

# Linux, day 4



# LAB: The shell environment



# Assignment

- Adjust your account's "*~/.bashrc*".
  - Add "*/opt/test*" to *\$PATH*.
- Make the "*/opt/test*" directory.
  - Copy the "*/ls*" binary to "*/opt/test/testls*".
- Do a new SSH login (or start a new Bash).
  - Can you now run "*testls*"?

# Solution

```
$ echo 'PATH=$PATH:/opt/test' >> ~/.bashrc  
  
$ sudo mkdir -p /opt/test  
$ sudo cp -p /usr/bin/ls /opt/test/testls  
  
$ ssh localhost "which testls"
```

# What will we do today?

- ~~Recap~~
- ~~Git lab, from day 3.~~
- ~~The shell environment~~
- Shell scripting
- Closing: homework and Q&A

# LAB: Shell scripting: a start

# LAB: Create a simple script

- Create a script which:
  - Runs ;)
  - Reads a name from the first, passed parameter.
  - Asks for a greeting interactively (with *read*).
  - Outputs a greeting to the name.

# Example

```
$ ./greeting.sh Tess  
How would you like to be greeted?  
Hello  
Hello Tess
```



# Solution

```
#!/bin/bash  
NAME=$1  
  
read -p "What greeting would you like? " GREET  
  
echo "${GREET} ${NAME}"
```

# Solution

```
$ chmod +x greeting.sh
```

```
$ ./greeting.sh Tess
```

```
What greeting would you like? Hello
```

```
Hello Tess
```

# What will we do today?

- ~~Recap~~
- ~~Git lab, from day 3.~~
- ~~The shell environment~~
- Shell scripting - MORE
- Closing: homework and Q&A

# LAB: Shell scripting: I/O & Files

# Assignment 1

- Find all files with "passwd" in their name.
- Find all files, literally and exactly called "passwd".
- Find all world-writable files.

# Assignment 2

- SSH from one VM to the other,
- Use a HEREDOC to run:
  - *touch /tmp/foobar*
  - *ls /tmp*
  - *echo \$(whoami) > /tmp/foobar*
  - *cat /tmp/foobar*

# Solution

```
$ locate passwd
```

```
$ find / -type f -name "*passwd*"
```

```
$ locate -b -r /passwd$
```

```
$ find / -type f -name "passwd"
```

# Solution

```
$ find / -perm -o+w -type f
```



# Solution

```
$ ssh localhost << EOF
touch /tmp/foobar
ls /tmp
echo \$(whoami) > /tmp/foobar
cat /tmp/foobar
EOF
```

# What will we do today?

- ~~Recap~~
- ~~Git lab, from day 3.~~
- ~~The shell environment~~
- Shell scripting -> More!
- Closing: homework and Q&A

# LAB: Shell scripting: Flow

# Assignment

- Write a shell script which:
  - Checks if it's run as root; if not, *"exit 1"*.
  - Reads a command from passed parameters.
    - This command is either "create" or "remove".
  - Asks for a number (for now, keep it <20).
  - Either creates or removes "user1", "user2", "user3" etc.
  - Uses HEREDOC to make "welcome.txt" in their homedir.

# Assignment

- If you run it, this looks like:

```
$ sudo /tmp/dummy-users.sh create
```

```
How many?
```

```
5
```

```
$ cat /home/user5/welcome.txt      #works
```

# Solution

- I have a sample solution on Github.
- It's here, in [the Lesson 004 directory](#).

# What will we do today?

- ~~Recap~~
- ~~Git lab, from day 3.~~
- ~~The shell environment~~
- ~~Shell scripting~~
- Closing: homework and Q&A

# Closing



# Homework

- Reading:
  - Chapter 4: Processing and analyzing text
  - Chapter 25: Shell scripting

# Homework

- Create a shell script to "*ping sweep*" a network.
  - It should ask for the first three octets of an IP.
  - Then it should cycle through all 254 addresses.
  - e.g. *./pingsweep 192.168.10.0 24*

# Other resources

- [GNU.org Bash manual](#)
- [Exercism](#): gamified learning programming.
  - 80+ assignments for Bash.
- [TLDP.org](#) has some [fun assignments](#).

# Reference materials

# Resources

- [Creating shell scripts in Enterprise Linux](#) (PluralSight)
- [A roundup of 15 popular Linux shells.](#)
- [Linux shell metacharacters](#)
- [Bash globbing tutorial](#)
- [Bash read command](#)
- [Bash getopts example](#)

# Resources

- [Really in-depth on pipes, forks and more](#)
- [Testing file characteristics in Bash](#)
- [Why you don't read lines with "for"](#)
- [An excellent, in-depth study guide for shell scripting](#)
- [Practice more, take the challenge!](#)
- [Or try Tutorials Ground](#)

# Resources

- [Exercism](#): gamified learning programming.
- [TLDP.org](#) has some [fun assignments](#).
- [Arithmetic in Bash](#)
- [GNU.org Bash manual](#)
- [Shell Scripting tutorial for beginners](#) (YouTube)