# Core Concepts: Library, Class, Function, and Method

## 🔄 How Each Concept Contributed to the Development of the Next

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| Concept | Why It Was Needed | How It Helped Develop Others |
| Library | To avoid rewriting everything from scratch and reuse existing code. | Enabled organized code structure and ready-made functions for development. |
| Class | We needed to represent real-world objects and group data and behaviors. | Introduced OOP and helped structure large libraries like NumPy. |
| Function | To avoid repetition and reuse logic easily. | Became a basic unit inside libraries and classes for modular code. |
| Method | We needed specific actions tied to specific objects. | Enabled object-specific behavior and interaction in OOP. |

## 🧠 Real-World Example: Understanding with NumPy

1. Problem: Pure Python is slow for numerical operations.  
2. Solution: Use a library called NumPy, written in C (imported with `import numpy as np`).  
3. Inside NumPy, there's a Class called `ndarray` that defines how arrays behave.  
4. To create an array, we use a Function `np.array()` — it's not a method, it's a library-level function.  
5. Once the array is created, we can use Methods like `.sum()` or `.reshape()` — these are bound to the array object.