

## The Playlist

Mobius loves his new Generic Media Computer (GMC). Mobius has his GMC communicates with his home library so that all his favorite songs can play. The order in which the GMC plays the songs is a bit random.

- Mobius's devices stores a list of unplayed songs.
- When a song is reaches the GMC is put in the unplayed list.
- Once a song ends a new one immediately begins, if an unplayed song exists.
- The song that plays will always be the unplayed one that Mobius likes the most.
- If a song arrives as a song begins to play, the new arrival will not play.
- When a song arrives and no song is playing the newly arrived song begins playing immediately.
- No two songs will arrive at the same time.

Last decade the order in which the songs played was amazing, but Mobius does not remember the exact order. Mobius does have access to the times in which certain songs reached his GMC. He also knows the preferential order of all his songs, and the length of each song.

Please help recover Mobius's playlist by printing the amazing song order.

### Input Specification

The first line of input will be a single positive integer,  $n$ , ( $n < 1,000,000$ ) representing the number of songs streamed to Mobius's device.

Each of the following  $n$  lines will begin with 2 positive integers,  $a$  and  $l$ , representing the arrival time in seconds from midnight and the length of the song in seconds. Following the time information will be a single string of no more than 24 lower cases Latin letters (i.e. 'a', 'b', 'c', ..., 'z').

The songs are given in the order in which Mobius likes them. The first song is Mobius's favorite song and the last song is his least favorite song.

### Output Specification

Output the names of the songs in the order in which they occur.

## Input Output Example

Input	Output
9 200 100 sweatchildrenofmind 100 100 monkeyflowers 150 10 greatestsonginworld 440 100 sewitkindofshady 300 100 dundundun 140 10 wintertimejoy 35 45 winterwubwubland 210 80 isntshewubly 480 64 markersong	winterwubwubland monkeyflowers greatestsonginworld sweatchildrenofmind dundundun wintertimejoy isntshewubly sewitkindofshady markersong
7 1996 240 yankeedandee 2500 237 whywhywhy 2200 180 nostars 1555 120 weareamerica 2002 155 alloutoftears 1340 300 niceforwho 1005 335 itlikesme	itlikesme niceforwho weareamerica yankeedandee nostars alloutoftears whywhywhy

## Explanation

### Case 1:

The order in which the songs are inserted into the list is

1. winterwubwubland
2. monkeyflowers
3. wintertimejoy
4. greatestsonginworld
5. sweatchildrenofmind
6. isntshewubly
7. dundundun
8. sewitkindofshady
9. markersong

winterwubwubland is added and played first at time 35. The song ends at time 80.

At the end (time = 80) no other songs have been add to the playlist.

We wait until monkeyflowers is added and played at time = 100. It will last until time = 200. By then both wintertimejoy and greatestsonginworld is added. Even though sweatchildrenofmind is added at 200 it won't be played, because a new song starts.

greatestsonginworld will play (at time = 200). It ends at 210.

After wintertime joy sweatchildrenofmind is played isntshewubly gets added simultaneously. The song lasts until time = 310.

By 310 dundundun is added. The possible songs are {wintertimejoy, isntshewubly, dundundun}. The highest ranked of these is dundundun. Which lasts until 410. No song is added by then.

At 410 wintertimejoy plays and will end at 420 and isntshewubly plays until 500. Both sewitkindofshady and markersong are added, and they play in the order of sewitkindofshady and markersong.

**Case 2:**

**1996 240 YANKEEDANDEE**

**2500 237 WHYWHYWHY**

**2200 180 NOSTARS**

**1555 120 WEAREAMERICA**

**2002 155 ALLOUTOFTEARS**

**1340 300 NICEFORWHO**

**1005 335 ITLIKESME**

The songs are added in the order

1. itlikesme @ 1005 options  
plays itlikeme until 1340
2. niceforwho @ 1340 options  
plays niceforwho until 1640
3. weareamerica @ 1555  
plays weareamerica until 1760
4. yankeedandee @ 1996  
plays yankeedandee until 2236
5. alloutoftears @ 2002
6. nostars @ 2200  
plays nostars until 2416  
plays alloutoftears until 2571
7. whywhywhy @ 2500  
plays whywhywhy until 2808

**Grading Information**

Reading from standard input/output – 10 points

No extra IO – 10 points

Implements Priority Queue (efficient heap) – 10 points

Sorts the songs prior to insertion into the Priority Queue – 10 points

Good comments/variable names/whitespace usage – 10 points

Your program will be tested on 10 test cases – 5 points each

*No points will be awarded to programs that do not compile.*

*Solutions without an “advanced” data structure (tree, hash table, trie, etc.) will receive a maximum of 50 points*

*Only cases that finish within the maximum of {5 times the judge solution, 10 seconds} will be graded.*