Question 3 [6 Points]

Write a shell script validate_results.sh that reads student data from marks.txt.

Each line contains:RollNo, Name, Marks1,Marks2,Marks3Your script should:

• Print students who failed in exactly ONE subject • Print students who passed in ALL subjects
• Print the count of students in each categoryPassing marks for each subject is 33.Use loops,
conditionals, and arithmetic operations.

Script:

```bash
1    #!/bin/bash
2
3    # Check if marks.txt exists and is readable
4    if [ ! -r "marks.txt" ]; then
5        echo "Error: marks.txt file not found or not readable."
6        exit 1
7    fi
8
9    # Counters
10   fail_one_count=0
11   pass_all_count=0
12
13   echo "Students who failed in exactly ONE subject:"
14
15   # Read file line by line
16   while IFS=',' read -r roll name m1 m2 m3
17   do
18       fail_count=0
19
20       # Check each subject
21       if [ "$m1" -lt 33 ]; then
22           fail_count=$((fail_count + 1))
23       fi
24
25       if [ "$m2" -lt 33 ]; then
26           fail_count=$((fail_count + 1))
27       fi
28
29       if [ "$m3" -lt 33 ]; then
30           fail_count=$((fail_count + 1))
31       fi
32
33       # Failed in exactly one subject
34       if [ "$fail_count" -eq 1 ]; then
35           echo "$roll, $name"
36           fail_one_count=$((fail_one_count + 1))
37       fi
38
39       # Passed in all subjects
40       if [ "$fail_count" -eq 0 ]; then
41           pass_all_count=$((pass_all_count + 1))
42       fi
43
44   done < marks.txt
45
46   echo ""
47   echo "Students who passed in ALL subjects:"
48   echo "-----------------------------------"
49
50   # Second pass to print passed students
51   while IFS=',' read -r roll name m1 m2 m3
52   do
53       if [ "$m1" -ge 33 ] && [ "$m2" -ge 33 ] && [ "$m3" -ge 33 ]; then
54           echo "$roll, $name"
55       fi
56   done < marks.txt
57
58   echo ""
59   echo "Summary:"
60   echo "--------"
61   echo "Students failed in exactly one subject: $fail_one_count"
62   echo "Students passed in all subjects: $pass_all_count"
63
```

Explanation:

if [! -r "marks.txt"]; then

      if : starts a condition

      [...] : test cmd

      -r : checked if file is readable

      ! : Not operator

      marks.txt: file name

while IFS=',' read -r roll name m1 m2 m3

      while : loop that run till the condition is false

      IFS=',' Input field separator

      read : read one line

      variables receive values

            roll : roll number
            name: Student name

            m1,m2,m3 : Marks

do : starts the loop body

fail_count= 0

      counter for this student

if ["$m1" -lt 33]; then

      -lt : less than

      check if marks 1 <33

ail_count=$((fail_count + 1))

Arithmetic operation

Increases failure by 1

Same logic for other condition

while IFS=',' read -r roll name m1 m2 m3

Starts a second loop

used only to print names of students who passed all subjects

In conclusion: The script reads student records line by line using a while loop, counts failed subjects using arithmetic operations, and categorizes students based on pass/fail conditions.

Output:

```
sudhanshu@Sudhanshus-MacVati Question3 % chmod +x validate_results.sh
sudhanshu@Sudhanshus-MacVati Question3 % ./validate_results.sh
Students who failed in exactly ONE subject:
------------------------------------------------
101, Amit
103, Rahul
105, Suresh
107, Karan

Students who passed in ALL subjects:
----------------------------------------
102, Neha
104, Pooja
106, Anjali
108, Priya
110, Meera

Summary:
---------
Students failed in exactly one subject: 4
Students passed in all subjects: 5
sudhanshu@Sudhanshus-MacVati Question3 %
```