

## • Ground Location (Owner: Ground )

### Stage 1

Directly check owner's location to founder exact location

- Only show founded items in ground
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### Stage 2

We take the owner's **left, right, front, back, top, bottom** and try to match them with the founder's **exact locations**.

- Show founded items in ground + left, right, front, back, top, bottom of ground
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### Stage 3

We take the owner's **left, right, front, back, top, bottom** and match them with the founder's **left, right, front, back, top, bottom**.

- Show founded items in ground + left, right, front, back, top, bottom of ground + locations that their left, right, front, back, top, bottom are part of Ground's left, right, front, back, top, bottom.

## • Building logic with floor-id and lecture-hall (Owner: 3<sup>rd</sup> floor, G304 )

### Stage 1

Directly check owner's location to founder exact location

- Only show founded items in G304
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### Stage 2

Use the owner's (hall's) **left, right, front** and match them with the founder's **exact locations**.

- Show founded items in G304 + left, right, front of G304
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### Stage 3

Use the owner's(hall's) **left, right, front** and match them with the founder's **left, right, front**.

(To get whole floor.)

- Show founded items in G304 + left, right, front of G304 + locations that their left, right, front are part of G304 left, right, front.

- **Building logic with floor-id (without hall) (Owner: 3<sup>rd</sup> floor)**

### Stage 1

Match the all halls in floor.

- Only show founded items in whole 3<sup>rd</sup> floor (all halls in 3<sup>rd</sup> floor)
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### Stage 2

Show all locations in owner's floor **and** upper floor **and** bottom floor.

- Show founded items in whole 3<sup>rd</sup> floor + whole 2<sup>nd</sup> floor + whole 1<sup>st</sup> floor
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### Stage 3

Show all locations of the building where owner's floor in.

- Show founded items in whole building (which 3<sup>rd</sup> floor include)

- **Building logic without floor-id and lecture-hall (Owner: New building)**

### Stage 1

Match the all halls in building.

- Only show founded items in whole new building (all halls in new building)
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### Stage 2

We take the owner's (Building's) **left, right, front, back, top, bottom** and try to match them with the founder's **exact locations**. + All halls inside the building

- Only show founded items in whole new building + left, right, front, back, top, bottom of new building.
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### Stage 3

We take the owner's (Building's) **left, right, front, back, top, bottom** and match them with the founder's **left, right, front, back, top, bottom**. + All halls inside the building

- Show founded items in whole new building + left, right, front, back, top, bottom of new building + locations that their left, right, front, back, top, bottom are part of new building's left, right, front, back, top, bottom.