LAB 4: IMPLEMENTATION OF MIDPOINT CIRCLE DRAWING ALGORITHM

Midpoint Circle Algorithm
Given: Radius r and center (xc, yc)

Step 1: Assign Initial Values
x = 0
y = r
pk = 1 - r # Decision parameter

Step 2: Input Circle Center and Radius
Input xc, yc, r

Step 3: Plot Initial 8 Symmetric Points
Plot points:
(xc + x, yc + y), (xc - x, yc + y),
(xc + x, yc - y), (xc - x, yc - y),
(xc + y, yc + x), (xc - y, yc + x),
(xc + y, yc - x), (xc - y, yc - x)

Step 4: Increment x
x = x + 1
Step 5: Check Decision Parameter pk
if pk < 0:
  pk = pk + 2*x + 1
else:
  y = y - 1
  pk = pk + 2*(x - y) + 1

Step 6: Plot 8 Symmetric Points
Plot new points:
(xc + x, yc + y), (xc - x, yc + y),
(xc + x, yc - y), (xc - x, yc - y),
(xc + y, yc + x), (xc - y, yc + x),
(xc + y, yc - x), (xc - y, yc - x)

Step 7: Repeat
Repeat Steps 4–6 until x >= y