

# man7.org Training and Consulting

## Michael Kerrisk

Michael Kerrisk (man7.org Training and Consulting, <http://man7.org/training/>) provides training and consulting on low-level application development on Linux and UNIX systems. He develops and delivers all courses offered by man7.org. The emphasis of his courses is on providing deep conceptual understanding coupled with intensive in-class practical work.

### About Michael Kerrisk

A software engineer who is passionate about excellent training and writing, Michael Kerrisk has been programming on UNIX systems since 1987, and first began teaching UNIX system programming courses in 1989.

He has for many years been active in Linux development, working with kernel developers on design review, testing, and documentation of new Linux kernel–user-space APIs, work for which he has become well-known in the Linux community. In many cases, he personally knows the implementers of the APIs that he describes in his courses; in some cases he has been influential in shaping those APIs.

Since 2004, he has been the maintainer of the Linux *man-pages* project (<http://www.kernel.org/doc/man-pages/>), which provides documentation of the Linux system call API, as well as the APIs in the standard C library. He is the author or coauthor of more than 400 of the around 1000 manual pages provided by the project.

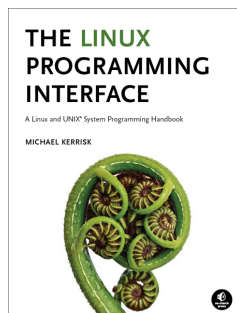
Originally from New Zealand, Michael Kerrisk is nowadays based in Munich, Germany, from where he travels to deliver training courses and conference presentations across Europe, as well as in the USA and other parts of the world.



### The Linux Programming Interface

Michael Kerrisk is the author of *The Linux Programming Interface* (TLPI), published in 2010 by No Starch Press (<http://man7.org/tlpi/>).

At 1550 pages, with around 200 example programs, 115 diagrams, and 88 tables, TLPI is widely acclaimed as the definitive work on system programming for Linux (and UNIX) systems. To date, TLPI has been translated into Korean, Japanese, Simplified Chinese, Traditional Chinese, and Russian.



### Course materials

Extensive training materials (course books and sample code) are provided as part of all man7.org courses. All training material used in man7.org courses is developed by the trainer, Michael Kerrisk. Course books are printed on demand for each course, and updated following every course, based on customer feedback and teaching experiences. Naturally, our training materials are updated constantly to keep up with Linux developments. This short, frequent feedback loop results in training materials of exceptional quality and currency.

We believe our training materials are second to none, a belief reflected in feedback from our customers. Samples of the training materials can be found on our web site.

### Course format

All courses follow a (highly interactive) lecture-plus-lab format, with extensive practical sessions to consolidate the “theory” covered in the course. Courses are delivered in English.

### Onsite courses

Subject to scheduling commitments, Michael Kerrisk is available to deliver onsite courses in almost any location.

### Custom courses

As well as standard courses (some of which are described on the following page), man7.org frequently provides custom courses whose length and content are tailored to customer requests. Please contact us with your requests.

### Customers and references

Past and current customers of man7.org courses include Google, IBM, Cisco Systems, BMW, Robert Bosch, and the French and British governments. Contact details for referees from past courses are available upon request.

# man7.org: overview of selected courses

The list below provides a summary of some of the standard courses taught by Michael Kerrisk. Custom courses are also available upon request. Further details on standard and custom courses can be found at <http://man7.org/training/>.

## Linux/UNIX System Programming

Course code: M7D-SP01 (5 days)

Intended for a wide audience, including system programmers, embedded developers, devops engineers, and security engineers, this course provides a deep understanding of the operating system architecture and low-level interfaces required to build system-level applications on Linux and UNIX systems ranging from embedded processors to enterprise servers.

Detailed presentations coupled with many carefully designed practical exercises provide participants with the knowledge needed to write complex system, network, and multi-threaded applications.

Topics covered include file I/O; files, directories, and links; signals; processes; process creation and termination; program execution. multithreaded programming with POSIX threads; IPC (pipes, FIFOs, shared memory, semaphores, message queues, local and network IPC with sockets); and I/O multiplexing (*poll()*, *select()*, and *epoll()*).

## Linux Security and Isolation APIs

Course code: M7D-SECISOL01 (3 days)

Covering topics including control cgroups (cgroups v1 and v2), namespaces (with a deep dive into user namespaces), capabilities, and seccomp (secure computing), this course provides a deep understanding of the low-level Linux features used to design, build, and troubleshoot container, virtualization, and sandboxing frameworks.

As well as developers, designers, and administrators creating or deploying container frameworks, the diverse audience for this course includes embedded developers and security engineers.

## System Programming for Linux Containers

Course code: M7D-SPLC01 (5 days)

This course is aimed particularly at developers, administrators, and devops engineers who develop, maintain, administer, or troubleshoot container frameworks.

After covering some fundamentals of Linux/UNIX system programming (file I/O; files, directories, and links; signals; processes; process creation and termination; and program execution), the course goes on to examine the low-level Linux

features (control cgroups, namespace, user namespaces, capabilities, seccomp) used to implement privileged applications and build container systems such as Docker and LXC.

## Building and Using Shared Libraries on Linux

Course code: M7D-SHLIB01 (1 day)

This course provides a thorough understanding of the process of designing, building, and using shared libraries on Linux. Topics covered include: fundamentals of library creation and use; shared library versioning; symbol resolution; library search order; executable and linking format (ELF); dynamically loaded libraries; controlling symbol visibility; and symbol versioning.

## Linux/UNIX Programming Fundamentals

Course code: M7D-SPINTRO01 (2 days)

This course provides a sound understanding of the basic operating system features and low-level interfaces (principally, system calls and library functions) that are used to build system-level applications on Linux and UNIX systems. Topics covered include: file I/O; files, directories, and links; signals; processes; process creation and termination; and program execution. The course provides the fundamental knowledge that is assumed by the follow-on course *Linux/UNIX IPC Programming* (M7D-IPC01) and is also recommended as preparation for the course *Linux Security and Isolation APIs* (M7D-SECISOL01).

## Linux/UNIX IPC Programming

Course code: M7D-IPC01 (2 days)

This course provides a thorough introduction to the interprocess (IPC) techniques that Linux and UNIX systems provide for use by user-space programs. These features allow the creation of complex multiprocess applications that coordinate their actions and exchange information with each other. Topics covered include pipes, FIFOs, shared memory, semaphores, message queues, local and network IPC with sockets, and I/O multiplexing (*poll()*, *select()*, *epoll()*). An overview of a number of other IPC mechanisms is provided during the course.