MAC0331 - Lista 1

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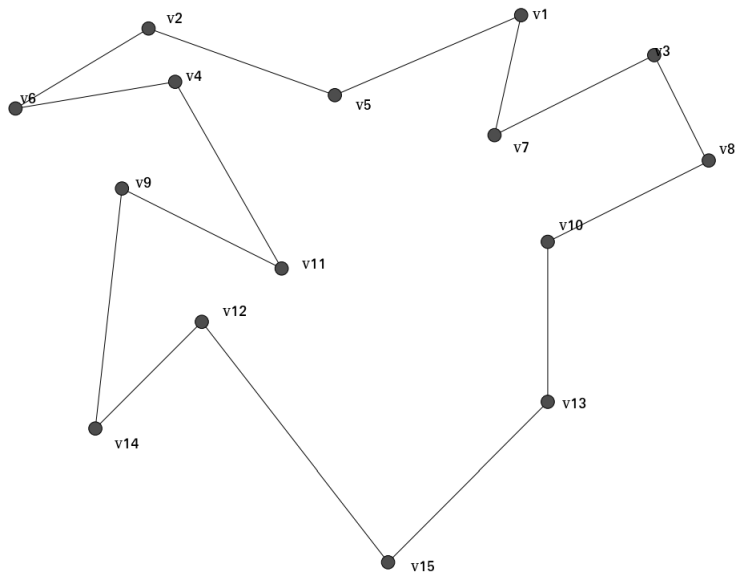
Q 8:

If using the definition of direction typical of the English language, the answer is no. The reason is that if a polygon is α-monotone, then it is also $(-\alpha)$-monotone. If using the definition typical of the Portuguese, in which $\overline{NS}$ might mean $\overrightarrow{NS}$ or $\overleftarrow{NS}$ language, the answer is yes.

Q 10:



In the trace test, T is the sweep line and (c,v,d) is the set of the vertex analyzed and its left (c) and right (d) edges - those are not always named. D is the set of diagonals.

Vertex	Case	Actions	D
v_1	2	T += (c,v,d)	
v_2	2	T += (c,v,d)	
v_3	2	T += (c,v,d)	
v_4	2	Replace trapeze with two new	(v_2, v_4)
v_5	3	Replace two trapeze with one new	(v_2, v_4)
v_6	3	Remove trapeze	(v_2, v_4)
v_7	3	Replace trapeze with two new	(v_2, v_4), (v_5, v_7)
v_8	1	Exchange trapeze	(v_2, v_4), (v_5, v_7), (v_7, v_8)
v_9	2	T += (c,v,d)	(v_2, v_4), (v_5, v_7), (v_7, v_8)
v_{10}	1	Exchange trapeze	(v_2, v_4), (v_5, v_7), (v_7, v_8)
v_{11}	3	Replace two trapeze with one new	(v_2, v_4), (v_5, v_7), (v_7, v_8), (v_5, v_{11})
v_{12}	2	Replace trapeze with two new	(v_2, v_4), (v_5, v_7), (v_7, v_8), (v_5, v_{11}), $(v_{11}, v_{12}))$
v_{13}	1	Exchange trapeze	(v_2, v_4), (v_5, v_7), (v_7, v_8), (v_5, v_{11}), $(v_{11}, v_{12}))$
v_{14}	3	Remove trapeze	(v_2, v_4), (v_5, v_7), (v_7, v_8), (v_5, v_{11}), $(v_{11}, v_{12}))$
v_{15}	3	Remove trapeze	(v_2, v_4), (v_5, v_7), (v_7, v_8), (v_5, v_{11}), $(v_{11}, v_{12}))$

Q15:

a.

```
1  print_face_vertices (face f):
2          start = f.edge
3          n = start.next
4          print(start.v_0)
5          while (n != start):
6                  print(next.v_0)
7                  n = n.next
```

```
1  print_adjacent_vertices(edge start): # start is (u,v) -- v is the target vertex
2          e = start
3          while (true):
4                  print(e.v_0)
5                  e = e.next.twin
6                  if (e == start):
7                          break
```