03-F-04

Triangulation

Triangulating Monotone Polygons

- Stack-Chain Consistency

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Vertex Stack

- While L goes top-down,

  each vertex will be

  connected sooner or later

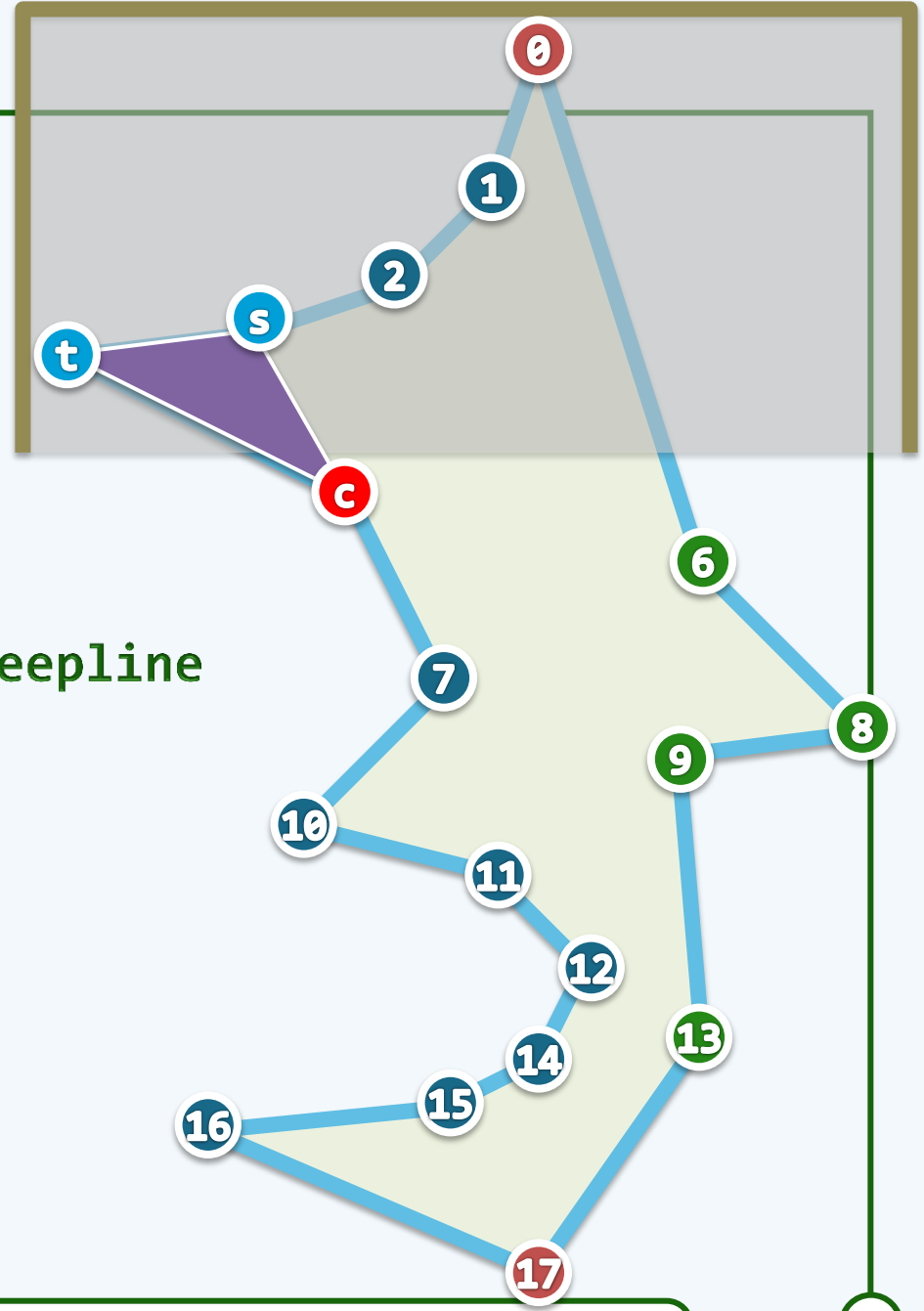
  to some vertex below the current sweepline

- We maintain a stack S

  to store those vertices which

  - have been examined so far, but

  - are not completely processed yet



Vertex Stack

- ❖ c : the current vertex

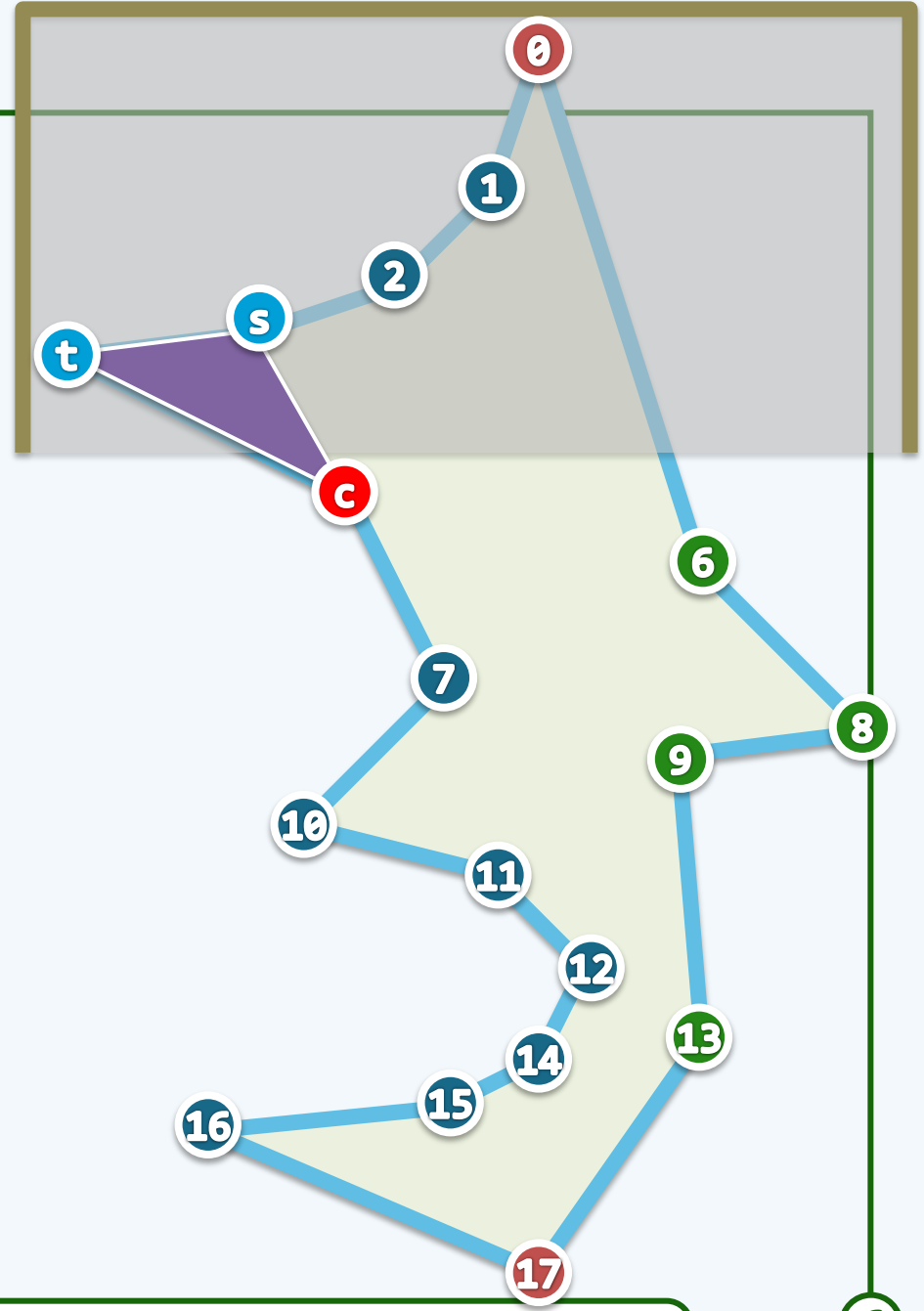
  t : the top vertex of S

  s : the vertex next to t in S

- ❖ The events are classified into 3 types,

  based on the relative position

  of c, t and s



Stack-Chain Consistency

❖ At any moment during the algorithm

1. all vertices in S are sorted by height
2. all vertices in S lie on the **same** monotone chain
3. any 3 consecutive vertices in S define a **reflex** angle
4. the vertex of next event is **adjacent** to either
   - the stack **top** (i.e., on the **same** chain) or
   - the **bottom** (i.e., on the **opposite** chain)