

Z6110X0002: Linux Programming

Lecturer: Prof. Zichen Xu

Self-Introduction

- Dr. Zichen Xu (徐子晨)
- Professor in NCU
- Former Googler, Buckeye, Gator, and Bull
- Main field:
 - Green computing, Data storage,
 - Database management systems,
 - Data analysis, and AI.



Information About the Course (Cont.)

- We have a regular office hour: **Tuesday 1:00PM-2:00PM**
 - We can have other meeting time if you email to schedule
- Lab session, starting on 5th week
 - Monday 9:45AM-12:10PM
- Course Link:
- <http://good.ncu.edu.cn/LinuxProgramming/homepage.html>

Course Description

- Linux, like its predecessor Unix, is an open source operating system kernel.
- All Unix systems, Linux included, provide a mutual set of abstractions and interfaces. Indeed, this commonality defines Linux.
- Abstractions, such as the file and the process, interfaces to manage pipes and sockets, and so on, are at the core of what is Linux Programming.

Something New About the Course

- Everyone gets a name tag
 - I know you better, at least know your name
 - I do not need to do attendance check
 - You may feel more get involved
- Every homework will be published in the course website
- Every homework must be written in Markdown/Latex
 - Submitted to our homework email address: ncuhomework@outlook.com
- The course will be taught in both English and Mandarin

Course Organization

- We plan to have 5 – 8 homework
 - Approximately once in two/three weeks
- We will NOT have mid-term exam
 - A mid-report will do
- We do have final exam
 - I hope the exam will be nice and easy, just hope!

Course Organization (Cont.)

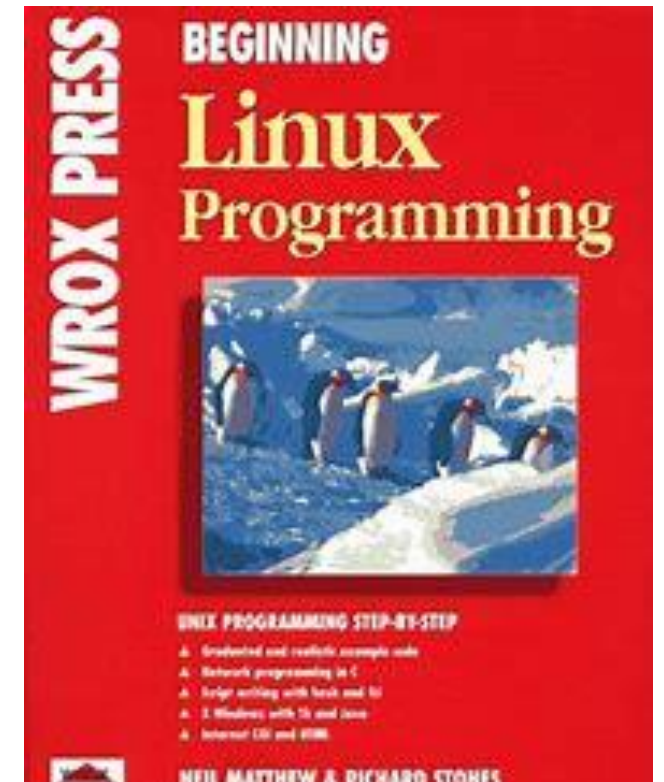
- We do have a lot of reading assignment
 - Reading papers, articles, and books
 - Writing your after-read notes
 - Of course, in markdown or latex style
- We will recommend you many many books to read
 - Most books do have electronic copies, no worries
 - Some books are worthy to keep a paper version, I will mention it then
 - I welcome counter-reading suggestions

Lecture 1:

Linux Programming 101

What is Linux Programming

- What is Linux?
- What is Linux programming?



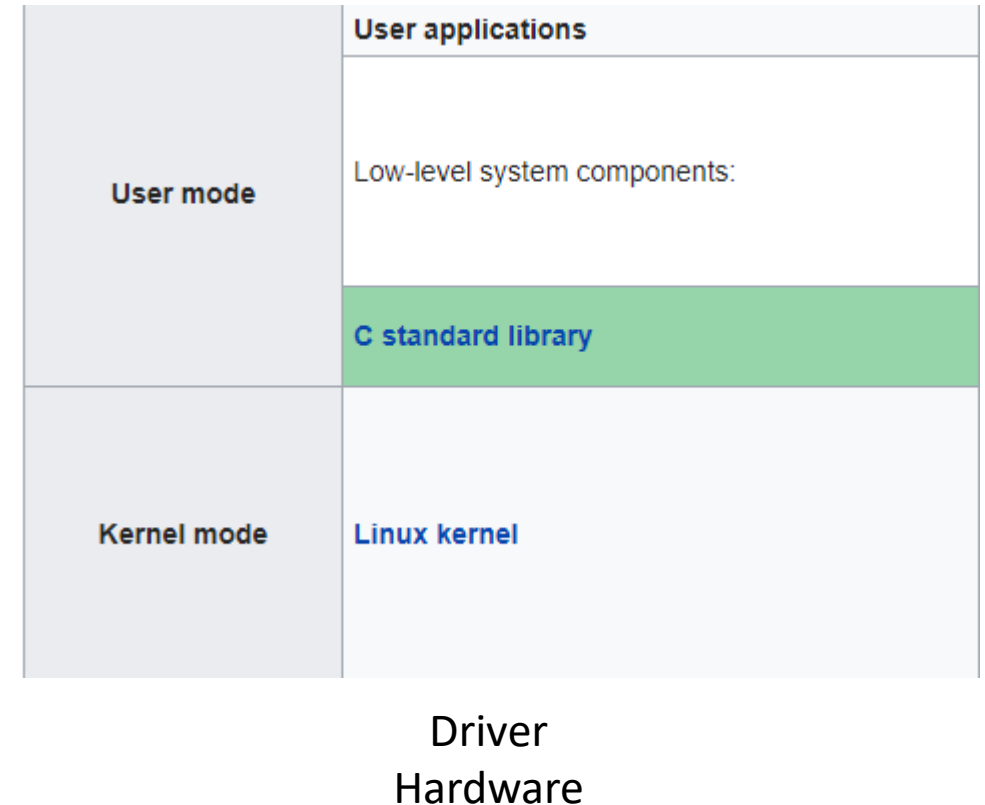
Beginning Linux Programming
By Neil Matthew, et al.
Published by Wiley Press

The Linux Story

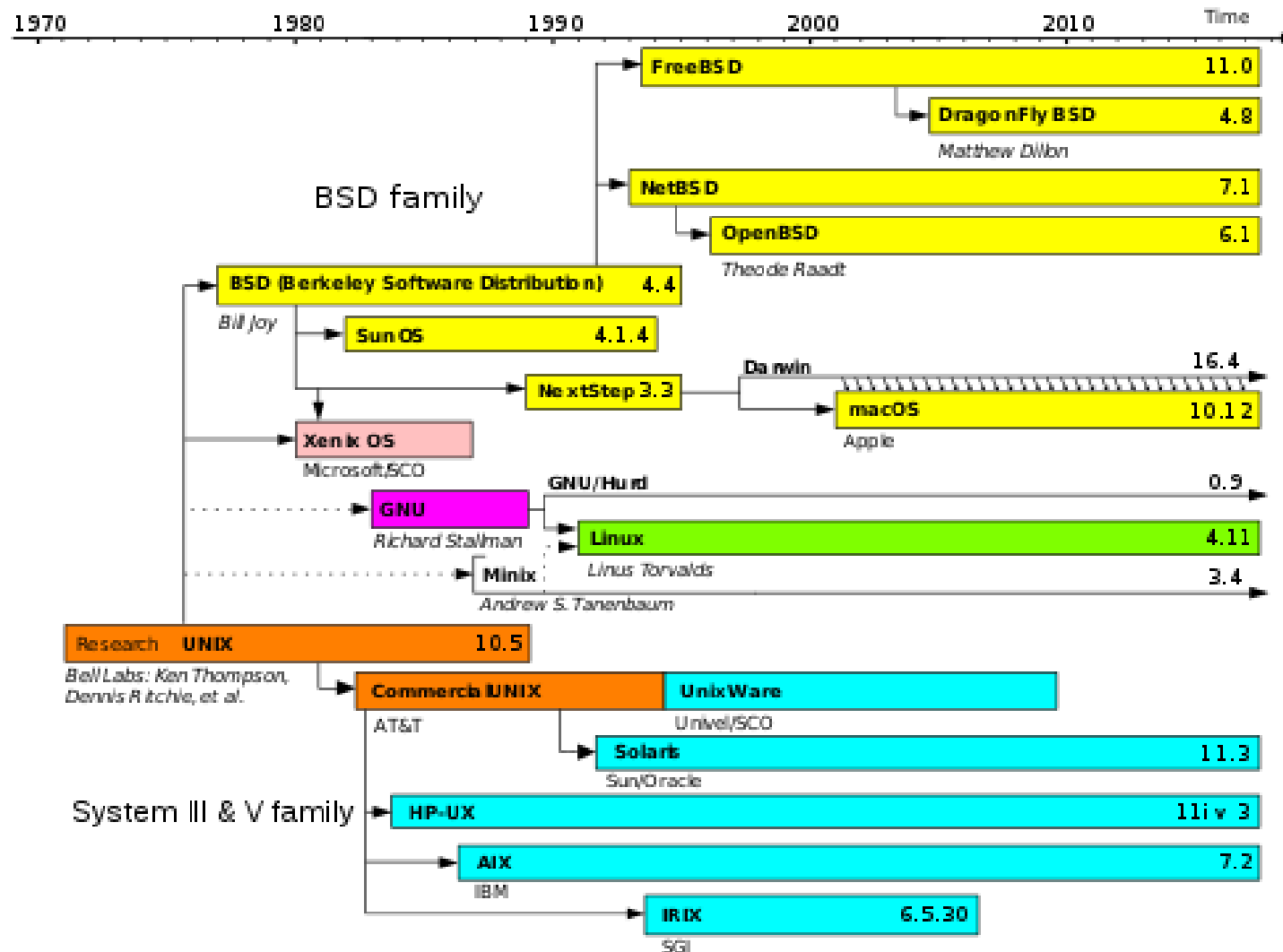
- A FREE operating system
- Born in Sep. 17, 1991
- Son of Linus Torvalds and Unix
- Has many siblings
 - Fedora, red hat, CentOS, OpenSUSE, Mint, Ubuntu, etc.

Linux Architecture

- A bootloader
- An init program
- Software libraries
- Basic Unix-like commands
- Widget toolkits
- A package management system
- User interface programs



The History of Linux



What is Linux Programming

- Programming languages under Linux distribution support
 - Ada, C, C++, Python, Golang, etc.
 - GNU Compiler Collection
- Shell programming under Linux kernel and libraries support
- Graphic programming under GNOME and KDE
- Tools: *Vim*, *Emacs*, and *nano* are commended

Course Discussion

- What can you expect from this course?
 - A well-taught course with rich materials
 - A real example of a popular operating system
 - The masterful skill to manipulate anything in your system
 - Some good A or A+ grades
- What will you get from this course?
 - Pass a course in your regular undergraduate study
 - Learn something new or irregular
 - Try to become an expertise in your major
 - Try to customize your operating system
 - Try to write your own operating system