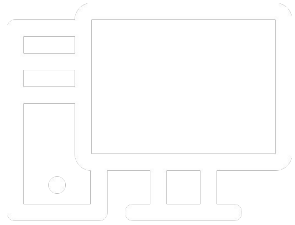Connor Nelson
Arizona State University

Recall: Steps to Accept TCP/IP Network Connections

```
socket(AF_INET, SOCK_STREAM, IPPROTO_IP) = 3
bind(3,
     {sa_family=AF_INET,
      sin_port=htons(80),
      sin_addr=inet_addr("0.0.0.0")},
     16)                                  = 0
listen(3, 0)                              = 0
accept(3, NULL, NULL)                     = 4
```

PROCESS	
PID PPID	42 1
Real User ID Effective User ID Saved User ID	1000 1000 1000
FD 0 FD 1 FD 2 FD 3 FD 4 ... FD 1024	/dev/pts/1 /dev/pts/1 /dev/pts/1 socket:[31337] socket:[31338]

```
555555554000-555555555000 r--p  /bin/program
555555555000-555555556000 r-xp  /bin/program
...
7ffff7da6000-7ffff7dc8000 r--p  /lib/.../libc.so.6
7ffff7dc8000-7ffff7f40000 r-xp  /lib/.../libc.so.6
...
7fffffde000-7fffffffff000 rw-p  [stack]
```

Simple HTTP Request

GET / HTTP/1.0

Talking HTTP

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write(4, "HTTP/1.0 200 OK\r\n\r\n", 19)  = 19
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```

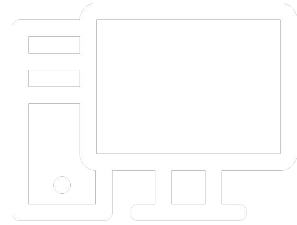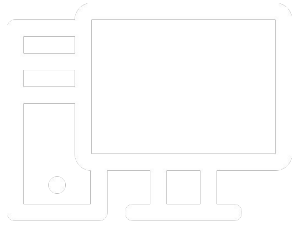# # Talking HTTP

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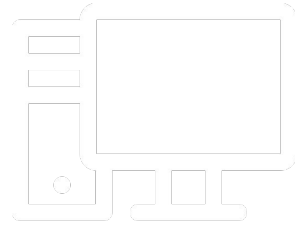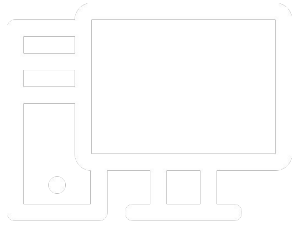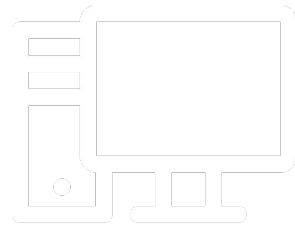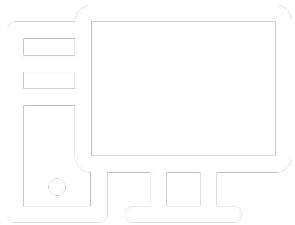
Simple HTTP Response

```
HTTP/1.0 200 OK
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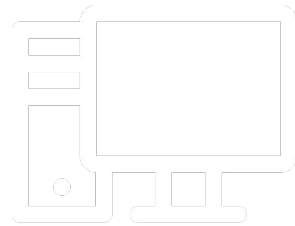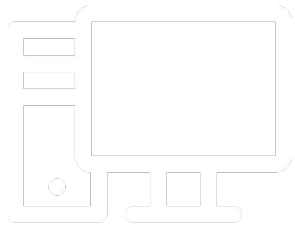
Simple ~~HTTP~~ Request

!@#$%^&*()

Simple HTTP Response

HTTP/1.0 200 OK

HTTP Request

GET /flag HTTP/1.0

Understanding HTTP

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accept(3, NULL, NULL)                         = 4
read(4,
     "GET /flag HTTP/1.0\r\n\r\n",
     256)                                     = 19
```

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Real User ID Effective User ID Saved User ID	1000 1000 1000
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read(4,
     "GET /flag HTTP/1.0\r\n\r\n",
     256)                                   = 19
open("/flag", O_RDONLY)                     = 5
```

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FD 0 FD 1 FD 2 FD 3 FD 4 FD 5 FD ...	/dev/pts/1 /dev/pts/1 /dev/pts/1 socket:[31337] socket:[31338] /flag

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read(4,
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open("/flag", O_RDONLY)                        = 5
read(5, "FLAG", 256)                           = 4
```

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write(4,
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      27)                                     = 27
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HTTP Response

```
HTTP/1.0 200 OK

FLAG
```