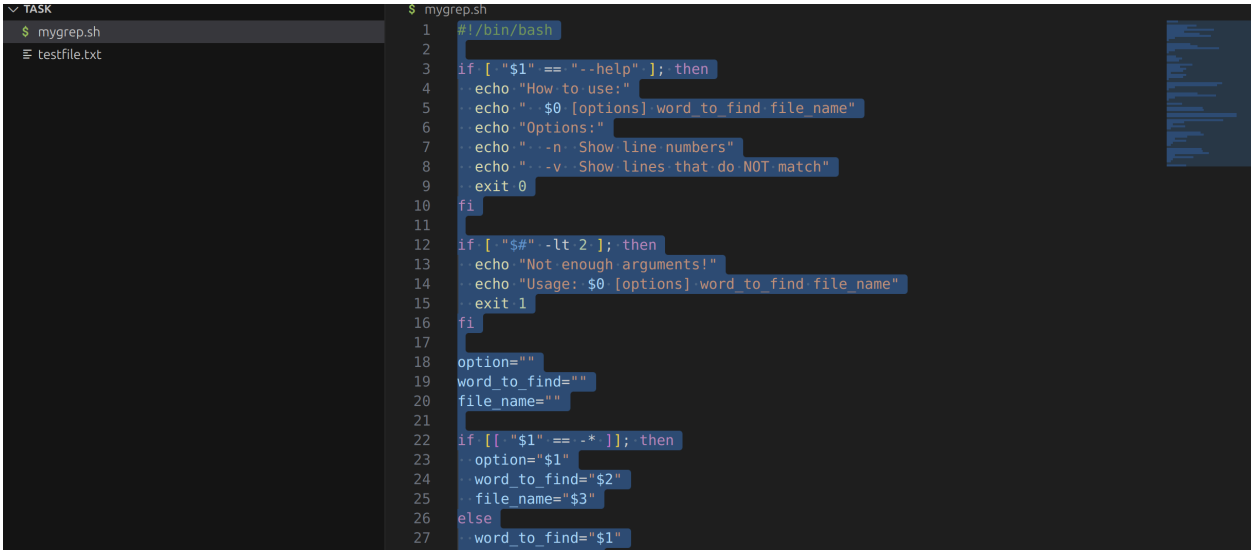
Fawry | ステップ

Task 1

```
#!/bin/bash

if [ "$1" == "--help" ]; then
  echo "How to use:"
  echo "  $0 [options] word_to_find file_name"
  echo "Options:"
  echo "  -n  Show line numbers"
  echo "  -v  Show lines that do NOT match"
  exit 0
fi

if [ "$#" -lt 2 ]; then
  echo "Not enough arguments!"
  echo "Usage: $0 [options] word_to_find file_name"
  exit 1
fi
```

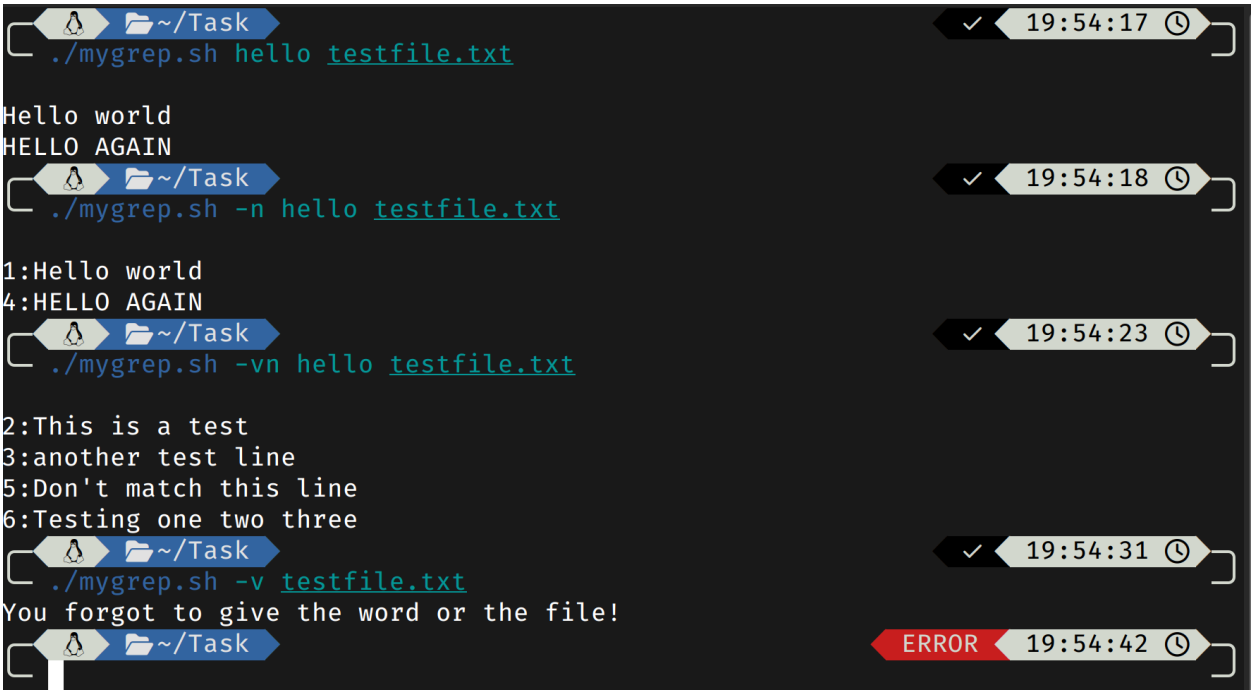
```
option=""
word_to_find=""
file_name=""

if [[ "$1" == -* ]]; then
  option="$1"
  word_to_find="$2"
  file_name="$3"
else
  word_to_find="$1"
  file_name="$2"
fi

if [ -z "$word_to_find" ] || [ -z "$file_name" ]; then
  echo "You forgot to give the word or the file!"
  exit 1
fi

if [ ! -f "$file_name" ]; then
  echo "Oops! File '$file_name' does not exist."
  exit 1
fi

line_number=0

while IFS= read -r current_line; do
  line_number=$((line_number + 1))

  line_in_small=$(echo "$current_line" | tr '[:upper:]' '[:lower:]')
  word_in_small=$(echo "$word_to_find" | tr '[:upper:]' '[:lower:]')

  if [[ "$line_in_small" == *"$word_in_small"* ]]; then
    is_match=true
  else
    is_match=false
  fi
```

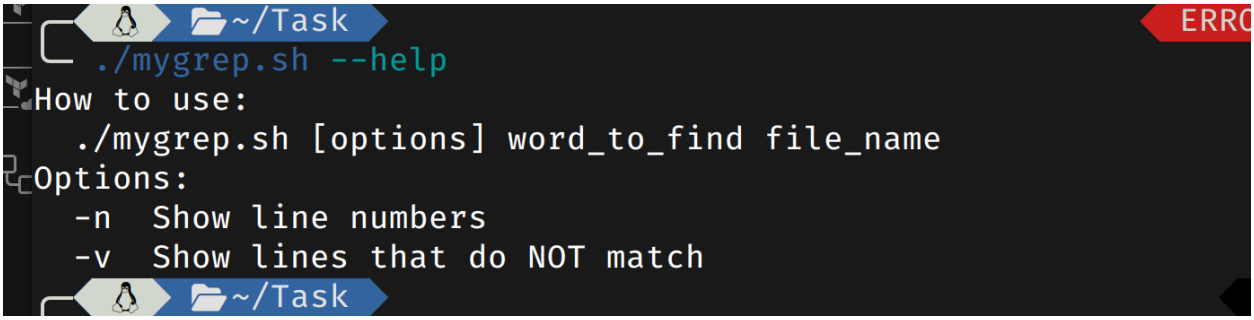
```
  if [[ "$option" == *v* ]]; then
    if [ "$is_match" == true ]; then
      is_match=false
    else
      is_match=true
    fi
  fi

  if [ "$is_match" == true ]; then
    if [[ "$option" == *n* ]]; then
      echo "${line_number}:$current_line"
    else
      echo "$current_line"
    fi
  fi

done < "$file_name"
```




```
## test file
Hello world
This is a test
```

```
another test line
HELLO AGAIN
Don't match this line
Testing one two three
```





1. How my script handles arguments and options:

First, the script checks if the user typed `--help` and shows how to use it. Then it makes sure there are enough arguments. It looks if the first thing is an option (like `-n` or `-v`). If yes, it saves it. After that, it reads the file line by line. It checks if each line has the word we are looking for (ignoring big/small letters). Depending on the

option, it either shows matching lines, shows lines that don't match (`-v`), and adds line numbers if needed (`-n`).

2. How I would change it for regex or -i/-c/-l options:

I would add more options when reading the input. For regex, I would use a different way to match lines (like `[[ $line =~ $pattern ]]`). For `-i`, I would handle case sensitivity better. For `-c`, I would count how many matches and print the number at the end. For `-l`, I would just print the filename if there is a match.

3. Hardest part and why:

The hardest part was handling the options correctly, like making sure `-n` and `-v` work together. Also making sure it shows the right lines or skips them, without messing up.

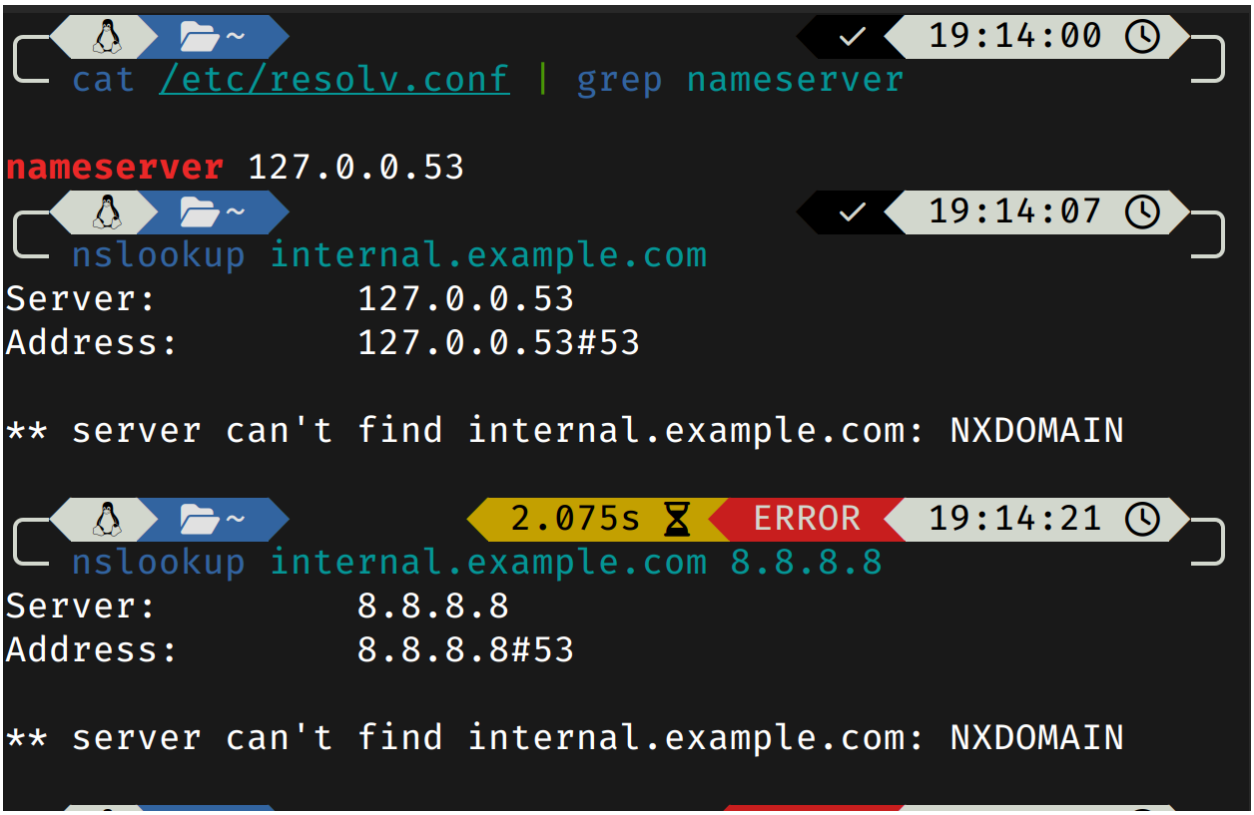
Task 2 | ステップ 2

1. Verify DNS Resolution

Goal: Check if `internal.example.com` is resolvable via:

Commands:

```
# Check which DNS servers you are using
cat /etc/resolv.conf

# Try resolving using system DNS
nslookup internal.example.com

# Now manually specify Google's DNS
nslookup internal.example.com 8.8.8.8
```



2. Diagnose Service Reachability

Goal:

check if the service is reachable.

Commands:

```
## i want to do it but there is no server to test

# Ping the resolved IP
ping <IP_ADDRESS>

# Check if ports 80 (HTTP) or 443 (HTTPS) are open
telnet <IP_ADDRESS> 80
telnet <IP_ADDRESS> 443
```

```
# OR
nc -zv <IP_ADDRESS> 80
nc -zv <IP_ADDRESS> 443

# OR use curl to try to connect
curl -I http://internal.example.com
curl -I https://internal.example.com

# On the server itself, check if service is listening
ss -tuln | grep -E ':80|:443'
```

Layer	Possible Cause
DNS	- Wrong DNS entry- Missing A record- DNS server misconfigured- Local /etc/resolv.conf wrong- Firewall blocking DNS queries
Network	- Firewall blocking HTTP/HTTPS- Routing issues (wrong routes/subnet)
Service Level	- Web server (nginx/httpd) not bound to 0.0.0.0- Service listening only on localhost- Service down on specific node
Client Side	- /etc/hosts has wrong mapping- Cache issues (stale DNS entries)

a) DNS Issues

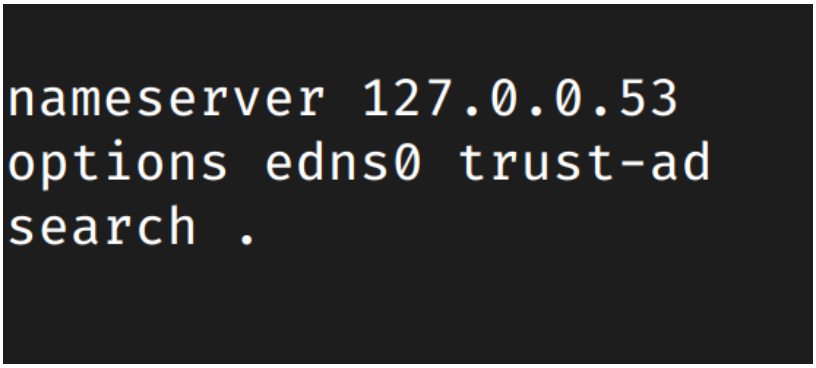
- **How to Confirm:**

  `nslookup` from system DNS but works with `8.8.8.8`.

- **Commands to Fix:**
  - If /etc/resolv.conf wrong:

    ```
    sudo nano /etc/resolv.conf
    ```

```
# Fix or add correct nameserver entries
```



- need to flush local DNS cache:

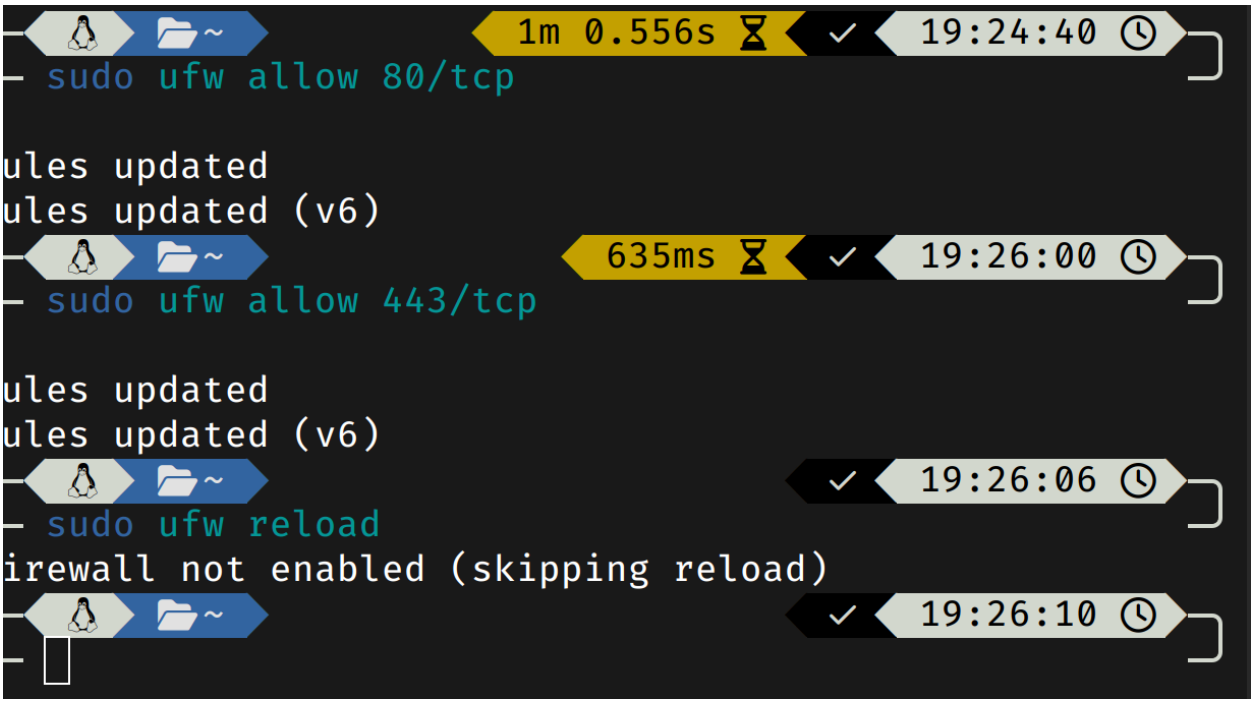
```
sudo systemd-resolve --flush-caches
```

b) Firewall Issues

- **How to Confirm:**
  - `nc -zv <IP> 80` or `443` times out.
  - `telnet` fails to connect.
- **Commands to Fix:**

with `ufw`:

```
sudo ufw allow 80/tcp
sudo ufw allow 443/tcp
sudo ufw reload
```



d) Routing/Subnet Issues

- Use `traceroute`:

```
traceroute <IP_ADDRESS>
```

🏆 Bonus

Configure Local /etc/hosts Entry

Commands

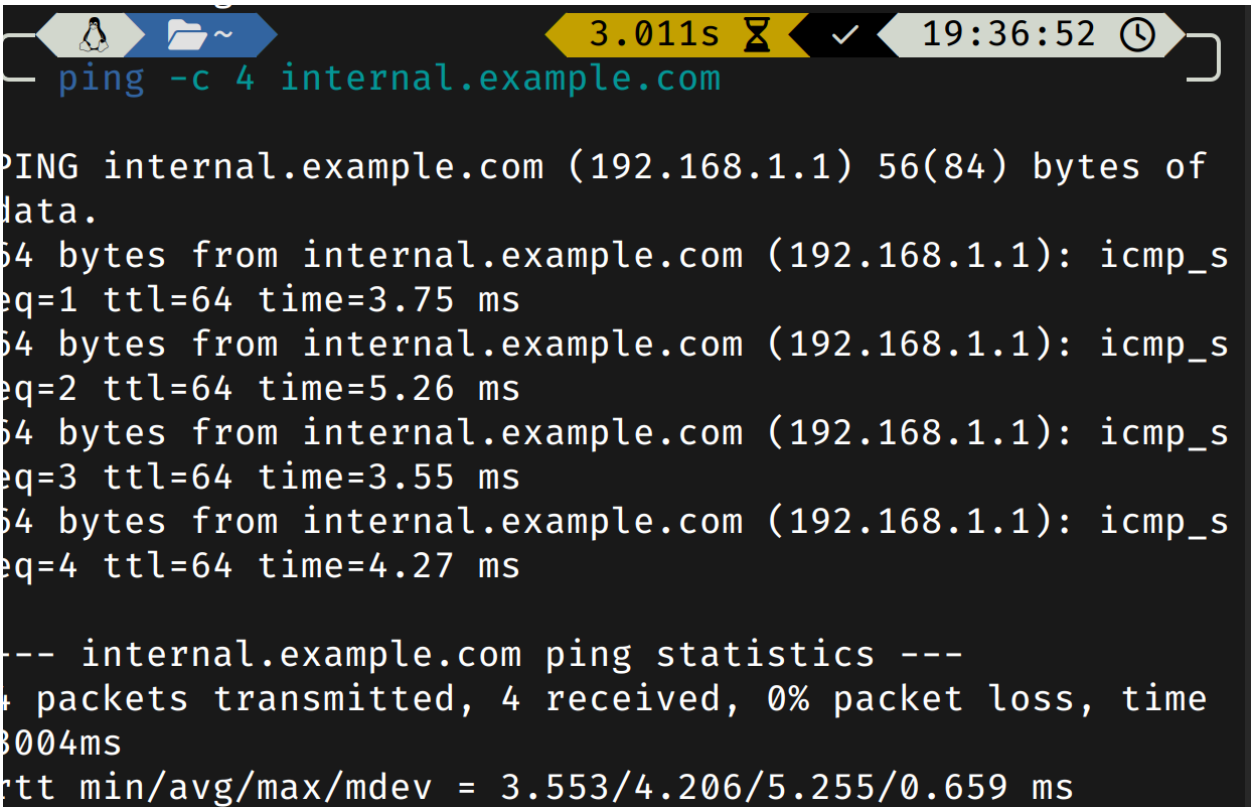
```
sudo nano /etc/hosts
```

Add:

```
192.168.1.1 internal.example.com
```

```
ping internal.example.com
curl http://internal.example.com
```

Test:



Persist DNS Settings with systemd-resolved or NetworkManager

```
# Check status
systemctl status systemd-resolved

# Set DNS servers persistently
sudo nano /etc/systemd/resolved.conf

[Resolve]
DNS=192.168.1.1
FallbackDNS=8.8.8.8



sudo systemctl restart systemd-resolved
```