Operating Systems & System Software - Lab

Lab 6:

Processes and Threads

Week 7

Mouli Sankaran

OS & SS Lab 6: Focus

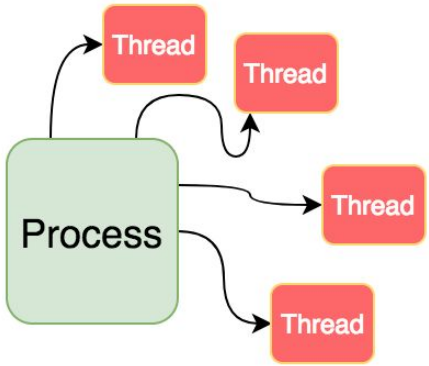
- **Processes and Threads**
  - **Ref: Session 5A**
- **pthread_create()**
- **Programs**
  - **thread_ex1.c**
  - **thread_ex2.c**
- **Assignment 5 (Lab 6)**
  - **thread_ex3.c**

pthread_create()

pthread_create()

int **pthread_create**(**pthread_t** *thread, **const pthread_attr_t** *attr,
void *(*start_routine) (void *), **void** *arg);

- **pthread_create()** creates a new thread
- It is passed a **pointer** to **pthread_t** for this routine to write the ID of the thread created (**1st param**)
- It can be passed some attributes (**2nd param**)
- Thread entry **function pointer** (**3rd param**)
- **void *** parameter to the entry function (**4th param**)



Function pointer: void *(*start_routine) (void *):
start_routine is a **pointer to a function** which accepts **void*** as parameter and returns a **void ***

```
gcc -o threadEx1 -D_REENTRANT thread_ex1.c -lpthread
```

Practice Programs

Processes and Threads

- **thread_ex1.c**
- **thread_ex2.c**

Assignment 5 (Lab 6)

1. Create three threads from the main thread, by defining and using three **different entry functions** such as:

a. **void** *thread1_function(**void ***)
b. **void** *thread2_function(**void ***)
c. **void** *thread3_function(**void ***)

c) Define three **different messages** to each of the new threads created
   a) **char message1[] = "Message to Thread1 !!!";**
   b) **char message2[] = "Message to Thread2 !!!";**
   c) **char message3[] = "Message to Thread3 !!!";**

d) Define **localData** in each of the threads with different initialized values, such as 1000, 2000, 3000

e) Let all threads run forever, incrementing the **localData** as well as **procData** by one, after sleeping for **1 second.**

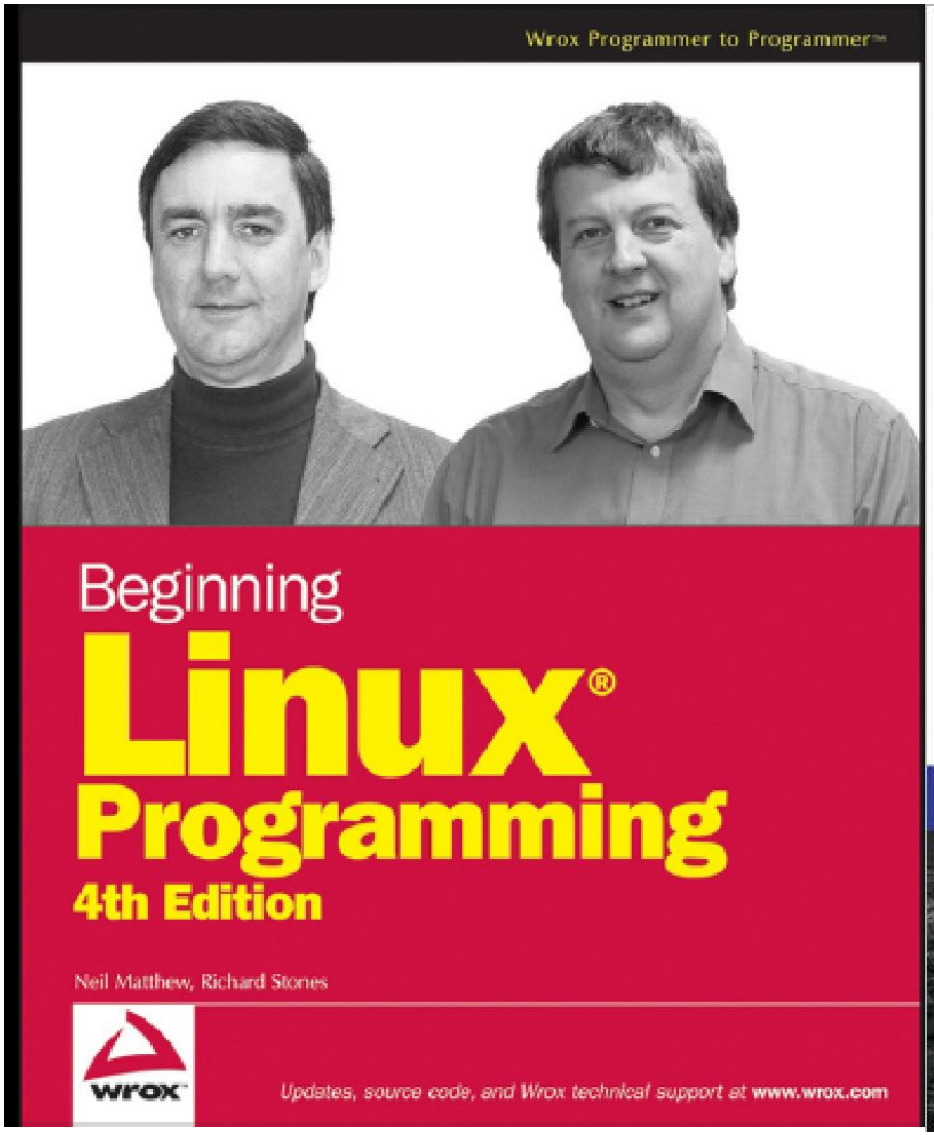
OS & SS Lab 6: Summary

- **Processes and Threads**
  - **Ref: Session 5A**
- **pthread_create()**
- **Programs**
  - **thread_ex1.c**
  - **thread_ex2.c**
- **Assignment 5 (Lab 6)**
  - **thread_ex3.c**

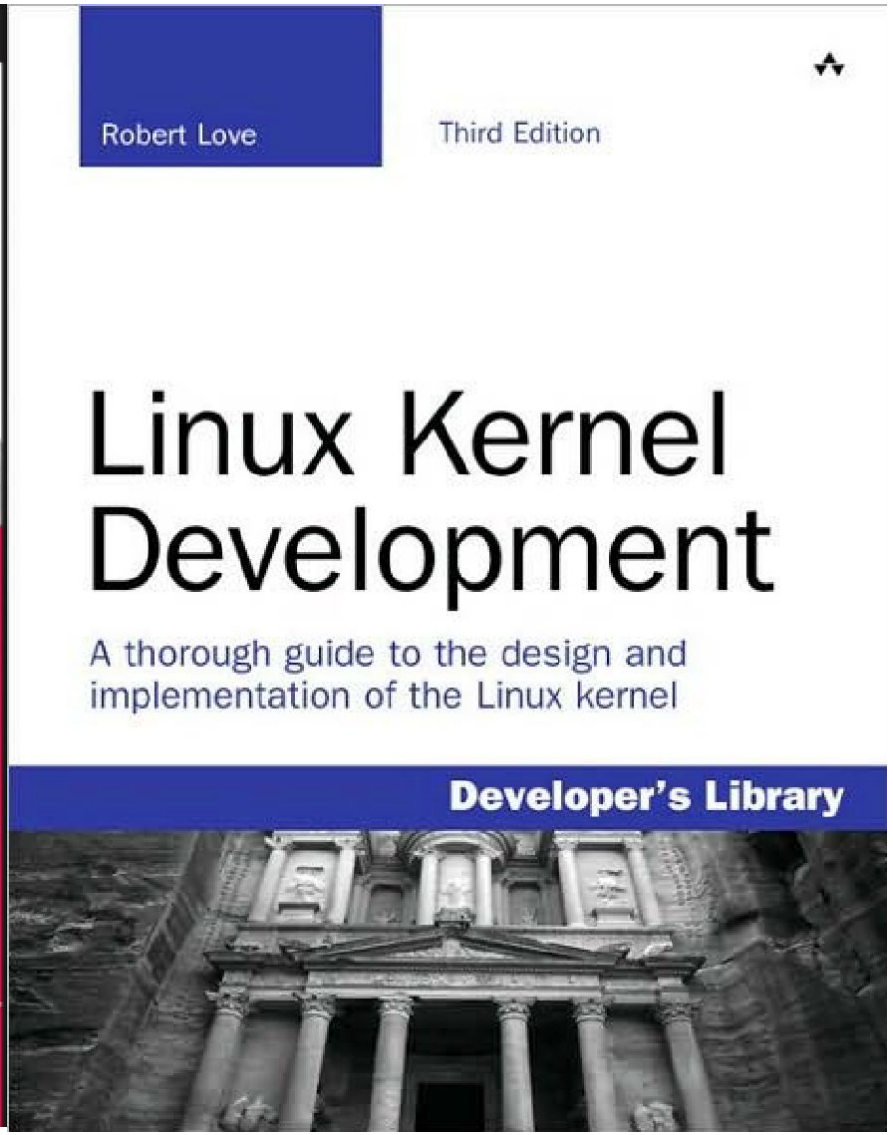
System Software: References

Additional References (1 & 2)

Ref 1



Ref 2

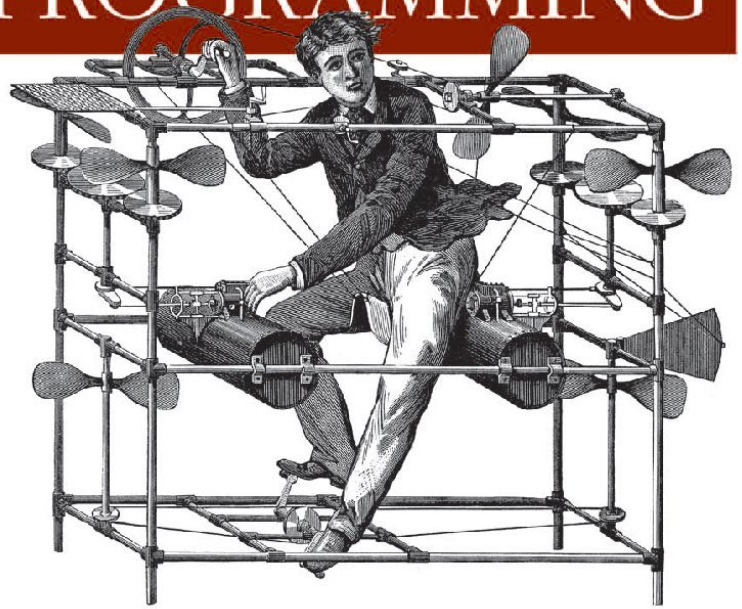


References (1 & 2)

Ref 3

SYSTEM AND LIBRARY CALLS EVERY PROGRAMMER NEEDS TO KNOW

LINUX SYSTEM PROGRAMMING



O'REILLY®

ROBERT LOVE

Ref 4

Advanced Linux Programming

Mark Mitchell, Jeffrey Oldham, and Alex Samuel

New Riders

www.newriders.com
201 West 103rd Street, Indianapolis, Indiana 46290
An Imprint of Pearson Education
Boston • Indianapolis • London • Munich • New York • San Francisco