Problem 2627: Debounce

Problem Information

Difficulty: Medium
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Given a function

fn

and a time in milliseconds

t

, return a

debounced

version of that function.

A

debounced

function is a function whose execution is delayed by

t

milliseconds and whose execution is cancelled if it is called again within that window of time. The debounced function should also receive the passed parameters.

For example, let's say

t = 50ms

, and the function was called at

30ms

,

60ms

, and

100ms

.

The first 2 function calls would be cancelled, and the 3rd function call would be executed at

150ms

.

If instead

t = 35ms

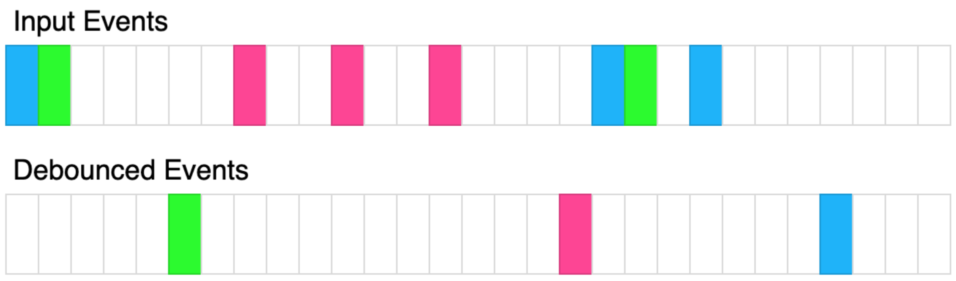
, The 1st call would be cancelled, the 2nd would be executed at

95ms

, and the 3rd would be executed at

135ms

.



The above diagram shows how debounce will transform events. Each rectangle represents 100ms and the debounce time is 400ms. Each color represents a different set of inputs.

Please solve it without using lodash's

_.debounce()

function.

Example 1:

Input:

t = 50 calls = [{"t": 50, inputs: [1]},   {"t": 75, inputs: [2]}]

Output:

[{"t": 125, inputs: [2]}]

Explanation:

let start = Date.now(); function log(...inputs) {   console.log([Date.now() - start, inputs]) } const dlog = debounce(log, 50); setTimeout(() => dlog(1), 50); setTimeout(() => dlog(2), 75);

The 1st call is cancelled by the 2nd call because the 2nd call occurred before 100ms The 2nd call is delayed by 50ms and executed at 125ms. The inputs were (2).

Example 2:

Input:

t = 20 calls = [{"t": 50, inputs: [1]},   {"t": 100, inputs: [2]}]

Output:

[{"t": 70, inputs: [1]}, {"t": 120, inputs: [2]}]

Explanation:

The 1st call is delayed until 70ms. The inputs were (1). The 2nd call is delayed until 120ms. The inputs were (2).

Example 3:

Input:

t = 150 calls = [{"t": 50, inputs: [1, 2]},   {"t": 300, inputs: [3, 4]},   {"t": 300, inputs: [5, 6]}]

Output:

[{"t": 200, inputs: [1,2]}, {"t": 450, inputs: [5, 6]}]

Explanation:

The 1st call is delayed by 150ms and ran at 200ms. The inputs were (1, 2). The 2nd call is cancelled by the 3rd call The 3rd call is delayed by 150ms and ran at 450ms. The inputs were (5, 6).

Constraints:

0 <= t <= 1000

1 <= calls.length <= 10

0 <= calls[i].t <= 1000

0 <= calls[i].inputs.length <= 10

Code Snippets

JavaScript:

```
/**
* @param {Function} fn
* @param {number} t milliseconds
* @return {Function}
*/
var debounce = function(fn, t) {

return function(...args) {

}
};

/**
* const log = debounce(console.log, 100);
* log('Hello'); // cancelled
* log('Hello'); // cancelled
* log('Hello'); // Logged at t=100ms
*/
```

TypeScript:

```
type F = (...args: number[]) => void

function debounce(fn: F, t: number): F {

return function(...args) {

}
};

/**
* const log = debounce(console.log, 100);
* log('Hello'); // cancelled
* log('Hello'); // cancelled
* log('Hello'); // Logged at t=100ms
*/
```

Solutions

JavaScript Solution:

```
/**
* Problem: Debounce
* Difficulty: Medium
* Tags: general
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
* @param {Function} fn
* @param {number} t milliseconds
* @return {Function}
*/
var debounce = function(fn, t) {

return function(...args) {

}
};

/**
* const log = debounce(console.log, 100);
* log('Hello'); // cancelled
* log('Hello'); // cancelled
* log('Hello'); // Logged at t=100ms
*/
```

TypeScript Solution:

```
/**
* Problem: Debounce
* Difficulty: Medium
* Tags: general
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/
```

```
type F = (...args: number[]) => void

function debounce(fn: F, t: number): F {

return function(...args) {

}
};

/**
* const log = debounce(console.log, 100);
* log('Hello'); // cancelled
* log('Hello'); // cancelled
* log('Hello'); // Logged at t=100ms
*/
```