Chapter 2: Iterative - fractal

Fractal

Definiton

self-similarity

For instance: 山脉，羊齿叶，海岸线，**Mandelbrot set**

The construction of Mandelbrot set

1. Iterative: top effient.

```
def f(n):
    solution=0
    for i in range(n):
        solution=iterative(solution)
    return solution
```

2. recursion: exquisite for human, but always slow effcient.有点像倒过来（实际运算还是正过来）的数学归纳法。

```
def f(n):
# The condition to stop this recursion
    if n=0:
        solution=0
    else:
        solution=interative(f(n))
    return solution
```

The dim-computation of fractal

- Input:

For a square with length of side: 1, its area: 1

For a square with length of side: 2, its area: 4

$$2^{dim} = 4$$
$$dim = log_2 4 = 2$$

- operation

For instance: Sierpinski三角形

$$2^{dim} = 3$$
$$dim = log_2 3$$