[CS 11] Prac 10f – Warehouse Sort

Problem Statement

The e-commerce company Chopee stores its packages in a giant warehouse. However, the warehouse is not very well-designed. They simply store all packages they have in a single line. This is inconvenient, as they will need to rearrange the packages from time to time!

That's why they have developed a robotic arm that can perform the following operation, assuming there are n packages numbered 0 to $n-1$ from left to right:

- Choose a *contiguous* subsequence of the packages, and then reverse their order.

More formally:

- Choose a package i, where $0 \le i < n$;
- Choose a package j, where $i \le j < n$;
- Reverse the order of packages i to j, inclusive.

Given q operations, where each operation is a reversal operation like the above, what is the order of the packages after these operations are done in the given order?

Task Details

Your task is to implement a function called `warehouse_rearrange`. This function has two parameters:

- the first parameter is the `int` n.
- the second parameter is a `tuple` / `list` of q pairs of `int`s. Each pair looks like (i, j) with $0 \le i \le j < n$ and represents a reversal operation.

The function must return a `list` of n `int`s denoting the order of the packages (from left to right) after the operations are done in the given order. Each package number (0 to $n-1$) must appear exactly once in this `list`.

Restrictions

(See 10a for more restrictions)

For this problem in particular:

- The source code limit is 2000.

Example Calls

Example 1 Function Call

```
warehouse_rearrange(7, (
    (2, 5),
    (1, 3),
    (3, 6),
    (4, 4),
    (3, 4),
))
```

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Example 1 Return Value

```
[0, 4, 5, 2, 6, 3, 1]
```

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Constraints

- The function `warehouse_rearrange` will be called at most $1{,}000$ times.
- $1 \le n \le 90{,}000$
- $0 \le q \le 90{,}000$
- The sum of ns across all calls will be $\le 90{,}000$.
- The sum of qs across all calls will be $\le 90{,}000$.

Scoring

- You get 60 ❤️ points if you solve all test cases where:
  - $n \le 50$
  - $q \le 50$
  - The sum of the ns across all calls will be 600.
  - The sum of the qs across all calls will be 600.
- You get 60 ❤️ points if you solve all test cases where:
  - $n \le 6{,}000$
  - $q \le 6{,}000$
  - The sum of the ns across all calls will be $12{,}000$.
  - The sum of the qs across all calls will be $12{,}000$.
- You get 100 💔 points if you solve all test cases.

Submit solution [CS 11] Practice 10 ❤️

My submissions ❤️

Points: 220 (partial)
Time limit: 12.0s
Memory limit: 1G

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Problem type

Allowed languages
~~NONE~~, py3

Clarifications

Report an issue

No clarifications have been made at this time.