Lab 3 : Modifying an Existing Script

Objective: Enhance and customize a script.

Script I used: `print_numbers.sh` from `Scripts` folder

🌱 Original vs. 🚀 Enhanced Script Behavior

🧃 Original Script: `print_numbers.sh`

A humble loop with a fixed mindset — it prints numbers 1 to 5, no questions asked. Like a playlist stuck on repeat, it delivers the same output every time. No input, no validation, no surprises. It's reliable, but rigid — a one-size-fits-all solution in a world that craves customization.

```
for i in 1 2 3 4 5
do
  echo "Number: $i"
done
```

🚀 Enhanced Script: `enhanced_numbers.sh`

This isn't your average loop. It's a command-line chameleon:

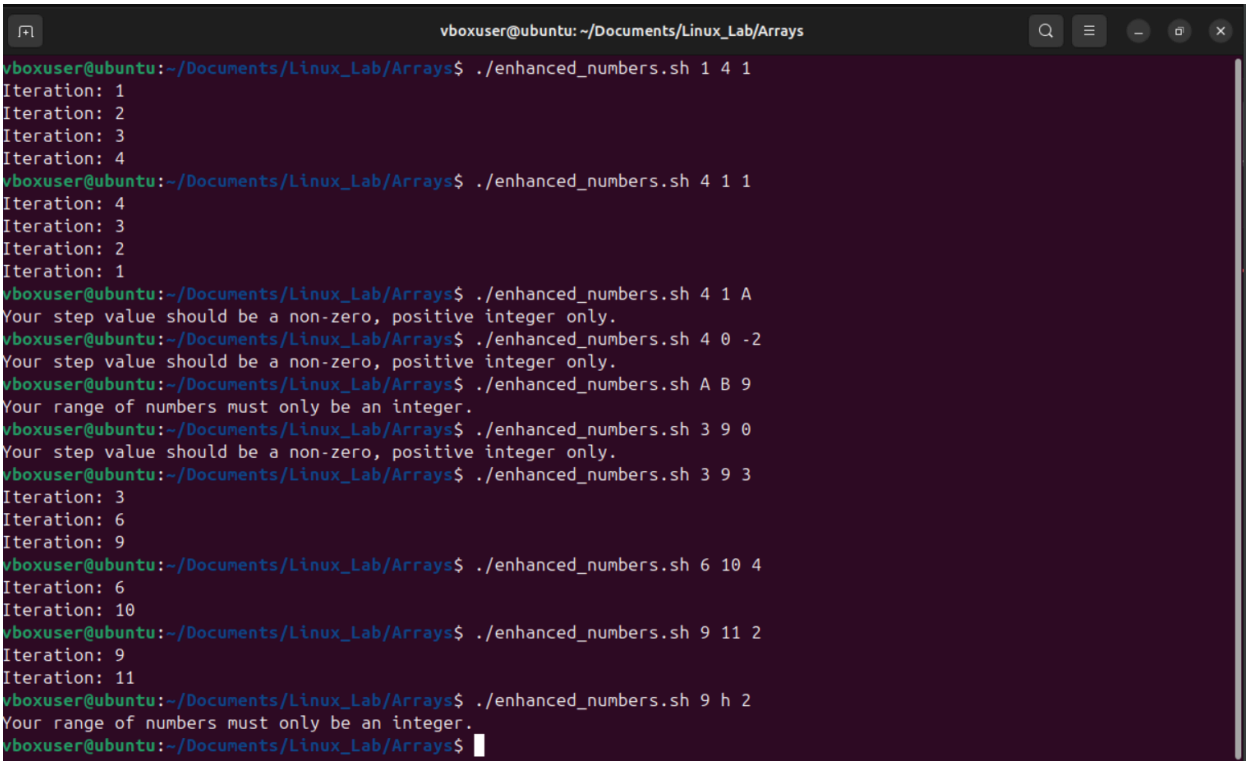
- 🧠 Smart enough to validate your inputs
- 🔁 Flexible enough to count up or down
- 🛡️ Safe enough to reject nonsense like a zero step

- 🐬 You can flip the direction of loop.
- 🎛️ Customizable with just three arguments: `start`, `end`, and `step`

🔍 How It Works

- You feed it three numbers.
- It checks if they make sense.
- Then it prints a sequence tailored to your input — ascending or descending, fast or slow.

🧪 Sample Run Code Outputs:



EXTRA QUESTIONS:

Q1: What does `$1` mean in a Bash script?

A: `$1` refers to the first argument passed to the script when it's executed. For example, if you run `./script.sh apple banana`, then `$1` will be `apple`.

Q2: What is `$@` used for?

A: `$@` represents all the arguments passed to the script, treated as separate words. It's perfect for looping through each input individually. Example:

```
for item in "$@"; do
  echo "$item"
done
```

Q3: What does $# tell us?

A:

> You can't use 'macro parameter character #' in math mode

```
$# gives the total number of arguments passed to the script. If you run ./script.
```

will be 3.

Q4. What does exit 1 do in a script?

A: exit 1 stops the script and returns an error code (1) to the shell, signaling that something went wrong. It's commonly used after input validation fails or when a critical condition isn't met.

```
if [ $# -ne 3 ]; then
  echo "Error: Please provide exactly three arguments."
  exit 1
fi
```

Q5: What's the difference between exit 0 and exit 1?

A:

- exit 0 → Success. The script completed without issues.
- exit 1 (or any non-zero value) → Failure. Something went wrong, and the script exited early.

Appendix: Raw Markdown Source (LAB3.md)

Due to a limitation on the submission portal — which only allows uploading **two files** — I've embedded the full raw Markdown source of `LAB3.md` directly into this PDF. This ensures all three required deliverables (`enhanced_numbers.sh` , `LAB3.md` , and `LAB3.pdf`) are included and accessible for review. The content below reflects the original Markdown file exactly as written.

````
# Lab 3 : Modifying an Existing Script
Objective: Enhance and customize a script.

## Script I used: `print_numbers.sh` from `Scripts` folder

## 🌱 Original vs. 🚀 Enhanced Script Behavior

### 🧃 Original Script: `print_numbers.sh`
A humble loop with a fixed mindset — it prints numbers 1 to 5, no
questions asked. Like a playlist stuck on repeat, it delivers the same
output every time. No input, no validation, no surprises. It's reliable,
but rigid — a one-size-fits-all solution in a world that craves
customization.

    ```bash
    for i in 1 2 3 4 5
    do
      echo "Number: $i"
    done
    ```

## 🚀 Enhanced Script: `enhanced_numbers.sh`
This isn't your average loop. It's a command-line chameleon:
- 🧠 Smart enough to validate your inputs
- 🔁 Flexible enough to count up or down
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- 🐬 You can flip the direction of loop.
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- You feed it three numbers.
- It checks if they make sense.
- Then it prints a sequence tailored to your input — ascending or
descending, fast or slow.

### 🍼 Sample Run Code Outputs:
![]
(https://github.com/boa3444/Linux_Lab/blob/1473fcac56a2b52f7fca02f8f7d29435

## EXTRA QUESTIONS:

### Q1: What does `$1` mean in a Bash script?
````

````
**A:** `$1` refers to the first argument passed to the script when it's
executed. For example, if you run `./script.sh apple banana`, then `$1`
will be `apple`.

---

### Q2: What is `$@` used for?
**A:** `$@` represents all the arguments passed to the script, treated
as separate words. It’s perfect for looping through each input
individually. Example:
    ```bash
    for item in "$@"; do
      echo "$item"
    done
    ```

### Q3: What does `$#` tell us?
**A:** `$#` gives the total number of arguments passed to the script. If
you run `./script.sh apple banana cherry`, then `$#` will be `3`.

### Q4. What does `exit 1` do in a script?
**A:** `exit 1` stops the script and returns an error code (`1`) to the
shell, signaling that something went wrong. It’s commonly used after
input validation fails or when a critical condition isn’t met.
    ```bash
    if [ $# -ne 3 ]; then
      echo "Error: Please provide exactly three arguments."
      exit 1
    fi
    ```

### Q5: What’s the difference between `exit 0` and `exit 1`?
**A:**
- `exit 0` → Success. The script completed without issues.
- `exit 1` (or any non-zero value) → Failure. Something went wrong, and
the script exited early.
````