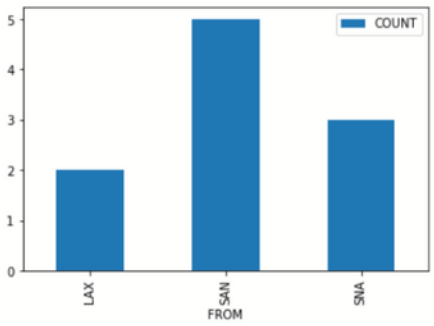
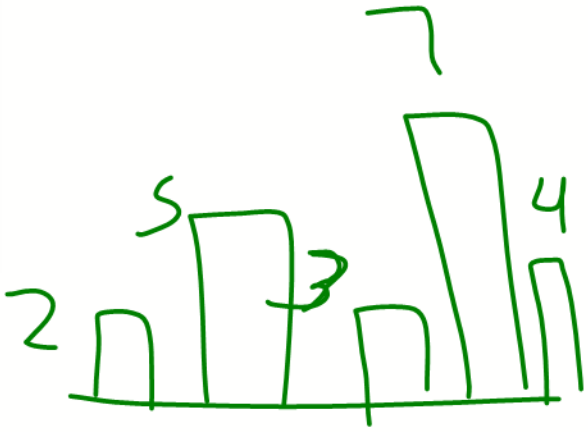
from Fall 2021 midterm

# Problem 5

Lecture 9

Suppose we create a DataFrame called `socal` containing only King Triton's flights departing from SAN, LAX, or SNA (John Wayne Airport in Orange County). `socal` has 10 rows; the bar chart below shows how many of these 10 flights departed from each airport.

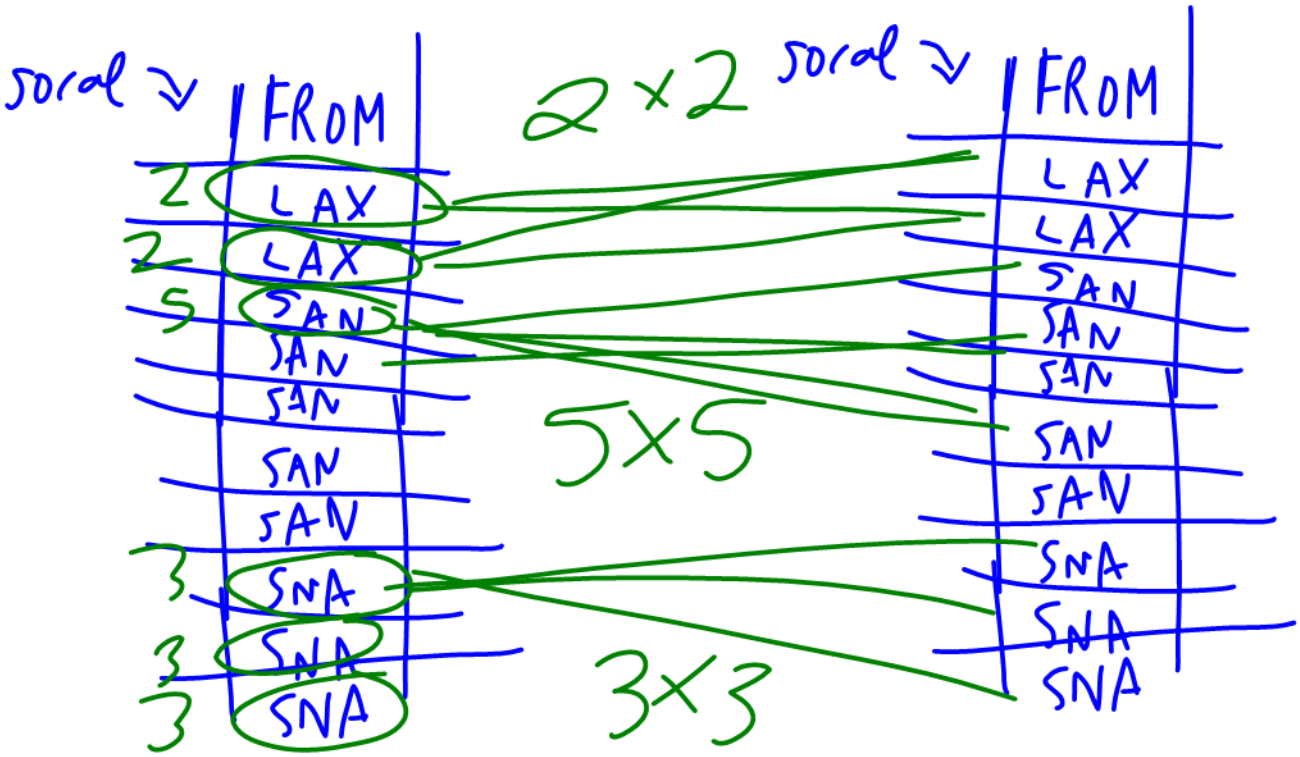


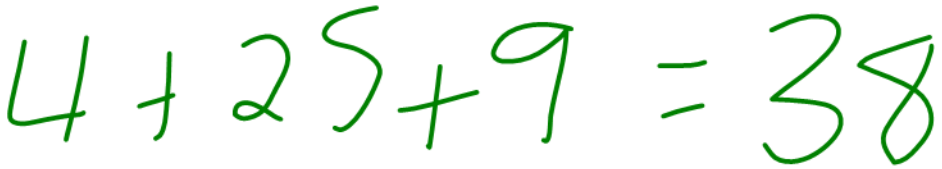




Consider the DataFrame that results from merging `socal` with itself, as follows:

```
double_merge = socal.merge(socal, left_on='FROM', right_on='FROM')
```

How many rows does `double_merge` have?



from Spring 24 Final Exam

# Problem 2

Lecture 9

Michelle and Abel are each touring apartments for where they might live next year. Michelle wants to be close to UCSD so she can attend classes easily. Abel is graduating and wants to live close to the beach so he can surf. Each person makes their own DataFrame (called `michelle` and `abel` respectively), to keep track of all the apartments that they toured. Both `michelle` and `abel` came from querying `apts`, so both DataFrames have the same columns and structure as `apts`.

Here are some details about the apartments they toured.

- Michelle toured **one bedroom and studio** apartments at 12 different complexes, or 24 apartments total.
- Abel toured **one bedroom and two bedroom** apartments at 20 different complexes, or 40 apartments total.
- There are 8 complexes that are near both UCSD and the beach, and both Michelle and Abel toured these complexes.

We'll assume for this problem only that there is just one apartment of each size available at each complex, so that if they both tour a one bedroom apartment at the same complex, it is the exact same apartment with the same `"Apartment ID"`.

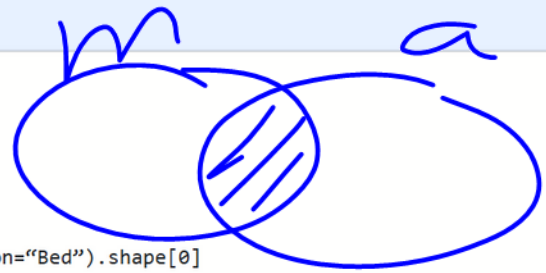
## Problem 2.1

What does the following expression evaluate to?

```
michelle.merge(abel, left_index=True, right_index=True).shape[0]
```

Click to view the solution.

8

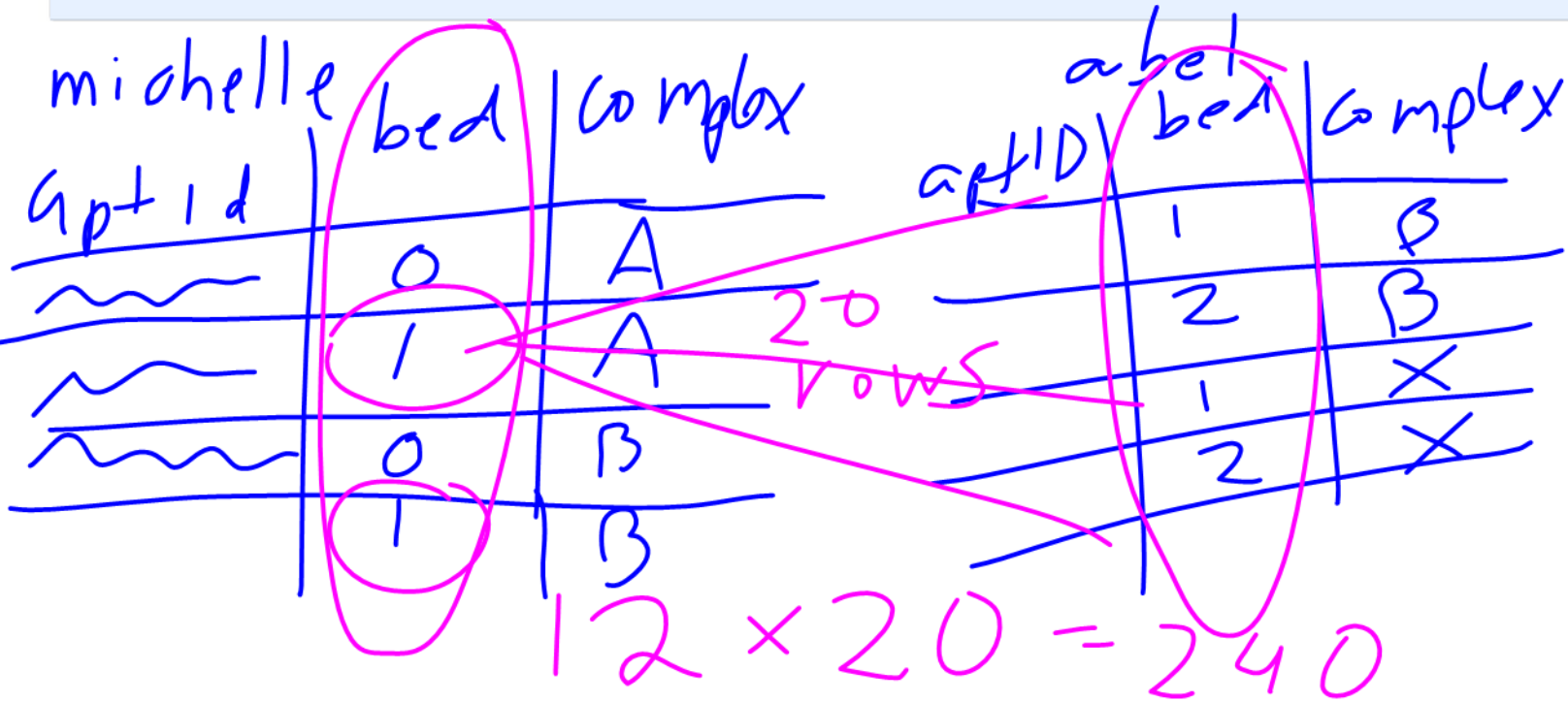



## Problem 2.2

What does the following expression evaluate to?

```
michelle.merge(abel, on="Bed").shape[0]
```

Click to view the solution.



## Problem 2.3

What does the following expression evaluate to?

```
michelle.merge(abel, on="Complex").shape[0]
```

4 x 8 = 32

Click to view the solution.

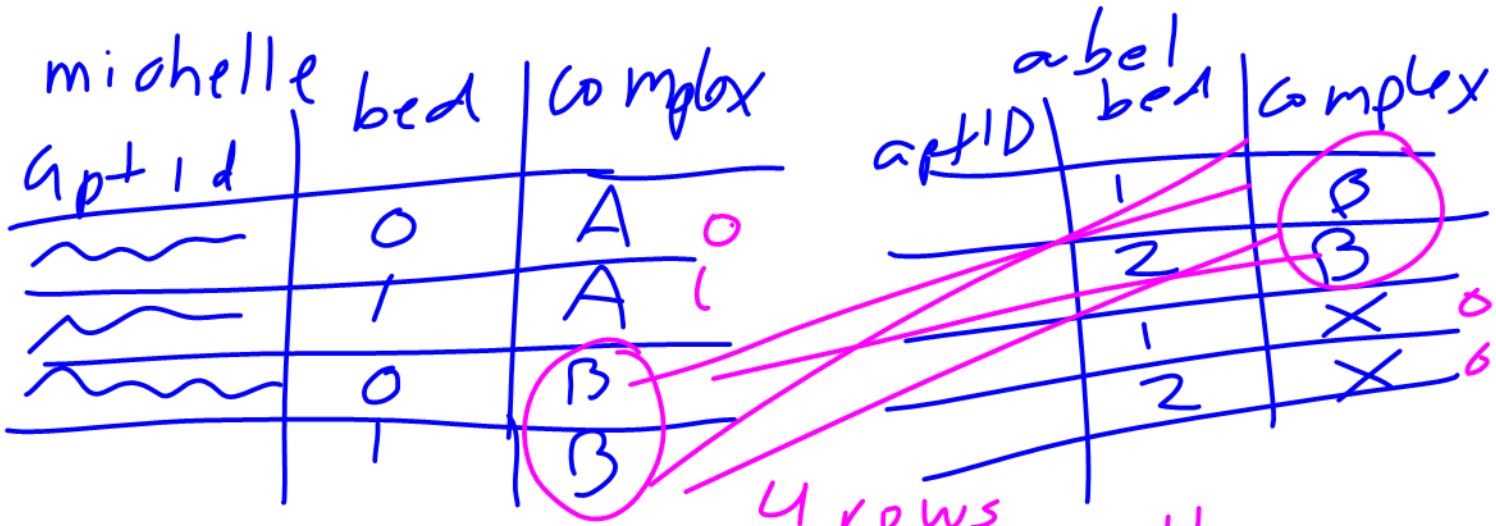
## Problem 2.4

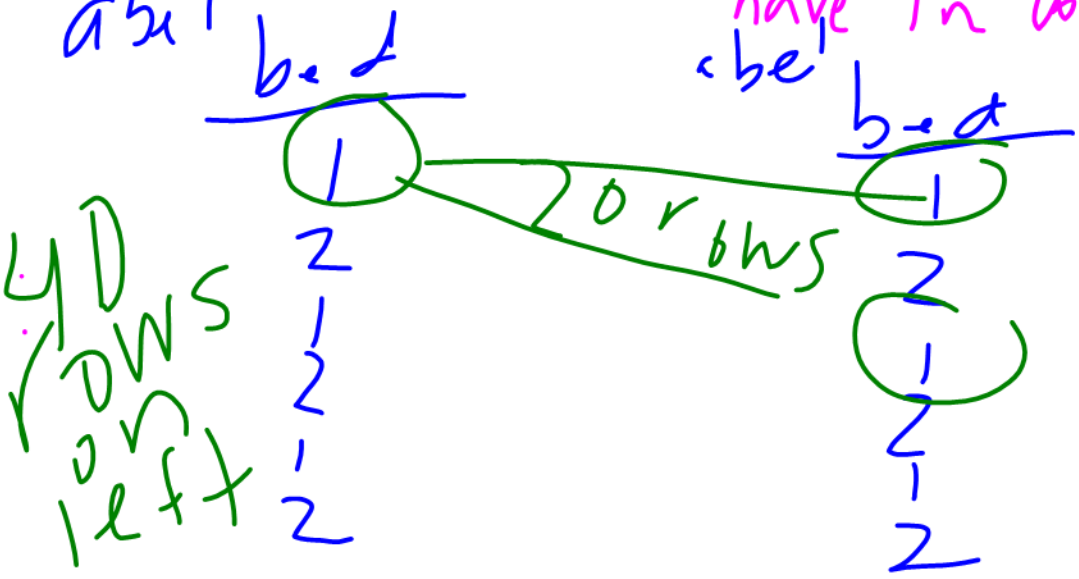
What does the following expression evaluate to?

```
abel.merge(abel, on="Bed").shape[0]
```

46 x 20 = 1600

Click to view the solution.



recommended
histogram question:
problem 10 of spring 24
midterm

problem 1 from Spring 24 Midterm: functions, for loops, data types

# Problem 1

Lecture 8

Fill in the blanks in the function `sum_phone` below. This function should take as input a string representing a phone number, given in the form `"xxx-xxx-xxxx"`, and return the sum of the digits of that phone number, as an `int`.

For example, `sum_phone("501-800-3002")` should evaluate to `19`.

```
def sum_phone(phone_number):
    total = 0
    for digit in phone_number:
        if ___(a)___:
            ___(b)___
    return total
```

Click to view the solution.

digit = "5"

to convert data types
str
int
float
etc

a) digit != "-"  error "-"

b) total = total + int(digit)

a) phone_number[i] != '-'

```
def sum_phone(phone_number):
    total = 0
    for i in np.arange(12):
        if _____:
            _____
    return total
```

"501-800-3002"

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 0 | 1 | - | 8 | 0 | 0 | - | 3 | 0 | 0 | 2 |

a) (i != 3) and (i != 7) or len(phone_number)

b) total = total + int(phone_number[i])

from Winter 24 Midterm

# Problem 4

Lecture 10

When someone is ready to make an accusation, they make a statement such as:

*"It was Miss Scarlett with the dagger in the study"*

While the suspect, weapon, and room may be different, an accusation will always have this form:

*"It was _____ with the _____ in the _____"*

Suppose the array `words` is defined as follows (note the spaces).

```
words = np.array(["It was ", " with the ", " in the "])
```

Suppose another array called `answers` has been defined. `answers` contains three elements: the name of the suspect, weapon, and room that we would like to use in our accusation, in that order. Using `words` and `answers`, complete the `for`-loop below so that `accusation` is a string, formatted as above, that represents our accusation.

```
accusation = ""
for i in ___(a)___:
    accusation = ___(b)___
```

lecture: feelings/actions