Question 2:

PAC Chart:

DATA GIVEN	REQUIRED RESULT(S)
→ x-Coordinate of Point. → y-Coordinate of Point.	→ Quadrant the point lies in.
REQUIRED PROCESSING	**SOLUTION ALTERNATIVE(S)**
→ Check the sign of x-Coordinate, → Check the sign of y-Coordinate, → Use the signs of coordinates to figure out its Quadrant: 1) In Quadrant I, both x and y are positive, 2) In Quadrant II, x is negative, and y is positive, 3) In Quadrant III, both x and y are negative, 4) In Quadrant IV, x is positive, and y is negative.	→ In case any of the coordinates is 0, it would mean that the point lies on either x-Axis or y-Axis.

IPO Chart:

INPUT	PROCESS	MODULE REFERENCE	OUTPUT
→ x-coordinate → y-coordinate	→ Enter x → Enter y → If both x and y positive, output Q1 → If x positive and y negative, output Q4 → If x negative and y positive, output Q2 → If both x and y negative, output Q3 → Otherwise output "Axes"	→ INPUT → INPUT → IF → PRINT → ELSEIF → PRINT → ELSEIF → PRINT → ELSEIF → PRINT → ELSE → PRINT	→ Quadrant or Axes

Algorithm:

Step 1: Ask the user to enter the x and y coordinates of the point.

Step 2: Store the coordinates in separate variables.

Step 3: Check if both x and y coordinates are greater than 0.

Step 4: If they're greater than 0, then output "Quadrant I".

Step 5: Otherwise, check if x is greater than 0 and y is less than 0.

Step 6: If it is so, then output "Quadrant IV".

Step 7: Otherwise, check if x is less than 0 and y greater than 0.

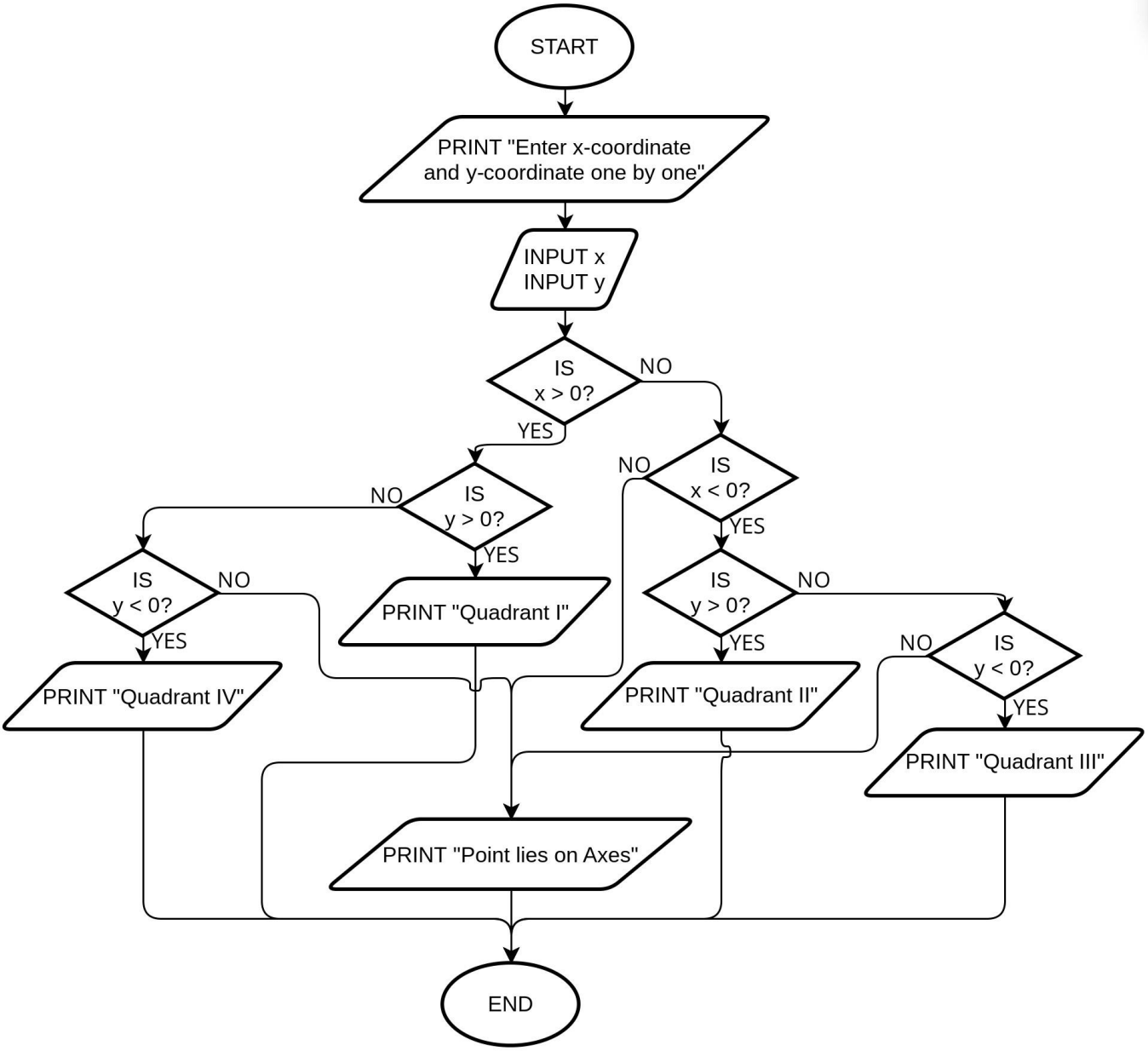
Step 8: If it is so, then output "Quadrant II".

Step 9: Otherwise, check if both x and y are less than 0.

Step 10: In this case, output "Quadrant III"

Step 11: In case none of the above conditions is true, output "Point lies on Axes".

Flowchart:


START
PRINT "Enter x-coordinate and y-coordinate one by one"
INPUT x
INPUT y
IS x > 0?
NO
YES
IS x < 0?
NO
YES
IS y > 0?
NO
YES
IS y < 0?
NO
YES
PRINT "Quadrant I"
IS y > 0?
NO
YES
IS y < 0?
NO
YES
PRINT "Quadrant IV"
PRINT "Quadrant II"
PRINT "Quadrant III"
PRINT "Point lies on Axes"
END

Pseudocode:

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01. START
02. PRINT "Coordinates are represented in the manner (x,y)"
03. PRINT "Enter the x-coordinate: "
04. INPUT x
05. PRINT "Enter the y-coordinate: "
06. INPUT y
07. IF x > 0 AND y > 0 THEN
08.     PRINT "Point lies in Quadrant I"
09. ELSEIF x > 0 AND y < 0 THEN
10.     PRINT "Point lies in Quadrant IV"
11. ELSEIF x < 0 AND y > 0 THEN
12.     PRINT "Point lies in Quadrant II"
13. ELSEIF x < 0 AND y < 0 THEN
14.     PRINT "Point lies in Quadrant III"
15. ELSE
16.     PRINT "Point lies on Axes"
17. ENDIF
18. END
```