

981. Time Based Key-Value Store

Description

Design a time-based key-value data structure that can store multiple values for the same key at different time stamps and retrieve the key's value at a certain timestamp.

Implement the `TimeMap` class:

- `TimeMap()` Initializes the object of the data structure.
- `void set(String key, String value, int timestamp)` Stores the key `key` with the value `value` at the given time `timestamp`.
- `String get(String key, int timestamp)` Returns a value such that `set` was called previously, with `timestamp_prev <= timestamp`. If there are multiple such values, it returns the value associated with the largest `timestamp_prev`. If there are no values, it returns `""`.

Example 1:

Input

```
["TimeMap", "set", "get", "get", "set", "get", "get"]  
[[], ["foo", "bar", 1], ["foo", 1], ["foo", 3], ["foo", "bar2", 4], ["foo", 4], ["foo", 5]]
```

Output

```
[null, null, "bar", "bar", null, "bar2", "bar2"]
```

Explanation

```
TimeMap timeMap = new TimeMap();  
timeMap.set("foo", "bar", 1); // store the key "foo" and value "bar" along with timestamp = 1.  
timeMap.get("foo", 1);       // return "bar"  
timeMap.get("foo", 3);       // return "bar", since there is no value corresponding to foo at timestamp 3 and timestamp 2, then the only value is  
at timestamp 1 is "bar".  
timeMap.set("foo", "bar2", 4); // store the key "foo" and value "bar2" along with timestamp = 4.  
timeMap.get("foo", 4);       // return "bar2"  
timeMap.get("foo", 5);       // return "bar2"
```

Constraints:

- $1 \leq \text{key.length}, \text{value.length} \leq 100$
- `key` and `value` consist of lowercase English letters and digits.
- $1 \leq \text{timestamp} \leq 10^7$
- All the timestamps `timestamp` of `set` are strictly increasing.
- At most $2 * 10^5$ calls will be made to `set` and `get`.

