

LINUX ESSENTIALS OBJECTIVE STUDY GUIDE

Topic 1: The Linux Community and a Career in Open Source

1.1 Linux Evolution & Popular Operating Systems

(Test Weight: 2)

Description: Knowledge of Linux development and major distributions.

Key Knowledge Areas:

- Distributions
- Embedded Systems
- Linux in the Cloud

Used files, terms and utilities:

- | | |
|----------------|--------------------|
| • Debian | • Linux Mint |
| • Ubuntu (LTS) | • Scientific Linux |
| • CentOS | • Raspberry Pi |
| • openSUSE | • Raspbian |
| • SUSE | • Android |
| • Red Hat | |

1.2 Major Open Source Applications

(Test Weight: 2)

Description: Awareness of major applications as well as their uses and development.

Key Knowledge Areas:

- Desktop applications
- Server applications
- Development languages
- Package management tools and repositories

Used files, terms and utilities:

- | | |
|------------------|--------------|
| • OpenOffice.org | • Samba |
| • LibreOffice | • C |
| • Thunderbird | • Java |
| • Firefox | • JavaScript |
| • GIMP | • Perl |
| • Nextcloud | • Shell |
| • ownCloud | • Python |
| • Apache (HTTPD) | • PHP |
| • NGINX | • dpkg |
| • MariaDB | • apt-get |
| • MySQL | • rpm |
| • NFS | • yum |

1.3 Open Source Software and Licensing

(Test Weight: 1)

Description: Open communities and licensing Open Source Software for business.

Key Knowledge Areas:

- Open source philosophy
- Open source licensing
- Free Software Foundation (FSF)
- Open Source Initiative (OSI)

Used files, terms and utilities:

- | | |
|--------------------|-------------------------------|
| • Copyleft | • Open Source Software |
| • Permissive | • FOSS |
| • GPL | • FLOSS |
| • BSD | • Open Source Business Models |
| • Creative Commons | |
| • Free Software | |

1.4 ICT Skills and Working in Linux

(Test Weight: 2)

Description: Basic Information and Communication Technology (ICT) skills and working in Linux.

Key Knowledge Areas:

- Desktop skills
- Getting to the command line
- Industry uses of Linux, cloud computing and virtualization

Used files, terms and utilities:

- | | |
|--------------------|------------------------|
| • Using a Browser | • Terminal/Console |
| • Privacy concerns | • Password issues |
| • Config Options | • Privacy tools |
| • Saving content | • Use apps in projects |

Topic 2: Finding Your Way on a Linux System

2.1 Command Line Basics

(Test Weight: 3)

Description: Basics of using the Linux command line.

Key Knowledge Areas:

- Basic shell
- Command line syntax
- Variables
- Quoting

Used files, terms and utilities:

- | | |
|-----------|-----------------|
| • Bash | • Path variable |
| • Echo | • Export |
| • History | • Type |

2.2 Using the Command Line to Get Help

(Test Weight: 2)

Description: Running help commands and navigation of the various help systems.

Key Knowledge Areas:

- Man pages
- Info pages

Used files, terms and utilities:

- | | |
|--------|-------------------|
| • man | • /usr/share/doc/ |
| • info | • locate |

2.3 Using Directories and Listing Files

(Test Weight: 2)

Description: Navigation of home and system directories and listing files in various locations.

Key Knowledge Areas:

- | | |
|----------------|---------------------|
| • Files | • Hidden |
| • Directories | Directories |
| • Hidden Files | • Home Directories |
| • Hidden | • Absolute/Relative |
| Directories | paths |

Used files, terms and utilities:

- | | |
|----------------------|------------|
| • ls options | • . and .. |
| • Recursive listings | • home & ~ |
| • cd | |

2.4 Creating, Moving and Deleting Files

(Test Weight: 2)

Description: Create, move and delete files and directories under the home directory.

Key Knowledge Areas:

- Files and directories
- Case sensitivity
- Simple globbing

Used files, terms and utilities:

- | | |
|------|---------|
| • mv | • touch |
| • cp | • mkdir |
| • rm | • rmdir |

Topic 3: The Power of the Command Line

3.1 Archiving Files on the Command Line

(Test Weight: 2)

Description: Archiving files in the user home directory.

Key Knowledge Areas:

- Files
- Directories
- Archives
- Compression

Used files, terms and utilities:

- | | |
|---------------|---------|
| • Tar | • Xz |
| • Tar options | • Zip |
| • Gzip | • Unzip |
| • Bzip2 | |

3.2 Searching and Extracting Data from Files

(Test Weight: 3)

Description: Search and extract data from files in the home directory.

Key Knowledge Areas:

- Command line pipes
- I/O redirection
- Regular Expressions using `.` `[]` `*` `?`

Used files, terms and utilities:

- | | |
|--------------------|--------|
| • grep | • sort |
| • less | • cut |
| • cat (head, tail) | • wc |

3.3 Turning Commands into a Script

(Test Weight: 4)

Description: Turning repetitive commands into simple scripts.

Key Knowledge Areas:

- Basic shell scripting
- Awareness of common text editors (vi and nano)

Used files, terms and utilities:

- | | |
|-----------------------------|---------------|
| • <code>#!</code> (shebang) | • For loops |
| • <code>/bin/bash</code> | • Echo |
| • Variables | • Exit Status |
| • Arguments | |

Topic 4: The Linux Operating System

4.1 Choosing an Operating System

(Test Weight: 1)

Description: Knowledge of major operating systems and Linux distributions.

Key Knowledge Areas:

- Differences between Windows
- OS X and Linux
- Distribution life cycle management

Used files, terms and utilities:

- | | |
|------------------|----------------------|
| • GUI vs. CLI | • Maintenance cycles |
| • Desktop config | • Beta & Stable |

4.2 Understanding Computer Hardware

(Test Weight: 2)

Description: Familiarity with the components that go into building desktop and server computers.

Key Knowledge Areas:

- Hardware

Used files, terms and utilities:

- | | |
|------------------|---------------|
| • Motherboards | • Hard drives |
| • CPUs | • SSD |
| • Power supplies | • Partitions |
| • Optical drives | • /dev/sd* |
| • Peripherals | • Drivers |

4.3 Where Data is Stored

(Test Weight: 3)

Description: Where various types of information are stored on a Linux system.

Key Knowledge Areas:

- Programs and configuration
- Processes
- Memory addresses
- System messaging
- Logging

Used files, terms and utilities:

- | | |
|----------|-------------|
| • ps | • /etc/ |
| • top | • /var/log/ |
| • free | • /boot/ |
| • syslog | • /proc/ |
| • dmesg | • /dev/ |
| | • /sys/ |

4.4 Your Computer on the Network

(Test Weight: 2)

Description: Querying vital networking configuration and determining the basic requirements for a computer on a Local Area Network (LAN).

Key Knowledge Areas:

- | | |
|------------|------------------------------|
| • Internet | • Querying DNS client config |
| • Network | • Querying network config |
| • Routers | |

Used files, terms and utilities:

- | | |
|-----------------|--------------------|
| • route | • ping |
| • Ip route show | • host |
| • Ifconfig | • netstat |
| • Ip addr show | • Ss |
| • IPV4 | • /etc/resolv.conf |
| • IPV6 | • /etc/hosts |

Topic 5: Security and File Permissions

5.1 Basic Security and Identifying User Types

(Test Weight: 2)

Description: Various types of users on a Linux system.

Key Knowledge Areas:

- Root and standard users
- System users

Used files, terms and utilities:

- | | |
|---------------|--------|
| • /etc/passwd | • who |
| • /etc/shadow | • w |
| • /etc/group | • sudo |
| • ID | • su |
| • last | |

5.2 Creating Users and Groups

(Test Weight: 2)

Description: Creating users and groups on a Linux system.

Key Knowledge Areas:

- User and group commands
- User IDs

Used files, terms and utilities:

- | | |
|---------------|------------|
| • /etc/passwd | • useradd |
| • /etc/shadow | • groupadd |
| • /etc/group | • passwd |
| • /etc/skel/ | |

5.3 Managing File Permissions and Ownership

(Test Weight: 2)

Description: Understanding and manipulating file permissions and ownership settings.

Key Knowledge Areas:

- File and directory permissions and ownership

Used files, terms and utilities:

- | | |
|---------|---------|
| • ls -l | • chmod |
| • ls -a | • chown |

5.4 Special Directories and Files

(Test Weight: 1)

Description: Special directories and files on a Linux system including special permissions.

Key Knowledge Areas:

- Using temporary files and directories
- Symbolic links

Used files, terms and utilities:

- | | |
|--------------|---------|
| • /tmp/ | • ls -d |
| • /var/tmp/ | • ln -s |
| • Sticky Bit | |