

LPIC-1[®]

LINUX PROFESSIONAL INSTITUTE CERTIFICATION

PRACTICE TESTS

Second Edition

EXAM 101-500 AND EXAM 102-500

Provides 1,000 practice questions
covering all exam objectives.

Complements the *LPIC-1 Linux Professional
Institute Certification Study Guide, Fifth Edition.*

STEVE SUEHRING

 **SYBEX**[®]
A Wiley Brand

LPIC-1[®]

Linux Professional Institute Certification

Practice Tests

Second Edition



Steven Suehring

 **SYBEX**[®]
A Wiley Brand

Copyright © 2020 by John Wiley & Sons, Inc., Indianapolis, Indiana

Published simultaneously in Canada

ISBN: 978-1-119-61109-7

ISBN: 978-1-119-61114-1 (ebk.)

ISBN: 978-1-119-61113-4 (ebk.)

Manufactured in the United States of America

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at <http://www.wiley.com/go/permissions>.

Limit of Liability/Disclaimer of Warranty: The publisher and the author make no representations or warranties with respect to the accuracy or completeness of the contents of this work and specifically disclaim all warranties, including without limitation warranties of fitness for a particular purpose. No warranty may be created or extended by sales or promotional materials. The advice and strategies contained herein may not be suitable for every situation. This work is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional services. If professional assistance is required, the services of a competent professional person should be sought. Neither the publisher nor the author shall be liable for damages arising herefrom. The fact that an organization or Web site is referred to in this work as a citation and/or a potential source of further information does not mean that the author or the publisher endorses the information the organization or Web site may provide or recommendations it may make. Further, readers should be aware that Internet Web sites listed in this work may have changed or disappeared between when this work was written and when it is read.

For general information on our other products and services or to obtain technical support, please contact our Customer Care Department within the U.S. at (877) 762-2974, outside the U.S. at (317) 572-3993 or fax (317) 572-4002.

Wiley publishes in a variety of print and electronic formats and by print-on-demand. Some material included with standard print versions of this book may not be included in e-books or in print-on-demand. If this book refers to media such as a CD or DVD that is not included in the version you purchased, you may download this material at <http://booksupport.wiley.com>. For more information about Wiley products, visit www.wiley.com.

Library of Congress Control Number: 2019949012

TRADEMARKS: Wiley, the Wiley logo, and the Sybex logo are trademarks or registered trademarks of John Wiley & Sons, Inc. and/or its affiliates, in the United States and other countries, and may not be used without written permission. ITIL is a registered trademark of Axelos Limited. All other trademarks are the property of their respective owners. John Wiley & Sons, Inc. is not associated with any product or vendor mentioned in this book.

Acknowledgments

Book writing tends to take attention away from other things in life. As I write this and look at the overgrown jungle that is my backyard, it's time to reflect and to find another project so I don't have to deal with whatever type of vine has taken over my shed and is creeping towards the house.

Thank you first to Kenyon Brown and Carole Jelen for this (and other) projects. Thank you also to the editors for this book, Kezia Endsley and David Clinton. Their expertise and diligence is essential in order to make the book the best it can be. Thank you to my family for their continued support. My colleagues at University of Wisconsin- Stevens Point help provide guidance and comic relief at times too.

As is the case for many books now, thank you to Jim, Patti, Tim, and Rob at Partners Pub. Thank you also to Kent Laabs for his generosity and continued help.

About the Author

Steve Suehring is an assistant professor of computing and new media technologies at University of Wisconsin—Stevens Point. Prior to joining the faculty in 2015, Steve gained 20 years of field experience in a variety of technical engineering, system and network administration, and system architectural roles. Steve has written several books and has served as an editor for *LinuxWorld* magazine.

Contents

<i>Introduction</i>		<i>vii</i>
Part I	Exam 101-500	1
Chapter 1	Topic 101: System Architecture	3
Chapter 2	Topic 102: Linux Installation and Package Management	21
Chapter 3	Topic 103: GNU and UNIX Commands	41
Chapter 4	Topic 104: Devices, Linux Filesystems, Filesystem Hierarchy Standard	63
Part II	Exam 102-500	83
Chapter 5	Topic 105: Shells and Shell Scripting	85
Chapter 6	Topic 106: User Interfaces and Desktops	103
Chapter 7	Topic 107: Administrative Tasks	121
Chapter 8	Topic 108: Essential System Services	139
Chapter 9	Topic 109: Networking Fundamentals	157
Chapter 10	Topic 110: Security	175
Part III	Practice Exams	193
Chapter 11	Practice Exam 1	195
Chapter 12	Practice Exam 2	207
Appendix	Answers to Review Questions	219
<i>Index</i>		<i>293</i>

Introduction

This book provides practice questions for the Linux Professional Institute LPIC-1 certification. Specifically, the book has been updated to reflect the objectives for exams 101-500 and 102-500. The book includes numerous multiple-choice questions related to the exam objectives found on the LPI website.

What Does This Book Cover?

Each chapter of the book connects directly to one of the objectives, and each objective is covered throughout the book. In addition, two practice exams are included in the book that you should find helpful in preparing for the exams.

The book does not require that you start at the beginning and read through in a linear, page-by-page manner. Rather, you may skip to objective areas that might be less familiar, and you can do so without losing any fidelity or missing something from a previous chapter.

Who Should Read This Book

It is assumed that you would have a companion text for this book in order to obtain deeper information on the given subjects for the exam. However, it is possible to use this book as a stand-alone means for preparation.

Here are some basic assumptions about the audience for this book:

- You have used Linux or are using the book to learn Linux.
- You have used a computer for basic operations.
- You will use the book as a means for practicing for the certification exams.

How to Use This Book

This book is best used as a tool for testing your knowledge in the objective domains specified for the exam. The book provides explanations for each question, including, where applicable, explanations as to why the other options were incorrect. Ideally, the book is used in conjunction with the companion text in order to fully explain the concepts.

Certification Exam Policies

The Linux Professional Institute outlines various policies related to certification and other similar matters. In addition, other policies applicable may be through the testing facility or organization. More information on some of the LPI policies can be found at www.lpi.org/policies.

Exam Objectives

The following lists contain the topics and weights for Exams 101 and 102. This list follows the sequence in which they are covered in the book. You can find more information about what is covered in each topic, including key knowledge areas and files, terms, and utilities, at the start of the applicable chapter.

Exam 101-500

Topic 101: System Architecture

- 101.1 Determine and configure hardware settings (weight 2).
- 101.2 Boot the system (weight 3).
- 101.3 Change runlevels/boot targets and shutdown or reboot system (weight 3).

Topic 102: Linux Installation and Package Management

- 102.1 Design hard disk layout (weight 2).
- 102.2 Install a boot manager (weight 2).
- 102.3 Manage shared libraries (weight 1).
- 102.4 Use Debian package management (weight 3).
- 102.5 Use RPM and YUM package management (weight 3).
- 102.6 Linux as a virtualization guest (weight 1)

Topic 103: GNU and UNIX Commands

- 103.1 Work on the command line (weight 4).
- 103.2 Process text streams using filters (weight 2).
- 103.3 Perform basic file management (weight 4).
- 103.4 Use streams, pipes, and redirects (weight 4).

- 103.5 Create, monitor, and kill processes (weight 4).
- 103.6 Modify process execution priorities (weight 2).
- 103.7 Search text files using regular expressions (weight 3).
- 103.8 Basic file editing 3

Topic 104: Devices, Linux Filesystems, Filesystem Hierarchy Standard

- 104.1 Create partitions and filesystems (weight 2).
- 104.2 Maintain the integrity of filesystems (weight 2).
- 104.3 Control mounting and unmounting of filesystems (weight 3).
- *104.4 Removed*
- 104.5 Manage file permissions and ownership (weight 3).
- 104.6 Create and change hard and symbolic links (weight 2).
- 104.7 Find system files and place files in the correct location (weight 2).

Exam 102-500

Topic 105: Shells and Shell Scripting

- 105.1 Customize and use the shell environment (weight 4).
- 105.2 Customize or write simple scripts (weight 4).

Topic 106: User Interfaces and Desktops

- 106.1 Install and configure X11 (weight 2).
- 106.2 Graphical desktops (weight 1)
- 106.3 Accessibility (weight 1)

Topic 107: Administrative Tasks

- 107.1 Manage user and group accounts and related system files (weight 5).
- 107.2 Automate system administration tasks by scheduling jobs (weight 4).
- 107.3 Localization and internationalization (weight 3)

Topic 108: Essential System Services

- 108.1 Maintain system time (weight 3).
- 108.2 System logging (weight 4)
- 108.3 Mail Transfer Agent (MTA) Basics (weight 3)
- 108.4 Manage printers and printing (weight 2).

Topic 109: Networking Fundamentals

- 109.1 Fundamentals of Internet protocols (weight 4)
- 109.2 Persistent network configuration (weight 4)
- 109.3 Basic network troubleshooting (weight 4)
- 109.4 Configure client-side DNS (weight 2).

Topic 110: Security

- 110.1 Perform security administration tasks (weight 3).
- 110.2 Set up host security (weight 3).
- 110.3 Securing data with encryption (weight 4)

Exam 101-500

PART

I



Chapter 1

Topic 101: System Architecture

THE FOLLOWING EXAM OBJECTIVES ARE COVERED IN THIS CHAPTER:

✓ 101.1 Determine and configure hardware settings.

- Key knowledge areas:
 - Enable and disable integrated peripherals.
 - Differentiate between the various types of mass storage devices.
 - Determine hardware resources for devices.
 - Tools and utilities to list various hardware information (e.g. `lsusb`, `lspci`, etc.)
 - Tools and utilities to manipulate USB devices
 - Conceptual understanding of `sysfs`, `udev`, and `dbus`
- The following is a partial list of the used files, terms, and utilities:
 - `/sys/`
 - `/proc/`
 - `/dev/`
 - `modprobe`
 - `lsmod`
 - `lspci`
 - `lsusb`

✓ 101.2 Boot the system.

- Key knowledge areas:
 - Provide common commands to the boot loader and options to the kernel at boot time.
 - Demonstrate knowledge of the boot sequence from BIOS/UEFI to boot completion.



- Understand SysV init and systemd.
 - Awareness of Upstart
 - Check boot events in the log files.
 - The following is a partial list of the used files, terms, and utilities:
 - dmesg
 - journalctl
 - BIOS
 - UEFI
 - bootloader
 - kernel
 - initramfs
 - init
 - SysV init
 - systemd
- ✓ **101.3 Change runlevels/boot targets and shut down or reboot system.**
- Key knowledge areas:
 - Set the default runlevel or boot target.
 - Change between runlevels/boot targets including single-user mode.
 - Shut down and reboot from the command line.
 - Alert users before switching runlevels/boot targets or other major system events.
 - Properly terminate processes.
 - Awareness of acpid
 - The following is a partial list of the used files, terms, and utilities:
 - /etc/inittab
 - shutdown
 - init
 - /etc/init.d/



- telinit
- systemd
- systemctl
- /etc/systemd/
- /usr/lib/systemd/
- wall

1. Which of the following commands is used to view kernel-related udev events in real time?
 - A. `udevls all`
 - B. `lsudev -f`
 - C. `udevmon -a`
 - D. `udevadm monitor`
2. Which command enables you to view the current interrupt request (IRQ) assignments?
 - A. `view /proc/irq`
 - B. `cat /proc/interrupts`
 - C. `cat /dev/irq`
 - D. `less /dev/irq`
3. Configuration of udev devices is done by working with files in which directory?
 - A. `/udev/devices`
 - B. `/devices/`
 - C. `/udev/config`
 - D. `/etc/udev`
4. Which command is used to automatically load a module and its dependencies?
 - A. `modprobe`
 - B. `lsmod`
 - C. `insmod`
 - D. `rmmod`
5. Which command is used to obtain a list of USB devices?
 - A. `usb-list`
 - B. `lsusb`
 - C. `ls-usb`
 - D. `ls --usb`
6. When working with hotplug devices, you need to gather more information about them through udevadm. Which udevadm command enables you to query the udev database for information on a device?
 - A. `query`
 - B. `info`
 - C. `getinfo`
 - D. `devinfo`

7. Which command can be used to view the kernel ring buffer in order to troubleshoot the boot process?
 - A. lsboot
 - B. boot-log
 - C. krblog
 - D. dmesg
8. During the initialization process for a Linux system using SysV `init`, which runlevel corresponds to single-user mode?
 - A. Runlevel 5
 - B. Runlevel SU
 - C. Runlevel 1
 - D. Runlevel 6
9. On a system using SysV `init`, in which directory are the startup and shutdown scripts for services stored?
 - A. `/etc/init-d`
 - B. `/etc/init`
 - C. `/etc/sysV`
 - D. `/etc/init.d`
10. Which command can be used to reboot a system?
 - A. `init 6`
 - B. `shutdown -h -t now`
 - C. `init 1`
 - D. `refresh-system`
11. When using an SysV `init`-based system, which command would you use if you make changes to the `/etc/inittab` file and want those changes to be reloaded without a reboot?
 - A. `init-refresh`
 - B. `init 6`
 - C. `telinit`
 - D. `reload-inittab`
12. Which command displays the current runlevel for a system?
 - A. `show-level`
 - B. `init --level`
 - C. `sudo init`
 - D. `runlevel`

13. Within which folder are systemd unit configuration files stored?
 - A. /etc/system.conf.d
 - B. /lib/system.conf.d
 - C. /lib/systemd/system
 - D. /etc/sysconfd
14. Which command is used with systemd in order to list the available service units?
 - A. systemd list-units
 - B. systemctl list-units
 - C. systemd unit-list
 - D. systemctl show-units
15. Which option to lspci is used to display both numeric codes and device names?
 - A. -numdev
 - B. -n
 - C. -nn
 - D. -devnum
16. Which command can be used to obtain a list of currently loaded kernel modules?
 - A. insmod
 - B. modlist
 - C. ls --modules
 - D. lsmod
17. Which option to the modprobe command shows the dependencies for a given module?
 - A. --show-options
 - B. --list-deps
 - C. --show-depend
 - D. --list-all
18. Which command can you use to send a message to all users who are currently logged into a system?
 - A. cat
 - B. wall
 - C. tee
 - D. ssh
19. Which of the following is a good first troubleshooting step when a hard disk is not detected by the Linux kernel?
 - A. Unplug the disk.
 - B. Check the system BIOS.

- C. Restart the web server service.
 - D. Run the `disk-detect` command.
20. Within which directory is information about USB devices stored?
- A. `/etc/usbdevices`
 - B. `/var/usb`
 - C. `/lib/sys/usb`
 - D. `/sys/bus/usb/devices`
21. If the kernel ring buffer has been overwritten, within which file can you look to find boot messages?
- A. `/var/log/bootmessages`
 - B. `/var/log/mail.info`
 - C. `/var/adm/log/boot.info`
 - D. `/var/log/dmesg`
22. Which command and option can be used to determine whether a given service is currently loaded?
- A. `systemctl --ls`
 - B. `telinit`
 - C. `systemctl status`
 - D. `sysctl -a`
23. Which command on a systemd-controlled system would place the system into single-user mode?
- A. `systemctl one`
 - B. `systemctl isolate rescue.target`
 - C. `systemctl single-user`
 - D. `systemctl runlevel one`
24. Which command on a system controlled by Upstart will reload the configuration files?
- A. `initctl reload`
 - B. `systemd reload`
 - C. `upstart --reload`
 - D. `ups -reload`
25. When working with a SysV system, which option to `chkconfig` will display all services and their runlevels?
- A. `--reload`
 - B. `--list`
 - C. `--all`
 - D. `--ls`

26. A drive connected to USB is considered which type of device?
- A. Medium
 - B. Coldplug
 - C. Hotplug
 - D. Sideplug
27. The system is using a temporary flash USB disk for data mounted at `/dev/sda1`. You need to remove the disk. Which of the following commands will enable the disk to be safely removed from the system?
- A. `usbstop /dev/sda`
 - B. `umount /dev/sda1`
 - C. `unmount /dev/sda1`
 - D. `dev-eject /dev/sda1`
28. You have connected a USB disk to the system and need to find out its connection point within the system. Which of the following is the best method for accomplishing this task?
- A. Rebooting the system
 - B. Viewing the contents of `/var/log/usb.log`
 - C. Connecting the drive to a USB port that you know the number of
 - D. Running `dmesg` and looking for the disk
29. Which of the following commands will initiate an immediate shutdown of the system?
- A. `shutdown -c`
 - B. `halt`
 - C. `systemd stop`
 - D. `stop-system`
30. Which option within a `systemd` service file indicates the program to execute?
- A. `StartProgram`
 - B. `ShortCut`
 - C. `ExecStart`
 - D. `Startup`
31. Which command will display the default target on a computer running `systemd`?
- A. `systemctl defaults`
 - B. `update-rc.d defaults`
 - C. `systemctl runlevel`
 - D. `systemctl get-default`

32. Which option to the `systemctl` command will change a service so that it runs on the next boot of the system?
- A. `enable`
 - B. `startonboot`
 - C. `loadonboot`
 - D. `start`
33. Which of the following best describes the `/proc` filesystem?
- A. `/proc` contains information about files to be processed.
 - B. `/proc` contains configuration files for processes.
 - C. `/proc` contains information on currently running processes, including the kernel.
 - D. `/proc` contains variable data such as mail and web files.
34. Which command will retrieve information about the USB connections on a computer in a tree-like format?
- A. `lsusb -tree`
 - B. `lsusb --tree`
 - C. `lsusb -t`
 - D. `usblist --tree`
35. What is one reason why a device driver does not appear in the output of `lsmod`, even though the device is loaded and working properly?
- A. The use of `systemd` means that drivers are not required for most devices.
 - B. The use of `initramfs` means that support is enabled by default.
 - C. The system does not need a driver for the device.
 - D. Support for the device has been compiled directly into the kernel.
36. Which option to `rmod` will cause the module to wait until it's no longer in use to unload the module?
- A. `-test`
 - B. `-f`
 - C. `-w`
 - D. `-unload`
37. You are using a storage area network (SAN) that keeps causing errors on your Linux system due to an improper kernel module created by the SAN vendor. When the SAN sends updates, it causes the filesystem to be mounted as read-only. Which command and option can you use to change the behavior of the filesystem to account for the SAN bug?
- A. `mount --continue`
 - B. `tune2fs -e continue`
 - C. `mkfs --no-remount`
 - D. `mount -o remount`

38. Within which directory are rules related to udev stored?
- A. /etc/udev.conf
 - B. /etc/udev.conf.d
 - C. /etc/udev/rules.d
 - D. /etc/udev.d
39. Which option to `lspci` displays the kernel driver in use for the given Peripheral Component Interconnect (PCI) device?
- A. -t
 - B. -k
 - C. -n
 - D. -a
40. Within which of the following directories will you find blacklist information for modules loaded with `modprobe`?
- A. /etc/blacklist
 - B. /etc/modprobe.d
 - C. /etc/blacklist.mod
 - D. /etc/modprobe
41. When working with a CentOS 6 system, which command is used to create the initial RAM disk?
- A. `mkinit`
 - B. `dracut`
 - C. `mkraminit`
 - D. `mkinitfs`
42. Within which file will you find a list of the currently available kernel symbols?
- A. /proc/kernelsyms
 - B. /etc/kernel.conf
 - C. /etc/lsyms
 - D. /proc/kallsyms
43. Which of the following commands can be used to show the various information related to a currently loaded module, including core size and settings for options?
- A. `systool -v -m <module>`
 - B. `modinfo -r <module>`
 - C. `lsmod <module>`
 - D. `infmod <module>`

44. Which directory contains various elements and configuration information about the kernel such as the release number, domain name, location of modprobe, and other settings?
- A. `/proc/sys/kmod`
 - B. `/proc/sys/kernel`
 - C. `/proc/kernel`
 - D. `/proc/kernel/sys`
45. Within which directory should systemd unit files that you create be stored?
- A. `/etc/system`
 - B. `/etc/systemd/system`
 - C. `/usr/share/systemd`
 - D. `/usr/share/system`
46. Which of the following commands should you execute after making changes to systemd service configurations in order for those changes to take effect?
- A. `systemd reload`
 - B. `reboot`
 - C. `systemctl daemon-reload`
 - D. `systemctl reboot`
47. Which of the following files contains the runlevels for the system along with a reference to the corresponding rc file?
- A. `/etc/runlevels`
 - B. `/etc/inittab`
 - C. `/etc/rc`
 - D. `/etc/runlevel`
48. Which boot loader can be used for File Allocation Table (FAT) filesystems and might be used for a rescue disk?
- A. SYSBOOT
 - B. SYSLINUX
 - C. TIELINUX
 - D. FATLINUX
49. Which of the following is used to provide an early filesystem-based loading process for key drivers needed to continue the boot process?
- A. `bootrd`
 - B. `driverload`
 - C. `initrd`
 - D. `initdrv`

50. When booting a system you receive an error similar to "No init found" and are then placed at an `initramfs` prompt. You need to check the hard drive for errors. Which of the following commands performs an error check on a hard drive partition in Linux?
- A. `defrag`
 - B. `fsck`
 - C. `checkfs`
 - D. `chkfs`
51. Which of the following commands places the system in single-user mode?
- A. `tellinit 1`
 - B. `chginit 1`
 - C. `telinet 1`
 - D. `telinit 1`
52. Which of the following commands changes the boot order for the next boot?
- A. `efibootmgr -c`
 - B. `efibootmgr -b -B`
 - C. `efibootmgr -o`
 - D. `efibootmgr -n`
53. Which boot loader can be used with ISO9660 CD-ROMS?
- A. ISOLINUX
 - B. EFIBOOT
 - C. ISOFS
 - D. BOOTISO
54. Within which directory are `systemd` user unit files placed by installed packages?
- A. `/usr/lib/systemd/user`
 - B. `/usr/lib/systemd/system`
 - C. `/usr/systemd`
 - D. `/usr/system`
55. When using Unified Extensible Firmware Interface (UEFI), which of the following files can be used as a boot loader?
- A. `shim.uefi`
 - B. `shim.efi`
 - C. `shim.fx`
 - D. `efi.shim`

56. Which directory on a SysV `init`-based system contains scripts that are used for starting and stopping services?
- A. `/etc/rc.int`
 - B. `/etc/boot`
 - C. `/etc/bootscripts`
 - D. `/etc/init.d`
57. Which of the following commands is used to find overriding configuration files on a `systemd`-based system?
- A. `diff`
 - B. `systemctl -diff`
 - C. `systemd-delta`
 - D. `systemctl configoverride`
58. Which of the following commands on a Red Hat system lists all of the SysV services set to be executed on boot along with their setting for each runlevel?
- A. `rlevel`
 - B. `chkconfig --list`
 - C. `bootldr --list`
 - D. `init --bootlist`
59. Which of the following commands, executed from within the UEFI shell, controls the boot configuration?
- A. `bootcfg`
 - B. `bcfg`
 - C. `grub-install`
 - D. `grcfg`
60. Which file must exist within `/tftpboot` on the Trivial File Transfer Protocol (TFTP) server for a system that will use PXELINUX for its boot loader?
- A. `pxelinux.tftp`
 - B. `pxelinux.boot`
 - C. `pxelinux.conf`
 - D. `pxelinux.0`
61. Which utility can you use on a Debian or Ubuntu system to manage SysV `init` scripts, such as setting them to run on boot?
- A. `bootorder`
 - B. `bootloader`
 - C. `configchk`
 - D. `update-rc.d`

62. Which key, pressed during the operating system selection menu, is used to enable editing of the parameters related to boot with GRUB?
- A. v
 - B. e
 - C. r
 - D. y
63. Which `systemctl` subcommand is used to switch runlevels?
- A. switch
 - B. move
 - C. runlevel
 - D. isolate
64. When examining the `/etc/inittab` file, which option signifies the default runlevel to which the system will boot?
- A. default
 - B. defaultboot
 - C. initdefault
 - D. defaultlvl
65. Which of the following is used instead of `initrd` to provide an early filesystem for essential drivers?
- A. `initnext`
 - B. `initramfs`
 - C. `initialize`
 - D. `initfs`
66. Which of the following commands sets the default `systemd` target to `multi-user`?
- A. `systemctl set-default multi-user.target`
 - B. `systemd set-default multi-user.target`
 - C. `systemctl set-def muser.target`
 - D. `systemd set-def muser.target`
67. When using a shim for booting a UEFI-based system, which of the following files is loaded after `shim.efi`?
- A. `grubx64.cfg`
 - B. `grub.conf`
 - C. `grubx64.efi`
 - D. `efi.boot`

68. Within which hierarchy are files from `/etc/init.d` linked so that the files are executed during the various runlevels of a SysV system?
- A. `/etc/rc.S`
 - B. `/etc/rc`
 - C. `/etc/boot/rc`
 - D. `/etc/rc.d`
69. What is the name of the unit to which a systemd system is booted in order to start other levels?
- A. `default.target`
 - B. `init.target`
 - C. `initial.target`
 - D. `load.target`
70. When viewing information in `/dev/disk/by-path` using the command `ls -l`, which of the following filenames represents a logical unit number (LUN) from Fibre Channel?
- A. `/dev/fc0`
 - B. `pci-0000:1a:00.0-fc-0x500601653ee0025f:0x0000000000000000`
 - C. `pci-0000:1a:00.0-scsi-0x500601653ee0025f:0x0000000000000000`
 - D. `/dev/fibre0`
71. You have purchased new solid-state drive (SSD) hardware that uses the NVMe (Non-Volatile Memory Express) protocol but cannot find the disks in the normal `/dev/sd*` location in which you have traditionally found such storage. In which location should you look for these drives?
- A. `/dev/nd*`
 - B. `/dev/nvme*`
 - C. `/dev/nv*`
 - D. `/dev/nvme/*`
72. Which file contains information about the current md Redundant Array of Inexpensive Disks (RAID) configuration such as the personalities?
- A. `/proc/raidinfo`
 - B. `/proc/rhyinfo`
 - C. `/proc/mdraid`
 - D. `/proc/mdstat`

73. Which of the following directory hierarchies contains information such as the World Wide Name (WWN) for Fibre Channel?
- A. `/sys/class/wwn`
 - B. `/sys/class/fc_host`
 - C. `/sys/class/fclist`
 - D. `/sys/class/fc/wwn`
74. Information about logical volumes can be found in which of the following directories?
- A. `/dev/lvinfo`
 - B. `/dev/map`
 - C. `/dev/mapper`
 - D. `/dev/lvmap`
75. Which of the following commands will examine the PCI subsystem for NVMe-based devices?
- A. `psnvme`
 - B. `lsnvme`
 - C. `lspci | grep scsi`
 - D. `lspci | grep -i nvme`
76. Which of the following devices is the location of the first Small Computer System Interface (SCSI) tape device detected at boot?
- A. `/dev/st1`
 - B. `/dev/sd0`
 - C. `/dev/sd1`
 - D. `/dev/st0`
77. Which of the following files should be used to display a message to users prior to logging in locally?
- A. `/etc/loginmesg`
 - B. `/etc/logmessage.txt`
 - C. `/etc/issue`
 - D. `/etc/banner`
78. Which file contains a message that is displayed after a successful login?
- A. `/etc/loginbanner`
 - B. `/etc/issue`
 - C. `/etc/motd`
 - D. `/etc/message`