Recursion

Java Reference

Recursion

Recursion 递归 is a method that calls itself. Every recursion needs a base case 基准情形 (when to stop) and a recursive call 递归调用 that moves toward it. Without a base case it never stops and crashes with a *stack overflow*.

```java
public class Main {
    public static void main(String[] args) {
        System.out.println(factorial(5));   // 120
    }

    public static int factorial(int n) {
        if (n <= 1) return 1;            // base case
        return n * factorial(n - 1);     // recursive call: n * (n-1)!
    }
}
```

Trace it: `factorial(5)` waits for `factorial(4)`, which waits for `factorial(3)`⋯down to `factorial(1)` returning `1`. Then the answers multiply back up: `1 → 2 → 6 → 24 → 120`.