

ISA 563: Fundamentals of Systems Programming

More IPC

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Unix Domain Sockets

- An IPC mechanism similar to network sockets
 - Supports local communication only
 - Socket visible at file system
 - Communication happens in kernel's buffers
 - Uses same APIs
- Also similar to FIFO:
 - But supports bi-directional communication

UDF Socket Creation (server)

- Socket:

```
unsigned int s, s2;  
struct sockaddr_un local, remote;  
int len;  
s = socket(AF_UNIX, SOCK_STREAM, 0);
```

- Bind:

```
local.sun_family = AF_UNIX;  
strcpy(local.sun_path, "/tmp/mysocket");  
unlink(local.sun_path);  
len = strlen(local.sun_path) + sizeof(local.sun_family);  
bind(s, (struct sockaddr *)&local, len);
```

UDF Socket Creation (server)

- listen:

```
listen(s, 5);
```

- accept:

```
len = sizeof(struct sockaddr_un);  
s2 = accept(s, &remote, &len);
```

```
while (len = recv(s2, &buf, 100, 0), len > 0)  
    send(s2, &buf, len, 0);
```

Demo

uds_echo_server.c
uds_echo_client.c

Memory-mapped IO

- A file or device is mapped to an area of memory
- Process can use the memory area as any other piece of memory, and file's contents will also be updated
- Can be used as a means of IPC (discussed in last section)
- Can save memory :
 - Processes use the same mmaped region
 - No need for each process to have its own copy of a file

Demo

mmap.c

Demo

`mmap_cp.c`