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Task 9: System Information Script Documentation

# Introduction and Overview

As a system administrator at 'MyComp', gathering and reviewing detailed system information is crucial for monitoring server health, diagnosing issues, and performing routine checks. To streamline this process, a script has been developed to display comprehensive system information. This script includes details about the CPU, memory, disk usage, network configuration, and running processes.

# Requirements

• CPU Information:  
 – Display detailed information about the CPU, including model, speed, and usage statistics.  
• Memory Information:  
 – Show total, used, and available memory.  
• Disk Usage:  
 – Display disk usage for all mounted filesystems.  
• Network Configuration:  
 – Show network interfaces and their configurations, including IP addresses, subnet masks, and MAC addresses.  
• Running Processes:  
 – List the currently running processes along with their CPU and memory usage.  
• Readable Output:  
 – Present the information in a clear and readable format.

# Script

#!/bin/bash  
  
# task9\_system\_info.sh  
# Script to display system information  
  
# Exit immediately if a command exits with a non-zero status  
set -e  
  
# Function to display CPU information  
cpu\_info() {  
 echo "CPU Information:"  
 if ! lscpu; then  
 echo "Error: Failed to retrieve CPU information."  
 exit 1  
 fi  
 echo ""  
}  
  
# Function to display memory information  
memory\_info() {  
 echo "Memory Information:"  
 if ! free -h; then  
 echo "Error: Failed to retrieve memory information."  
 exit 1  
 fi  
 echo ""  
}  
  
# Function to display disk usage information  
disk\_usage() {  
 echo "Disk Usage Information:"  
 if ! df -h; then  
 echo "Error: Failed to retrieve disk usage information."  
 exit 1  
 fi  
 echo ""  
}  
  
# Function to display network configuration  
network\_info() {  
 echo "Network Configuration:"  
 if ! ip -o -4 addr show | awk '{print "Interface:", $2, "\nIP Address:", $4}'; then  
 echo "Error: Failed to retrieve network configuration."  
 exit 1  
 fi  
 echo ""  
 echo "MAC Addresses:"  
 if ! ip link show | awk '/ether/ {print "Interface:", $2, "\nMAC Address:", $2, "\n"}'; then  
 echo "Error: Failed to retrieve MAC addresses."  
 exit 1  
 fi  
 echo ""  
}  
  
# Function to display running processes  
running\_processes() {  
 echo "Running Processes:"  
 if ! ps aux --sort=-%cpu,-%mem | head -n 10; then  
 echo "Error: Failed to retrieve running processes."  
 exit 1  
 fi  
 echo ""  
}  
  
# Main script execution  
echo "System Information Report"  
echo "========================="  
echo ""  
  
cpu\_info  
memory\_info  
disk\_usage  
network\_info  
running\_processes  
  
echo "Report generated on: $(date)"  
echo "Script executed successfully."

# Explanation

## CPU Information

The function `cpu\_info` uses the `lscpu` command to display detailed CPU information. If the command fails, an error message is displayed and the script exits with a status of 1.

## Memory Information

The function `memory\_info` uses the `free -h` command to show total, used, and available memory. If the command fails, an error message is displayed and the script exits with a status of 1.

## Disk Usage Information

The function `disk\_usage` uses the `df -h` command to display disk usage for all mounted filesystems. If the command fails, an error message is displayed and the script exits with a status of 1.

## Network Configuration

The function `network\_info` uses the `ip -o -4 addr show` command to display network interfaces and their IP addresses. It also uses `ip link show` to display the MAC addresses. If any command fails, an error message is displayed and the script exits with a status of 1.

## Running Processes

The function `running\_processes` uses the `ps aux --sort=-%cpu,-%mem` command to list the top 10 currently running processes, sorted by CPU and memory usage. If the command fails, an error message is displayed and the script exits with a status of 1.

## Main Script Execution

The main script execution section calls each of the functions in turn to generate a comprehensive system information report. A timestamp is added at the end, along with a success message if the script completes without errors.

# How to Run the Script

## Save the Script

Save the script to a file named `task9\_system\_info.sh`.

## Make the Script Executable

Open a terminal and navigate to the directory where the script is saved. Run the following command to make the script executable:  
```bash  
chmod +x task9\_system\_info.sh  
```

## Run the Script

Execute the script by running:  
```bash  
./task9\_system\_info.sh  
```

# Verifying the Output

When you run the script, you should see output similar to the following:  
```  
System Information Report  
=========================  
  
CPU Information:  
<CPU details here>  
  
Memory Information:  
<Memory details here>  
  
Disk Usage Information:  
<Disk usage details here>  
  
Network Configuration:  
Interface: <interface1>  
IP Address: <IP address1>  
Interface: <interface2>  
IP Address: <IP address2>  
  
MAC Addresses:  
Interface: <interface1>  
MAC Address: <MAC address1>  
  
Running Processes:  
<Process details here>  
  
Report generated on: <current date and time>  
Script executed successfully.  
```

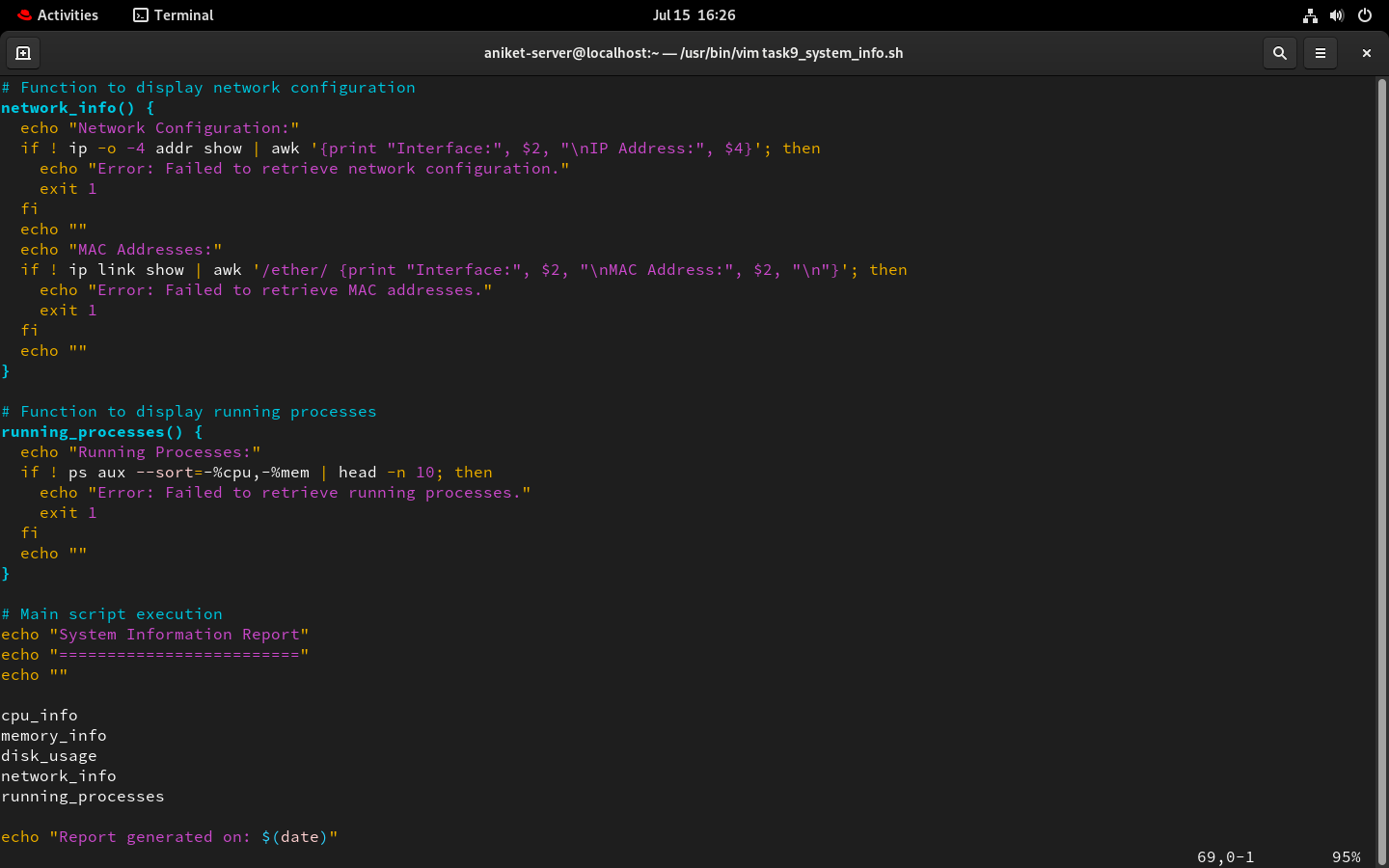
# Error Handling and Creativity

The script incorporates error handling to ensure reliability and robustness. If any command fails to execute, an error message is displayed, and the script exits with a non-zero status. This prevents incomplete or misleading reports.

Creativity is demonstrated through the clear and structured output format, making it easy to read and interpret the system information. The use of functions for each section of the report enhances readability and maintainability.

# Script’s Screenshots:

A screenshot of a computer

Description automatically generatedA screen shot of a computer

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