

Lists in Python



* Examples

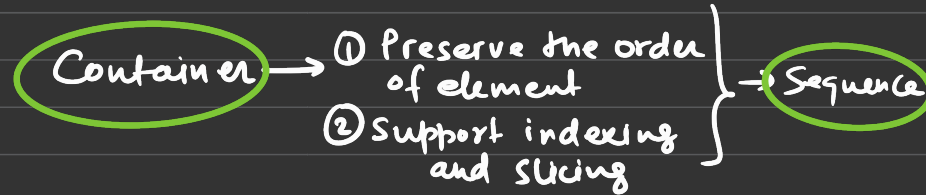
- Homogenous data**
 - `numbers = [10, 20, 30, 40, 50]` ← List of Integer
 - `fruits = ["apple", "banana", "cherry"]` ← List of strings
 - `bools = [True, False, True, False]` ← List of boolean
 - `temperatures = [36.5, 37.0, 36.4]` ← List of float
- Heterogenous data**
 - `mixed = [101, "Alice", True, 99.5]` → only primitive data
 - `employee = ["John", 32, 5.8, True, ["python", "c++"]]` ← nested list



→ List is a mutable, ordered collection that can hold item of different types

→ Features of list

1. Ordered
2. Mutable
3. Allow duplicates
4. Heterogenous



→ List is a

- Container → A datatype that hold collection of objects
- Sequence → An ordered collection of elements.

☆☆ `data = [10, 5.6, 4, 2]`

Q. How is this stored?

→ data is a list containing heterogeneous numeric types

10, 5.6, 4, 2
↑ ↑ ↑ ↑
int float int

→ Python lists are arrays of references (pointers) to Python objects

→ The list object data is stored somewhere in memory.

Step-by-step

data → List object

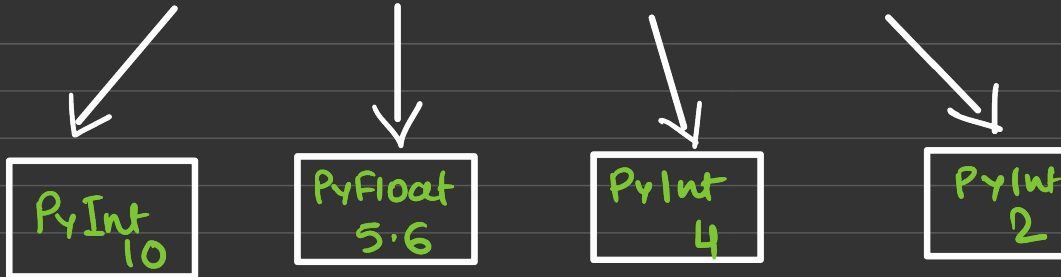
→ Variable
→ hold a pointer
to list object in memory

Size-4
pointer to array of references



refs_arr

ptr 10	ptr 5.6	ptr 4	ptr 2
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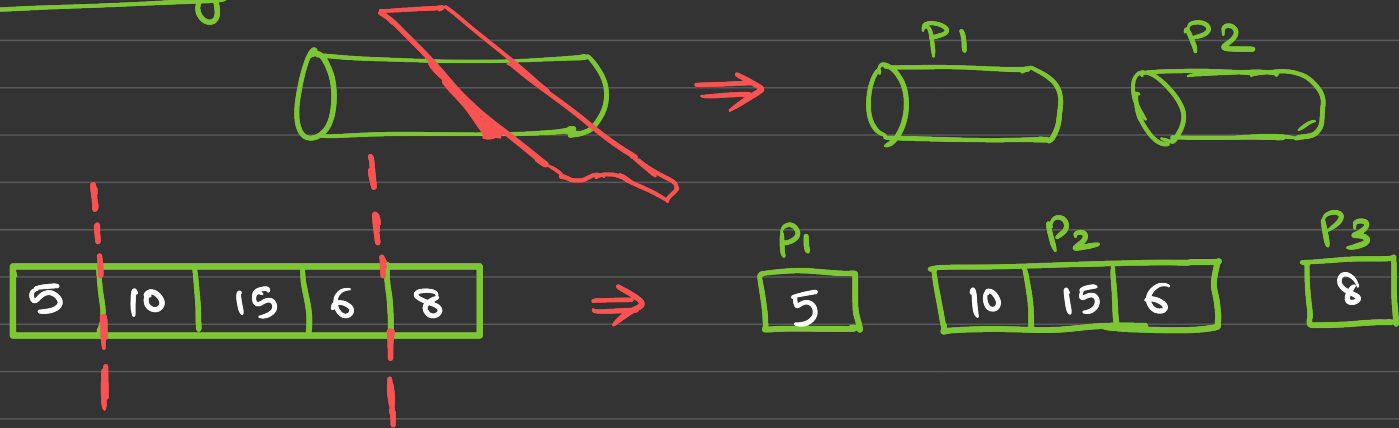
* Indexing



data = [2, 5, 6, 10, 12, 15]

idx → ↑ ↑ ↑ ↑ ↑ ↑
 0 1 2 3 4 5
 ↘ ↘ ↘ ↘ ↘ ↘
 -6 -5 -4 -3 -2 -1

* Slicing



↳ data[1:4] ⇒ [5, 6, 10]
[1, 3] ←

