# Polygon Segmentation Algorithm

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| Input to algorithm:   1. A line ‘slicing’ the polygon(s) 2. A collection of polygons, defined by points |  |
| Step 1:  Determine all line segments intersected by the ‘slicing’ line.  Segments should be sorted from left to right (along the direction of the slice).  There should always be an even number of intersecting segments.  If two polygons share an edge, the polygon that was last intersected will be added next. |  |
| Step 2:  For each intersecting segment, from left to right, begin iterating forward (clockwise) from that segment. If the segment is odd numbered, iterate backwards (counter-clockwise).  Step 2a:  Mark this segment as *traversed* or *assigned,* so that we do not traverse it again.  When a line segment is reached that is in the set of intersecting segments, if the index of that point is odd, make a connecting segment back to the previous intersecting segment, otherwise make a connecting segment to the next intersecting segment.  If the next/previous segment is the same as the one that we started with, we have completed a polygon. Go back to the beginning of step 2 and continue with the next *unassigned* line segment.  Otherwise, if the line segment we have now reached belongs to a different polygon, our iteration direction is reversed.  Go back to Step 2a. | 0  5  4  3  2  1 |
| Step 3:  Finally, polygons without any intersecting line segments (none shown in this example) will need to be added back to the return value. |  |