

MAC0331 - Lista 4

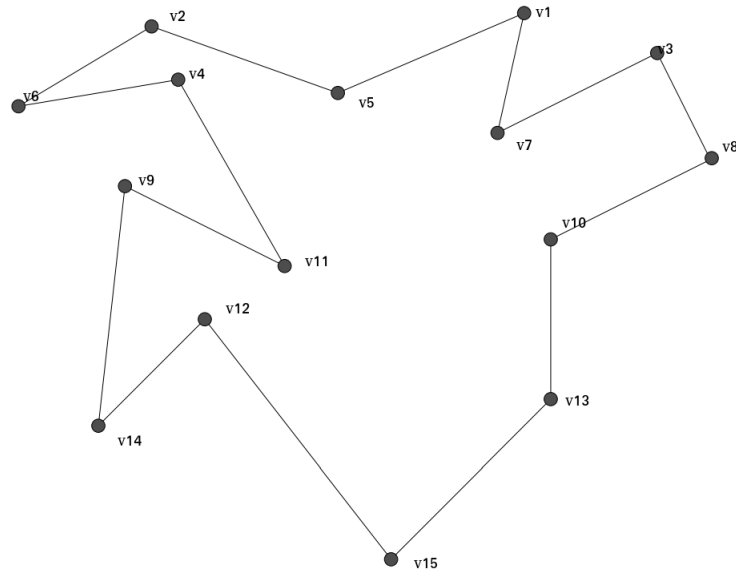
Matheus T. de Laurentys, 9793714

May 17, 2020

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 \overrightarrow{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.

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1  print_face_vertices (face f):
2      start = f.edge
3      n = start.next
4      print(start.v0)
5      while (n != start):
6          print(next.v0)
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.v0)
5          e = e.next.twin
6          if (e == start):
7              break

```