

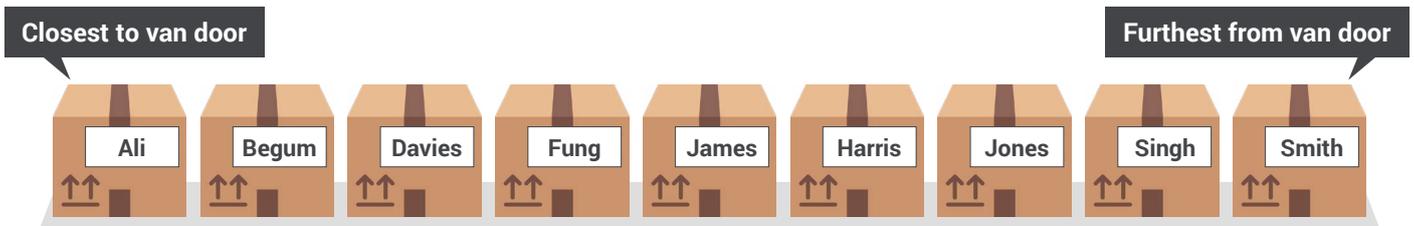
How to find the correct parcel to deliver

Background information

Luca is a delivery driver who has decided to position the parcels he has to deliver in alphabetical order inside his van. The parcel recipients with a surname starting with A will be closest to the doors of the van, Z the furthest away from the doors. The diagram below shows how the parcels are organised in the van.

At Luca's first delivery location he needs to deliver the parcel for Jones. Luca uses a linear searching approach to find the correct parcel. This means he must look at 7 parcels before finding the one he needs to deliver. In other words, he must compare the name 'Jones' with 7 parcels before finding the correct match.

Luca thinks using this linear search approach is a good idea as he will be able to find the parcels easily when he reaches each destination.



Your task

Answer the following questions:

- Explain how the linear search works for Luca's first delivery.
- How many comparisons would Luca have to make to find the parcel for **Singh**?
- How many comparisons would Luca have to make to find the parcel for **James**?
- What would be the best-case scenario?
- What would be the worst-case scenario?
- What are the advantages and disadvantages of this parcel organization system in Luca's van?
- If the parcels were not in alphabetical order how would this affect Luca's linear search?
- How could a binary search improve searching for a parcel?

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