1. Create a function that takes a list and returns a new list containing only prime numbers.

Examples

filter_primes([7, 9, 3, 9, 10, 11, 27])   [7, 3, 11]

filter_primes([10007, 1009, 1007, 27, 147, 77, 1001, 70])   [10007, 1009]

filter_primes([1009, 10, 10, 10, 3, 33, 9, 4, 1, 61, 63, 69, 1087, 1091, 1093, 1097])   [1009, 3, 61, 1087, 1091, 1093, 1097]

2. Once a water balloon pops, is soaks the area around it. The ground gets drier the further away you travel from the balloon.

The effect of a water balloon popping can be modeled using a list. Create a function that takes a list which takes the pre-pop state and returns the state after the balloon is popped. The pre-pop state will contain at most a single balloon, whose size is represented by the only non-zero element.

Examples

pop([0, 0, 0, 0, 4, 0, 0, 0, 0])   [0, 1, 2, 3, 4, 3, 2, 1, 0]

pop([0, 0, 0, 3, 0, 0, 0])   [0, 1, 2, 3, 2, 1, 0]

pop([0, 0, 2, 0, 0])   [0, 1, 2, 1, 0]

pop([0])   [0]

3. "Loves me, loves me not" is a traditional game in which a person plucks off all the petals of a flower one by one, saying the phrase "Loves me" and "Loves me not" when determining whether the one that they love, loves them back.

Given a number of petals, return a string which repeats the phrases "Loves me" and "Loves me not" for every alternating petal, and return the last phrase in all caps. Remember to put a comma and space between phrases.

Examples

loves_me(3)   "Loves me, Loves me not, LOVES ME"

loves_me(6)   "Loves me, Loves me not, Loves me, Loves me not, Loves me, LOVES ME NOT"

```
loves_me(1)    "LOVES ME"
```

4. Write a function that sorts each string in a list by the letter in alphabetic ascending order (a-z).

Examples

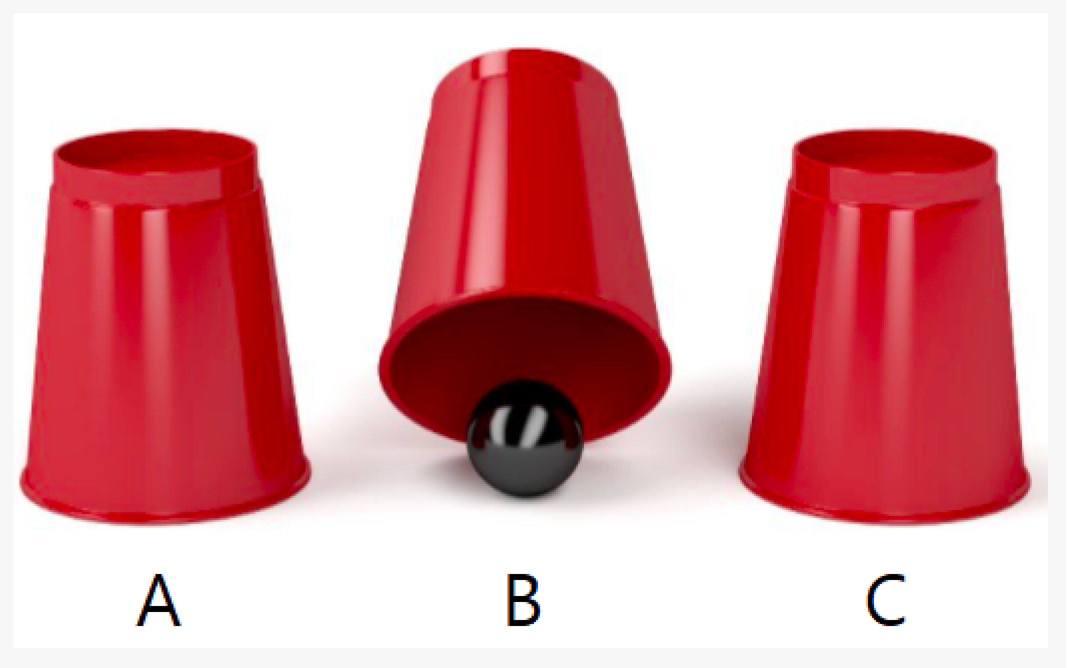
```
sort_by_letter(["932c", "832u32", "2344b"])
  ["2344b", "932c", "832u32"]

sort_by_letter(["99a", "78b", "c2345", "11d"])
  ["99a", "78b", "c2345", "11d"]

sort_by_letter(["572z", "5y5", "304q2"])
  ["304q2", "5y5", "572z"]

sort_by_letter([])
  []
```

5. There are three cups on a table, at positions A, B, and C. At the start, there is a ball hidden under the cup at position B.



However, I perform several swaps on the cups, which is notated as two letters. For example, if I swap the cups at positions A and B, I could notate this as AB or BA.

Create a function that returns the letter position that the ball is at, once I finish swapping the cups. The swaps will be given to you as a list.

Example

```
cup_swapping(["AB", "CA", "AB"])     "C"

# Ball begins at position B.
# Cups A and B swap, so the ball is at position A.
# Cups C and A swap, so the ball is at position C.
# Cups A and B swap, but the ball is at position C, so it doesn't move.
```