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# Point Location

## Kirkpatrick Structure

## - Hierarchy

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# Hierarchical Representation

❖ For each planar subdivision S of size n,

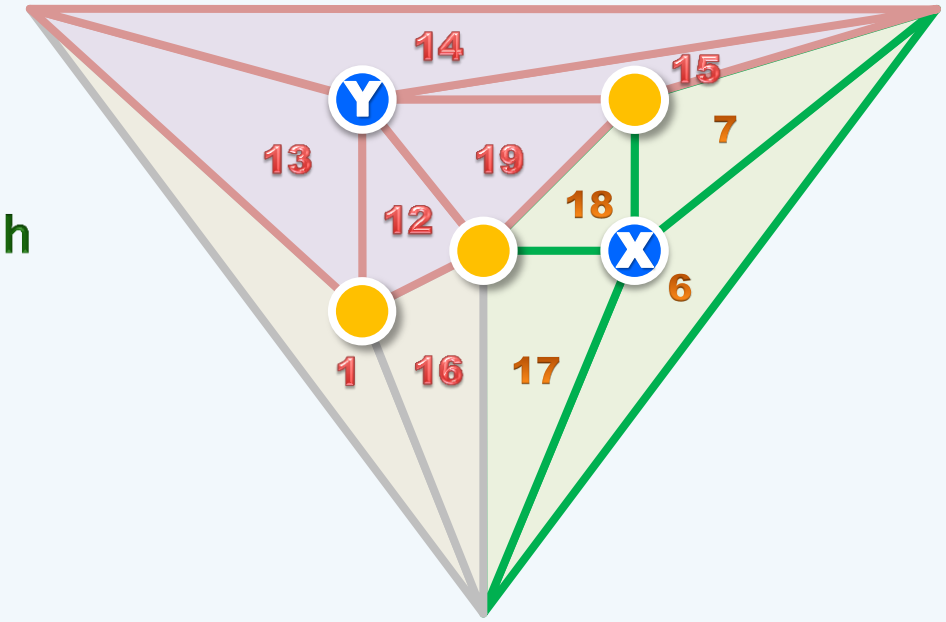
there is a triangulation sequence { $T_0$, $T_1$, ..., $T_h$ } where

- $T_0$ is the **augmented** triangulation of S
- each triangle in $T_{k+1}$

  overlaps a **constant** number

  of triangles in $T_k$, for $0 \le k < h$
- $T_h$ contains a single triangle

  i.e., the outer face of $T_0$
- h = $O(\log n)$




❖ To construct such a representation, the key issue is ...

# Constructing $T_{k+1}$ from $T_k$

- Select an **appropriate** subset of vertices in $T_k$
- Remove these vertices, as well as the incident edges
- Re-triangulate the holes left