جامعة بيرزيت

BIRZEIT UNIVERSITY

Linux Laboratory - ENCS3130

Project 1: Automated Linux/Unix Command Manual Generation

Part 1: Generate Linux/Unix Command Manual

Objective:

The project aims to automate the generation of a system manual for Linux/Unix commands using Python or shell scripting. The script developed will facilitate the creation of **a Text file document** structured as a template for each command. Each command will be presented with its name as the title, followed by a table containing the following information:

1. **Command Description**: The name of the command and information about it.
2. **Version History of the Command**: Extracted using the version command.
3. **Example**: An illustrative example showcasing the usage of the command.
4. **Related Commands**: Extraction of all related commands using tools like grep.

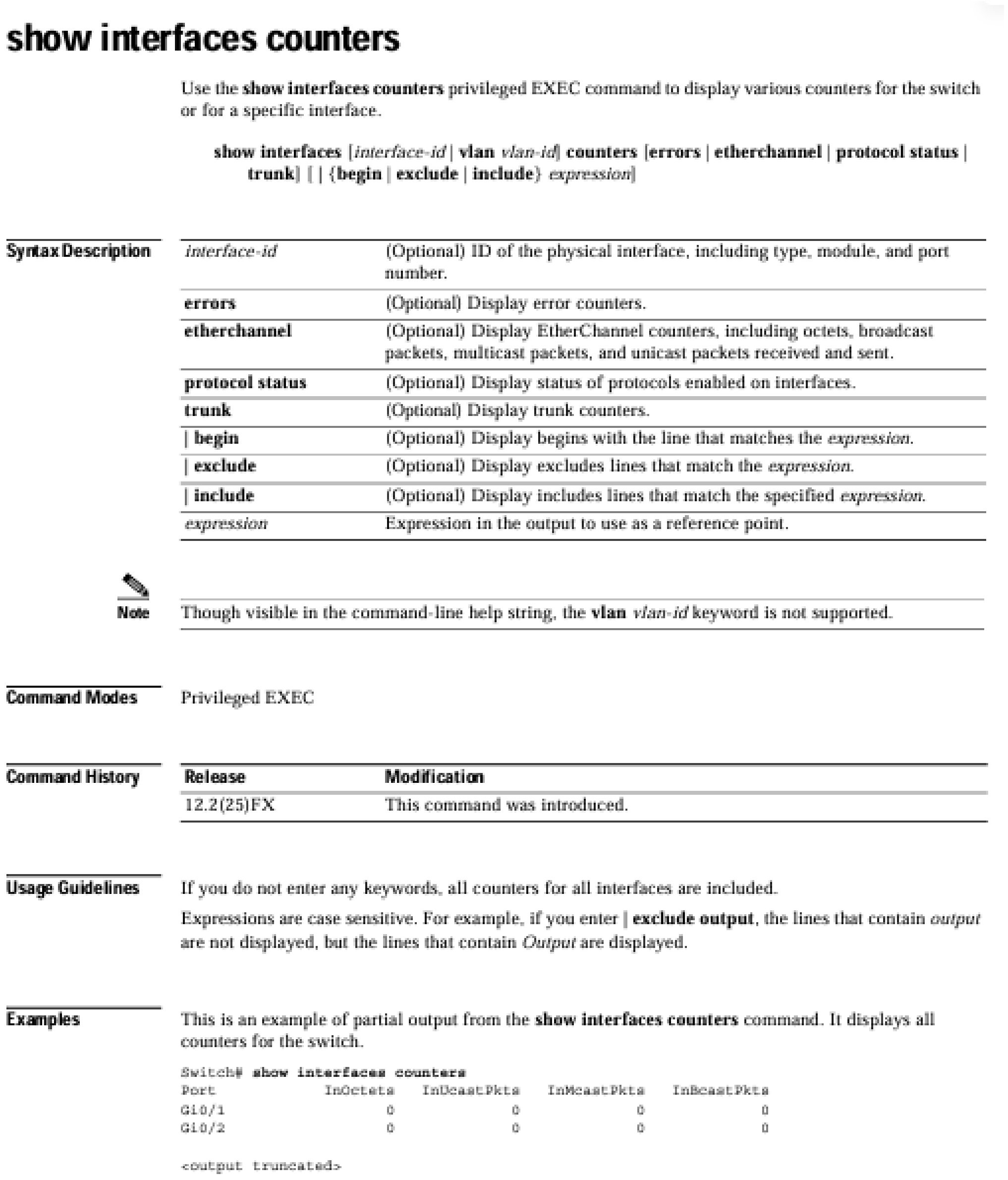
This automated approach streamlines the manual generation process, ensuring consistency and efficiency in documenting Linux/Unix commands.

Command Template Example:

>lspci

Description	lspci is a utility for displaying information about PCI buses in the system and devices connected to them.
Version History	3.10.0-957.el7.x86_64
Example	> lspci -t -[0000:00]-
Related Commands	pci_ids, setpci, update-pciids, rpcinfo, lspci
Notes	

The descriptive files that you should create must follow the CISCO template as the following figure shows:



show interfaces counters

Use the **show interfaces counters** privileged EXEC command to display various counters for the switch or for a specific interface.

show interfaces [*interface-id* | **vlan** *vlan-id*] **counters** [**errors** | **etherchannel** | **protocol status** | **trunk**] [| {**begin** | **exclude** | **include**} *expression*]

Syntax Description

interface-id	(Optional) ID of the physical interface, including type, module, and port number.
errors	(Optional) Display error counters.
etherchannel	(Optional) Display EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.
protocol status	(Optional) Display status of protocols enabled on interfaces.
trunk	(Optional) Display trunk counters.
| begin	(Optional) Display begins with the line that matches the *expression*.
| exclude	(Optional) Display excludes lines that match the *expression*.
| include	(Optional) Display includes lines that match the specified *expression*.
expression	Expression in the output to use as a reference point.

Note Though visible in the command-line help string, the **vlan** *vlan-id* keyword is not supported.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(25)FX	This command was introduced.

Usage Guidelines

If you do not enter any keywords, all counters for all interfaces are included.

Expressions are case sensitive. For example, if you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

Examples

This is an example of partial output from the **show interfaces counters** command. It displays all counters for the switch.

```
Switch# show interfaces counters
Port            InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Gi0/1                  0              0              0              0
Gi0/2                  0              0              0              0

<output truncated>
```

Part 2: Verification

Objective:
This part aims to verify the generated content. Read the existing document and verify its correctness by running the command, checking the example, etc.

Part 3: Continuous Improvement and Extension

Objective:
Enhance the existing project by incorporating additional features, improving usability, and extending functionality.

1. **Command Recommendation:**
   Implement a command recommendation system based on user preferences, suggesting commands that are related to their previous searches or usage patterns.

2. **Search Functionality:**
   Add a search functionality to the generated manual, allowing users to quickly find information about specific commands or topics.

Verification steps:

1. **Some references on how to get commands**
   - Use 'compgen -c' to list all the commands you could run.
   - Use 'compgen -a' to list all the aliases you could run.
   - Use 'compgen -b' to list all the built-ins you could run.
   - Refer to StackOverflow: https://stackoverflow.com/questions/948008/linux-command-to-list-all-available-commands-and-aliases

2. **Example:**

- For the command lspci:

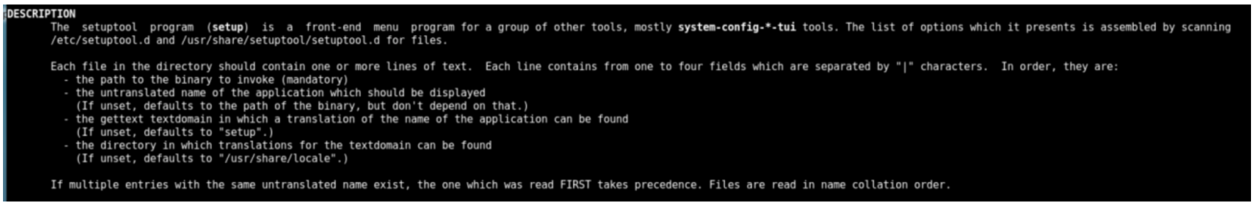
  ➢ Retrieve the description from the man page using:

  ▪ `>info lspci | awk '/^DESCRIPTION$/,/^OPTIONS$/' | grep -v '^OPTIONS$'`

  ▪ Or

  ▪ `>man lspci | awk '/^DESCRIPTION$/,/^OPTIONS$/' | grep -v '^OPTIONS$'`

Output will be just the description section:



```
DESCRIPTION
       The  setuptool  program  (setup)  is  a  front-end  menu  program for a group of other tools, mostly system-config-*-tui tools. The list of options which it presents is assembled by scanning
       /etc/setuptool.d and /usr/share/setuptool/setuptool.d for files.

       Each file in the directory should contain one or more lines of text.  Each line contains from one to four fields which are separated by "|" characters.  In order, they are:
         - the path to the binary to invoke (mandatory)
         - the untranslated name of the application which should be displayed
           (If unset, defaults to the path of the binary, but don't depend on that.)
         - the gettext textdomain in which a translation of the name of the application can be found
           (If unset, defaults to "setup".)
         - the directory in which translations for the textdomain can be found
           (If unset, defaults to "/usr/share/locale".)

       If multiple entries with the same untranslated name exist, the one which was read FIRST takes precedence. Files are read in name collation order.
```

- Generate an Example for the command lspci :
  - >lspci -t

    -[0000:00]-

- Get the version of unix/or system with:
  - >uname -r   or > uname --version

    3.10.0-957.el7.x86_64

- Find related commands with:
  - >'compgen -c | grep pci'

    pci_ids
    setpci
    update-pciids
    rpcinfo
    lspci

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What to turn on:

1- Snapshot of project evaluations/output
2- Source code