Geometric Intersection

BO Algorithm: Analysis

- Correctness

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sweepline

❖ Whenever two segments become ⬚adjacent⬚ along L, we will

   - ⬚check⬚ if they intersect to the ⬚right⬚ of L

    And if so, we will

   - ⬚insert⬚ the intersection as a new event
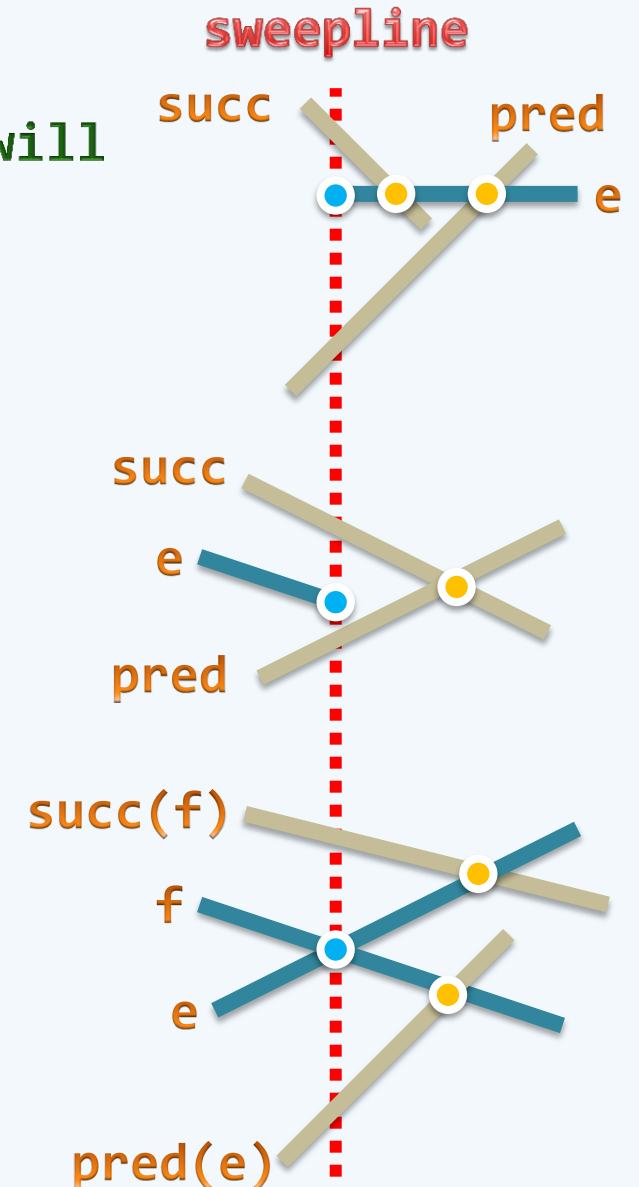
❖ That means that during the sweeping,

    every event inserted ⬚is⬚ indeed an intersection

❖ But, on the other hand,

    would any intersection point

    be ⬚ignored⬚ by this algorithm?

succ   pred   e

succ   e   pred

succ(f)   f   e   pred(e)

❖ **The following lemma answers this question and hence establishes the correctness of BO algorithm ...**

❖ **For any segments e and f intersecting at point P, there is a placement of the sweep line prior to the event P s.t.**

    - e and f begin to be [adjacent]

    along the sweep line and hence

    - will be tested for intersection