第十二周

本周目标

1. 最简单的 class 就是把过去的数据和函数用 class “包装”起来。
2. 如何定义一个 class，`init()` 的意义，`self` 的意思和用法。
3. 写完之后，把自己的 class 用 `import xxx` 命令用到一个新的文件，验证是否能正常运行。

1. Write a Python class to convert a roman numeral to an integer.

2. Write a Python class to find validity of a string of parentheses, `'('`, `')'`, `'{'`, `'}'`, `'['` and `']'`. These brackets must be close in the correct order, for example `"()"` and `"()[]{}"` are valid but `"[)"`, `"({[)]"` and `"{{{"` are invalid.

3. Write a Python class to get all possible unique subsets from a set of distinct integers.
   Input:
   `[4, 5, 6]`
   Output:
   `[[], [4], [5], [6], [4, 5], [4, 6], [5, 6], [4, 5, 6]]`

4. Write a Python class to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number.
   Input:
   `numbers = [10, 20, 10, 40, 50, 60, 70], target = 50`
   Output:
   `3, 4`

5. Write a Python class to find the three elements that sum to zero from a set of n real numbers.
   Input:
   `[-25, -10, -7, -3, 2, 4, 8, 10]`
   Output:
   `[[-10, 2, 8], [-7, -3, 10]]`

6. Write a Python class to implement `pow(x, n) := x ** n`.

7. Write a Python class to reverse a string word by word.
   Input:
   `hello world`
   Output:
   `world hello`

8. Write a Python class which has two methods `get_String` and `print_String`. `get_String` accepts a string from the user and `print_String` prints the string in upper case.

9. Write a Python class named `Rectangle` constructed by a length and width and a method which will compute the area of a rectangle.

10. Write a Python class named `Circle` constructed by a radius and two methods which will compute the area and the perimeter of a circle.

11. Write a python class named `Triangle` implementing `<=, <, >, >=, ==, !=, str().` The relation is decided by their edge lengths.