tuples
lists
dictionaries

tuples

ordered sequence of elements
immutable
represented by parenthesis

tuples

ordered sequence of elements
immutable
represented by parenthesis
iterable

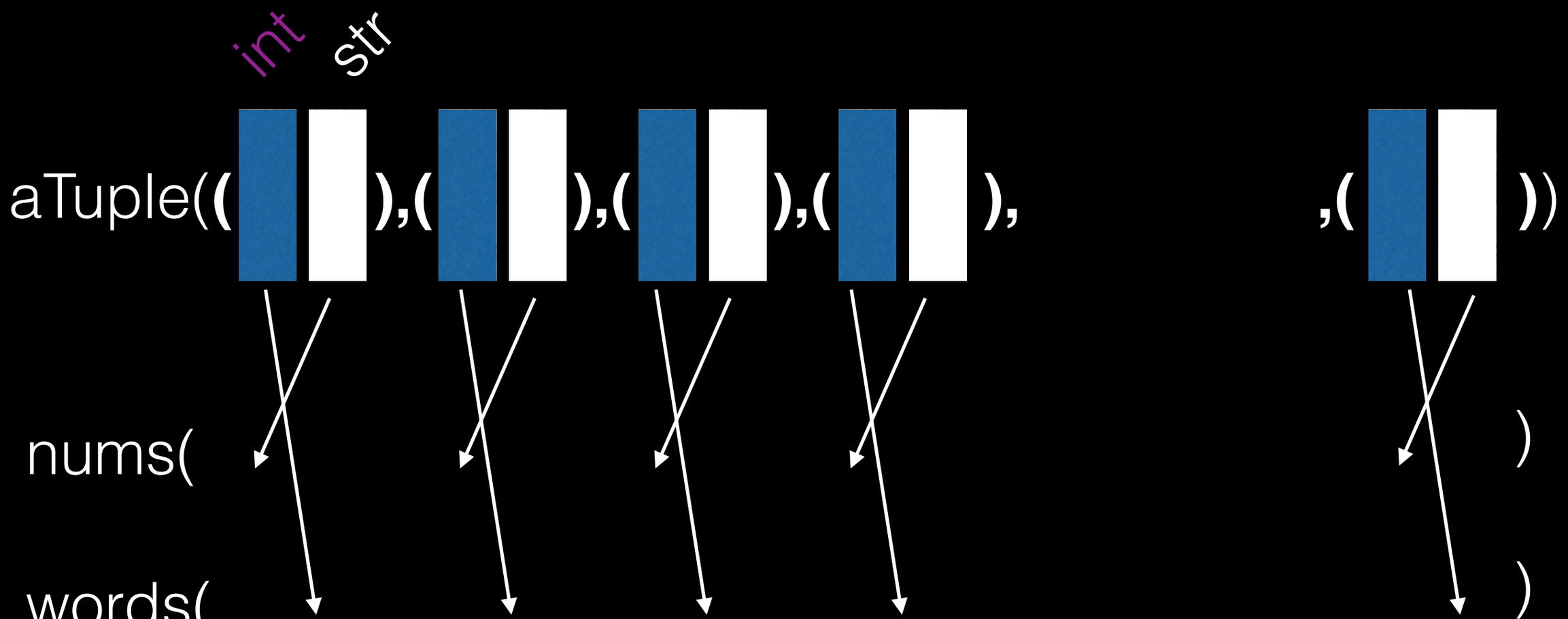
Write a function that returns the quotient and remainder of a division x by y. Return a tuple containing the quotient and remainder.

Write a function that returns the minimum and the maximum of the integers and the number of unique words present in the tuples contained in a tuple (see input below). Return a tuple containing the integers of the minimum, maximum and the number of unique words.

Here an example for an input and output:

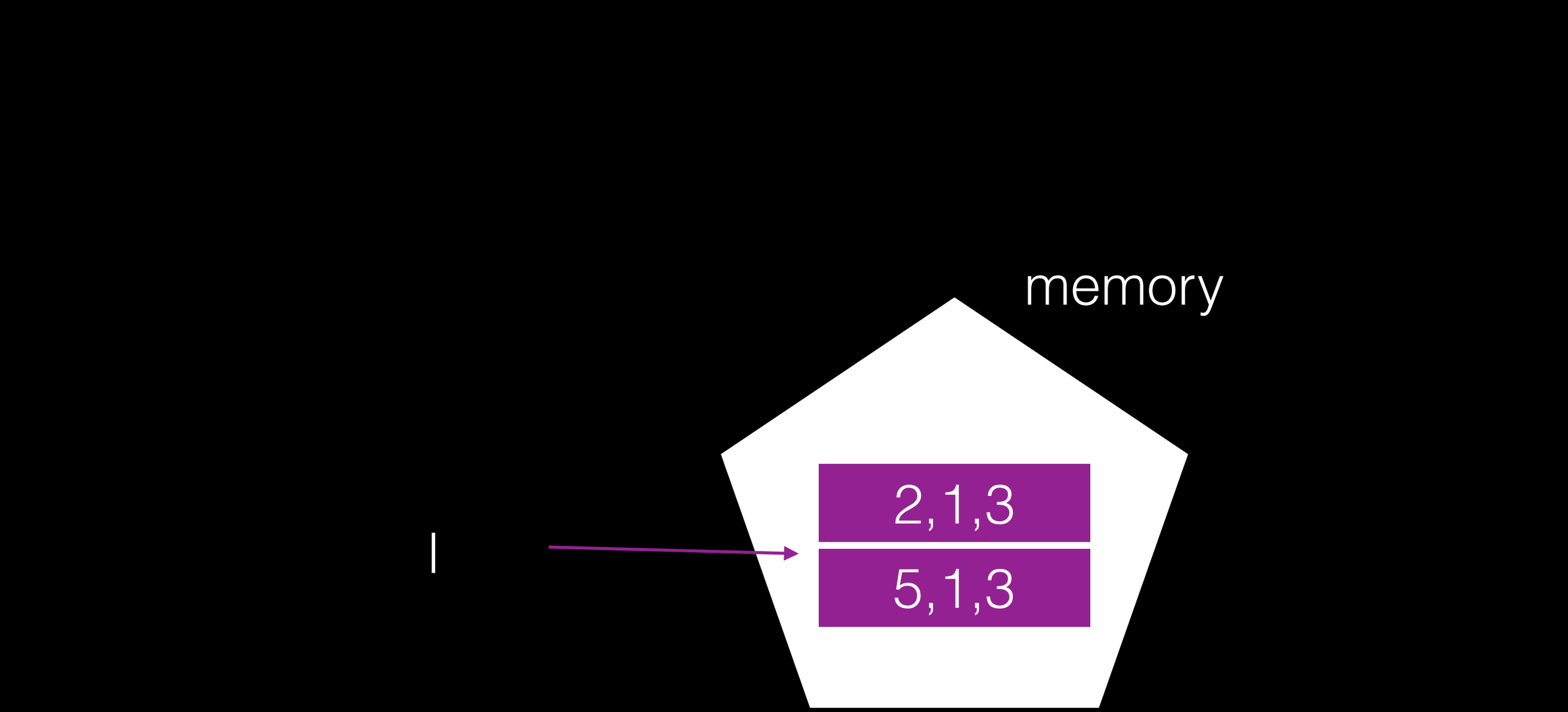
input = ((1, ‘mine'), (3, 'yours'), (5, ‘ours'), (7, ‘mine'))

output = (1, 7, 3)


int
str
aTuple((
),(
),(
),(
),
,(
))
nums(
)
words(
)

list

ordered sequence of elements
mutable
represented by square brackets


memory
2,1,3
5,1,3

list

ordered sequence of elements

mutable

represented by square brackets

iterable

Write a function that iterates over a list of integers and returns the sum.

standard operations on lists and tuples

lists

append
extend
pop
remove
join
sorted
sort
reverse

standard operations on tuples

range(5) - equivalent to tuple (0,1,2,3,4)

range(2, 6) - equivalent to tuple (2,3,4,5)

range(5, 2, -1) - equivalent to tuple (5,4,3)

```
for i in range(5):
        <expression>

for i in (0,1,2,3,4):
        <expression>
```

Mutations, Aliasing, Cloning

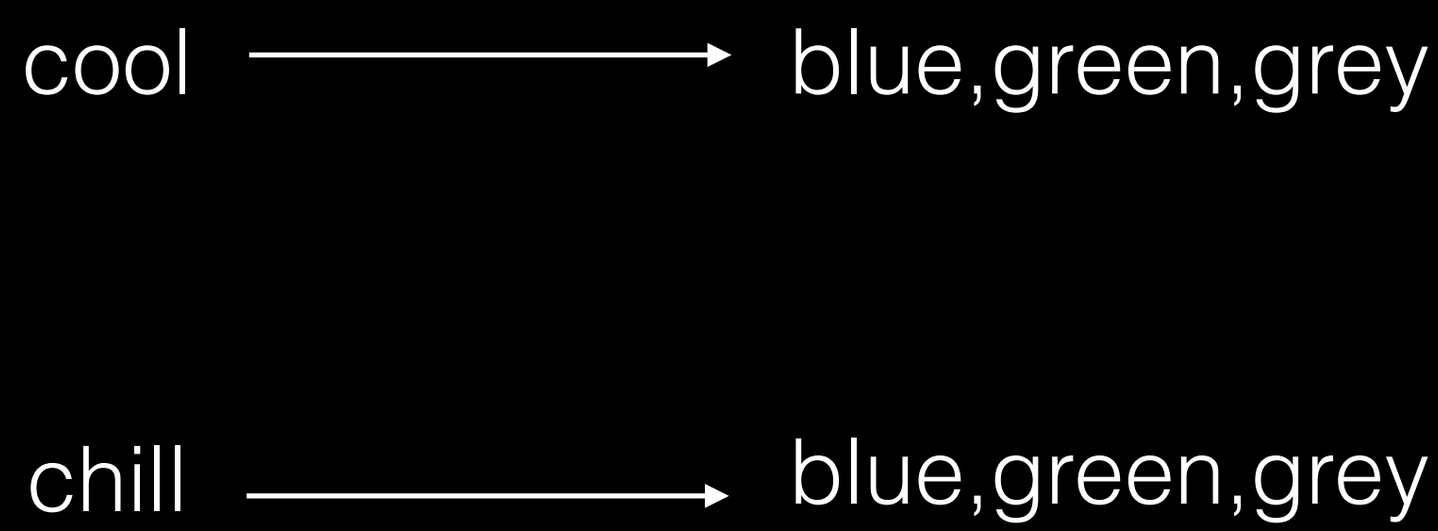
lists

are mutable
behave differently than immutable types
is an object in memory
variable name points to object
any variable pointing to that object is effected
keep in mind side effects

Justin Drew Bieber
Justin Bieber
JB
Bieber
The Bieb
JBeebs

attributes: singer, rich, troublemaker


warm
red,orange,yellow ,pink
hot


cool
blue,green,grey
chill
blue,green,grey

cool ⟶ blue,green,grey

chill ⟶ blue,green,grey

Frames

Objects

Global scope

warm

hot

brightcolors

list

0
'yellow'

1
'orange'

list

0
'red'

1
'pink'

list

One last topic about mutation before the break. If I'm going to iterate over a list, I really want to avoid mutating that list as I iterate over it.
Write a piece of code that removes duplicates from two lists. The idea is if I've got two lists, I'd like to loop through the first list and then go over the second list and say, if I've already got a copy of that, I'm going to remove it from the first list.

Mutation and cloning

BREAK