Level 6

> Level 6

Direct visibility

We consider that a hotspot have the properties in level 5.
Also, the buildings have the restrictions and properties presented in level 5.

Task for Level 6:

Given a site, find which hotspots have direct visibility to each other.

Level 6

- One hotspot has direct and unobstructed view on another hotspot if there is direct line-of-sight between the centers of the hotspots, ignoring the original and destination buildings.

- A line of sight is not valid if the line crosses or touches voxels (3d cells) of a building different than the source or destination building.

> Level 6

Input:

Same as for level 5

Output:

- List of hotspot centers (same as level 4 and 5)

  followed by

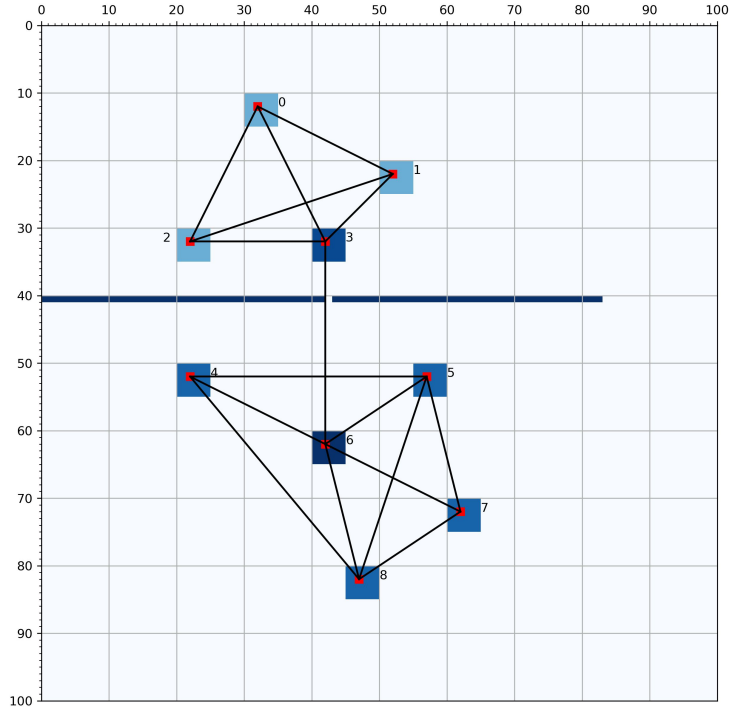
- List of visibility relation

Level 6

Keep in mind:

- List of hotspot centers: id r c ..., as for Level 4:
  - id is zero based hotspot id based on a sort order (see below);
  - r, c coordinates, row and column, integer, of the bounding box center cells
  - Sort hotspots by their coordinates, row-wise (lowest rows first) and column-wise (lowest columns first) if they share the same row coordinate.
- List of visibility relations a b where a is visible from b and the other way around, too
  - In the visibility relation, make sure that a<b and the list is sorted by a

> Level 6



Example:

List of edges:

(0, 1), (0, 2), (0, 3), (1, 2), (1, 3), (2, 3), (3, 6), (4, 5),
(4, 6), (4, 8), (5, 6), (5, 7), (5, 8), (6, 7), (6, 8), (7, 8)

Note that there is no (4, 7) edge. Mind the gap in the wall

Sample output:

0 12 32 1 22 52 2 32 22 3 32 42 4 52 22 5 52 57 6 62 42 7 72 62 8 82 47

0 1 0 2 0 3 1 2 1 3 2 3 3 6 4 5 4 6 4 8 5 6 5 7 5 8 6 7 6 8 7 8