AUG 2024

LINUX FUNDAMENTALS PART 1

TRYHACKME EXPERIENCE REPORT

MODULE 9:CATCH THE FLAG(CTF)

Prepared by: Keerthi TR

Approved by: Ayush Singh

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INTRODUCTION

- Overview of TryHackMe: TryHackMe is an online platform that provides cybersecurity training through hands-on labs and challenges.
- Objective of the Report: This report details my experience with the "Linux Fundamentals Part 1" room on TryHackMe, including steps taken, challenges faced, and lessons learned.
- Personal Goals: Enhance my understanding of Linux operating systems, improve command-line proficiency, and strengthen foundational knowledge for cybersecurity tasks.

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INITIAL SETUP

- Account Creation and Setup: Created an account on TryHackMe and configured my profile. Ensured my environment was set up with necessary tools such as a VPN and a virtual machine running a Linux distribution.
- Initial Challenges: Minor issues with VPN configuration, resolved by following the detailed instructions provided by TryHackMe.

MODULE OVERVIEW

- Module Name: Linux Fundamentals Part 1
- Objective: Introduce the basics of the Linux operating system, including navigation, file management, and essential commands.

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STEP-BY-STEP PROCESS

- **Task 1: Introduction to Linux**
- Objective: Understand the basics of the Linux operating system and its history.
- Steps:
  a. Read Introduction: Learned about the origins of Linux and its importance in modern computing.
  b. Navigate the Interface: Familiarized with the command line interface (CLI) of Linux.
- Challenges: Initial unfamiliarity with the command line interface.
- Solutions: Practiced basic commands and navigation to build comfort.
- Tools/Commands Used: pwd, ls, cd
- Completion: Successfully navigated through the introductory content.
- Key Learnings: Basic understanding of Linux history and the importance of CLI.

- **Task 2: Basic Linux Commands**
- Objective: Learn and practice basic Linux commands for file and directory management.
- Steps:
  a. File Management Commands: Practiced creating, deleting, and moving files and directories.
  b. Permissions: Learned about file permissions and how to modify them using chmod.
- Challenges: Understanding file permissions and how to change them.
- Solutions: Repeatedly practiced using chmod and consulted external resources for deeper understanding.
- Tools/Commands Used: touch, mkdir, rm, mv, chmod
- Completion: Completed tasks successfully, gaining proficiency in basic file management.
- Key Learnings: Ability to manage files and directories, and understanding of file permissions.

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Task 3: More Basic Commands

- Objective: Extend knowledge of basic commands with additional tools for text manipulation and system monitoring.
- Steps:
  a. Text Manipulation: Learned to use commands for viewing and editing text files.
  b. System Monitoring: Practiced commands for monitoring system performance and processes.
- Challenges: Remembering multiple commands and their specific uses.
- Solutions: Created a reference sheet for commands and their purposes.
- Tools/Commands Used: cat, nano, top, ps, echo
- Completion: Successfully executed all tasks and commands.
- Key Learnings: Enhanced text manipulation skills and basic system monitoring techniques.

Task 4: Running Your First Few Commands - Key Insights and Learning

- Terminal Use: Emphasizes the importance of the Terminal in interacting with lightweight Linux systems like Ubuntu, which often lack a GUI.
- Command Familiarity: Introduces basic but essential commands (echo and whoami) to help users become comfortable with the Terminal.
- Output Text: Demonstrates the use of the echo command to display text in the Terminal, with the example echo "Hello Friend!".
- Identify User: Explains the whoami command to find out the currently logged-in user's username, with the example whoami.
- Practice Commands: Encourages practicing these commands to build familiarity, with specific tasks like outputting "TryHackMe" and identifying the username tryhackme.
- Foundational Skills: Highlights the significance of these basic commands as the foundation for more complex operations in Linux, enhancing overall command-line proficiency.

Key Learning: Understanding and practicing basic Terminal commands like echo and whoami is essential for efficient system interaction. These commands are fundamental tools that help users gain confidence and proficiency with the command-line interface, paving the way for more advanced tasks in Linux.

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- **Task 5: Interacting With the Filesystem - Key Insights and Learning**
- Listing Files (ls):
  - Insight: The ls command lists the contents of the current directory, allowing users to see what files and folders exist without needing a graphical interface.
- Changing Directories (cd):
  - Insight: The cd command changes the current working directory, enabling navigation through the filesystem.
- Outputting File Contents (cat):
  - Insight: The cat command concatenates and displays the contents of files, which is essential for reading text files and other documents directly from the Terminal.
- Printing Working Directory (pwd):
  - Insight: The pwd command prints the full path of the current working directory, helping users keep track of their location within the filesystem.
- Navigating Files and Folders:
  - Insight: Combining ls, cd, cat, and pwd commands allows efficient navigation and interaction with the filesystem, making it possible to perform various tasks without a GUI.

- Key Learning: Mastery of basic filesystem commands (ls, cd, cat, pwd) is crucial for efficient system navigation and management in Linux, providing a foundation for more advanced command-line operations.

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- **Task 6: Searching for Files - Key Insights and Learning**
- Efficiency with ‘find’:
- Insight: The find command allows for efficient file searching across the entire system, eliminating the need to manually navigate through directories.
- Basic ‘find’ Usage:
- Insight: Using find -name [filename], users can quickly locate files by name within the current directory and its subdirectories.
- Advanced ‘find’ with Wildcards:
- Insight: The find command supports wildcards (e.g., find -name *.txt) to search for files by extension, making it versatile for various search needs.
- Content Search with grep:
- Insight: The grep command is invaluable for searching within file contents, enabling users to find specific values or patterns within large files.
- Combining Commands for Efficiency:
- Insight: Combining find and grep can streamline complex search tasks, enhancing productivity and accuracy in locating and analyzing files and their contents.
- Practical Application:
- Key Learning: Mastering commands like find and grep significantly boosts efficiency and proficiency in managing and navigating Linux systems. These tools are essential for quickly locating files and specific information within files, which is crucial for effective system administration and troubleshooting.

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- **Task 7: Understanding Linux Operators - Key Insights and Learning**
- Background Execution (&):
- Insight: The & operator allows commands to run in the background, enabling multitasking and freeing up the terminal for other operations.
- Combining Commands (&&):
- Insight: The && operator enables the chaining of commands, where the subsequent command runs only if the preceding command is successful, ensuring sequential execution.
- Output Redirection (>):
- Insight: The > operator redirects command output to a file, creating or overwriting the file with the output, which is useful for saving command results.
- Appending Output (>>):
- Insight: The >> operator appends command output to the end of a file without overwriting existing content, useful for adding data incrementally.
- Efficient File Management:
- Insight: Combining these operators enhances efficiency in managing files and executing commands, making it easier to handle large tasks and automate workflows.
- Practical Application:
- Key Learning: Mastery of Linux operators such as &, &&, >, and >> is crucial for effective command-line operations. These operators provide powerful ways to manage tasks, automate processes, and handle output efficiently, significantly improving productivity in a Linux environment.

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TASK 8: CONCLUSION & SUMMARIES

1. Importance of Linux:
   - Summary: Linux's prevalence in modern computing environments is due to its stability, flexibility, and open-source nature, making it a vital skill for IT professionals.
2. Initial Interaction with Linux:
   - Summary: Familiarization with Linux commands and the terminal interface is foundational for efficient system management and operation.
3. Fundamental Commands:
   - Summary: Mastery of basic commands like echo, whoami, ls, cd, cat, and pwd is crucial for navigating and interacting with the Linux filesystem.
4. Filesystem Navigation and Search:
   - Summary: Understanding how to navigate directories and search for files using find and grep enhances efficiency in managing and locating data.
5. Shell Operators:
   - Summary: Learning shell operators such as &, &&, >, and >> empowers users to execute commands in the background, combine commands, and manage output effectively.
6. Building Proficiency:
   - Summary: Continued practice with these commands and operators will lead to greater proficiency and confidence in using Linux, making complex tasks more manageable.

Key Learning:

- Key Learning: Mastery of fundamental Linux commands, filesystem navigation, and shell operators is essential for efficient system management. These skills provide a strong foundation for advanced Linux usage and problem-solving, ultimately enhancing productivity and technical expertise in a Linux environment.

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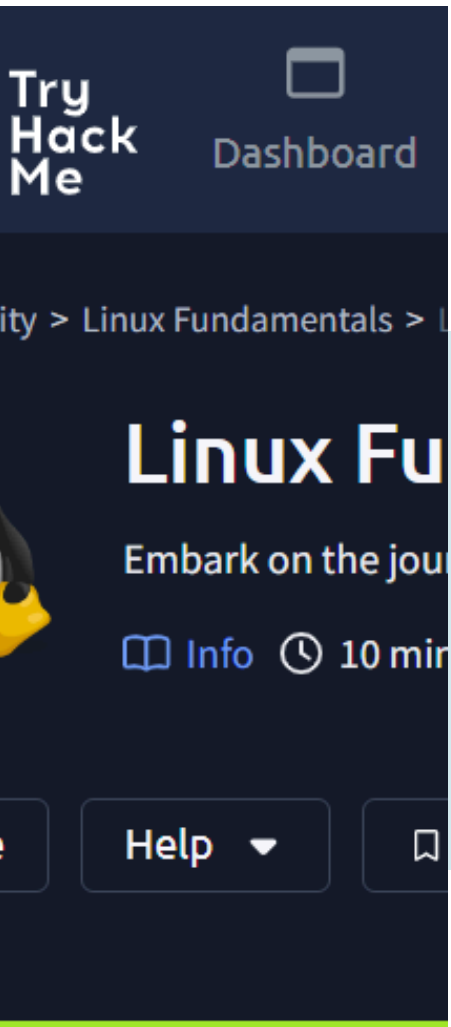

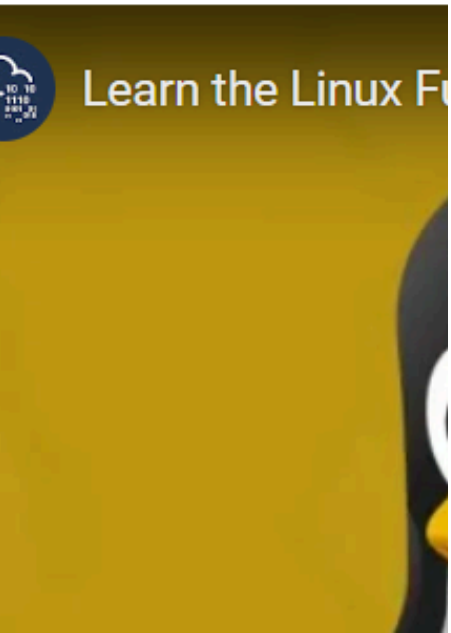

Reflection

- Personal Reflections: The experience significantly improved my comfort and proficiency with the Linux command line. The hands-on nature of the tasks helped reinforce theoretical knowledge with practical application.
- Alignment with Career Goals: This experience aligns with my goal of becoming proficient in cybersecurity, as a strong foundation in Linux is essential for many cybersecurity tasks.
- Changes in Approach: I have adopted a more systematic approach to learning new technical skills, emphasizing hands-on practice and the use of reference materials.

Conclusion

- Summary: The "Linux Fundamentals Part 1" room on TryHackMe provided a comprehensive introduction to Linux, enhancing my command line skills and foundational knowledge.
- Future Plans: I plan to continue with the subsequent parts of the Linux Fundamentals series on TryHackMe and further deepen my understanding of Linux and its applications in cybersecurity.
- Recommendations: I highly recommend this room to anyone seeking to build a strong foundation in Linux, as it provides clear instructions, practical tasks, and valuable insights.

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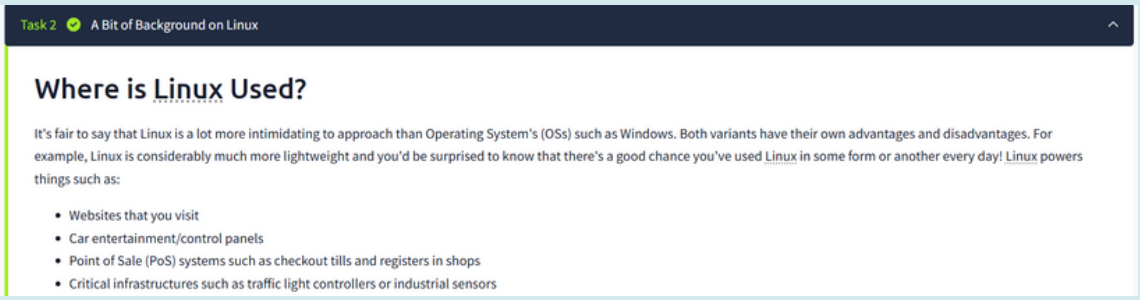
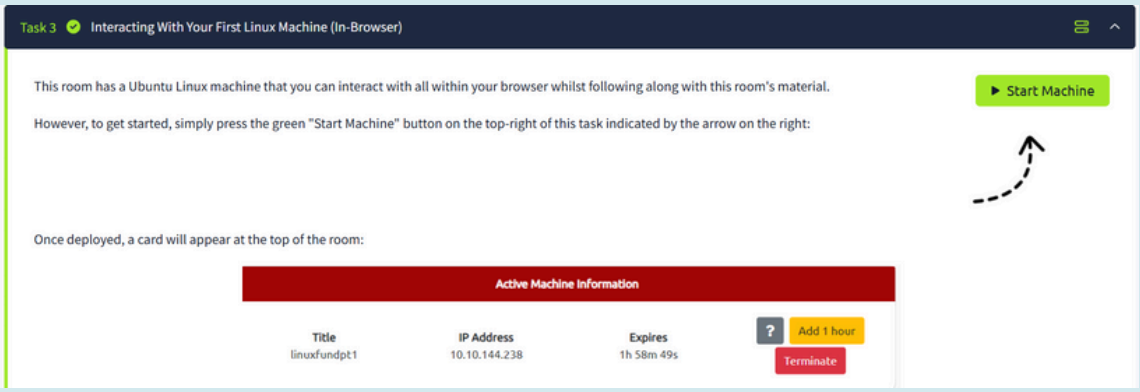
PROOF OF CONCEPT:

TASK 1: COMPLETION



TASK 2: COMPLETION



TASK 3: COMPLETION

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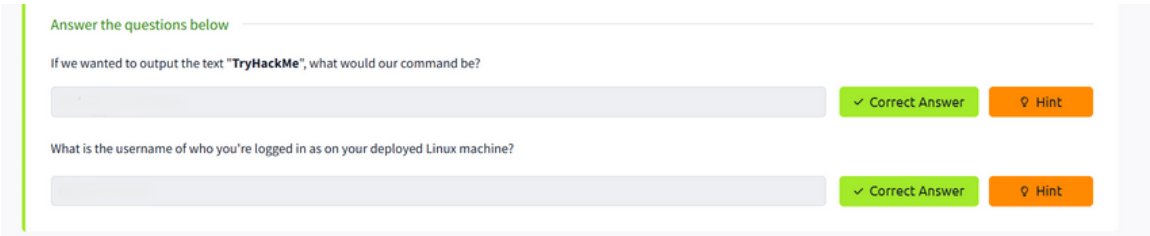
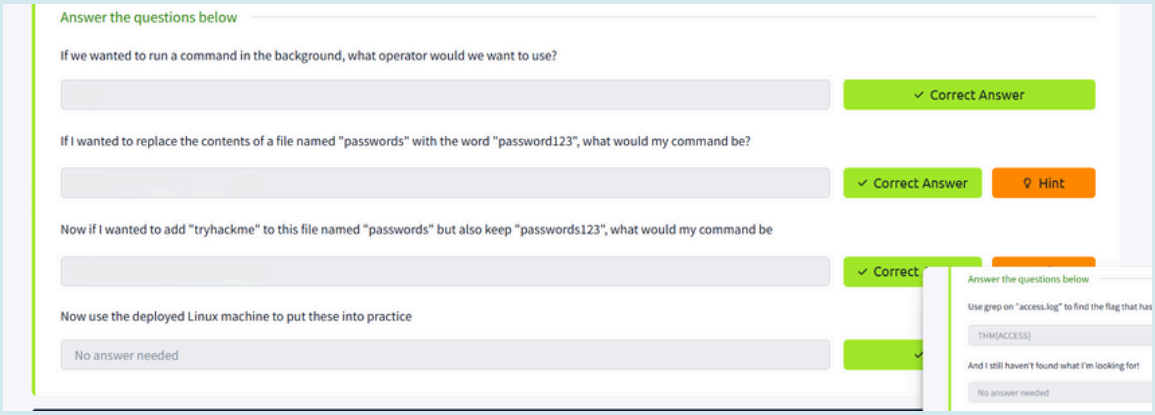


TASK 4: COMPLETION



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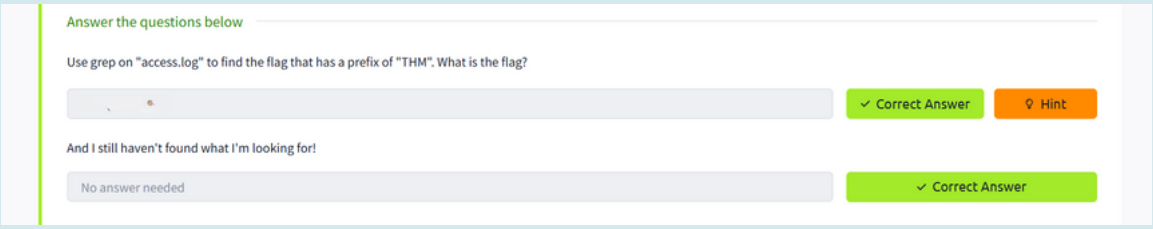

TASK 6: COMPLETION

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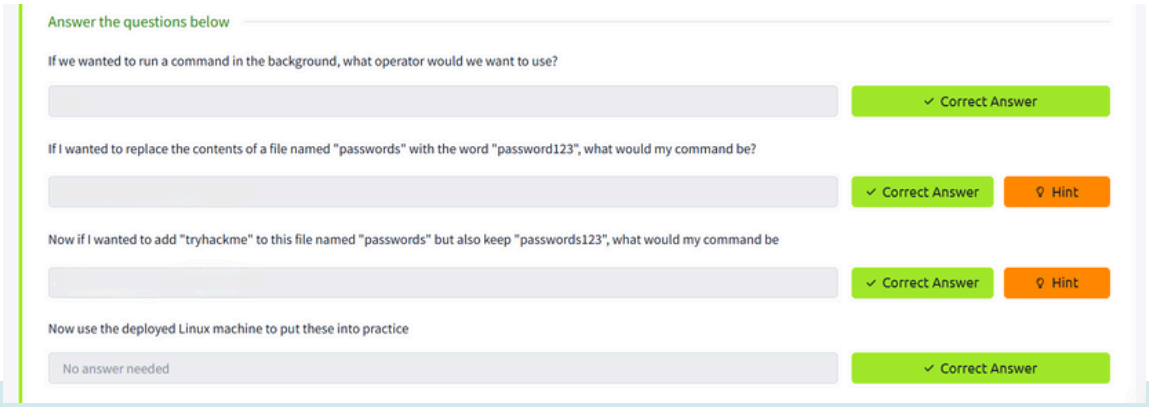
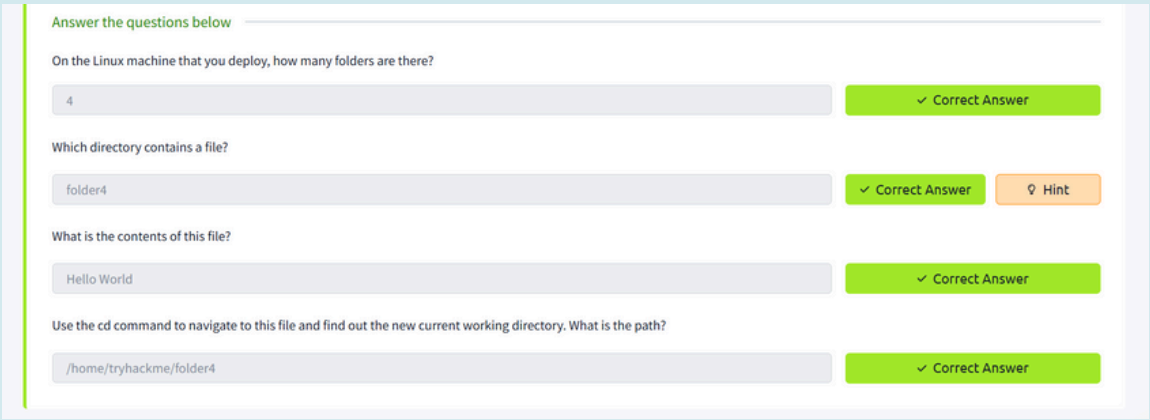


TASK 7: COMPLETION



TASK 8: COMPLETION

CODE SINPPETS

1. Displaying the Current Date and Time

bash Copy code

```bash
date
```

2. Creating and Writing to a File

bash Copy code

```bash
echo "Hello, Linux!" > hello.txt
```

3. Appending to a File

bash Copy code

```bash
echo "Appending this line" >> hello.txt
```

4. Listing Files in a Directory

bash Copy code

```bash
ls -l
```

5. Navigating to a Directory

bash Copy code

```bash
cd Documents
```

6. Finding a File by Name

bash Copy code

```bash
find . -name "example.txt"
```

7. Viewing the Content of a File

```bash
cat hello.txt
```

8. Searching for a Specific String in a File

```bash
grep "search_term" hello.txt
```

9. Redirecting Command Output to a File

```bash
ls > directory_listing.txt
```

10. Running a Command in the Background

```bash
sleep 60 &
```

11. Combining Commands with Logical AND

```bash
echo "Start" && echo "End"
```

12. Viewing the Current Working Directory

```bash
pwd
```

13. Counting Lines in a File

```bash
wc -l hello.txt
```