66. Plus One

Solved

Easy | Topics | Companies

You are given a **large integer** represented as an integer array `digits`, where each `digits[i]` is the `i^th` digit of the integer. The digits are ordered from most significant to least significant in left-to-right order. The large integer does not contain any leading `0`'s.

Increment the large integer by one and return *the resulting array of digits*.

Example 1:

```
Input: digits = [1,2,3]
Output: [1,2,4]
Explanation: The array represents the integer 123.
Incrementing by one gives 123 + 1 = 124.
Thus, the result should be [1,2,4].
```

Example 2:

```
Input: digits = [4,3,2,1]
Output: [4,3,2,2]
Explanation: The array represents the integer 4321.
Incrementing by one gives 4321 + 1 = 4322.
Thus, the result should be [4,3,2,2].
```

Example 3:

> **Input:** digits = [9]
> **Output:** [1,0]
> **Explanation:** The array represents the integer 9.
> Incrementing by one gives 9 + 1 = 10.
> Thus, the result should be [1,0].

Constraints:

- `1 <= digits.length <= 100`
- `0 <= digits[i] <= 9`
- `digits` does not contain any leading `0`'s.

Python:

```
class Solution:
    def plusOne(self, digits: List[int]) -> List[int]:
        n = len(digits)

        # Start from the last digit
        for i in range(n-1, -1, -1):
            if digits[i] < 9:   # If digit is less than 9, just add 1
                digits[i] += 1
                return digits
            digits[i] = 0  # If digit is 9, set it to 0 and continue

        # If all digits were 9, e.g. [9,9,9] → [1,0,0,0]
        return [1] + digits
```

JavaScript:

```
/**
 * @param {number[]} digits
 * @return {number[]}
 */
var plusOne = function(digits) {
    // Start from the last digit
    for (let i = digits.length - 1; i >= 0; i--) {
```

```
        // If current digit is less than 9, just add 1 and return
        if (digits[i] < 9) {
            digits[i] += 1;
            return digits;
        }
        // If digit is 9, set it to 0 and continue loop (carry over)
        digits[i] = 0;
    }

    // If we finish loop, it means all digits were 9 (e.g., [9,9,9])
    // So result should be [1,0,0,...]
    digits.unshift(1);
    return digits;
};
```

Java:

```
class Solution {
    public int[] plusOne(int[] digits) {
        int n = digits.length;

        // Traverse the array from the last digit
        for (int i = n - 1; i >= 0; i--) {
            // If current digit is less than 9, just add 1 and return
            if (digits[i] < 9) {
                digits[i]++;
                return digits;
            }
            // If digit is 9, make it 0 and continue loop
            digits[i] = 0;
        }

        // If all digits are 9, then we need an extra digit
        int[] result = new int[n + 1];
        result[0] = 1; // rest are already 0 by default
        return result;
    }
}
```