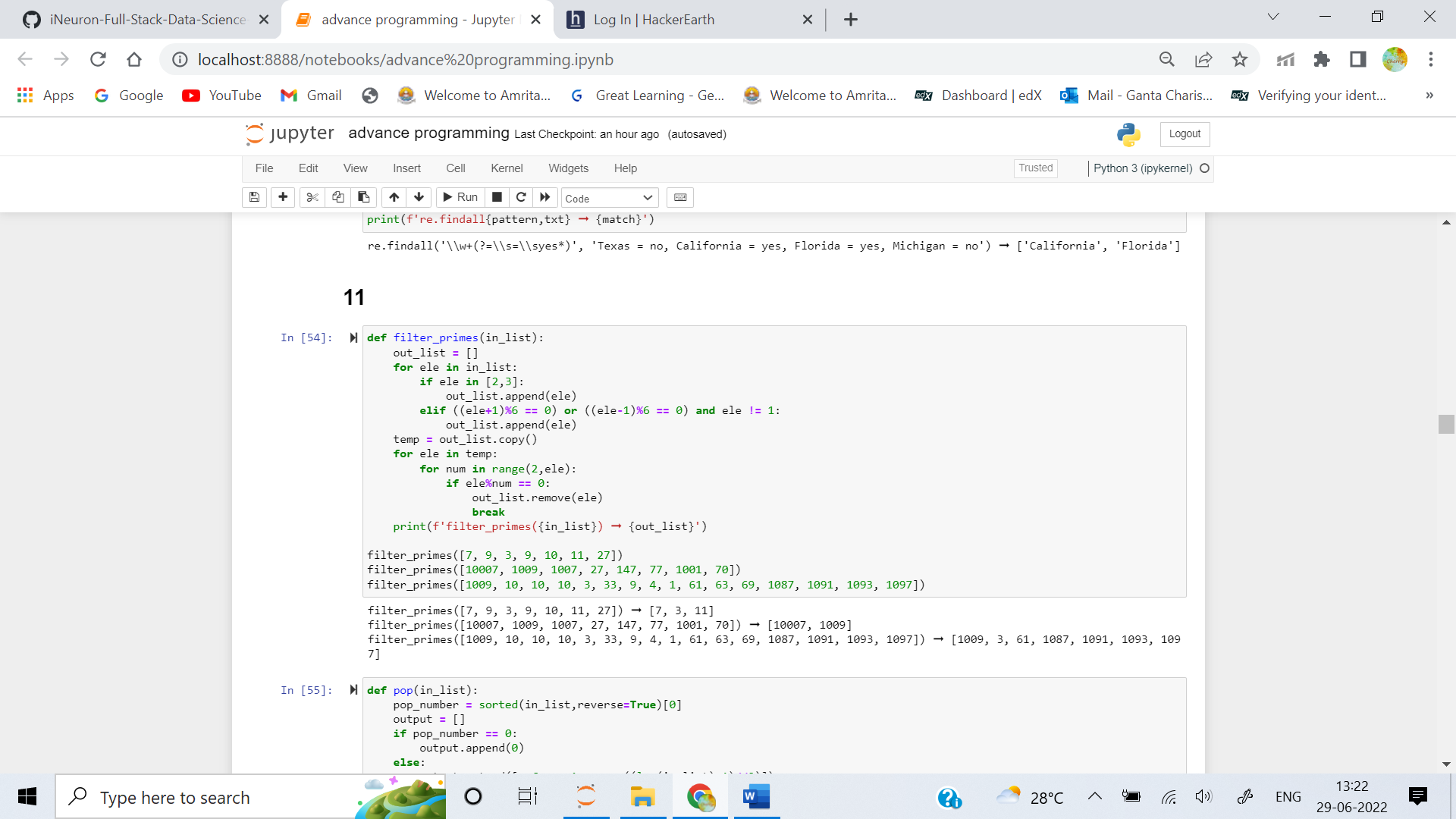
1. Create a function that takes a list and returns a new list containing only prime numbers.

**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]

**ANS:** 

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.

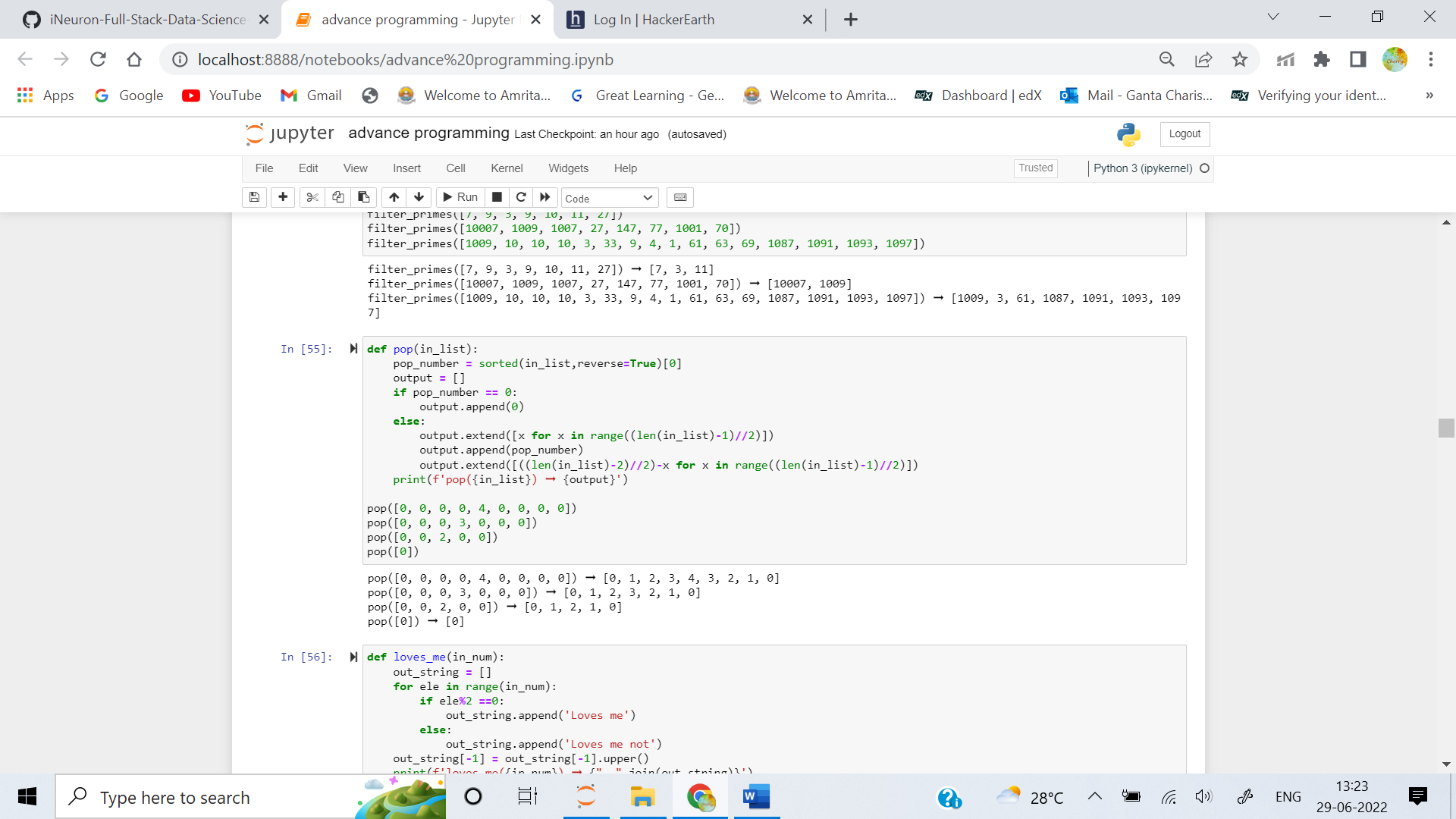
**Examples**

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]

**ANS:** 

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.

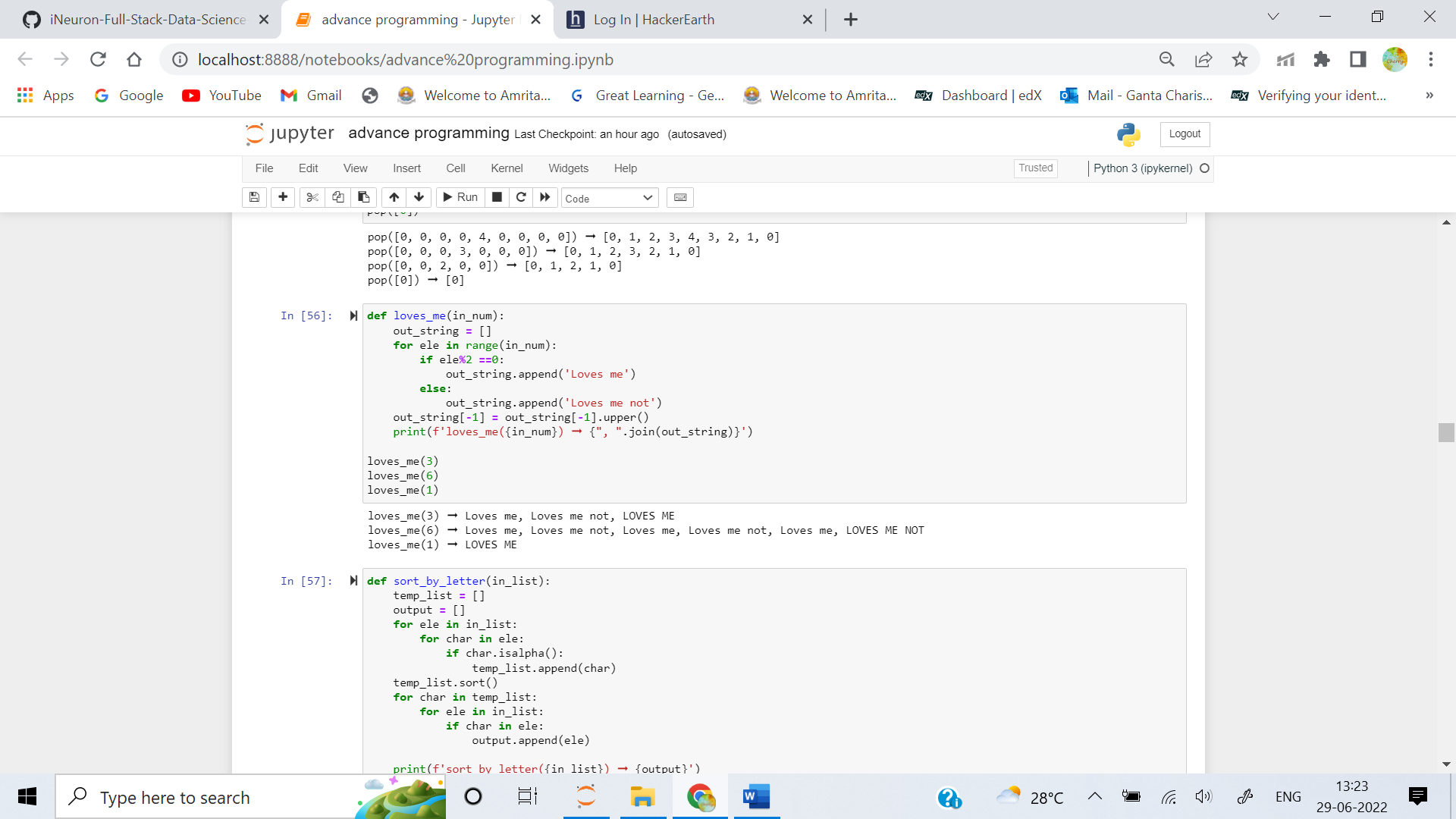
Given a number of petals, return a string which repeats the phrases "Loves me" and "Loves me not" for every alternating petal, and return the last phrase in all caps. Remember to put a comma and space between phrases.

**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"

**ANS:** 

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"])

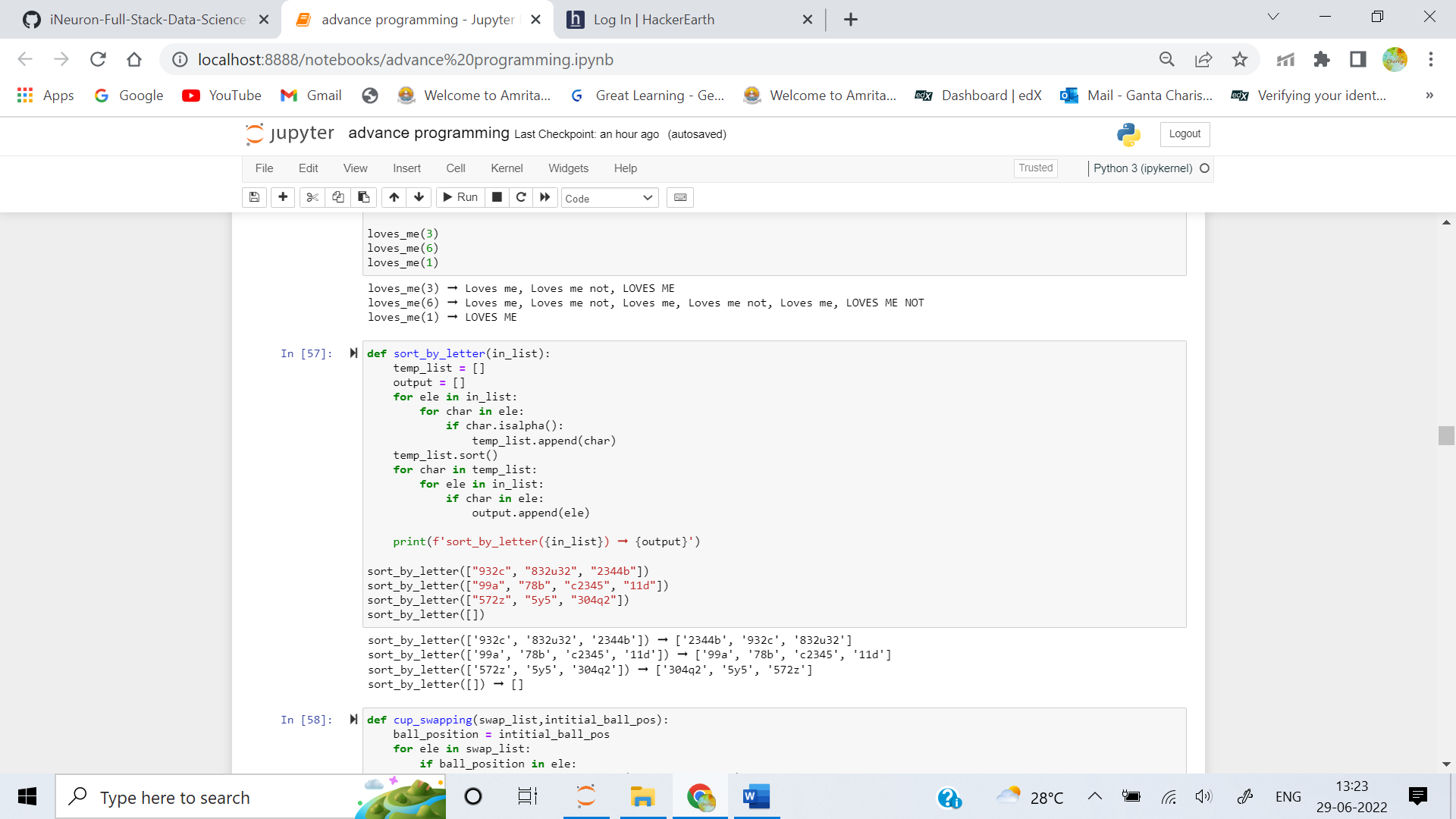
➞ ["99a", "78b", "c2345", "11d"]

sort\_by\_letter(["572z", "5y5", "304q2"])

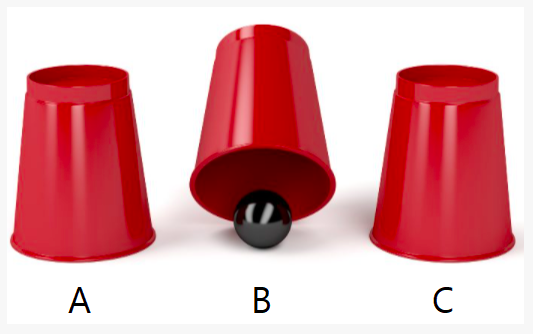
➞ ["304q2", "5y5", "572z"]

sort\_by\_letter([])

➞ []

**ANS:** 

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.

**ANS:** 