Linux Kernel

History

- Unix – Late 60's Bell Labs
- GNU – Richard Stallman (mid 80's)
  - http://www.gnu.org/gnu/thegnuproject.html
- Minix – Andrew Tanenbaum '86
- Linux – Linus Torvalds '92
- Interesting link:
  - http://oreilly.com/catalog/opensources/book/appa.html

A Member of the Unix Family...

- http://en.wikipedia.org/wiki/Linux (nice picture)

Today

- Linus still maintains the code, works for non-profit Linux Foundation
- A note on development model...
- Numbering system... 2.2.6 etc.
- Current SLOC...
  IBM Link: Anatomy of the Linux Kernel

The Source Tree

- Let's look back at IBM link to see what's in the kernel.
- Good description of source tree:

  http://www.linuxchix.org/content/courses/kernel_hacking/lesson6

- Link to Cross Reference:
  - http://lxr.linux.no/linux+v2.6.30.10/

Build Process

- Setting up .config file has two effects:
  - #define
  - Determines what source files are compiled
- Mysterious asm/ directory
- Let's look at a header file...
  - (No one to one correspence between source files and header files.)

Reading/Writing Kernel Code

- These guys don't seem to be using malloc very much. Where is printf? What's going on here?
- Some useful stuff is in include/linux/string.h
- Elsewhere:
  - kmalloc
  - printf

Linked Lists

- include/linux/list.h
- Incidentally... Why so many macros?

C Miscellany

- static:
  - In a function: means that memory is persistent
  - Outside of a function, limits scope to the current file.
- extern:
  - Declares, but does not define the variable.
    - No memory is set aside, the variable will be defined somewhere else.
  - extern functions:

extern is significant only with data declarations. In function declarations, it can be used as a stylistic hint to indicate that the function's definition is probably in another source file, but there is no formal difference between

```
extern int f();
```

and

```
int f();
```

http://c-faq.com/decl/extern.html