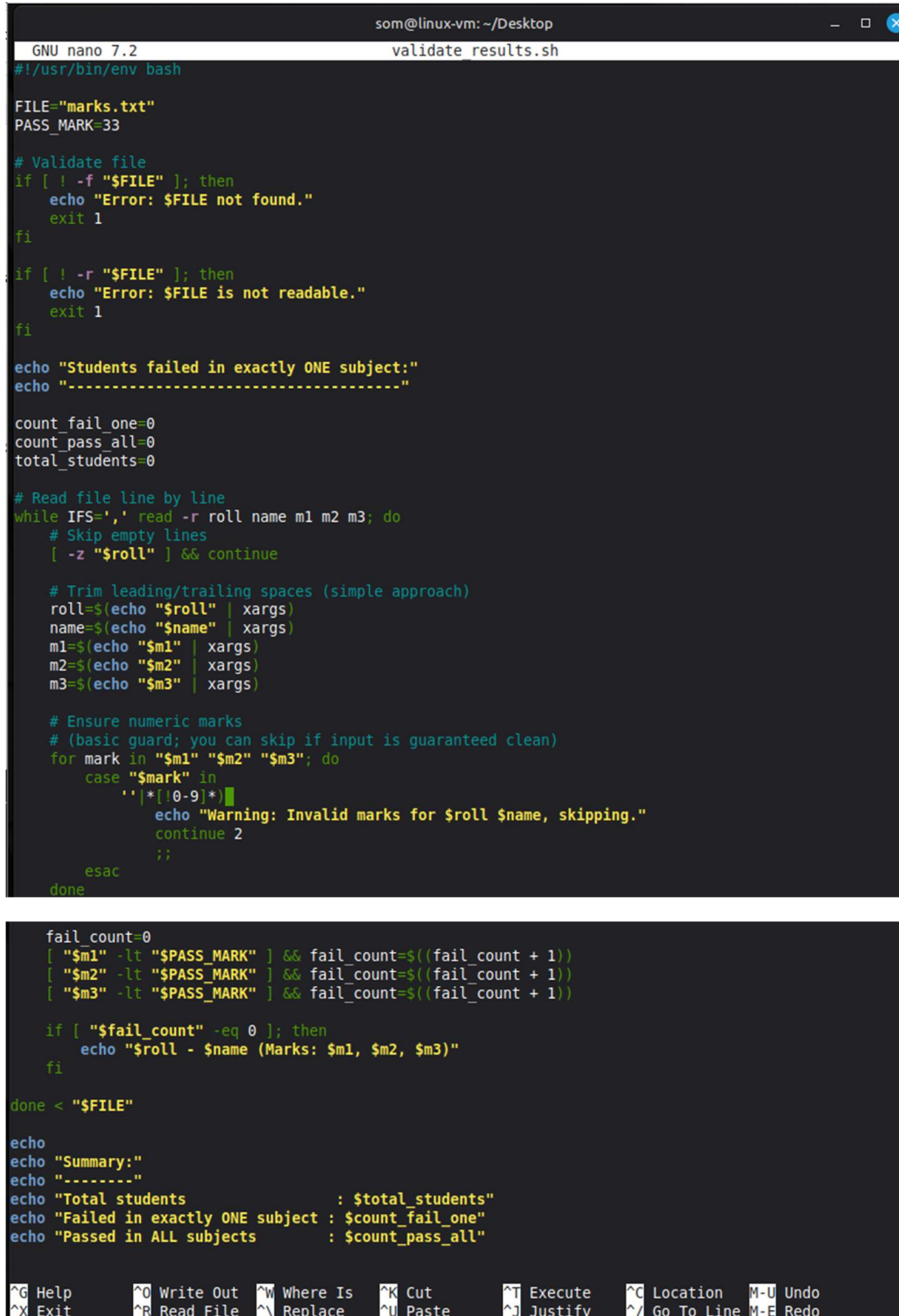


Question 3 (2024eb03003):

Please find screenshot of shell script below and attaching **validate_results.sh** script to GitHub repository:



```
som@linux-vm: ~/Desktop
GNU nano 7.2 validate_results.sh
#!/usr/bin/env bash

FILE="marks.txt"
PASS_MARK=33

# Validate file
if [ ! -f "$FILE" ]; then
    echo "Error: $FILE not found."
    exit 1
fi

if [ ! -r "$FILE" ]; then
    echo "Error: $FILE is not readable."
    exit 1
fi

echo "Students failed in exactly ONE subject:"
echo "-----"

count_fail_one=0
count_pass_all=0
total_students=0

# Read file line by line
while IFS=' ' read -r roll name m1 m2 m3; do
    # Skip empty lines
    [ -z "$roll" ] && continue

    # Trim leading/trailing spaces (simple approach)
    roll=$(echo "$roll" | xargs)
    name=$(echo "$name" | xargs)
    m1=$(echo "$m1" | xargs)
    m2=$(echo "$m2" | xargs)
    m3=$(echo "$m3" | xargs)

    # Ensure numeric marks
    # (basic guard; you can skip if input is guaranteed clean)
    for mark in "$m1" "$m2" "$m3"; do
        case "$mark" in
            *[!0-9]*)
                echo "Warning: Invalid marks for $roll $name, skipping."
                continue 2
            ;;
        esac
    done

    fail_count=0
    [ "$m1" -lt "$PASS_MARK" ] && fail_count=$((fail_count + 1))
    [ "$m2" -lt "$PASS_MARK" ] && fail_count=$((fail_count + 1))
    [ "$m3" -lt "$PASS_MARK" ] && fail_count=$((fail_count + 1))

    if [ "$fail_count" -eq 0 ]; then
        echo "$roll - $name (Marks: $m1, $m2, $m3)"
    fi
done < "$FILE"

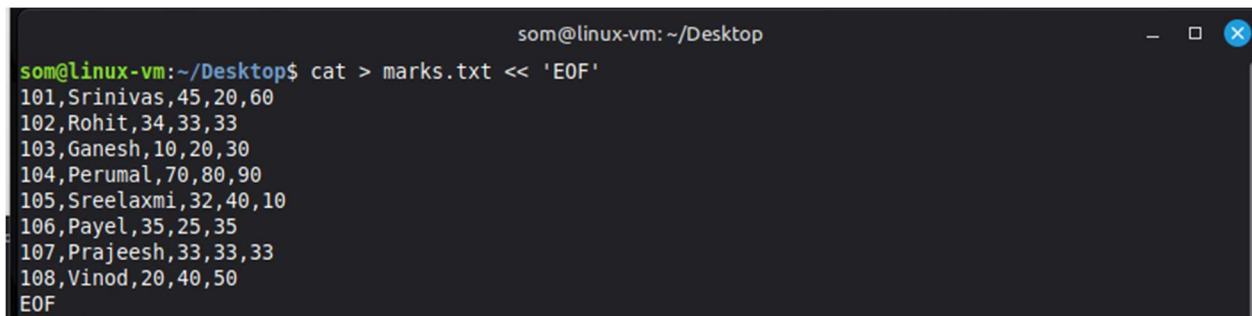
echo
echo "Summary:"
echo "-----"
echo "Total students           : $total_students"
echo "Failed in exactly ONE subject : $count_fail_one"
echo "Passed in ALL subjects    : $count_pass_all"

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  M-U Undo
^X Exit      ^R Read File ^M Replace   ^U Paste     ^J Justify   ^_ Go To Line M-E Redo
```

Testing the `validate_results.sh` Script

Create a file `marks.txt`

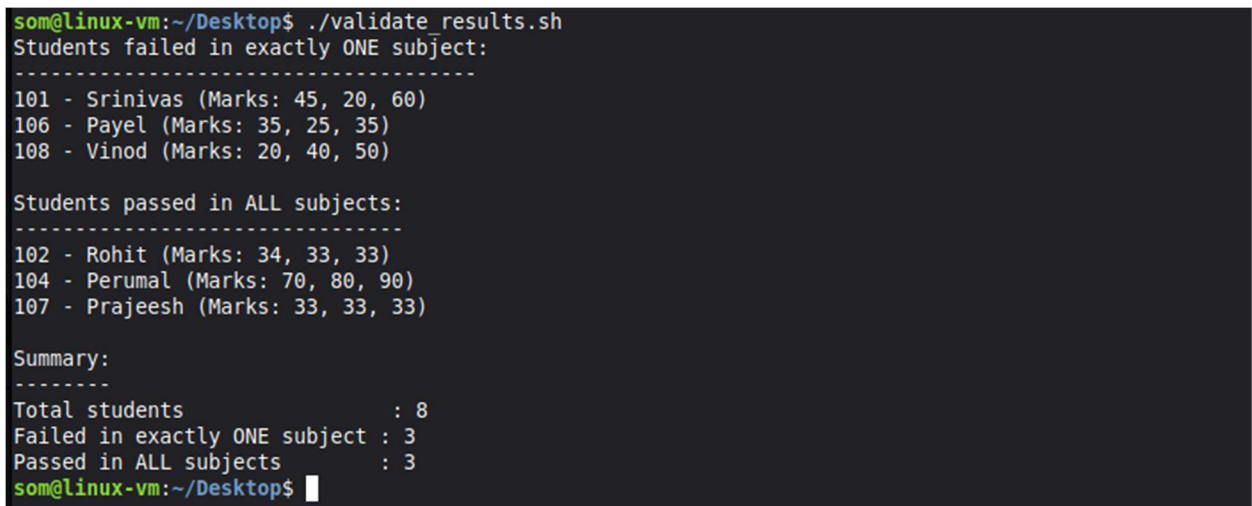
```
cat > marks.txt << 'EOF'
101,Srinivas,45,20,60
102,Rohit,34,33,33
103,Ganesh,10,20,30
104,Perumal,70,80,90
105,Sreelaxmi,32,40,10
106,Payel,35,25,35
107,Prajeesh,33,33,33
108,Vinod,20,40,50
EOF
```

A terminal window titled 'som@linux-vm: ~/Desktop' showing the command 'cat > marks.txt << 'EOF'' and its output, which lists eight students with their IDs and marks in three subjects, followed by 'EOF'.

```
som@linux-vm: ~/Desktop
som@linux-vm:~/Desktop$ cat > marks.txt << 'EOF'
101,Srinivas,45,20,60
102,Rohit,34,33,33
103,Ganesh,10,20,30
104,Perumal,70,80,90
105,Sreelaxmi,32,40,10
106,Payel,35,25,35
107,Prajeesh,33,33,33
108,Vinod,20,40,50
EOF
```

Test Case 1: Normal operation

`./validate_results.sh`

A terminal window titled 'som@linux-vm: ~/Desktop' showing the command './validate_results.sh' and its output. The output categorizes students into those who failed in exactly one subject and those who passed in all subjects, followed by a summary of the total counts.

```
som@linux-vm:~/Desktop$ ./validate_results.sh
Students failed in exactly ONE subject:
-----
101 - Srinivas (Marks: 45, 20, 60)
106 - Payel (Marks: 35, 25, 35)
108 - Vinod (Marks: 20, 40, 50)

Students passed in ALL subjects:
-----
102 - Rohit (Marks: 34, 33, 33)
104 - Perumal (Marks: 70, 80, 90)
107 - Prajeesh (Marks: 33, 33, 33)

Summary:
-----
Total students           : 8
Failed in exactly ONE subject : 3
Passed in ALL subjects    : 3
som@linux-vm:~/Desktop$
```

Requirement validated:

Expected results from this data:

- Failed exactly ONE subject: (03)
101,Srinivas,45,20,60
106,Payel,35,25,35
108,Vinod,20,40,50
- Passed ALL subjects: (03)
102,Rohit,34,33,33
104,Perumal,70,80,90
107,Prajeesh,33,33,33
- Total students: (08)