Linux Rapid Embedded Programming

Linux

management in general. Linux distributions support shell scripts, awk, sed and make. Many programs also have an embedded programming language to support

Linux (LIN-uuks) is a family of open source Unix-like operating systems based on the Linux kernel, an operating system kernel first released on September 17, 1991, by Linus Torvalds. Linux is typically packaged as a Linux distribution (distro), which includes the kernel and supporting system software and libraries—most of which are provided by third parties—to create a complete operating system, designed as a clone of Unix and released under the copyleft GPL license.

Thousands of Linux distributions exist, many based directly or indirectly on other distributions; popular Linux distributions include Debian, Fedora Linux, Linux Mint, Arch Linux, and Ubuntu, while commercial distributions include Red Hat Enterprise Linux, SUSE Linux Enterprise, and ChromeOS. Linux distributions are frequently...

Embedded system

system. It is embedded as part of a complete device often including electrical or electronic hardware and mechanical parts. Because an embedded system typically

An embedded system is a specialized computer system—a combination of a computer processor, computer memory, and input/output peripheral devices—that has a dedicated function within a larger mechanical or electronic system. It is embedded as part of a complete device often including electrical or electronic hardware and mechanical parts.

Because an embedded system typically controls physical operations of the machine that it is embedded within, it often has real-time computing constraints. Embedded systems control many devices in common use. In 2009, it was estimated that ninety-eight percent of all microprocessors manufactured were used in embedded systems.

Modern embedded systems are often based on microcontrollers (i.e. microprocessors with integrated memory and peripheral interfaces),...

Linux Foundation

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Linux kernel

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The Linux kernel is a free and open-source Unix-like kernel that is used in many computer systems worldwide. The kernel was created by Linus Torvalds in 1991 and was soon adopted as the kernel for the GNU operating system (OS) which was created to be a free replacement for Unix. Since the late 1990s, it has

been included in many operating system distributions, many of which are called Linux. One such Linux kernel operating system is Android which is used in many mobile and embedded devices.

Most of the kernel code is written in C as supported by the GNU Compiler Collection (GCC) which has extensions beyond standard C. The code also contains assembly code for architecture-specific logic such as optimizing memory use and task execution. The kernel has a modular design such that modules can be...

Yocto Project

for embedded and IoT software that are independent of the underlying architecture of the embedded hardware. The project was announced by the Linux Foundation

The Yocto Project is a Linux Foundation collaborative open source project whose goal is to produce tools and processes that enable the creation of Linux distributions for embedded and IoT software that are independent of the underlying architecture of the embedded hardware. The project was announced by the Linux Foundation in 2010 and launched in March, 2011, in collaboration with 22 organizations, including OpenEmbedded.

The Yocto Project's focus is on improving the software development process for embedded Linux distributions. The Yocto Project provides interoperable tools, metadata, and processes that enable the rapid, repeatable development of Linux-based embedded systems in which every aspect of the development process can be customized.

In October 2018, Arm Holdings partnered with Intel...

Linux adoption

Linux adoption is the adoption of Linux-based computer operating systems (OSes) by households, nonprofit organizations, businesses, and governments. Android

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Android, which runs on Linux, is the world's most widely used computer operating system. As of October 2024, Android has 45% of the global operating system market followed by Windows with 26%.

Linux runs almost every type of device, all the top 500 most powerful supercomputers in the world, desktop computers, laptops, the International Space Station, smartphones, smartwatches, TVs, and cars. Additional large systems like The New York Stock Exchange, the Pentagon, and social media platforms like Facebook, YouTube, and X (formerly Twitter) all run on Linux. Microsoft's cloud service depends on Linux.

In August 2010, Jeffrey Hammond, principal analyst...

Field-programmability

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An electronic device or embedded system is said to be field-programmable or in-place programmable if its firmware (stored in non-volatile memory, such as ROM) can be modified "in the field", without disassembling the device or returning it to its manufacturer.

This is often an extremely desirable feature, as it can reduce the cost and turnaround time for replacement of buggy or obsolete firmware. For example, a digital camera vendor could distribute firmware supporting a new image file format by instructing consumers to download a new firmware image to the camera via a USB

cable.

Euphoria (programming language)

Euphoria is a programming language created by Robert Craig of Rapid Deployment Software in Toronto, Ontario, Canada. Initially developed (though not publicly

Euphoria is a programming language created by Robert Craig of Rapid Deployment Software in Toronto, Ontario, Canada. Initially developed (though not publicly released) on the Atari ST, the first commercial release was for MS-DOS as proprietary software. In 2006, with the release of version 3, Euphoria became open-source software. The openEuphoria Group continues to administer and develop the project. In December 2010, the openEuphoria Group released version 4 of openEuphoria along with a new identity and mascot for the project. OpenEuphoria is currently available for Windows, Linux, macOS and three flavors of *BSD.

Euphoria is a general-purpose high-level imperative-procedural interpreted language. A translator generates C source code and the GNU compiler collection (GCC) and Open Watcom compilers...

Borland Kylix

low-level programming, such as the development of device drivers or kernel modules.[citation needed] Though it interacts poorly with many Linux window managers

Borland Kylix is a compiler and integrated development environment (IDE) formerly sold by Borland, but later discontinued. It is a Linux software development environment based on Borland Delphi and Borland C++ Builder, which runs under Microsoft Windows. Continuing Delphi's classical Greek theme, Kylix is the name for an ancient Greek drinking cup. The closest supported equivalent to Kylix is the free Lazarus IDE package, designed to be code-compatible with Delphi. As of 2010 the project has been resurrected in the form of Delphi cross compiler for Mac and Linux, as shown in the Embarcadero's Delphi and C++ Builder roadmap. As of September 2011 with Kylix discontinued the framework for cross-platform development by Embarcadero is FireMonkey.

PSOS (real-time operating system)

Software Components Group (SCG). In the 1980s, pSOS rapidly became the RTOS of choice for all embedded systems based on the Motorola 68000 series family

pSOS (Portable Software On Silicon) is a real-time operating system (RTOS), created in about 1982 by Alfred Chao, and developed and marketed for the first part of its life by his company Software Components Group (SCG). In the 1980s, pSOS rapidly became the RTOS of choice for all embedded systems based on the Motorola 68000 series family architecture, because it was written in 68000 assembly language and was highly optimised from the start. It was also modularised, with early support for OS-aware debugging, plug-in device drivers, Internet protocol suite (TCP/IP) stacks, language libraries, and disk subsystems. Later came source code level debugging, multiprocessing support, and further computer networking extensions.

In about 1991, Software Components Group was acquired by Integrated Systems...