

## Building a hotel

You are a large hotel magnate and are looking to build a hotel in New York. In order to do so, you will need to attract potential investors. There are  $n$  possible amenities that you can include in your hotel: maid service, room service, goldplated shower handles, and so on. Each of these amenities comes at a cost,  $c_j$  for the  $j$ th amenity where  $j \in \{0, 1, 2, \dots, n-1\}$ .

There are  $m$  potential investors, and investor  $i$  is willing to give you a total of  $p_i$  where  $i \in \{0, 1, 2, \dots, m-1\}$ ... but there's a catch. Investor  $i$  is only willing to invest if you include a set of amenities  $S_i \subseteq \{0, 1, 2, \dots, n-1\}$  in your hotel. Each investor has a different set of requirements. A given investor doesn't care if there are extra amenities, only that the amenities in the set  $S_i$  are included.

As the hotel magnate, you get to keep all the money leftover after the hotel is built. So your goal will be to maximize the money leftover from the investors' money after paying for all of their required amenities. Note that once you have paid for a specific amenity, you will not have to pay for it again. In other words, if both investors 1 and 2 demand maid service, you only need to pay for it once.

You will write a program that outputs the numbers of the investors that you plan to take money from.

Consider the following information from the file `information.txt`.

```
29602 24772 77838 790 72635
25076 12538 27586 25076 25077 25077 27586 12537 25077
0 2 3 4
0 2 3
0 1 3
0 1 2 3 4
0 1 2 3 4
0 1 2 3 4
0 1 3
1 2 3
0 1 2 3 4
```

In this case, there are 5 potential amenities (the first line, numbered from 0 to 4 from left to right) and 9 potential investors (the second line, numbered from 0 to 8 from left to right). The first investor is demanding that amenities 0, 2, 3, and 4 all be provided. The second investor is demanding only 0, 2, and 3. And so on. You should only take money from investors 2 and 6 (and therefore purchase amenities 0, 1, and 3). The output file `investors.txt` should therefore be

```
2
6
```