

# SHELL SCRIPTING

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# SH SYNTAX

# SHELL SYNTAX

```
$ command arg1 arg2 arg3 ...  
command output  
$ VAR=value  
$ echo "$VAR"  
value
```

# SHELL SYNTAX

## Special variables

- \$0, \$1, \$2...
- \$#
- \$?
- \$\$

# SHELL SYNTAX

Quotes are kinda weird

```
$ FILENAME="gnu slash linux"
$ cat $FILENAME
cat: gnu: No such file or directory
cat: slash: No such file or directory
cat: linux: No such file or directory
$ cat '$FILENAME'
cat: '$FILENAME': No such file or directory
$ cat "$FILENAME"
i'd like to interject for a moment
```

# THE [ COMMAND

```
$ [ "$USER" = "root" ]; echo "$?"  
1
```

# THE [ COMMAND

- Logical: !, -a, -o
- Strings: -n, -z, =, !=
- Integers: -eq, -ne, -gt, -ge, -lt, -le
- Files: -f, -d, so many more...

# CONTROL FLOW

## If statements

```
$ if command1 a b c; then  
>     echo "first thing"  
> elif command2 x y z; then  
>     echo "second thing"  
> else  
>     echo "third thing"  
> fi
```



# CONTROL FLOW

## Logical operators

```
$ command && echo "it worked" || echo "it didn't"  
$ # use { braces } for grouping, not ( parentheses )
```

# CONTROL FLOW

## Loops

```
$ while [ -f "thefile" ]; do  
>     echo "the file still exists"  
> done
```

# CONTROL FLOW

## Loops

```
$ words="i use arch btw"  
$ for x in $words; do  
>     echo "$x"  
> done  
i  
use  
arch  
btw
```

# CONTROL FLOW

## Loops

```
$ fav_numbers="42,256,1337"  
$ IFS=","  
$ for x in $fav_numbers; do  
>     echo "$x"  
> done  
42  
256  
1337
```

# CONTROL FLOW

## Case

```
$ case "$USER" in
>   "root" | "admin")
>     echo "i'm in"
>     ;;
>   *)
>     echo "i'm not in"
>     ;;
> esac
i'm not in
```

# INPUT/OUTPUT

## Default file descriptors

- 0: stdin
- 1: stdout
- 2: stderr

# INPUT/OUTPUT

## Pipes

```
$ echo "some text" | tr '[:lower:]' '[:upper:]' | figlet
```



SOME TEXT

# INPUT/OUTPUT

## Redirects

```
$ echo "zebra" > mammals
$ echo "aardvark" >> mammals
$ sort < mammals
aardvark
zebra
```



# INPUT/OUTPUT

## Redirects

```
$ curl "https://thiswebsitedoesntexist.skin/" 2> /dev/null
```

# COMMAND SUBSTITUTION

```
$ date -I  
2023-09-22  
$ echo "today's date: $(date -I)"  
today's date: 2023-09-22
```

# ARITHMETIC

```
$ min=23  
$ max=47  
$ echo "range: $((max-min))"  
range: 24
```

# ASYNCHRONOUS EXECUTION

```
$ sleep 5 && echo 'done!' &  
$ echo 'other things'  
other things  
$  
done!
```

# SUBSHELLS

```
$ pwd  
/  
$ ( cd /etc; pwd )  
/etc  
$ pwd  
/
```

# PRINTF

```
$ printf 'name: %s\nage: %.2f\n' \  
> "Lennart Poettering" "42.935857683593774"  
name: Lennart Poettering  
age: 42.94
```

# GREP

Search for things using regular expressions

```
$ grep "root" /etc/passwd
root:x:0:0::/root:/bin/bash
$ grep "^[a-z]\{5\}$" /usr/share/dict/words | head -n 5
aback
abaft
abase
abash
abate
```

# TEE

```
$ echo "some text" | tee logfile  
some text  
$ cat logfile  
some text
```



# SHA256SUM

```
$ sha256sum /etc/hosts  
772f1140686c616f823839840d82d36c813514ddadde60e74bb8b612e82cd4  
$ # also: md5sum, sha1sum, sha384sum, etc.
```

# TR

```
$ echo 'RITlug' | tr 'l' 'w'  
RITwug  
$ echo 'i hate vowels' | tr -d 'aeiou'  
ht vwls  
$ echo 'big' | tr '[:lower:]' 'A-Z'  
BIG
```

# YES

```
$ yes
```

```
y
```

```
y
```

```
y
```

```
y
```

```
y
```

```
...
```

# FILESYSTEM THINGS

- `touch`: update/modify file modification time
- `mkdir`: make a directory
- `mkfifo`: make a named pipe (FIFO device)

# CHMOD, CHOWN

- `chmod +x, chmod o-w`
- `chmod 777, chmod -R 644`
- `chown root, chown -R root:root`

**AWK**

**SED**