Design Document

Mandatory assignment 1
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Disclaimer

I was not able to implement all the functionality described in the assignment text. As it currently stands the project contains a working daemon that connects to other daemons on the network with MIP-ARP. The ping client and server. Currently the ping client can successfully send a ping but I was not able to complete the server sending back the pong reply to the client.

The daemons use a cache to resolve request from the client and server.

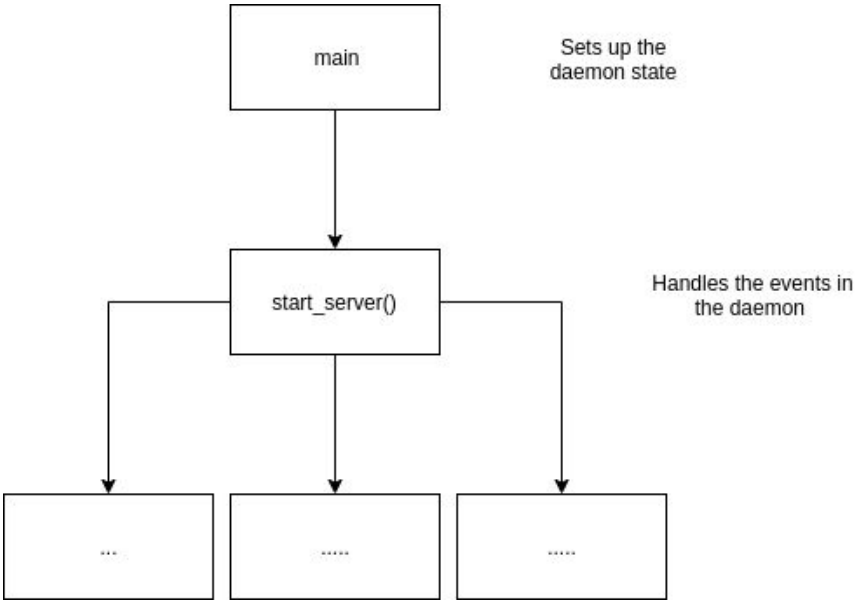
Discussion

A discussion of how MIP is different than IPv4, and how its performance compares to IPv4

MIP as it stands in the assignment text contains fewer error checking messure and features that IPv4 such as checksum. The address space for MIP is much smaller (255 vs 2^{32}). MIP has a smaller header and as such takes less space.

- IPv4 header size: 20 bytes
- MIP header size: 4 bytes

Graph



Project Layout

Project Layout overview

IN4230-M1
├── bin
├── src
│ ├── client
│ └── server
└── tests

Directory	Description
bin	Contains the built executable files mipd <- daemon ping_client ping_server
src	Contains the project source files The directories

	client/ server/ Contains the main source files for the ping client and server
tests	Contains unit tests for the project

Building the program

Running a terminal in the project root

BUILD WITH DEBUG
make dev

BUILD ALL PROJECT EXECUTABLES
make

BUILD AND RUN TESTS
make tests

Executing the program

From project root

START THE DAEMON
bin/mipd [-h] [-d] <socket_application> [MIP addresses ...]

START THE PING CLIENT
ping_client [-h] <destination_host> <message> <socket_application>

START THE PING SERVER
ping_server [-h] <socket_application>

Full File Layout

IN4230-M1
├── bin

```
├── LICENSE
├── Makefile
├── README.md
├── src
│   ├── app_connection.c    ← Responsible for connection to domain sockets
│   ├── app_connection.h
│   ├── client
│   │   └── ping_client.c   ← ping_client main source file
│   ├── dbg.h               ← Debugging macros
│   ├── DumpHex.c
│   ├── interface.c         ← Responsible for enumeration and handling of interfaces
│   ├── interface.h
│   ├── link.c              ← Responsible for handling traffic from and to the network
│   ├── link.h
│   ├── mip_arp.c           ← Responsible for MIP-ARP
│   ├── mip_arp.h
│   ├── mip.c               ← MIP constructs
│   ├── mipd.c
│   ├── mip.h
│   ├── polling.c           ← Responsible for epoll
│   ├── polling.h
│   ├── server
│   │   └── ping_server.c   ← ping_server main source file
│   ├── server.c            ← Main event loop and server construct
│   └── server.h
└── tests                   ← Project unit tests
    ├── app_connection_tests.c
    ├── interface_tests.c
    ├── link_tests_excluded.c
    ├── minunit.h
    ├── mip_arp_tests.c
    ├── mip_tests.c
    ├── polling_tests_excluded.c
    ├── runtests.sh
    └── test_tests.c
```