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What is Linux?

Linux is an open-source operating system that manages hardware and software resources on a computer. It is based on the UNIX operating system and is widely used for its stability, security, and flexibility. Unlike Windows or macOS, Linux is open-source, meaning anyone can modify and distribute its source code.

Key Features of Linux:

- **Open-Source:** Free to use and modify.
- **Security:** Provides strong user permission control.
- **Stability:** Less prone to crashes and issues.
- **Multi-User Support:** Multiple users can access the system simultaneously.
- **Portability:** Can run on various hardware architectures.
- **Customization:** Highly configurable and supports multiple desktop environments.
- **Shell Support:** Provides powerful command-line utilities.

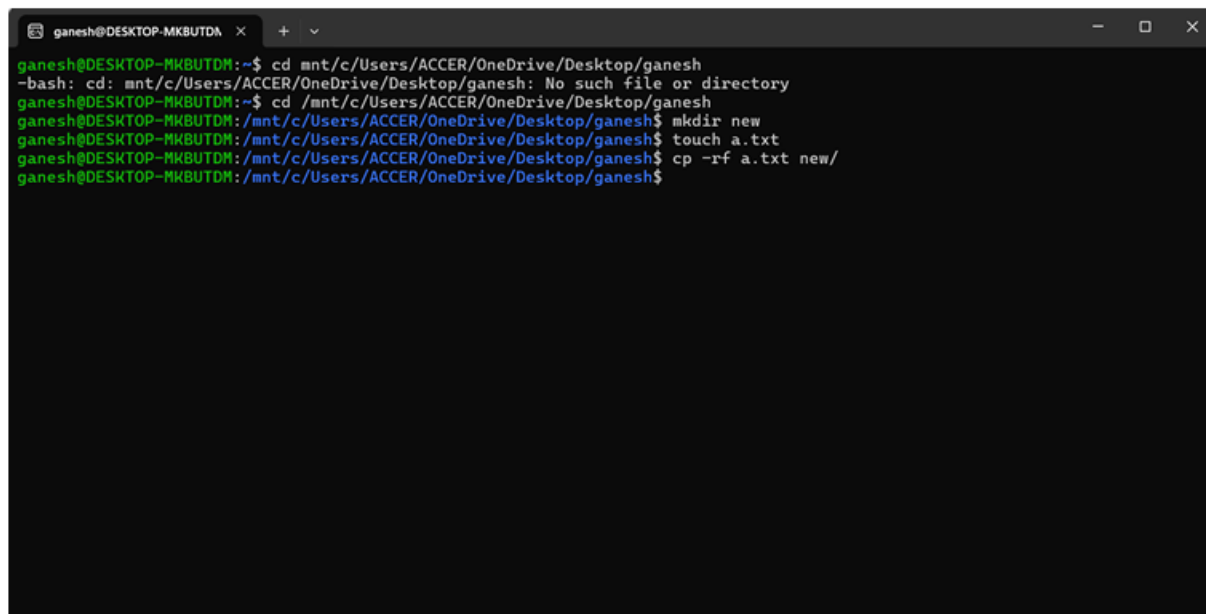
Basic Linux Commands

Creating and Navigating Directories

- **Create a directory:** `mkdir myfolder`
- **Navigate into a directory:** `cd myfolder`
- **Move back to the previous directory:** `cd ..`
- **List contents of a directory:** `ls -l`
- **Remove an empty directory:** `rmdir myfolder`

Creating and Managing Files

- **Create an empty file:** touch file.txt
- **View file contents:** cat file.txt
- **Copy a file:** cp file.txt newfile.txt
- **Move/rename a file:** mv file.txt newlocation/
- **Delete a file:** rm file.txt

A terminal window titled 'ganesh@DESKTOP-MKBUTDN' with standard window controls. The terminal shows a series of commands and their outputs: 1. 'cd mnt/c/Users/ACCER/OneDrive/Desktop/ganesh' followed by an error message: '-bash: cd: mnt/c/Users/ACCER/OneDrive/Desktop/ganesh: No such file or directory'. 2. 'cd /mnt/c/Users/ACCER/OneDrive/Desktop/ganesh'. 3. 'mkdir new'. 4. 'touch a.txt'. 5. 'cp -rf a.txt new/'. The prompt returns to the root of the terminal window after each command.

```
ganesh@DESKTOP-MKBUTDN:~$ cd mnt/c/Users/ACCER/OneDrive/Desktop/ganesh
-bash: cd: mnt/c/Users/ACCER/OneDrive/Desktop/ganesh: No such file or directory
ganesh@DESKTOP-MKBUTDN:~$ cd /mnt/c/Users/ACCER/OneDrive/Desktop/ganesh
ganesh@DESKTOP-MKBUTDN:/mnt/c/Users/ACCER/OneDrive/Desktop/ganesh$ mkdir new
ganesh@DESKTOP-MKBUTDN:/mnt/c/Users/ACCER/OneDrive/Desktop/ganesh$ touch a.txt
ganesh@DESKTOP-MKBUTDN:/mnt/c/Users/ACCER/OneDrive/Desktop/ganesh$ cp -rf a.txt new/
ganesh@DESKTOP-MKBUTDN:/mnt/c/Users/ACCER/OneDrive/Desktop/ganesh$
```

Recursive File and Directory Operations

- **Create a nested directory structure:** mkdir -p parent/child/grandchild
- **Remove a directory and all its contents:** rm -rf directory_name

Changing File Permissions and Ownership

- **Modify file permissions:** chmod 755 file.txt
- **Change file ownership:** chown user:group file.txt

Searching with Grep Command

- **Search for a word in a file:** `grep "word" file.txt`
- **Search recursively in directories:** `grep -r "word" /path/`

Working with WSL (Windows Subsystem for Linux)

Windows Subsystem for Linux (WSL) allows users to run Linux distributions on a Windows machine. It provides a Linux-compatible terminal interface within Windows.

Basic WSL Commands

- **Launch WSL:** Open PowerShell and type `wsl`
- **List installed distributions:** `wsl -l`
- **Install a new distribution:** `wsl --install -d <distribution_name>`
- **Run a Linux command from PowerShell:** `wsl ls`
- **Exit WSL:** `exit`

Connecting with MySQL in Linux

MySQL is a widely used relational database management system. To connect with MySQL in Linux, follow these steps:

Installing MySQL

```
sudo apt update
```

```
sudo apt install mysql-server
```

Starting MySQL Service

```
sudo systemctl start mysql
```

Logging into MySQL

```
sudo mysql -u root -p
```

(Enter the root password when prompted.)

Creating a Database

```
CREATE DATABASE mydatabase;
```

Creating a User and Granting Privileges

```
CREATE USER 'myuser'@'localhost' IDENTIFIED BY 'mypassword';
```

```
GRANT ALL PRIVILEGES ON mydatabase.* TO 'myuser'@'localhost';
```

```
FLUSH PRIVILEGES;
```

Connecting to MySQL as a User

```
mysql -u myuser -p
```

Listing Databases

```
SHOW DATABASES;
```

The screenshot shows the HackerRank interface for the 'Let's Echo' challenge. On the left, a sidebar contains links for 'Problem', 'Submissions', 'Leaderboard', and 'Solutions'. The main content area on the left displays the problem details: 'Write a bash script that prints the string "HELLO".', 'Input Format' (no input file), 'Output Format' (HELLO), 'Sample Input' (HELLO), 'Sample Output' (HELLO), and an empty 'Explanation' section. On the right, a code editor is open with the language set to 'BASH'. It contains a single line of code: '1 echo "HELLO"'. At the bottom right of the editor, there are buttons for 'Run Code' and 'Submit Code', along with a status bar showing 'Line: 1 Col: 13'. The top of the browser window shows several open tabs, including 'C406 - SRE - Zoom', 'Launch Meeting - Z...', 'ChatGPT', 'net speed test - Go...', 'Home - Google Dr...', 'Untitled document', and 'Let's Echo | HackerRank'. The bottom of the browser window shows a Windows taskbar with the date '2/17/2023' and time '2:37 PM'.

hackerrank.com/challenges/bash-tutorials---a-personalized-echo/problem?isFullScreen=true

HackerRank | Prepare | Linux Shell | Bash | A Personalized Echo | Exit Full Screen View

Problem

Write a Bash script which accepts `name` as input and displays the greeting "Welcome (name)"

Input Format

There is one line of text, `name`.

Output Format

One line: "Welcome (name)" (quotation marks excluded).
The evaluation will be case-sensitive.

Sample Input 0

Dan

Sample Output 0

Welcome Dan

Sample Input 1

Prashant

Sample Output 1

Welcome Prashant

```
1 read name
2 echo "Welcome $name"
```

Line: 2 Col: 20

Upload Code as File | Test against custom input | Run Code | Submit Code

TOT - MIN Video highlight

hackerrank.com/challenges/bash-tutorials---looping-with-numbers/problem?isFullScreen=true

HackerRank | Prepare | Linux Shell | Bash | Looping with Numbers | Exit Full Screen View

Problem

Use a for loop to display the natural numbers from 1 to 50.

Input Format

There is no input

Output Format

```
1
2
3
4
5
.
.
.
.
50
```

```
1 for i in {1..50}; do echo $i;
2 done
```

Line: 1 Col: 10

Upload Code as File | Test against custom input | Run Code | Submit Code

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