Polygon Segmentation Algorithm

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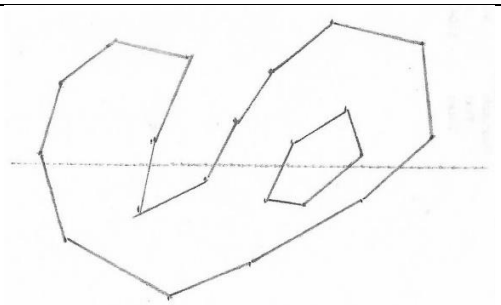
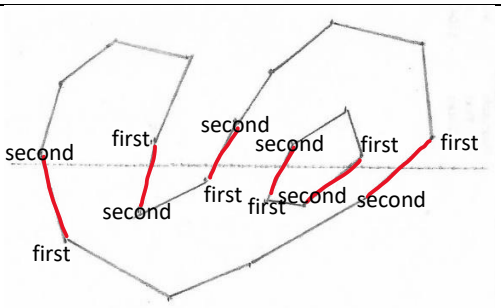
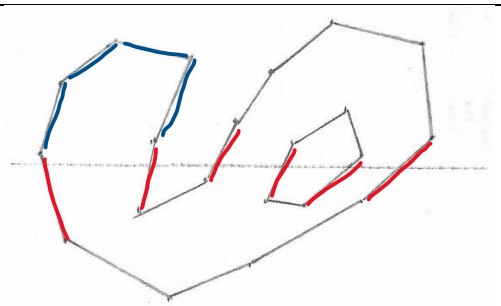
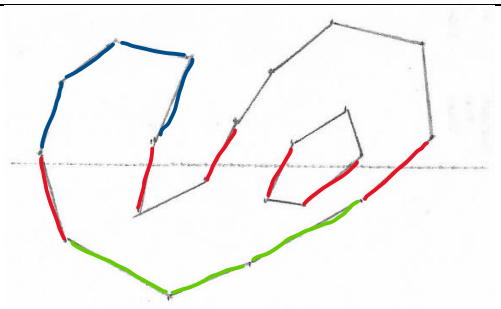
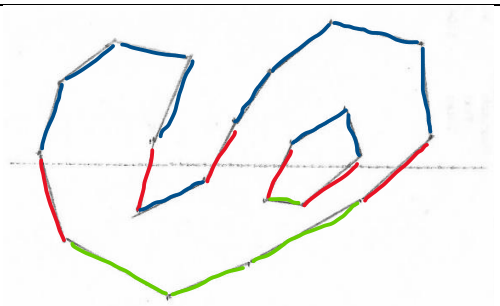
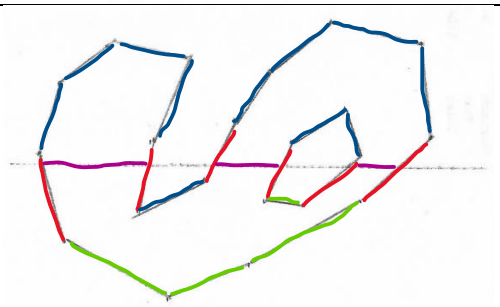
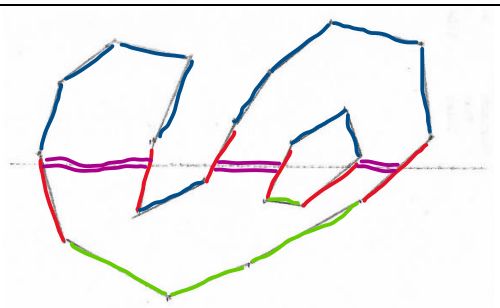
Input to algorithm: 1) A line 'slicing' the polygon(s) 2) A collection of polygons, defined by points	
Step 1: Determine all line segments intersected by the line. Segments should be sorted from left to right. There should always be an even number of intersecting segments. Each segment will also have a pair of pointers (shown here as "first" and "second") to the next line segment. These will be set to null initially.	
Step 2: Starting with the first intersecting segment, begin iterating forward (clockwise) from the first intersecting segment. When a line segment is reached that is in the set of intersecting polygons, store a pointer to the line segment in the "second" slot. The segment that is reached will store a pointer back to the current segment in its "first" slot.	
Step 3: Continuing with the current segment, begin iterating backwards (counter-clockwise) from the first intersecting segment. When a line segment is reached that is in the set of intersecting polygons, store a pointer to the line segment in the "first" slot. The segment that is reached will store a pointer back to the current segment in its "second" slot.	

Step 4: Repeat steps 2 and 3 for all the intersecting (red) line segments. If the “first” or “second” pointers are already set, iterating that direction can be skipped.	
Step 5: In this step new polygons will be made from existing polygons. Connections will be made between all pairs of consecutive numbers.	
Step 5a: A pair of line segments will be created for each new joining line segment. (shown in purple) I’ve drawn them with separation, in reality, there will be no separation between them. They will have identical start and end coordinates. Step 5b: For each new joining line segment, iteration will be done until that purple line segment is reached. At this point a new polygon will be complete. If a purple line segment is used in order to reach the originating line segment, it will be considered “used” and will be skipped.	
Step 6: Finally, polygons without any intersecting line segments (none shown in this example) will need to be added back to the return value.	