

M: Mirror Magic

Problem author: Erik Sünderhauf

- **Problem:** Given two sets of points A and B . Determine whether there is a symmetry line separating A and B , i.e., mirroring A along that line results in B

M: Mirror Magic

Problem author: Erik Sünderhauf

- **Problem:** Given two sets of points A and B . Determine whether there is a symmetry line separating A and B , i.e., mirroring A along that line results in B
- Compute the Center of Mass (COM) for both sets:

$$c_A = \left(\sum_{p \in A} p \right) / |A|$$

M: Mirror Magic

Problem author: Erik Sünderhauf

- **Problem:** Given two sets of points A and B . Determine whether there is a symmetry line separating A and B , i.e., mirroring A along that line results in B
- Compute the Center of Mass (COM) for both sets:
$$c_A = \left(\sum_{p \in A} p \right) / |A|$$
- If there is a symmetry line, it
 - goes through $(c_A + c_B)/2$, and
 - is perpendicular to $c_A - c_B$

M: Mirror Magic

Problem author: Erik Sünderhauf

- **Problem:** Given two sets of points A and B . Determine whether there is a symmetry line separating A and B , i.e., mirroring A along that line results in B

- Compute the Center of Mass (COM) for both sets:

$$c_A = \left(\sum_{p \in A} p \right) / |A|$$

- If there is a symmetry line, it
 - goes through $(c_A + c_B)/2$, and
 - is perpendicular to $c_A - c_B$

→ Check that

- $c_A \neq c_B$,
- mirroring A results in B , and
- all points in A lie strictly one side of the mirror line

M: Mirror Magic

Problem author: Erik Sünderhauf

- **Problem:** Given two sets of points A and B . Determine whether there is a symmetry line separating A and B , i.e., mirroring A along that line results in B
- Compute the Center of Mass (COM) for both sets:
$$c_A = \left(\sum_{p \in A} p \right) / |A|$$
- If there is a symmetry line, it
 - goes through $(c_A + c_B)/2$, and
 - is perpendicular to $c_A - c_B$

M: Mirror Magic

Problem author: Erik Sünderhauf

- **Problem:** Given two sets of points A and B . Determine whether there is a symmetry line separating A and B , i.e., mirroring A along that line results in B
- Compute the Center of Mass (COM) for both sets:
$$c_A = \left(\sum_{p \in A} p \right) / |A|$$
- If there is a symmetry line, it
 - goes through $(c_A + c_B)/2$, and
 - is perpendicular to $c_A - c_B$

Possible pitfalls:

- Rounding after mirroring without checking for integer coordinates
- Sorting for comparing the mirrored A with B
- Missing one of the checks above
- float instead of (long) double

