

# Unix-like Operating Systems

Exit status, command test, flow control.

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# Exit status

- What is the exit status?
  - The exit status is the value returned by the child process while terminating (exit status falls between 0 and 255).
  - An exit status of zero indicates success.
  - A non-zero exit status indicates failure.
- What is the meaning of exit status of the following commands?

- ```
PASS=/etc/passwd  
grep ^root: "$PASS" ; echo $?
```

Pattern is found.

- ```
grep ^rooooot: "$PASS" ; echo $?
```

Pattern is not found.

- ```
grep ^root: /etc/foo ; echo $?
```

Wrong argument.

- ```
~/ .bash_history ; echo $?
```

Wrong permissions.

- What is the meaning of exit status of the following commands?

- `winzip ; echo $?`

Command not found.

- `ls -lR / ^C ; echo $?`

Exit by signal.

# Command test and if

- Create a shell script `list1.bash` that requires one argument.
  - If the argument is missing or if there are more arguments, then the script prints the following error and exits with exit status 1.

```
Usage: ./list1.bash directory_name
```

- If the argument is a name of a directory and the directory is readable, then the scripts lists its contents by command `ls -la`. Otherwise the script prints the following error and exits with exit status 2.

```
./list1.bash: "foo" is not readable directory
```

- Change the access permissions of the script by the following command

```
chmod 755 list1.bash
```

- Run the script by the following command

```
./list1.bash
```

# Command test and if

```
#!/bin/bash

#--- Checking Arguments ---
if [ $# != 1 ]
then
    echo "Usage: $0 directory_name" >&2
    exit 1
fi

if [ -d "$1" -a -r "$1" ]
#--- For readable directory
then
    ls -la "$1"

#--- Otherwise
else
    echo "$0: \"$1\" is not readable directory" >&2
    exit 2
fi
```

# Loop for

- Modify previous shell script such that for every regular readable file in the directory it will print file type (output from command file).
- Example of script output

```
$> ../list2.bash /usr/bin/ | head

/usr/bin/[: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically linked
/usr/bin/411toppm: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically
/usr/bin/7z: POSIX shell script, ASCII text executable
/usr/bin/7za: POSIX shell script, ASCII text executable
/usr/bin/a2p: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically
/usr/bin/aa-easyprof: Python script, ASCII text executable
/usr/bin/abs2rel: Lua script, ASCII text executable
/usr/bin/aclocal: awk script, ASCII text
/usr/bin/aclocal-1.13: awk script, ASCII text
/usr/bin/aconnect: ELF 64-bit LSB executable, x86-64, version 1 (SYSV), dynamically
```

# Loop for

```
...
if [ -d "$1" -a -r "$1" ]
    ### For readable directory
    then

        for i in "${1%/}"/*      # Remove matching suffix pattern
        do
            if [ -f "$i" -a -r "$i" ]
                then
                    file "$i"
                fi
            done

        ### Otherwise
    else
        echo "$0: \"$1\" is not readable directory" >&2
        exit 2
    fi
```