

Introduction

Overview

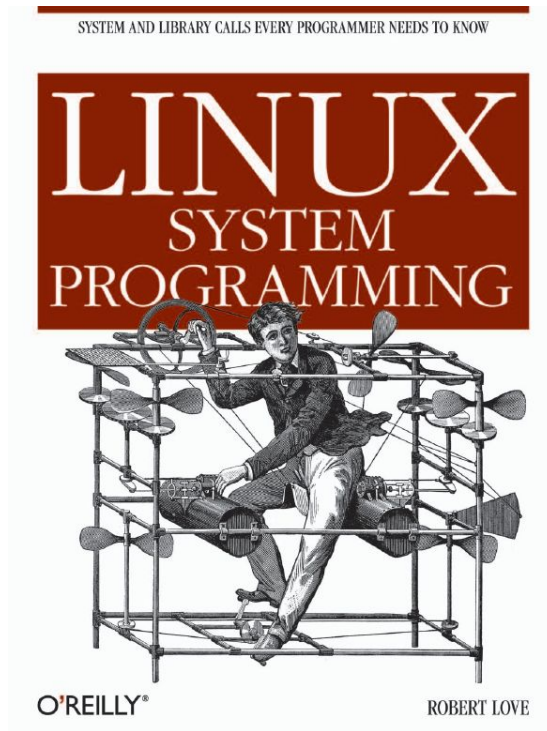
- Системне програмування. Спеціальність 123 - KI (Луцький національний технічний університет)
https://drive.google.com/file/d/1NgvgUhJfyOwQl23iP34xnRgJuM_6H0PK/view?usp=drive_link
- Системне програмування C і C++ (Державний університет інтелектуальних технологій і зв'язку. Одеса)
<https://suitt.edu.ua/wp-content/uploads/2024/04/systemne-prohramuvannia-c-i-c.pdf>
- Системне програмування (Факультет електроніки ЛНУ)
https://electronics.lnu.edu.ua/wp-content/uploads/2022_OK_27_syl.pdf
- Системне програмування. Спеціальність 123 - KI (Технічний фаховий коледж Луцького національного технічного університету)
<https://e-tk.lntu.edu.ua/course/view.php?id=277>

Overview

- Systems Programming in C++ (Technische Universität München)
<https://db.in.tum.de/teaching/ss19/c++praktikum/>
- Practical course: Systems Programming (Chair of Distributed Systems & Operating Systems at TU Munich)
<https://github.com/lis1-sys-prog-course/docs>
- CS4414: Systems Programming (Computer Science at Cornell University)
<https://www.cs.cornell.edu/courses/cs4414/2023sp/Schedule.htm>
- CSE 20289: Systems Programming (University of Notre Dame)
<https://www3.nd.edu/~pbui/teaching/cse.20289.sp17/>

System Programming

Traditionally speaking, all Unix programming is system-level programming. Historically, Unix systems did not include many higher-level abstractions. Even programming in a development environment such as the X Window System exposed in full view the core Unix system API.



Системне програмування.

Спеціальність: F5 Комп'ютерна інженерія (НЕФК)

| | |
|-------------------------|--|
| Зміст дисципліни | <p>Змістовий модуль 1. Вступ. Мови системного програмування.</p> <p>Змістовий модуль 2. Програмування в системних оболонках на прикладі Bash.</p> <p>Змістовий модуль 3. Основні засоби, конструкції та принципи програмування мовою Python.</p> <p>Змістовий модуль 4. Візуальне програмування з використанням фреймворку PyQt.</p> |
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About

- What Is System Programming?
<https://www.coursera.org/in/articles/system-programming>
- The Programming Language Guide
<https://www.youtube.com/watch?v=2lVDktWK-pc>
- Python Vs C++ Vs Java! <https://youtu.be/hnlz0YYCpBU>
- Python vs C/C++ vs Assembly side-by-side comparison
<https://www.youtube.com/watch?v=3PclJKd1PKU>

System software written in Bash

```
sde@thames:~  
File Edit View Search Terminal Help  
[sde@thames ~]$ pass  
Password Store  
├── Bank  
│   ├── BoS  
│   ├── Nationwide  
│   └── Smile  
├── Home  
│   ├── Bank-Vault  
│   ├── Safe2  
│   └── Shopping  
│       ├── Aldi  
│       ├── Amazon  
│       ├── HMV  
│       ├── JohnLewis  
│       ├── Mands  
│       ├── Poundland  
│       └── RiverIsland  
└── Work  
    ├── Client-45  
    ├── Client-46  
    ├── Email  
    ├── google.com  
    └── mobile-phone  
[sde@thames ~]$
```

Canon LPB-6000B driver installer



https://github.com/hieplpvip/ubuntu_canon_printer

Linux init scripts



```
root@ban335-vm:/etc/rc0.d# ls -lt 0  
Stopping Session c1 of user root.  
Stopping user Manager For USB 0...  
Stopping Save/Restore Sound Card State...  
OK ] Stopped target System Time Synchronized.  
OK ] Closed Load/Save RF Kill Switch Status /dev/rfkill Watch.  
OK ] Stopped target Timers.  
OK ] Stopped daily Cleanup of Temporary Directories.  
OK ] Stopped target Multi-User System.  
Stopping Network Name Resolution...  
Stopping Kernel Logging Service...  
Stopping helloworld.service...  
Stopping System Logging Service...  
OK ] Stopped target Local Commands.  
Stopping Getty on tty1...  
Stopping Serial Getty on ttyS0...  
Stopping Serial Getty on ttyS1...  
OK ] Stopped target Serial Console.  
OK ] Stopped System Logging Service.  
OK ] Stopped Kernel Logging Service.  
OK ] Stopped Network Name Resolution.  
OK ] Stopped Serial Getty on ttyS0.  
OK ] Stopped Serial Getty on ttyS1.  
OK ] Stopped Getty on tty1.  
OK ] Stopped user Manager For USB 0.  
OK ] Stopped Session c1 of user root.  
OK ] Stopped Save/Restore Sound Card State.  
OK ] Stopped helloworld.service.  
OK ] Stopped user Manager For USB 0.  
OK ] Stopped user Manager For USB 0.
```

System software written on Python

The image is a collage of three screenshots illustrating system software written on Python.

Top Left: Terminal Window
The terminal shows a user at the prompt `teacher@main` in the directory `/home/teacher/pt`. A file listing is displayed, showing files like `pt`, `video`, `Документи`, `Завантаження`, `Загальнодоступні`, `Зображення`, `Музика`, `extensions`, `logs`, `saves`, `templates`, `nets`, `PT.conf`, and `PT.conf.autosave`. The bottom of the terminal shows the command `drwxrwxr-x 6 teacher teacher 8 2024-04-08 22:12 46.1K sum, 93.7G free 1/9 Top`.

Top Right: Web Browser
The browser shows the Google homepage with the search bar and various links like `Gmail`, `Maps`, `Translate`, `Search`, `Drive`, and `Photos`. The address bar shows `https://www.google.com`.

Bottom: Spyder Python IDE
The IDE shows a code editor with a Python script named `temp.py`. The code defines a function `count_sheeps` that counts the number of sheep in a list. The console shows the output of the script, indicating that the function is working correctly.

Python everywhere

```
linux@alma:~$ sudo dnf install nginx
Last metadata expiration check: 0:43:29 ago on Sun 26 Jun 2022 07:37:31 PM EDT.
Dependencies resolved.

Package                Architecture Version      Repository    Size
Installing:
  nginx                 x86_64      1:1.20.1-18.el9.alma  appstream    594 k
Installing dependencies:
  almalinux-logs        noarch      90.5.1-1.1.el9  appstream    38 k
  nginx-filesystem      noarch      1:1.20.1-18.el9.alma  appstream    11 k

Transaction Summary
Install 3 Packages

Total download size: 623 k
Installed size: 1.0 M
Is this ok [y/N]: y
```

