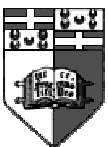


Unix Unix Domain Sockets

- Unix Domain sockets use the same connection protocol as internet sockets, yet are used to communicate on the same system.
- It is another form of IPC limited to the same host machine.
- All data flow is reliable since data is redirected in the kernel.
- Instead of IP addresses and ports, **pathnames** of files are used.
- The file referenced is created in some systems, yet this is not necessary.
- One cannot open a socket file using the *open()* system call.
- A socket file has type `S_IFSOCK` and can be tested with the `S_ISSOCK()` macro in conjunction with the *fstat()* system call.

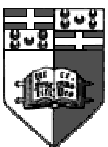




Unix Sockets

- *struct sockaddr_un* is used whenever *struct sockaddr* is required.
- All Unix domain sockets use the `<sys/un.h>` header file.
- *sun_path* is a null terminated string which is used for the path to be used.
- To create a UNIX socket, the *socket()* call is used with family set to `AF_UNIX`, type to `SOCK_STREAM` and protocol equal to 0.
- The usual calls to *bind()*, *connect()*, *listen()* and *accept()* are used to open stream connections using *struct sockaddr_un*.

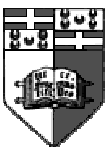
```
struct sockaddr_un {
    short sun_family; // AF_UNIX
    char sun_path[108]; // pathname
}
```





Unix Sockets (cont)

- A connection is opened between two sockets, where each socket is associated with a different pathname.
- On some systems, socket creation is allowed depending on access rights to the pathname's directory.
- Closing a UNIX socket will remove the file from the system.
- *read()*, *write()* and all other system calls we used for internet sockets are valid for UNIX sockets.





Exercises

- Open a connection between two processes using UNIX sockets.
- Write a concurrent server which listens on a specific UNIX socket and then echoes to screen whatever arrives on established connections.
- Implement a server which using *select()* responds to commands on established UNIX socket connections.
- Make the above server also accept new connections.

