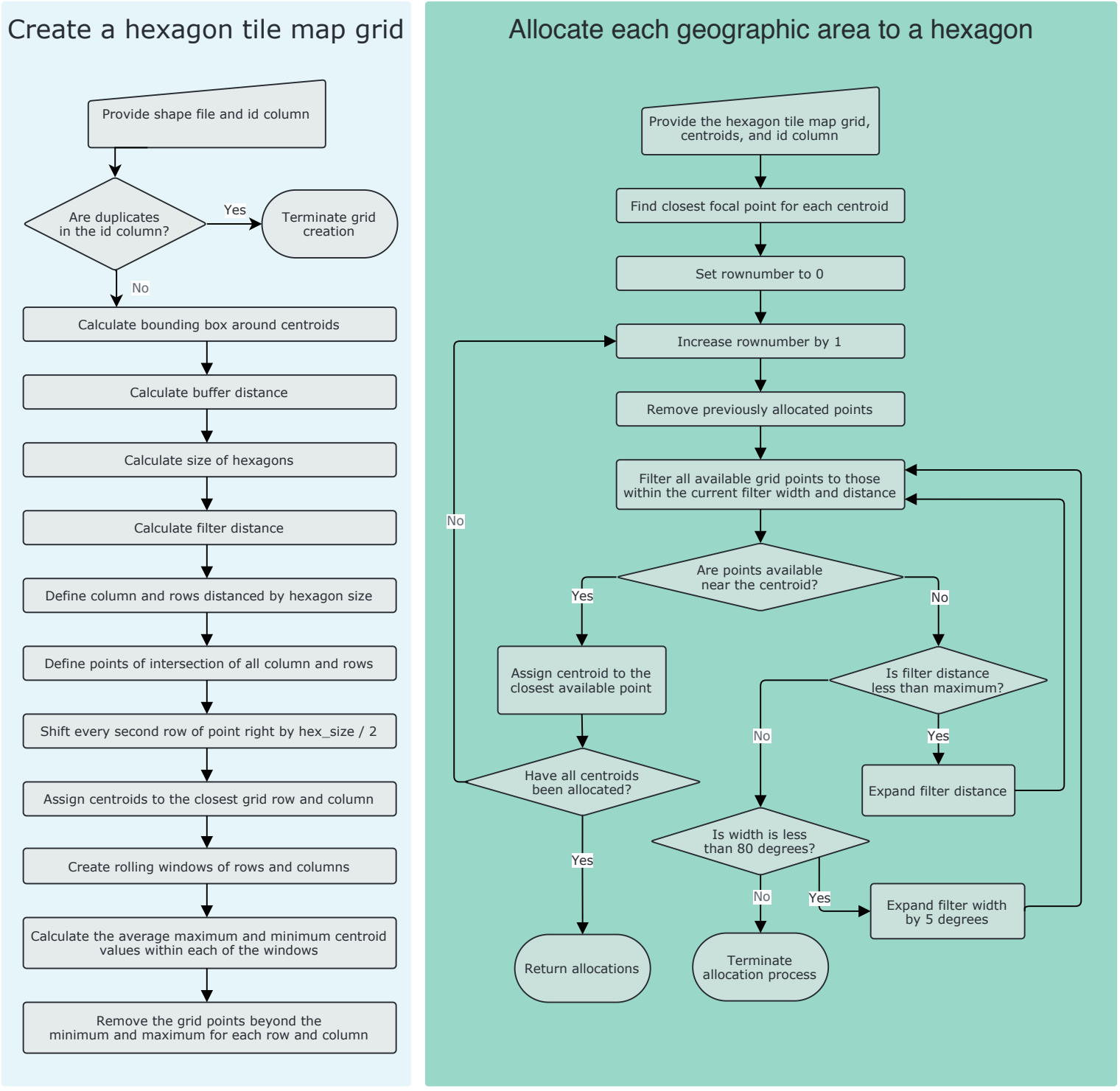
Create a hexagon tile map grid
Provide shape file and id column
Are duplicates in the id column?
Yes
Terminate grid creation
No
Calculate bounding box around centroids
Calculate buffer distance
Calculate size of hexagons
Calculate filter distance
Define column and rows distanced by hexagon size
Define points of intersection of all column and rows
Shift every second row of point right by hex_size / 2
Assign centroids to the closest grid row and column
Create rolling windows of rows and columns
Calculate the average maximum and minimum centroid values within each of the windows
Remove the grid points beyond the minimum and maximum for each row and column
Allocate each geographic area to a hexagon
Provide the hexagon tile map grid, centroids, and id column
Find closest focal point for each centroid
Set rownumber to 0
Increase rownumber by 1
Remove previously allocated points
Filter all available grid points to those within the current filter width and distance
Are points available near the centroid?
Yes
No
Assign centroid to the closest available point
Is filter distance less than maximum?
No
Yes
Have all centroids been allocated?
Expand filter distance
No
Is width is less than 80 degrees?
Yes
No
Yes
Expand filter width by 5 degrees
Return allocations
Terminate allocation process