BASH SCRIPTING

Week 1
Bash Foundations

Write, run, and explain your first scripts

Two 90-minute lessons | Milestone M1: Script Operator

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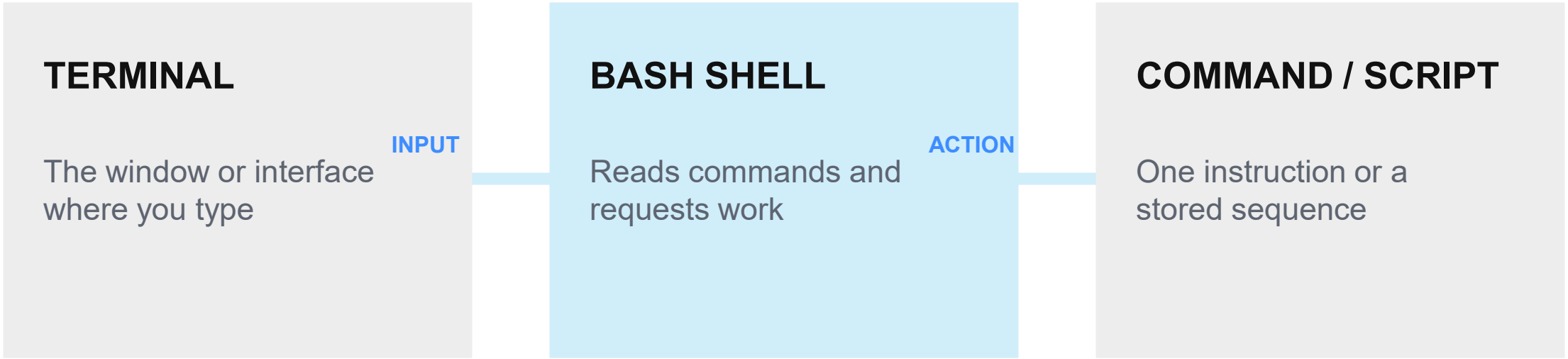
By the end of Week 1, you can prove six skills

01	Explain terminal, shell, Bash, command, and script
02	Identify the shebang, comments, commands, and output
03	Run a script with bash script.sh
04	Run a script directly with ./script.sh
05	Use exit status to recognize success or failure
06	Build and explain an environment snapshot

Terminal is the interface; Bash interprets commands



A terminal can host different shells. Bash is one shell and also a scripting language.

A script is a file that Bash reads from top to bottom

1

WRITE

Create a text file

2

SELECT

Choose Bash

3

EXECUTE

Run each command

4

OBSERVE

Read output + status

```
editor -> first-script.sh -> bash -> commands -> output + exit status
```

Four parts make a first script readable and runnable

```
#!/usr/bin/env bash

# Display identity information

printf '%s\n' 'System Identity'
whoami
hostname
pwd
```

01 **SHEBANG**

Selects Bash for direct execution.

02 **DESCRIPTION**

Explains the script's purpose.

03 **OUTPUT**

Gives the reader clear context.

04 **COMMANDS**

Perform the requested work.

The execution method determines which requirements apply

METHOD 1

```
bash script.sh
```

Bash is selected explicitly.
The file must be readable.
Execute permission is not required.

METHOD 2

```
./script.sh
```

The system reads the shebang.
The file must be executable.
./ means the current directory.

A .sh filename does not grant permission - chmod +x changes the permission bits.

Guided demo: predict every line before execution

```
#!/usr/bin/env bash

printf '%s\n' '=== My First Bash Script ==='
printf 'User: %s\n' "$(whoami)"
printf 'Hostname: %s\n' "$(hostname)"
printf 'Current directory: %s\n' "$(pwd)"
printf 'Date: %s\n' "$(date)"
```

RUN

```
bash first-script.sh

chmod +x first-
script.sh
./first-script.sh

echo $?
```

CHECK
Same output. Final status: 0.

Output, error, and status answer different questions

STANDARD OUTPUT

What information did the command produce?

```
pwd
/home/student
```

STANDARD ERROR

What diagnostic did the command report?

```
ls /missing
No such file...
```

EXIT STATUS

Did the command succeed or fail?

```
echo $?
0 or nonzero
```

Check $? immediately - the next command replaces it.

&& continues on success; || responds to failure

SUCCESS PATH

```
command1 && command2
```

command1 returns 0

then command2 runs

FAILURE PATH

```
command1 || command2
```

command1 returns nonzero

then command2 runs

```
pwd && echo 'ready'     |     ls /missing || echo 'check failed'
```

A useful report combines commands with clear labels

```
#!/usr/bin/env bash

printf '%s\n' 'Linux Environment Snapshot'
printf 'Date: %s\n' "$(date)"
printf 'User: %s\n' "$(whoami)"
printf 'Hostname: %s\n' "$(hostname)"
printf 'Kernel: %s\n' "$(uname -r)"
uptime
free -h
df -h /
```

REPORT SECTIONS

01 Identity

02 Operating system

03 Memory

04 Root filesystem

05 Completion message

Read-only by design: no sudo, no configuration changes.

Two labs turn understanding into evidence

LAB 1

My First Script

Create identity output
Run through Bash
Run directly
Observe permission failure
Explain every line

LAB 2

Environment Snapshot

Check syntax
Report system information
Use readable sections
Test two execution methods
Record final exit status

Required proof: script + commands + output + exit status + explanation

Milestone M1: create, execute, and explain independently

SCRIPT OPERATOR

You are ready when you can build a script, run it two ways, check status, and explain every line.

01 **STRUCTURE**
Shebang + description + commands

02 **EXECUTION**
bash file and ./file both work

03 **EVIDENCE**
Output + error + exit status

NEXT: Week 2 adds variables, quoting, user input, and positional arguments.