

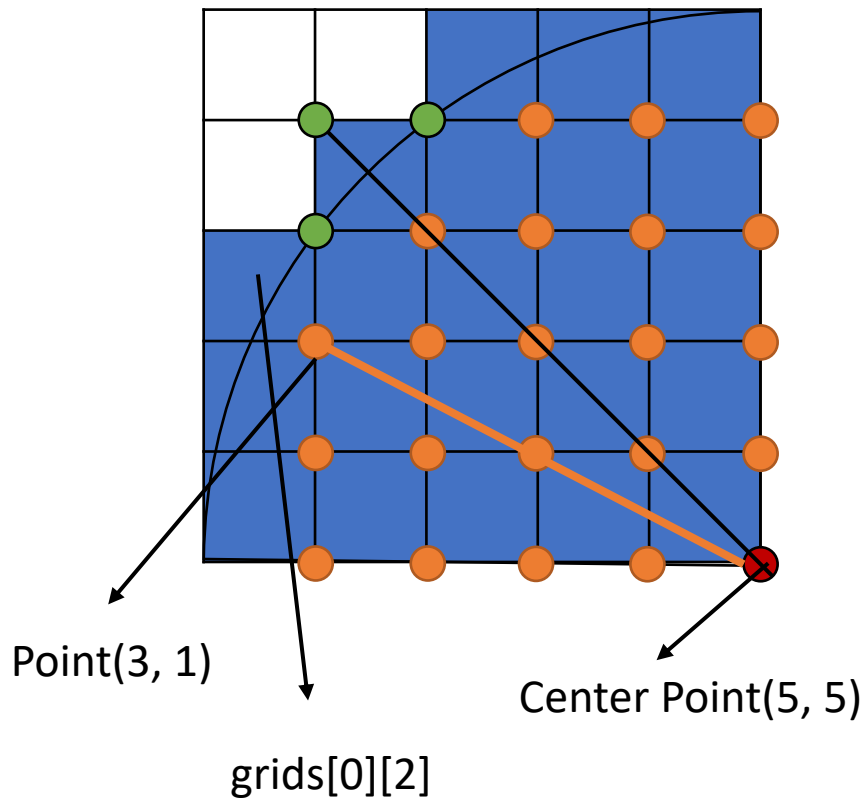
CS109 Assignment 5

The ppt only provides one possible problem-solving idea of fillGrids() method, which does not mean that this is the only idea or the best problem-solving idea.

Designer: Yueming ZHU

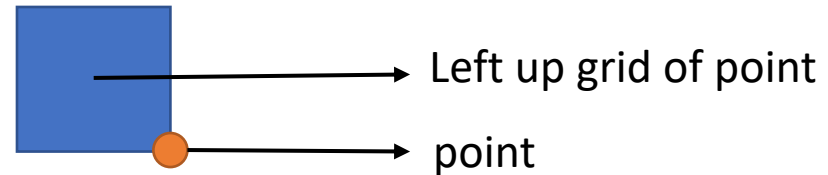
In Circle fillGrids()

1. We can only pay attantion to the $\frac{1}{4}$ Circle below:

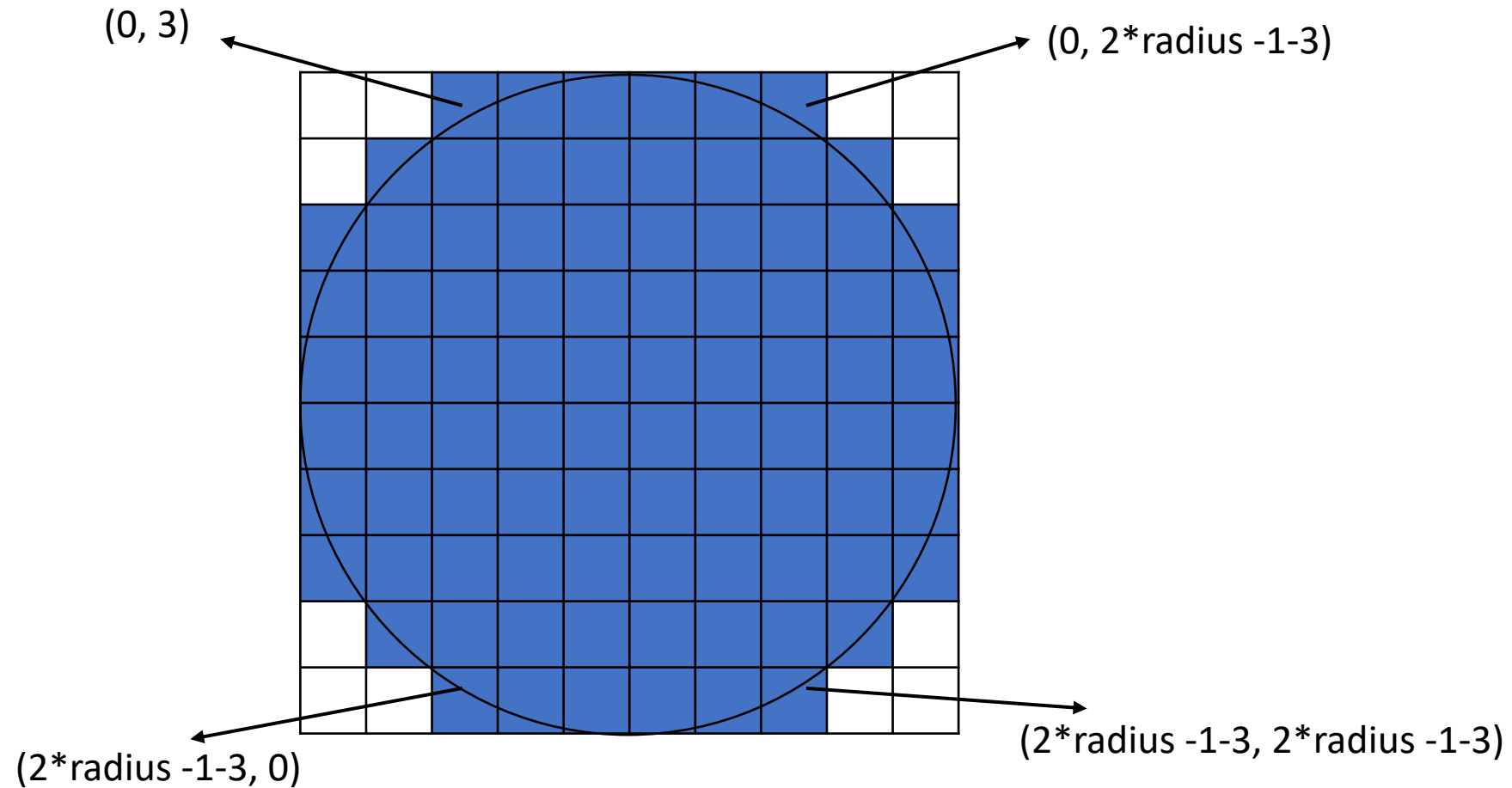


2. For each points in $\frac{1}{4}$ Circle, if we find a point whose length to The Red points $<$ Radius, we will fill the grid in the left-up side.

For example, the length between the point(3,1) and the center point(5, 5) is smaller than Radius, so that the grid (0, 2) should be painted.

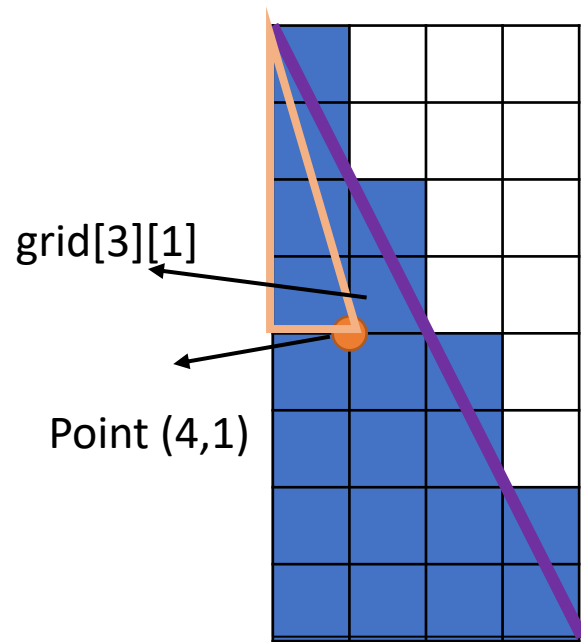


If we find a gird to be painted in $\frac{1}{4}$ Circle,
we can also find the corresponding gird to be painted in other $\frac{3}{4}$ Circle



In RightTriangle fillGrids()

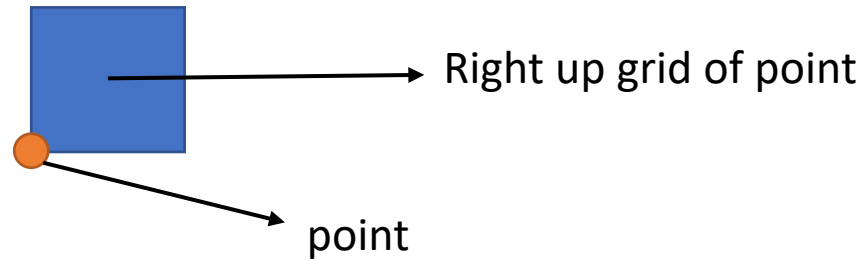
1. We can only pay attantion to only one Direction in RightTriangle below:



2. Calculate the slope of the purple line. $\text{Slope} = 8 / 4 = 2$.

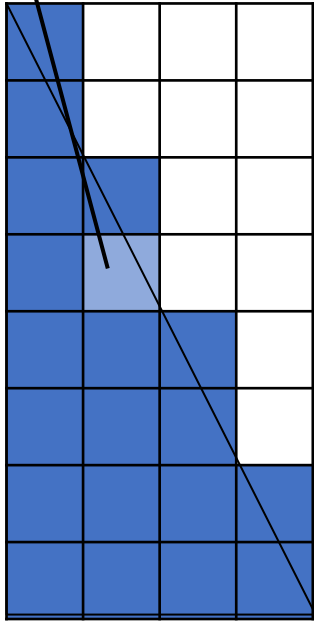
3. For each point in rightTriangle, calculate the slope, if the slope is larger than the slope of purple line, the grid in its right-up side should be painted.

For example: The the slope of the point (4, 1) is 4, which is larger than 2, so that the grid (3, 1) should be painted.



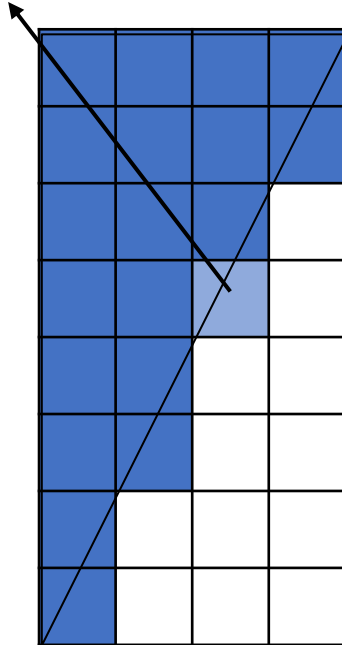
If we find a gird to be painted in LEFT_DOWN,
we can also find the corresponding gird to be painted in other 3 Triangles

$(3, 1)$



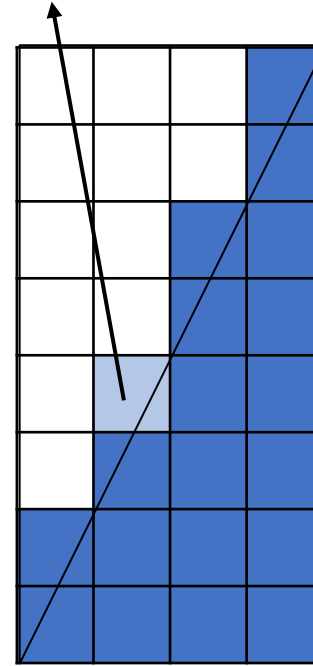
LEFT_DOWN

$(3, \text{width} - 1 - 1)$



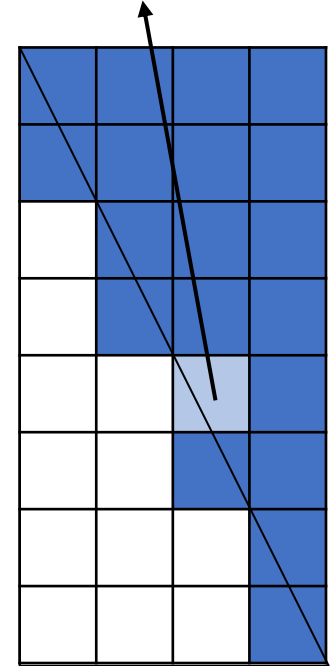
LEFT_UP

$(\text{height} - 3 - 1, 1)$



RIGHT_DOWN

$(\text{height} - 3 - 1, \text{width} - 1 - 1)$



RIGHT_UP