uCertify

Course Outline

A Practical Guide to Linux Commands, Editors, and Shell Programming

13 May 2024

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3. Exercises, Quizzes, Flashcards & Glossary

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4. Expert Instructor-Led Training
5. ADA Compliant & JAWS Compatible Platform
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Here's what you get

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1. Course Objective

Master the command-line interfaces of Linux and macOS with A Practical Guide to Linux Commands, Editors, and Shell Programming. This course offers step-by-step guidance, from fundamental concepts to advanced topics, enabling students, power users, professionals and programmers to unlock the full potential of Linux operating systems. This course equipped with Interactive lessons, testPreps and hands-on labs enhances the learning experience by providing a simulated learning environment.

2. Pre-Assessment

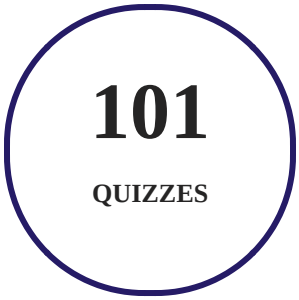
Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

3. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

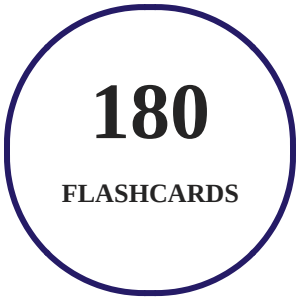
4. Quizzes

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



5. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



6. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.

7. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

8. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

9. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

10. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been

recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
    1. Best Postsecondary Learning Solution

- **2015**
    1. Best Education Solution
    2. Best Virtual Learning Solution
    3. Best Student Assessment Solution
    4. Best Postsecondary Learning Solution
    5. Best Career and Workforce Readiness Solution
    6. Best Instructional Solution in Other Curriculum Areas
    7. Best Corporate Learning/Workforce Development Solution

- **2016**
    1. Best Virtual Learning Solution
    2. Best Education Cloud-based Solution
    3. Best College and Career Readiness Solution
    4. Best Corporate / Workforce Learning Solution
    5. Best Postsecondary Learning Content Solution
    6. Best Postsecondary LMS or Learning Platform
    7. Best Learning Relationship Management Solution

- **2017**
    1. Best Overall Education Solution
    2. Best Student Assessment Solution
    3. Best Corporate/Workforce Learning Solution
    4. Best Higher Education LMS or Learning Platform

- **2018**
    1. Best Higher Education LMS or Learning Platform

2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**
  1. Best Virtual Learning Solution
  2. Best Content Authoring Development or Curation Solution
  3. Best Higher Education Learning Management Solution (LMS)

- **2020**
  1. Best College and Career Readiness Solution
  2. Best Cross-Curricular Solution
  3. Best Virtual Learning Solution

11. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Introduction

- Features of This Course
- Contents
- Supplements

Chapter 2: Welcome to Linux and macOS

- The History of UNIX and GNU–Linux
- What Is So Good About Linux?
- Overview of Linux
- Additional Features of Linux
- Lesson Summary
- Exercises

Chapter 3: Getting Started

- Conventions Used in This Course
- Logging In from a Terminal (Emulator)
- Working from the Command Line
- su/sudo: Curbing Your Power (root Privileges)
- Where to Find Documentation
- More About Logging In and Passwords
- Lesson Summary
- Exercises

Chapter 4: The Utilities

- Special Characters
- Basic Utilities
- Working with Files
- | (Pipeline): Communicates Between Processes
- Four More Utilities
- Compressing and Archiving Files
- Locating Utilities
- Displaying User and System Information
- Communicating with Other Users
- Email
- Lesson Summary
- Exercises

Chapter 5: The Filesystem

- The Hierarchical Filesystem
- Directory Files and Ordinary Files
- Pathnames

- Working with Directories
- Access Permissions
- ACLs: Access Control Lists
- Links
- Lesson Summary
- Exercises

Chapter 6: The Shell

- Special Characters
- Ordinary Files and Directory Files
- The Command Line
- Standard Input and Standard Output
- Running a Command in the Background
- Filename Generation/Pathname Expansion
- Builtins
- Lesson Summary
- Exercises

Chapter 7: The vim Editor

- History
- Tutorial: Using vim to Create and Edit a File
- Introduction to vim Features
- Command Mode: Moving the Cursor
- Input Mode
- Command Mode: Deleting and Changing Text
- Searching and Substituting
- Miscellaneous Commands
- Copying, Moving, and Deleting Text
- Reading and Writing Files
- Setting Parameters
- Advanced Editing Techniques
- Units of Measure
- Lesson Summary
- Exercises

Chapter 8: The emacs Editor

- History

- Tutorial: Getting Started with emacs
- Basic Editing Commands
- Online Help
- Advanced Editing
- Major Modes: Language-Sensitive Editing
- More Information
- Lesson Summary
- Exercises

Chapter 9: The Bourne Again Shell (bash)

- Background
- Startup Files
- Commands That Are Symbols
- Redirecting Standard Error
- Writing and Executing a Simple Shell Script
- Control Operators: Separate and Group Commands
- Job Control
- Manipulating the Directory Stack

- Parameters and Variables
- Special Characters
- Locale
- Time
- Processes
- History
- Aliases
- Functions
- Controlling bash: Features and Options
- Processing the Command Line
- Lesson Summary
- Exercises

Chapter 10: The TC Shell (tcsh)

- Shell Scripts
- Entering and Leaving the TC Shell
- Features Common to the Bourne Again and TC Shells
- Redirecting Standard Error

- Working with the Command Line
- Variables
- Control Structures
- Builtins
- Lesson Summary
- Exercises

Chapter 11: Programming the Bourne Again Shell (bash)

- Control Structures
- File Descriptors
- Parameters
- Variables
- Builtin Commands
- Expressions
- Implicit Command-Line Continuation
- Shell Programs
- Lesson Summary
- Exercises

Chapter 12: The Perl Scripting Language

- Introduction to Perl
- Variables
- Control Structures
- Working with Files
- Sort
- Subroutines
- Regular Expressions
- CPAN Modules
- Examples
- Lesson Summary
- Exercises

Chapter 13: The Python Programming Language

- Introduction
- Scalar Variables, Lists, and Dictionaries
- Control Structures

- Reading from and Writing to Files
- Regular Expressions
- Defining a Function
- Using Libraries
- Lesson Summary
- Exercises

Chapter 14: The MariaDB SQL Database Management System

- History
- Notes
- Installing a MariaDB Server and Client
- Client Options
- Setting Up MariaDB
- Creating a Database
- Adding a User
- Examples
- Lesson Summary
- Exercises

Chapter 15: The AWK Pattern Processing Language

- Syntax
- Arguments
- Options
- Notes
- Language Basics
- Examples
- Lesson Summary
- Exercises

Chapter 16: The sed Editor

- Syntax
- Arguments
- Options
- Editor Basics
- Examples
- Lesson Summary
- Exercises

Chapter 17: The rsync Secure Copy Utility

- Syntax
- Arguments
- Options
- Examples
- Lesson Summary
- Exercises

Chapter 18: The OpenSSH Secure Communication Utilities

- Introduction to OpenSSH
- Running the ssh, scp, and sftp OpenSSH Clients
- Setting Up an OpenSSH Server (sshd)
- Troubleshooting
- Tunneling/Port Forwarding
- Lesson Summary
- Exercises

Chapter 19: Command Reference

- Utilities That Display and Manipulate Files
- Network Utilities
- Utilities That Display and Alter Status
- Utilities That Are Programming Tools
- Miscellaneous Utilities
- Standard Multiplicative Suffixes
- Common Options
- The sample Utility

Chapter 20: Appendix A: Regular Expressions

- Characters
- Delimiters
- Simple Strings
- Special Characters
- Rules
- Bracketing Expressions
- The Replacement String
- Extended Regular Expressions

- Appendix Summary

Chapter 21: Appendix B: Help

- Solving a Problem
- Finding Linux and macOS Related Information
- Specifying a Terminal

Chapter 22: Appendix C: Keeping the System Up-to-Date

- Using dnf
- Using apt-get
- BitTorrent

Chapter 23: Appendix D: macOS Notes

- Open Directory
- Filesystems
- Extended Attributes
- Activating The Terminal META Key
- Startup Files
- Remote Logins

- Many Utilities Do Not Respect Apple Human Interface Guidelines
- Installing Xcode and MacPorts
- macOS Implementation of Linux Features

12. Practice Test

Here's what you get

100	100
PRE-ASSESSMENTS QUESTIONS	POST-ASSESSMENTS QUESTIONS

Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

13. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

Getting Started

- Using the man, apropros, and whatis Utilities
- Changing the User's Password

The Utilities

- Using Basic Linux Utilities
- Working with Files
- Using echo, date, script, and unix2dos Utilities
- Using the tar Command in Linux
- Compressing and Decompressing a File
- Locating Utilities in Linux
- Displaying User and System Information

The Filesystem

- Working with Directories

- Changing and Displaying Permission
- Using ACL in Linux
- Dereferencing Symbolic Links Using chgrp
- Removing a Link
- Creating a Symbolic Link
- Creating a Hard Link

The Shell

- Using the noclobber and pipeline Features
- Redirecting Standard Input/Output
- Using the cat Utility
- Running a Job

The vim Editor

- Using vim to Create and Edit a File

The Bourne Again Shell (bash)

- Writing and Executing a Simple Shell Script
- Using Control Operators in Linux
- Manipulating the Directory Stack
- Assigning Attributes to Variables Using the declare Builtin
- Declaring and Initializing a Variable for a Script
- Displaying Locale Information
- Working with Timezones
- Managing Processes in Linux
- Using the history Command
- Using Aliases
- Creating a Function
- Using Command-Line Expansion

The TC Shell (tcsh)

- Entering and Leaving the TC Shell

- Creating and Running a Perl Program

Programming the Bourne Again Shell (bash)

- Using Builtin Commands in Linux

The Perl Scripting Language

- Using Variable in Perl
- Control Structures in Perl
- Using Sort
- Using Subroutines
- Using Regular Expression

The Python Programming Language

- Using Python Builtin Data Types
- Working with Regular Expression in Python
- Using Python Libraries

The MariaDB SQL Database Management System

- Installing a MariaDB Server and Client
- Setting Up MariaDB
- Creating a Database and Adding a User to It

The AWK Pattern Processing Language

- Using the gawk Utility

The sed Editor

- Using the sed Utility

The rsync Secure Copy Utility

- Using the rsync Utility

Here's what you get

50	50	42
LIVE LABS	VIDEO TUTORIALS	MINUTES

14. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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