

## TASK 7: Environment Variables & PATH (Linux)

### ◆ 1. View Environment Variables

commands:

```
romioontrack@Shashi:~$ printenv
SHELL=/bin/bash
WSL_GUI_APPS_ENABLED=1
WSL_DISTRO_NAME=Ubuntu
NAME=Shashi
PWD=/home/romioontrack
LOGNAME=romioontrack
HOME=/home/romioontrack
LANG=C.UTF-8
WSL_INTEROP=/run/WSL/385_interop
LS_COLORS=rss=0:di=0:34:ln=0:36:mh=0:pi=0:33:so=0:35:do=0:35:bd=0:30:33:01:cd=0:40:33:01:or=0:31:41:sg=0:30:43:ca=0:0:tw=39:42:ow=34:42:st=37:
44:ex=01:32:*.tar=01:31:*.tgz=01:31:*.arc=01:31:*.arj=01:31:*.tar.zst=01:31:*.lha=01:31:*.lzo=01:31:*.lz4=01:31:*.xz=01:31:*.lzma=01:31:*.xz=01:31:*.txz=01:31:*.tzo=01:31:*.tz=01:31:*.zip=01:31:*.tar.gz=01:31:*.deb=01:31:*.rpm=01:31:*.jar=01:31:*.war=01:31:*.ear=01:31:*.ear=01:31:*.cab=01:31:*.wim=01:31:*.swm=01:31:*.dwm=01:31:*.esd=01:31:*.avif=01:35:*.jpeg=01:35:*.mpng=01:35:*.mjpeg=01:35:*.gif=01:35:*.bmp=01:35:*.pbm=01:35:*.pgm=01:35:*.ppm=01:35:*.tga=01:35:*.xbm=01:35:*.xpm=01:35:*.webp=01:35:*.cgm=01:35:*.mp4=01:35:*.m4v=01:35:*.m4vps=01:35:*.m4v0=01:35:*.vob=01:35:*.xwd=01:35:*.xuv=01:35:*.tcm=01:35:*.emf=01:35:*.obj=01:35:*.rmvb=01:35:*.flc=01:35:*.avi=01:35:*.fls=01:35:*.flv=01:35:*.gl=01:35:*.dl=01:35:*.xcf=01:35:*.xwd=01:35:*.nuv=01:35:*.wmv=01:35:*.asf=01:35:*.emr=01:35:*.emf=01:35:*.obj=01:35:*.rmvb=01:35:*.flc=01:35:*.avi=01:35:*.fls=01:35:*.flv=01:35:*.gl=01:35:*.mid=00:36:*.m4a=00:36:*.mid=00:36:*.midi=00:36:*.mka=00:36:*.mp3=00:36:*.ogg=00:36:*.ra=00:36:*.wav=00:36:*.oga=00:36:*.opus=00:36:*.spx=00:36:*.xspf=00:36:*.old=00:90:*.bak=00:90:*.crdownload=00:90:*.dpkg-dist=00:90:*.dpkg-new=00:90:*.dpkg-old=00:90:*.dpkg-tmp=00:90:*.old=00:90:*.part=00:90:*.rej=00:90:*.tmpnew=00:90:*.tmp=00:90:*.ucf-dist=00:90:*.ucf-new=00:90:*.ucf-old=00:90:*.WAYLAND_DISPLAY=wayland-0
LESSCLOSE=/usr/bin/lesspipe %s %
TERM=xterm-256color
LESSOPEN=/usr/bin/lesspipe %
USER=romioontrack
DISPLAY=:0
SHLVL=1
XDG_RUNTIME_DIR=/run/user/1000/
WSLENV=
XDG_DATA_DIRS=/usr/local/share:/usr/share:/var/lib/snap/desktop
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/usr/games:/usr/lib/wsl/lib:/mnt/c/Program Files/WindowsApps/MicrosoftCorporationII.WindowsSubsystemForLinux_2.6.3.0_x64_8wekyb3d8bbwe:/mnt/c/Program Files/Eclipse Adoptium/jdk-17.0.17.10-hotspot/bin:/mnt/c/Program Files/CommonFiles/Oracle/Java/javapath:/mnt/c/Users/Win11/Downloads/WINDOWS.X64_213000_db_home/bin:/mnt/c/app/Win11/product/21c/dbhomeXE/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS/System32:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0:/mnt/c/WINDOWS/System32/OpenSSH:/mnt/c/MinGW/bin:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312/Scripts:/mnt/c/Program Files/MySQL/MySQL Server 8.0/bin:/mnt/c/Program Files (x86)/Microsoft SQL Server/160/DTS/Binn:/mnt/c/Program Files/Java/jdk-23/bin:/mnt/c/jdk-21/bin:/mnt/d:/mnt/c/ProgramData/chocolatey/bin:/mnt/c/Program Files/Git/cmd:/mnt/d/Oracle:/mnt/c/Users/Win11/AppData/Local/Programs/Microsoft VS Code/bin:/snap/bin
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
HOSTTYPE=x86_64
```

#### 🔥 One-liner summary:

`printenv` shows all environment variables that control how your Linux system and programs behave.

View a specific variable:

`echo $HOME`

`echo $PATH`

```
romioontrack@Shashi:~$ echo $HOME
/home/romioontrack
romioontrack@Shashi:~$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/usr/games:/usr/lib/wsl/lib:/mnt/c/Program Files/WindowsApps/MicrosoftCorporationII.WindowsSubsystemForLinux_2.6.3.0_x64_8wekyb3d8bbwe:/mnt/c/Program Files/Eclipse Adoptium/jdk-17.0.17.10-hotspot/bin:/mnt/c/Program Files/CommonFiles/Oracle/Java/javapath:/mnt/c/Users/Win11/Downloads/WINDOWS.X64_213000_db_home/bin:/mnt/c/app/Win11/product/21c/dbhomeXE/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS/System32:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0:/mnt/c/WINDOWS/System32/OpenSSH:/mnt/c/MinGW/bin:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312/Scripts:/mnt/c/Program Files/MySQL/MySQL Server 8.0/bin:/mnt/c/Program Files (x86)/Microsoft SQL Server/160/DTS/Binn:/mnt/c/Program Files/Java/jdk-23/bin:/mnt/c/jdk-21/bin:/mnt/d:/mnt/c/ProgramData/chocolatey/bin:/mnt/c/Program Files/Git/cmd:/mnt/d/Oracle:/mnt/c/Users/Win11/AppData/Local/Programs/Microsoft VS Code/bin:/snap/bin
romioontrack@Shashi:~$
```

## 2. Create Custom Variables (Temporary)

Create a variable for the current session:

```
romioontrack@Shashi:~$ MY_NAME="Shashi"
romioontrack@Shashi:~$ echo $NY_NAME

romioontrack@Shashi:~$ echo $MY_NAME
Shashi
```

❗ Important: This variable will be lost after terminal closes

### 3. Modify PATH Variable (Temporary)

Add a new directory to PATH:

```
romioontrack@Shashi:~$ export PATH=$PATH:/home/romioontrack/mytools
romioontrack@Shashi:~$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/bin:/usr/games:/usr/lib/wsl/lib:/mnt/c/Program Files/WindowsApps/MicrosoftCorporationII.WindowsSubsystemForLinux_2.6.3.0.x64_8wekyb3d8bbwe:/mnt/c/Program Files/Eclipse Adoptium/jdk-17.0.17.10-hotspot/bin:/mnt/c/Program Files/Common Files/Oracle/Java/javapath:/mnt/c/Users/Win11/Downloads/WINDOWS_X64_213009_db_home/bin:/mnt/c/app/Win11/product/21c/dbhomeXE/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS/System32/Wben:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0:/mnt/c/WINDOWS/System32/OpenSSH:/mnt/c/MinGW/bin:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312/Scripts:/mnt/c/Program Files/MySQL/MySQL Server 8.0/bin:/mnt/c/Program Files (x86)/Microsoft SQL Server/160/DTS/Binn:/mnt/c/Program Files/Java/jdk-23/bin:/mnt/c/jdk-21/bin:/mnt/d:/mnt/c/ProgramData/chocolatey/bin:/mnt/c/Program Files/Git/cmd:/mnt/d/Oracle:/mnt/c/Users/Win11/AppData/Local/Programs/Microsoft VS Code/bin:/snap/bin:/home/romioontrack/mytools
```

### 4. Make Variables Persistent (Permanent)

Edit shell configuration file:

For bash:

nano ~/.bashrc

Add at the bottom:

```
export MY_NAME="Shashi"
```

```
export PATH=$PATH:/home/romioontrack/mytools
```

Apply changes:

```
source ~/.bashrc
```

```
GNU nano 7.2                               /home/romioontrack/.bashrc
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
  *i*) ;;
  *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern "##" used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
#shopt -s globstar

# make less more friendly for non-text input files, see lesspipe(1)
[ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh lesspipe)"

# set variable identifying the chroot you work in (used in the prompt below)
if [ -z "$debian_chroot:" ] && [ -r /etc/debian_chroot ]; then
  debian_chroot=$(cat /etc/debian_chroot)
fi

[ Read 117 lines ]
^C Help          ^O Write Out      ^W Where Is      ^K Cut           ^T Execute      ^C Location      M-U Undo       M-A Set Mark    M-[ To Bracket
^X Exit          ^R Read File     ^\ Replace      ^U Paste         ^J Justify      ^/ Go To Line   M-E Redo       M-G Copy        ^Q Where Was
```

```
romioontrack@Shashi:~$ nano ~/.bashrc
romioontrack@Shashi:~$ export MY_NAME="Shashi"
romioontrack@Shashi:~$ export PATH=$PATH:/home/romioontrack/mytools
romioontrack@Shashi:~$ source ~/.bashrc
romioontrack@Shashi:~$ echo $MY_NAME
Shashi
romioontrack@Shashi:~$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/bin:/usr/games:/usr/lib/wsl/lib:/mnt/c/Program Files/WindowsApps/MicrosoftCorporationII.WindowsSubsystemForLinux_2.6.3.0.x64_8wekyb3d8bbwe:/mnt/c/Program Files/Eclipse Adoptium/jdk-17.0.17.10-hotspot/bin:/mnt/c/Program Files/Common Files/Oracle/Java/javapath:/mnt/c/Users/Win11/Downloads/WINDOWS_X64_213009_db_home/bin:/mnt/c/app/Win11/product/21c/dbhomeXE/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS/System32/Wben:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0:/mnt/c/WINDOWS/System32/OpenSSH:/mnt/c/MinGW/bin:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312/Scripts:/mnt/c/Program Files/MySQL/MySQL Server 8.0/bin:/mnt/c/Program Files (x86)/Microsoft SQL Server/160/DTS/Binn:/mnt/c/Program Files/Java/jdk-23/bin:/mnt/c/jdk-21/bin:/mnt/d:/mnt/c/ProgramData/chocolatey/bin:/mnt/c/Program Files/Git/cmd:/mnt/d/Oracle:/mnt/c/Users/Win11/AppData/Local/Programs/Microsoft VS Code/bin:/snap/bin:/home/romioontrack/mytools
```

### ◆ 5. Test Changes

Close terminal ✘

Open new terminal ✓

Run:

```
echo $MY_NAME
```

```
echo $PATH
```

```
romioontrack@Shashi:~$ echo $MY_NAME
romioontrack@Shashi:~$ echo $PATH
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/bin:/usr/games:/usr/local/games:/usr/lib/wsl/lib:/mnt/c/Program Files/WindowsApps/MicrosoftCorporationII.WindowsSubsystemForLinux_2.6.3.0_x64_8wekyb3d8bbwe:/mnt/c/Program Files/Eclipse Adoptium/jdk-17.0.17-10-hotspot/bin:/mnt/c/Program Files/Common Files/Oracle/Java/javapath:/mnt/c/Users/Win11/Downloads/WINDOWS_X64_213000_db_home/bin:/mnt/c/app/Win11/product/21c/dbhomeXE/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS/System32/Wbem:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0:/mnt/c/WINDOWS/System32/OpenSSH:/mnt/c/MinGW/bin:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312:/mnt/c/Users/Win11/AppData/Local/Programs/Python/Python312/Scripts:/mnt/c/Program Files/MySQL/MySQL Server 8.0/bin:/mnt/c/Program Files (x86)/Microsoft SQL Server/160/DTS/Binn:/mnt/c/Program Files/Java/jdk-23/bin:/mnt/c/jdk-21/bin:/mnt/d:/mnt/c/ProgramData/chocolatey/bin:/mnt/c/Program Files/Git/cmd:/mnt/d/Oracle:/mnt/c/Users/Win11/AppData/Local/Programs/Microsoft VS Code/bin:/snap/bin
romioontrack@Shashi:~$ |
```

## 6. Debug PATH Issues

Check where a command is coming from:

```
which java
```

```
which python
```

If command not found:

```
echo $PATH
```

Fix by re-exporting correct path:

```
export PATH=/correct/path:$PATH
```

## 7. Document Configuration

Create a simple documentation file:

```
nano env_vars.txt
```

Content example:

```
MY_NAME=Shashi
```

Added /home/romioontrack/mytools to PATH

Configured in ~/.bashrc