SEMINAR 14

I/O MULTIPLEXING

OUR PREVIOUS SERVER IS INEFFICIENT

IT ONLY HANDLES ONE CLIENT AT A TIME

CAN WE DO BETTER?

SLOW LORIS

SLOWLORIS PREVENTS US FROM USING THREADS/PROCESSES

EVOLUTION OF I/O MULTIPLEXING IN LINUX

- SELECT
- POLL
- EPOLL

HOW DO WE USE EPOLL?

CREATE EPOLL INSTANCE

```
int epoll_create(int size);

int epoll_create1(int flags);
// flags = 0 => equivalent to epoll_create
// flags: EPOLL_CLOEXEC
```

REGISTER FILE DESCRIPTORS

```c
int epoll_ctl(int epfd,
          int op, // EPOLL_CTL_ADD, EPOLL_CTL_MOD, EPOLL_CTL_DEL
          int fd,
          struct epoll_event *event);
```

```c
typedef union epoll_data {
  void *ptr;
  int fd;
  uint32_t u32;
  uint64_t u64;
} epoll_data_t;

struct epoll_event {
  uint32_t events;
  epoll_data_t data;
};
```

WAIT FOR IO EVENTS

```
int epoll_wait(int epfd,
               struct epoll_event *events,
               int maxevents,
               int timeout // -1 to block indefinitely
);
```

LEVEL-TRIGGERED VS EDGE-TRIGGERED