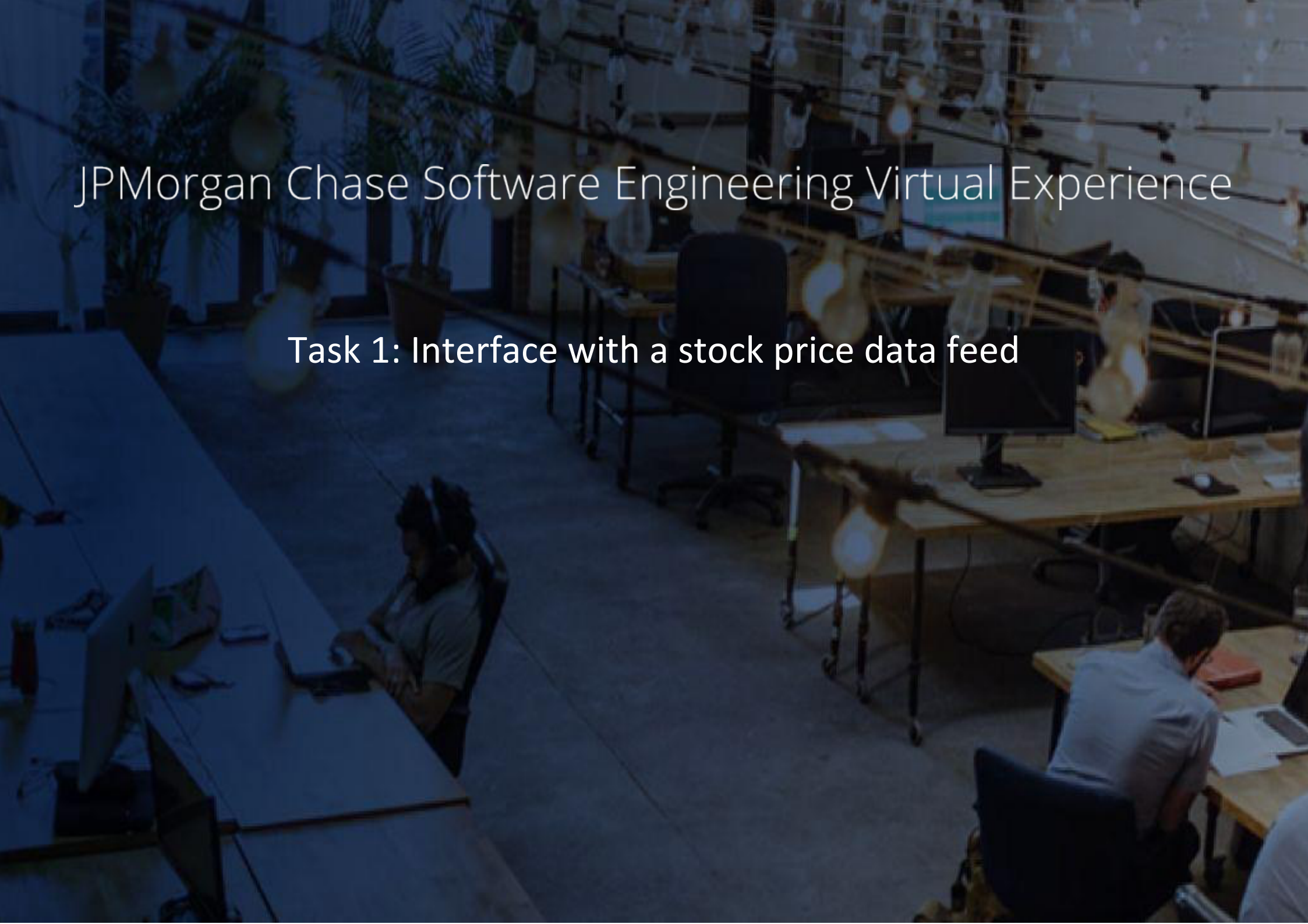


Task 1: Interface with a stock price data feed

First Step

Now that you have your local development environment set up, it's time to actually run the program. Run server3.py and client3.py (in that order) and take a look at the output. You should notice two things:

(1) The Ratio in the client output is always 1
(2) The price of each stock is always the same as its bid

These are obviously wrong so your job is to fix them…

Making changes in `client3.py`

All the changes you have make to get the right output will be in the client3.py file inside the repository

The changes you need to make will be in the following methods of the file

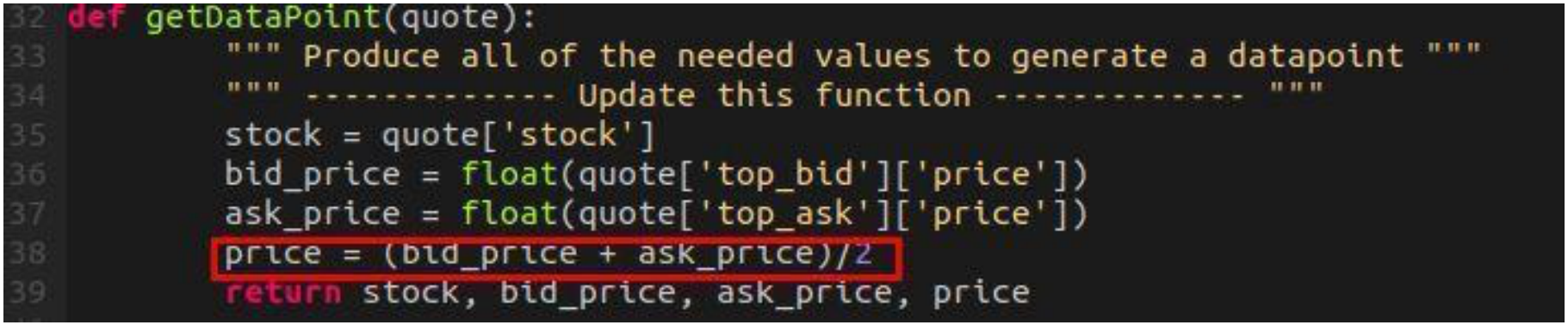
- getDataPoint
- getRatio
- Main

The changes for each method will be dissected on the next slide.

Making changes in `client3.py` - getDataPoint Method

In this method, you'll have to make modifications to compute the right stock price. This means you have to change how `price` is computed by using the formula: `(bid_price+ask_price) / 2`.

YOU DO NOT NEED TO CHANGE the return value as that is representational of the entire data point. You should end up with something like:



Making changes in client3.py – getRatio method

Right now, this method just returns 1 all the time. To correct this, you must change the return value to the ratio of stock price_a to stock price_b

```
41 def getRatio(price_a, price_b):
42         """ Get ratio of price_a and price_b """
43         """ ------------- Update this function ------------- """
44         """ Also create some unit tests for this function in client_test.py """
45         if (price_b == 0):
46                 # when price_b is 0 avoid throwing ZeroDivisionError
47                 return
48         return price_a/price_b
```

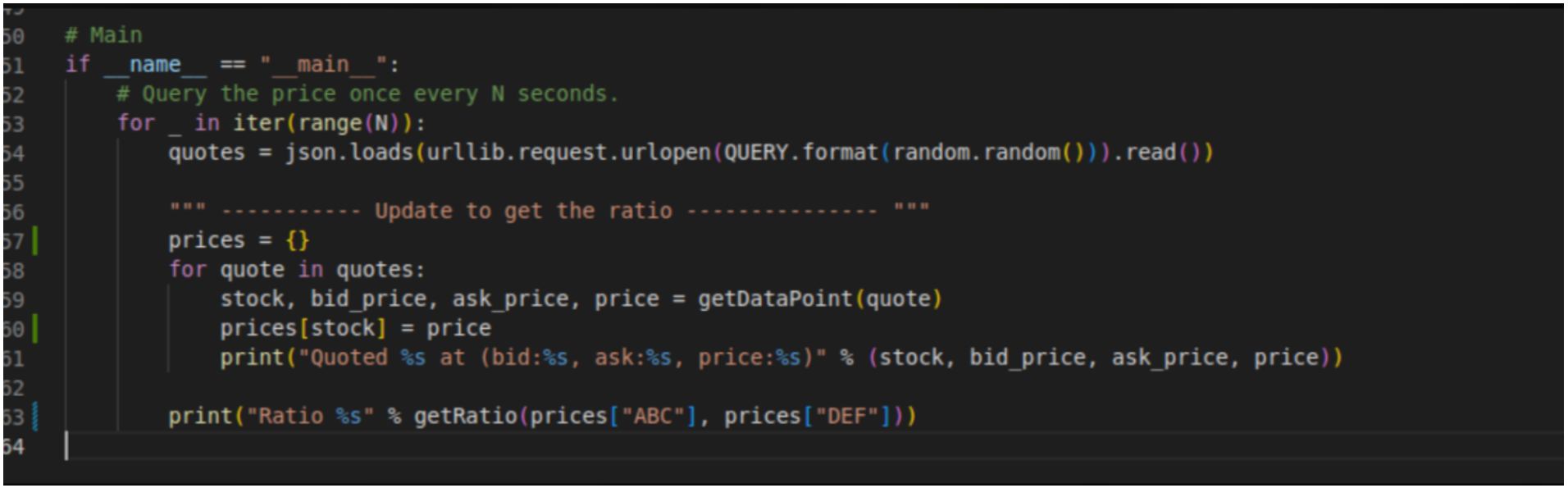
note: that we've also added the condition of the case where in price_b could be zero, i.e. division by zero, in the rare chance that it might happen...

Making changes in client3.py - Main method

Now that you've fixed the two other methods, it's just a matter of printing the correct values. For every iteration in the main method, you need to store the datapoints you get from the getDataPoint method so that you can properly call getRatio and print the right ratio.

To review, we created a prices dictionary to store the stock prices. Think of a dictionary as a key-value store wherein you can specify a key and be able to retrieve a value. In our case, the key was the stock name and the value was the price.

We then used this prices dictionary at the end to pass in the right values in the getRatio function.



```
# Main
if __name__ == "__main__":
    # Query the price once every N seconds.
    for _ in iter(range(N)):
        quotes = json.loads(urllib.request.urlopen(QUERY.format(random.random())).read())

        """ ----------- Update to get the ratio --------------- """
        prices = {}
        for quote in quotes:
            stock, bid_price, ask_price, price = getDataPoint(quote)
            prices[stock] = price
            print("Quoted %s at (bid:%s, ask:%s, price:%s)" % (stock, bid_price, ask_price, price))

        print("Ratio %s" % getRatio(prices["ABC"], prices["DEF"]))
```