## What is a List?

- A **list** is a collection of multiple items stored in a single variable.
- Lists are **ordered, changeable, and allow duplicate values**.
- Written inside **square brackets [ ]**.

```
fruits = ["apple", "banana", "mango", "orange"]
print(fruits)
```

## Accessing Elements (Indexing):

- Python lists use **index numbers** starting from **0**.

```
fruits = ["apple", "banana", "mango"]
print(fruits[0])   # apple
print(fruits[2])   # mango
```

- **Negative indexing** → counts from end.

```
print(fruits[-1])   # mango
```

## Slicing Lists:

- Just like strings, you can take a portion of a list.

```
fruits = ["apple", "banana", "mango", "orange", "grape"]
print(fruits[1:4])   # ['banana', 'mango', 'orange']
print(fruits[:3])    # ['apple', 'banana', 'mango']
print(fruits[2:])    # ['mango', 'orange', 'grape']
```

## Changing List Items:

- Lists are **mutable** (we can change values).

```
fruits = ["apple", "banana", "mango"]
fruits[1] = "kiwi"
print(fruits)   # ['apple', 'kiwi', 'mango']
```

## Adding Items to a List

- **append()** → adds item at end.

```
fruits.append("orange")  print(fruits)
```

- **insert(index, item)** → adds item at specific position.

```
fruits.insert(1, "grape")   print(fruits)
```

### Removing Items from a List

- **remove(item)** → removes by value.

```
fruits.remove("banana")
```

- **pop(index)** → removes by index (default last).

```
fruits.pop()
```

- **del** → delete element by index.

```
del fruits[0]
```

- **clear()** → empties the list.

```
fruits.clear()
```

## Length of a List:

- Use **len()** to count items.

```
fruits = ["apple", "banana", "mango"]
print(len(fruits))   # 3
```

## Importance of Lists:

- Useful for storing multiple values in one variable.
- Used in data storage, loops, calculations, and managing collections (students list, products, marks, etc.).