🧠 Topic 4: Arrays

🔹 Definition

An **array** stores multiple values of the same type in one variable.
In Python, the closest built-in type is the **list**, but you can also use the array module.

🔹 Terminologies

- **Element:** Each value stored in the array.
- **Index:** Position number of an element (starts at 0).
- **Array module:** Python library for arrays.
- **List:** Built-in dynamic array structure in Python.

🔹 Example + Outputs

```
from array import array


numbers = array('i', [1, 2, 3, 4])

for num in numbers:
    print(num)
```

Output:

1

2

3

4

Using lists as arrays:

```
fruits = ["apple", "banana", "cherry"]

print(fruits[1])
```

Output:

banana

🔹 **Benefits**

✅ Easy storage of multiple similar values.
✅ Supports indexing, slicing, looping.
✅ Efficient for numeric computation.

🔹 **Challenges**

Solved Challenge 1:

arr = [1,2,3,4,5]

print(sum(arr))

Solved Challenge 2:

arr = [10,20,30]

print(max(arr))

Your 18 Challenges:

1. Create an array of 5 integers.
2. Print first element of array.
3. Print last element.
4. Add new item to array.
5. Remove item from array.
6. Find average of array items.
7. Print array in reverse.
8. Multiply each item by 2.
9. Print only even items.
10. Find smallest value.

11. Check if number 10 is in array.
12. Replace element at index 2.
13. Count elements.
14. Slice first 3 items.
15. Concatenate two arrays.
16. Sort ascending.
17. Sort descending.
18. Convert array to string.