Electronic Computer Center
Al-Nahrain University
Linux Module
A. Altaher
Lecture 1 & 2

- Linux History
- Distributions Debian / Ubuntu
- Installation (Single/Dual mode – Virtual Box – Portable)
- Command line (Terminal)

Linux – 2017/18 – A. ALTAHER

Open-Source Operating Systems

- Operating systems made available in source-code format rather than just binary **closed-source.**

- Counter to the **copy protection** and **Digital Rights Management (DRM)** movement

- Started by **Free Software Foundation (FSF)**, which has "copy left" **GNU Public License (GPL)**

- Examples include **GNU/Linux** and **BSD** *(Berkeley Software Distribution)* **UNIX** (including core of **Mac OS X**), and any more

- Can use VMM (Virtual Machine Management) like VMware Player (Free on Windows), Virtualbox (open source and free on many platforms - http://www.virtualbox.com)

  Use to run guest operating systems for exploration

is a program that's written to the read-only memory (ROM) of a computing device, which is added at the time of manufacturing, is used to run user programs on the device. (IBM prefers the term microcode)

Linux – 2017/18 – A. ALTAHER

- Were developed at Bell Labs and became operational on a PDP-7 (Microcomputer 1965) in 1970. (Written by Assembly Language – Ken Thompson)

- Incorporated many ideas from Multics (Multiplexed Information and Computing Service) is a timesharing operating system begun in 1965 and used until 2000.

- PDP-11(1970 -1990) was a milestone because it first showed that UNIX would be an OS for all computers.

Linux – 2017/18 – A. ALTAHER

- Next milestone was rewriting UNIX in the programming language C
  - demonstrated the advantages of using a high-level language for system code (ken Thompson & Dennis Ritchie C Author) 1973

- Was described in a technical journal for the first time in 1974

- First widely available version outside Bell Labs was Version 6 in 1976

- Version 7, released in 1978 is the ancestor of most modern UNIX systems

- Most important of the non-AT&T systems was UNIX BSD (Berkeley Software Distribution)

Linux – 2017/18 – A. ALTAHER

UNIX = UNICS

Uniplexed Information and Computing System
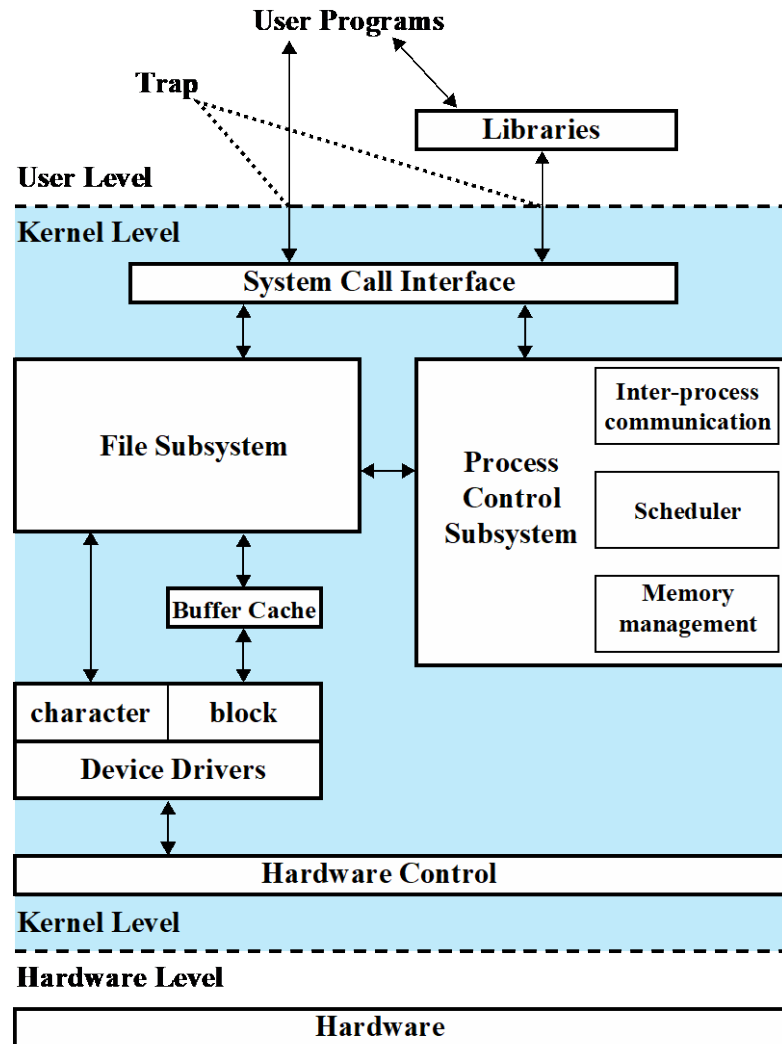
Figure 2.16 Traditional UNIX Kernel
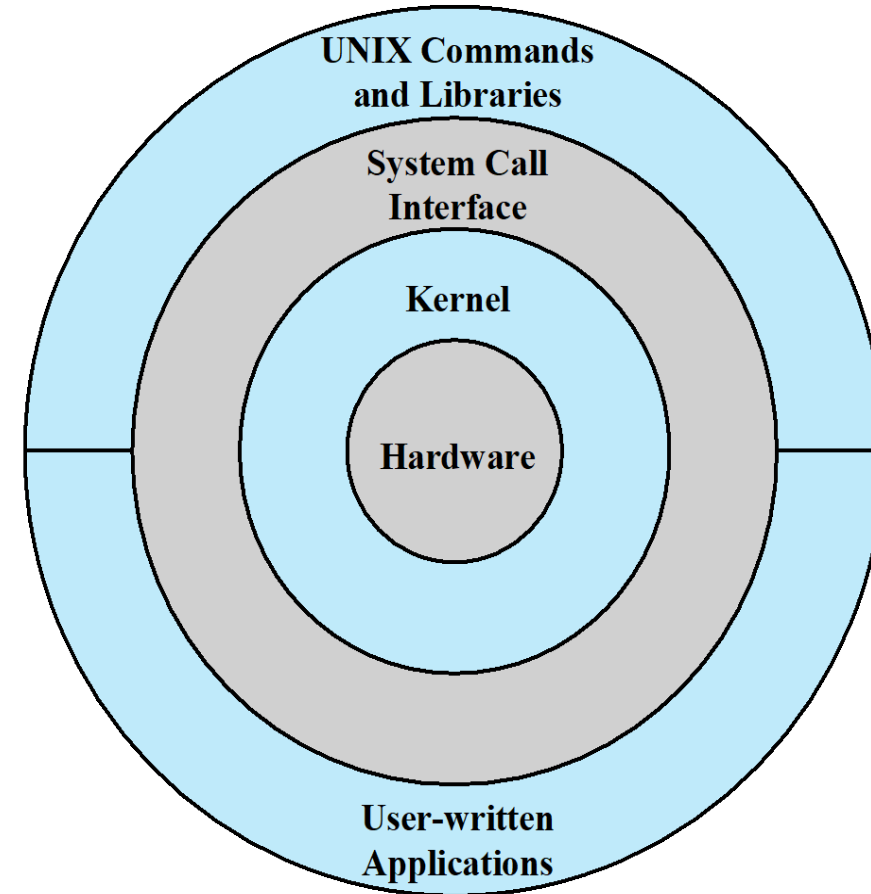

Figure 2.15 General UNIX Architecture

Linux – 2017/18 – A. ALTAHER

- Started out as a UNIX variant for the IBM PC
- Linus Torvalds, a Finnish student of computer science, wrote the initial version
- Linux was first posted on the Internet in 1991
- Today it is a full-featured UNIX system that runs on several platforms & Distributions of linux (Red Hat, Solaris, Debian, Ubuntu, Fedora, etc.)
- Is free and the source code is available
- Key to success has been the availability of free software packages
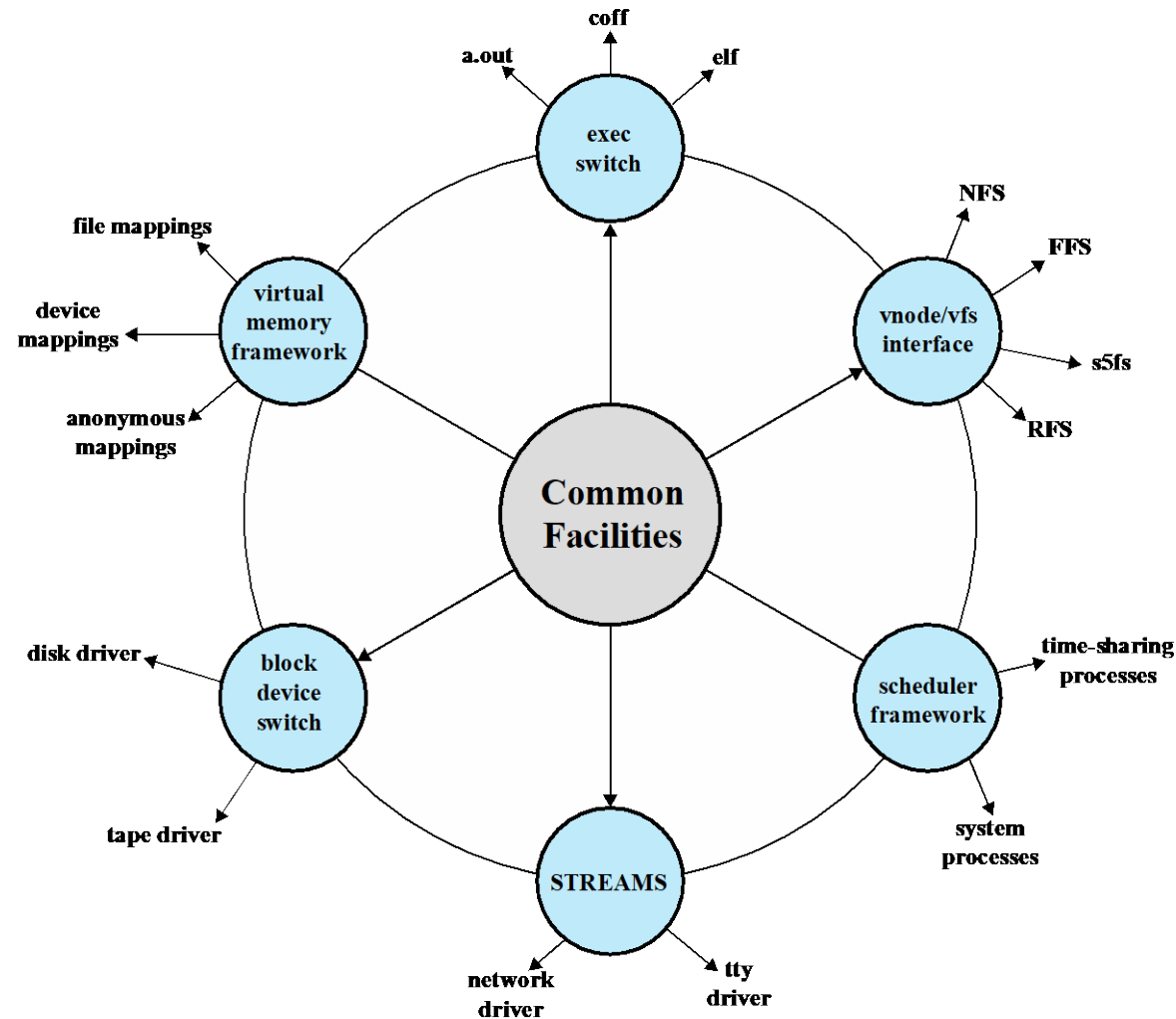- Highly modular and easily configured

Linux – 2017/18 – A. ALTAHER

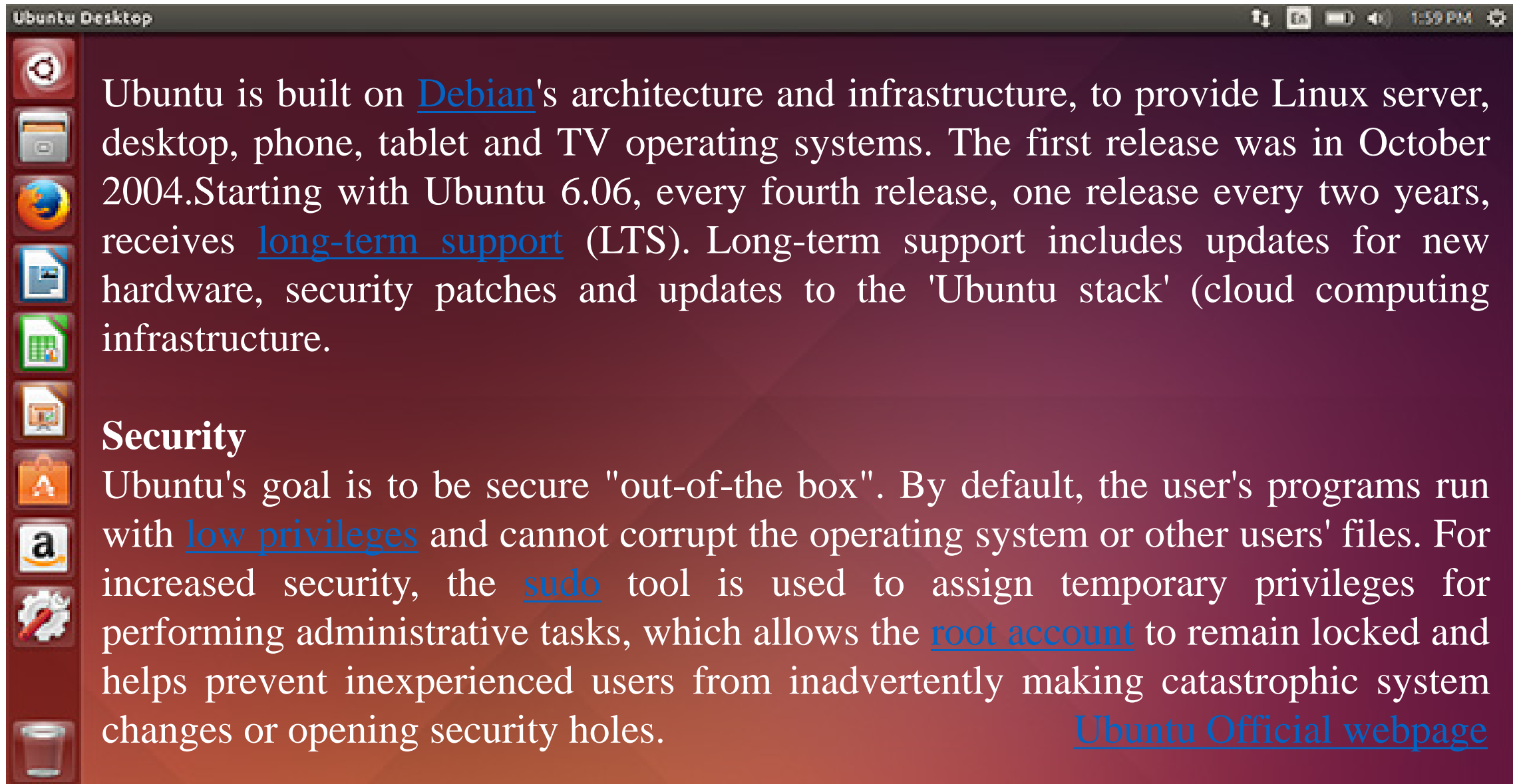**Figure 2.17   Modern UNIX Kernel [VAHA96]**

User Mode

- user program executes in user mode

- certain areas of memory are protected from user access

- certain instructions may not be executed

Kernel Mode

- monitor executes in kernel mode

- privileged (higher priority) instructions may be executed

- protected areas of memory may be accessed

Linux – 2017/18 – A. ALTAHER

The Debian Project was first announced in 1993 by **Ian Murdock**, Debian 0.01 was released on September 15, 1993,and the first stable release was made in 1996.

The Debian stable release branch is one of the most popular for personal computers and network servers, and has been used as a base for several other distributions.

Debian Official Webpage

Ubuntu is built on Debian's architecture and infrastructure, to provide Linux server, desktop, phone, tablet and TV operating systems. The first release was in October 2004.Starting with Ubuntu 6.06, every fourth release, one release every two years, receives long-term support (LTS). Long-term support includes updates for new hardware, security patches and updates to the 'Ubuntu stack' (cloud computing infrastructure.

Security

Ubuntu's goal is to be secure "out-of-the box". By default, the user's programs run with low privileges and cannot corrupt the operating system or other users' files. For increased security, the sudo tool is used to assign temporary privileges for performing administrative tasks, which allows the root account to remain locked and helps prevent inexperienced users from inadvertently making catastrophic system changes or opening security holes.

Ubuntu Official webpage

Linux – 2017/18 – A. ALTAHER

Youtube

https://www.youtube.com/watch?v=9t_gJWC32zk

Linux Handout & Tutorial

http://www.guru99.com/unix-linux-tutorial.html

William Knottenbelt Imperial college London 2001
http://www.doc.ic.ac.uk/~wjk/UnixIntro/index.html

WORLD OF ASIC 2014

http://www.asic-world.com/scripting/unix3.html

Linux – 2017/18 – A. ALTAHER

http://www.ee.surrey.ac.uk/Teaching/Unix/

http://www.ugu.com/sui/ugu/show?help.beginners

http://en.wikipedia.org/wiki/Unix

Linux – 2017/18 – A. ALTAHER