

Choosing the Right Data Container

Software often needs to hold and organize information. But **how** you organize it depends on what you need to do with it.

For each scenario below:

1. Read the situation.
2. Use the **Guided Questions** to think about how the information should be handled.

Don't worry about knowing the names yet — focus on how it should behave.

Guided Questions (Use these for *each* scenario)

1. Can I add or remove things anywhere, or only at one end?
 2. Do I care about the **order** things go in?
 3. Do I need to get to a specific item quickly (like by a number or label)?
 4. Is it important that the first thing in gets handled first, or the last thing in gets handled first?
 5. Does the container have a fixed size, or can it grow/shrink?
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Scenarios

1. Grocery List

You're writing down what you need to buy. Sometimes you add items, sometimes you cross things out.

2. Cafeteria Plates

Plates are stacked on top of each other. You can only take the top plate, and new clean plates go on top.

3. Movie Theater Line

People line up to buy tickets. The first person in line gets served first, new people join at the back.

4. Apartment Mailboxes

Every apartment has its own mailbox. If you know the apartment number, you can go straight to that box.

5. Browser Back Button

You've been clicking through websites. Pressing "back" takes you to the most recent page you visited before this one.

6. Customer Service Tickets

People send in questions. The oldest ticket should be answered first, while new tickets wait their turn.

7. Classroom Seating Chart

Every desk has a student. You want to find who sits at a particular desk quickly by row and column.

8. Undo Button in Word

Every time you type, Word remembers what you did. Pressing undo takes away the most recent change first.

9. Playlist

You have a list of songs. Sometimes you play them in order, sometimes you shuffle them randomly.

Wrap-Up Question

Looking back at your answers, what patterns do you notice?

- Some situations only let you add/remove at one end.
- Some situations keep things in order like a line.
- Some situations let you jump straight to the one you want.

In this class we will learn about Arrays, Lists, and HashMaps primarily. There are also Stacks, Queues, Sets, and Graphs which you can study on your own.