

List Constants & Mutability

- What is list?
 - Ordered collection of items
 - Written inside square brackets []
 - Example: numbers = [10, 20, 30]
- List Constants & Mutability
 - List constants: Lists with pre-set values
colors = ["red", "green", "blue"]
 - Mutable: Lists can be changed after creation
 - Modify elements by index
 - Add/remove elements
- Building Lists
 - Start empty: list(), []
 - Add elements with .append()
- Concatenation
 - list1 + list2 → combine lists
 - list * n → repeat list

Looking Inside Lists

- Access with indexing:
 - `mylist[0]` → first element
- Negative indexing:
 - `mylist[-1]` → last element
- Slicing:
 - `mylist[1:4]` → elements index 1 to 3
- Using `len()` and `range()`
 - `len(list)` → number of elements
 - `range()` → generate sequence of numbers

```
r = range(5)
print(r)           # Output: range(0, 5)
print(type(r))     # Output: <class 'range'>
```

```
print(list(range(5)))
# Output: [0, 1, 2, 3, 4]

print(list(range(2, 6)))
# Output: [2, 3, 4, 5]
```

Two ways looping over a list

Way 1: Loop Directly Over Elements

```
fruits = ["apple", "banana", "cherry"]  
  
for fruit in fruits:  
    print(fruit)
```

- **Way 2: Loop by Index**

```
fruits = ["apple", "banana", "cherry"]  
  
for i in range(len(fruits)):  
    print(i, fruits[i])
```

Useful List Methods and functions

`append()` → add to end

`insert()` → add at index

`remove()` → delete by value

`pop()` → delete by index & return value

`sort()` → sort in place

`max(list)` → largest

`min(list)` → smallest

`sum(list)` → total