

# Question 1:

## PAC Chart:

<b><i>DATA GIVEN</i></b>	<b><i>REQUIRED RESULT(S)</i></b>
<ul style="list-style-type: none"><li>→ Transaction Amount</li><li>→ Transaction Country</li><li>→ Transaction Timing</li></ul>	<ul style="list-style-type: none"><li>→ Flag any suspicious transaction</li></ul>
<b><i>REQUIRED PROCESSING</i></b>	<b><i>SOLUTION ALTERNATIVE(S)</i></b>
<ul style="list-style-type: none"><li>→ Store daily spending limit and usual countries of transaction as constants.</li><li>→ Make a variable to store total transaction amount for the day.</li><li>→ Take as input the number of transactions for past hour. If it is above the limit, then flag the transaction, otherwise proceed.</li><li>→ Take as input the country that transaction is taking place in. If it is unusual, then flag the transaction, otherwise proceed.</li><li>→ Take as input the amount of transaction. If adding it to the daily total brings it above the daily limit, then flag the transaction, otherwise proceed.</li></ul>	<ul style="list-style-type: none"><li>→ Instead of taking number of transactions as input, we can run a loop and keep track of the transactions using a date/time variable.</li><li>→ The currency in which transaction is being made can be changed based on country of transaction.</li></ul>

### **IPO Chart:**

<b><u>INPUT</u></b>	<b><u>PROCESS</u></b>	<b><u>MODULE REFERENCE</u></b>	<b><u>OUTPUT</u></b>
→ Number of transactions in the past hour → Total of Previous transactions → Amount for current transaction → Country of Transaction	→ Take all data as input → Check if number of transactions is above 3, in which case flag transaction → Add current amount to previous total → In case total becomes higher than limit, flag transaction → Check if country is unusual, in which case flag the transaction → Otherwise proceed	INPUT  IF-THEN  COMPUTE  IF-THEN  IF-THEN  ELSE	→ “Transaction Flagged” OR “Transaction Completed” based on previous conditions.

### **Algorithm:**

Step 1: Ask for number of transactions in past hour.

Step 2: If there have already been 3 transactions in past hour, print “Transaction Flagged” and end.

Step 3: Ask for country of transaction

Step 4: If country is unusual. Print “Transaction Flagged” and end.

Step 5: Otherwise, ask for total of previous transactions and amount of current transaction.

Step 6: Add current amount to previous total.

Step 7: If result of calculation above exceeds the daily limit, then print “Transaction Flagged” and end.

Step 8: Otherwise, print “Transaction Completed”.

### *Pseudocode:*

01. START

02. CONSTANT dailyLimit = 5000, country1 = “UAE”, country2 = “Pakistan”

03. PRINT “Enter the number of transactions made in last hour: “

04. INPUT numberOfTransactions

05. IF numberOfTransactions >= 3 THEN

06.     PRINT “Transaction Flagged! (Reason: Too many transactions in a short period)”

07. ELSE

08.     PRINT “Enter the country of transaction: “

09.     INPUT country

10.     IF country != country1 AND country != country2 THEN

11.         PRINT “Transaction Flagged! (Reason: Unusual country)”

12.     ELSE

13.         PRINT “Enter the total of previous transactions for today: “

14.         INPUT previousTotal

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15.      PRINT "Enter the amount for this transaction: "  
16.      INPUT transactionAmount  
17.      COMPUTE newTotal = previousTotal + transactionAmount  
17.      IF newTotal > dailyLimit THEN  
18.          PRINT "Transaction Flagged! (Reason: Daily limit exceeded)"  
19.      ELSE  
20.          PRINT "Transaction Completed!"  
21.      ENDIF  
22.  ENDIF  
23. ENDIF  
24. END
```

## Flowchart:

