

2726. Calculator with Method Chaining

Description

Design a `Calculator` class. The class should provide the mathematical operations of addition, subtraction, multiplication, division, and exponentiation. It should also allow consecutive operations to be performed using method chaining. The `Calculator` class constructor should accept a number which serves as the initial value of `result`.

Your `Calculator` class should have the following methods:

- `add` - This method adds the given number `value` to the `result` and returns the updated `Calculator`.
- `subtract` - This method subtracts the given number `value` from the `result` and returns the updated `Calculator`.
- `multiply` - This method multiplies the `result` by the given number `value` and returns the updated `Calculator`.
- `divide` - This method divides the `result` by the given number `value` and returns the updated `Calculator`. If the passed value is `0`, an error "Division by zero is not allowed" should be thrown.
- `power` - This method raises the `result` to the power of the given number `value` and returns the updated `Calculator`.
- `getResult` - This method returns the `result`.

Solutions within `10-5` of the actual result are considered correct.

Example 1:

```
Input:
actions = ["Calculator", "add", "subtract", "getResult"],
values = [10, 5, 7]
Output: 8
Explanation:
new Calculator(10).add(5).subtract(7).getResult() // 10 + 5 - 7 = 8
```

Example 2:

```
Input:
actions = ["Calculator", "multiply", "power", "getResult"],
values = [2, 5, 2]
Output: 100
Explanation:
new Calculator(2).multiply(5).power(2).getResult() // (2 * 5) ^ 2 = 100
```

Example 3:

```
Input:
actions = ["Calculator", "divide", "getResult"],
values = [20, 0]
Output: "Division by zero is not allowed"
Explanation:
new Calculator(20).divide(0).getResult() // 20 / 0
```

The error should be thrown because we cannot divide by zero.

Constraints:

- `actions` is a valid JSON array of strings
- `values` is a valid JSON array of numbers
- `2 <= actions.length <= 2 * 104`
- `1 <= values.length <= 2 * 104 - 1`
- `actions[i]` is one of "Calculator", "add", "subtract", "multiply", "divide", "power", and "getResult"
- First action is always "Calculator"
- Last action is always "getResult"

