

String to Integer (atoi)

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题目描述

Implement `atoi` to convert a string to an integer.

Hint: Carefully consider all possible input cases. If you want a challenge, please do not see below and ask yourself what are the possible input cases.

Notes: It is intended for this problem to be specified vaguely (ie, no given input specs). You are responsible to gather all the input requirements up front.

Requirements for `atoi`:

The function first discards as many whitespace characters as necessary until the first non-whitespace character is found. Then, starting from this character, takes an optional initial plus or minus sign followed by as many numerical digits as possible, and interprets them as a numerical value.

The string can contain additional characters after those that form the integral number, which are ignored and have no effect on the behavior of this function.

If the first sequence of non-whitespace characters in `str` is not a valid integral number, or if no such sequence exists because either `str` is empty or it contains only whitespace characters, no conversion is performed.

If no valid conversion could be performed, a zero value is returned. If the correct value is out of the range of representable values, `INT_MAX` (2147483647) or `INT_MIN` (-2147483648) is returned.

把字符串变成整数，超出范围的用最大值表示。最开始可以有空格，但不能有其他字符；后面可以有有效字符。

解题思路

用一个boolean标记是否已经开始数值计算，用`positive`存储'+/-'。用`long`存储返回值，一旦返回值出范围，就返回最大值。

代码

```
class Solution {
    public int myAtoi(String str) {
        if (str == null || str.trim().length() == 0)
            return 0;
        str = str.trim();
        long ret = 0;
        boolean label = false;
        long positive = 1;
        for (int i = 0; i < str.length(); i++) {
            if (!label && (str.charAt(i) == '-' || str.charAt(i) == '+' || (str.charAt(i) >= '0' && str.charAt(i) <= '9'))) {
                if (str.charAt(i) == '-')
                    positive = -1;
                if (str.charAt(i) >= '0' && str.charAt(i) <= '9')
```

```
        ret = ret + str.charAt(i) - '0';
        label = true;
    } else if (label && str.charAt(i) >= '0' && str.charAt(i) <= '9') {
        ret *= 10;
        ret = ret + str.charAt(i) - '0';
    } else if (str.charAt(i) < '0' || str.charAt(i) > '9') {
        break;
    }
    if (ret * positive > Integer.MAX_VALUE)
        return Integer.MAX_VALUE;
    if (ret * positive < Integer.MIN_VALUE)
        return Integer.MIN_VALUE;
}
ret *= positive;
return (int)ret;
}
}
```