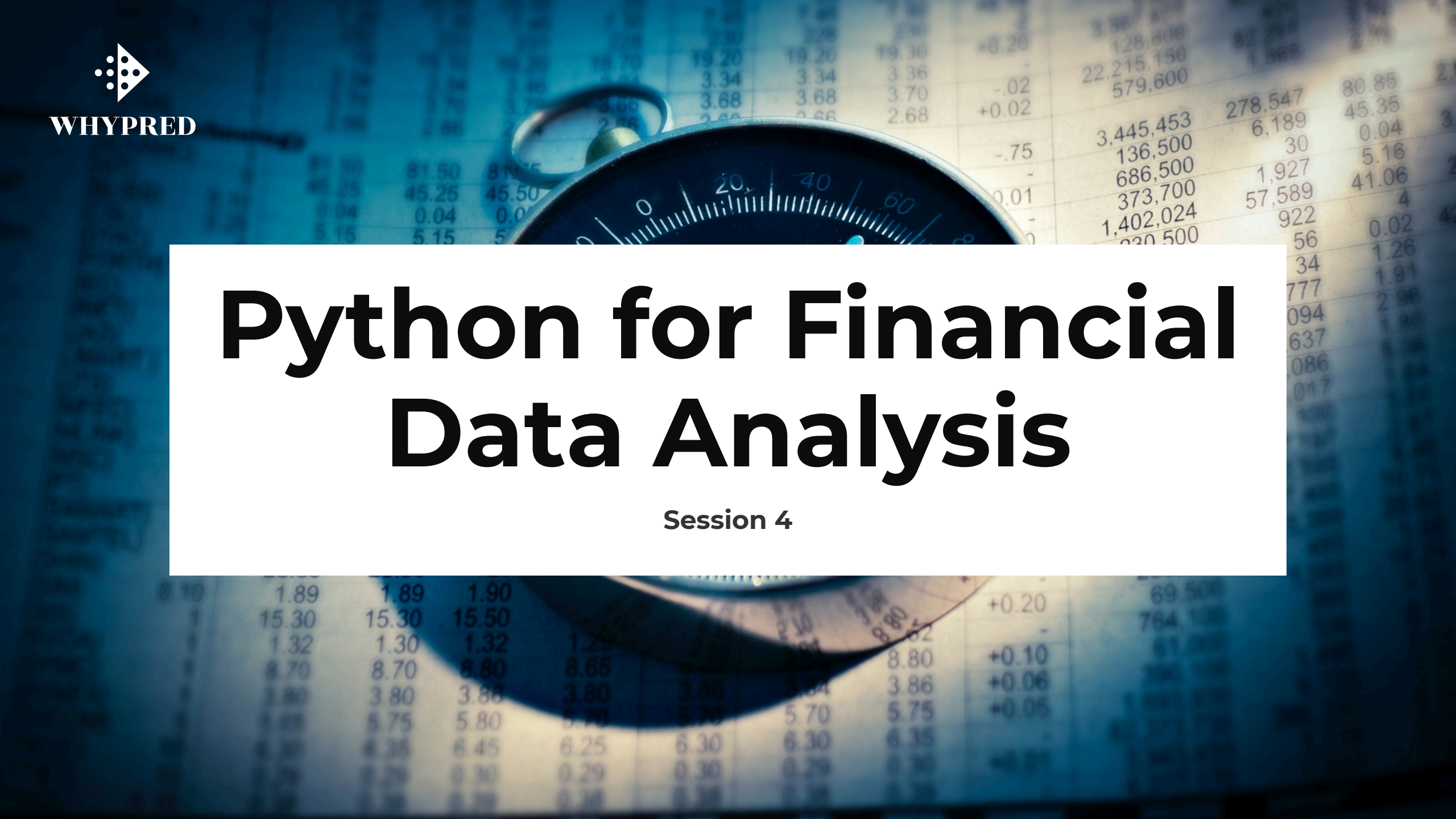

WHYPRED

Python for Financial Data Analysis

Session 4

Session Map

WHYPRED

1 **Recap**

Joins, Transformations, Time series,

2 **Analytics Approach**

How to tackle data analysis problems

3 **Case Study**

Russell 2000 and Macroeconomic Factors

4 **Survey + Quiz**

Course Outline

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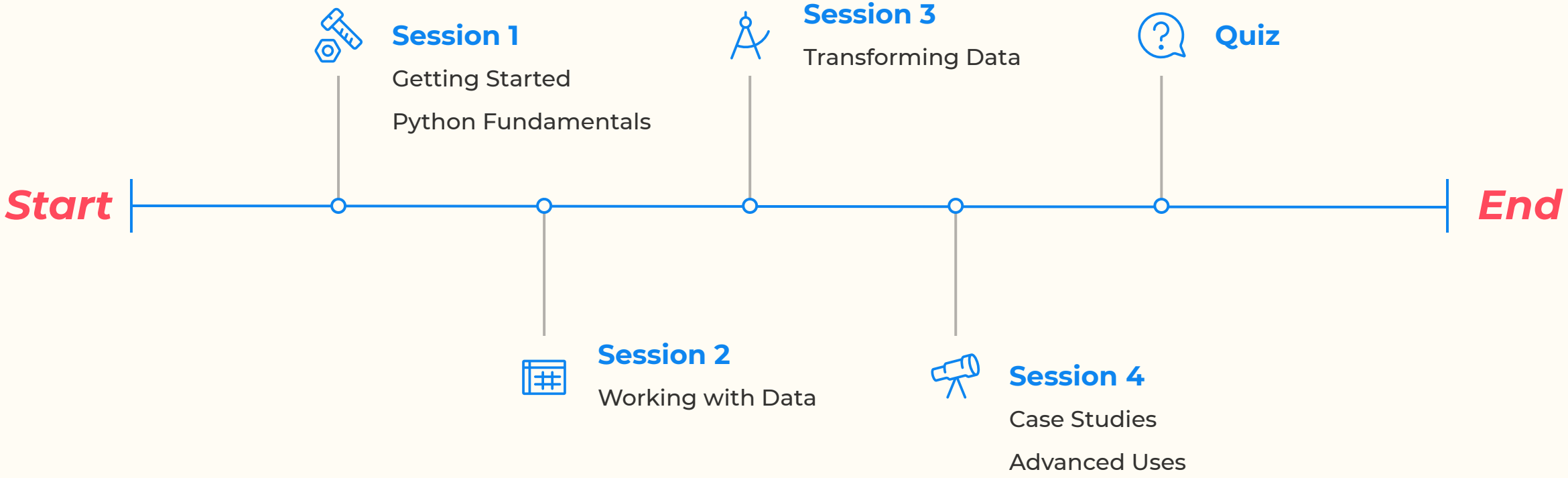

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Analytics Approach

Financial Data Analysis

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Modify	Making changes to the data aka **"wrangling"**	Deduping, filling missing value, changing data types.	Filtering Rows / Selecting Columns	Melt / Spread
Enrich	Creating new data using existing data aka **"feature engineering"**	Aggregation	Sampling	Calculations
Collate	Bringing multiple data sources together aka **"combining data"**	Joins	Union / Concatenate	Working with difference sources and formats

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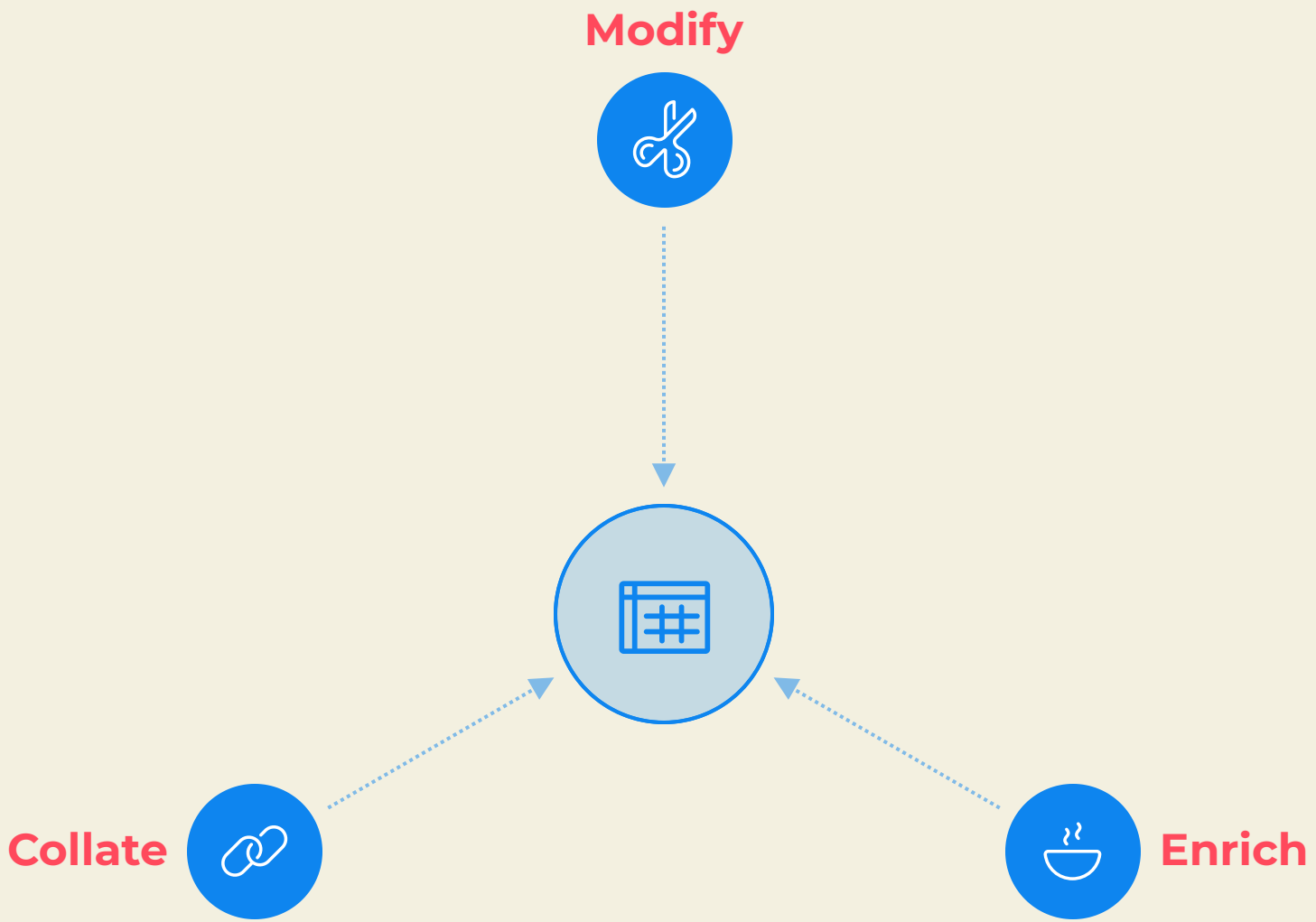
Which technique to apply to your data?



How to Tackle Any Problem

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1. Scope and collate your data sources, understand where they reside and their formats
2. Use the appropriate python function to bring your data into a dataframe
3. Apply any wrangling and cleaning required
4. Bring the dataframes together, apply any required transformations
5. Provide high quality cleaned data set for further use such as data science, ML, visualization.

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Case Study

Case Study - FRED MD

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The FRED-MD data set provided by the St. Louis Fed is a comprehensive collection of U.S. economic indicators.

1. Read the data from the website:

- Clean the data
- Filter for the last 5 years
- Select a subset of indicators

2. Obtain data for the Russell 2000:

- Use the Yahoo Finance API
- Calculate Returns
- Join on the FRED-MD subset

3. Apply K-Means algorithm

- Determine Clustering / Regimes
- Plot results
- Add date labels

Notebook Exercise

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4-1_case_study.ipynb

- All notebooks and slides are available ***here***
- Remember Google Colab is a shared cloud service, everyone is looking at the same notebook!
- To prevent accidental changes the notebooks are read only, at the beginning of each exercise make sure you create a copy so that you can edit your own copy!

Notebook Exercise

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Functions are reusable chunks code of code that are defined using the ***def*** keyword

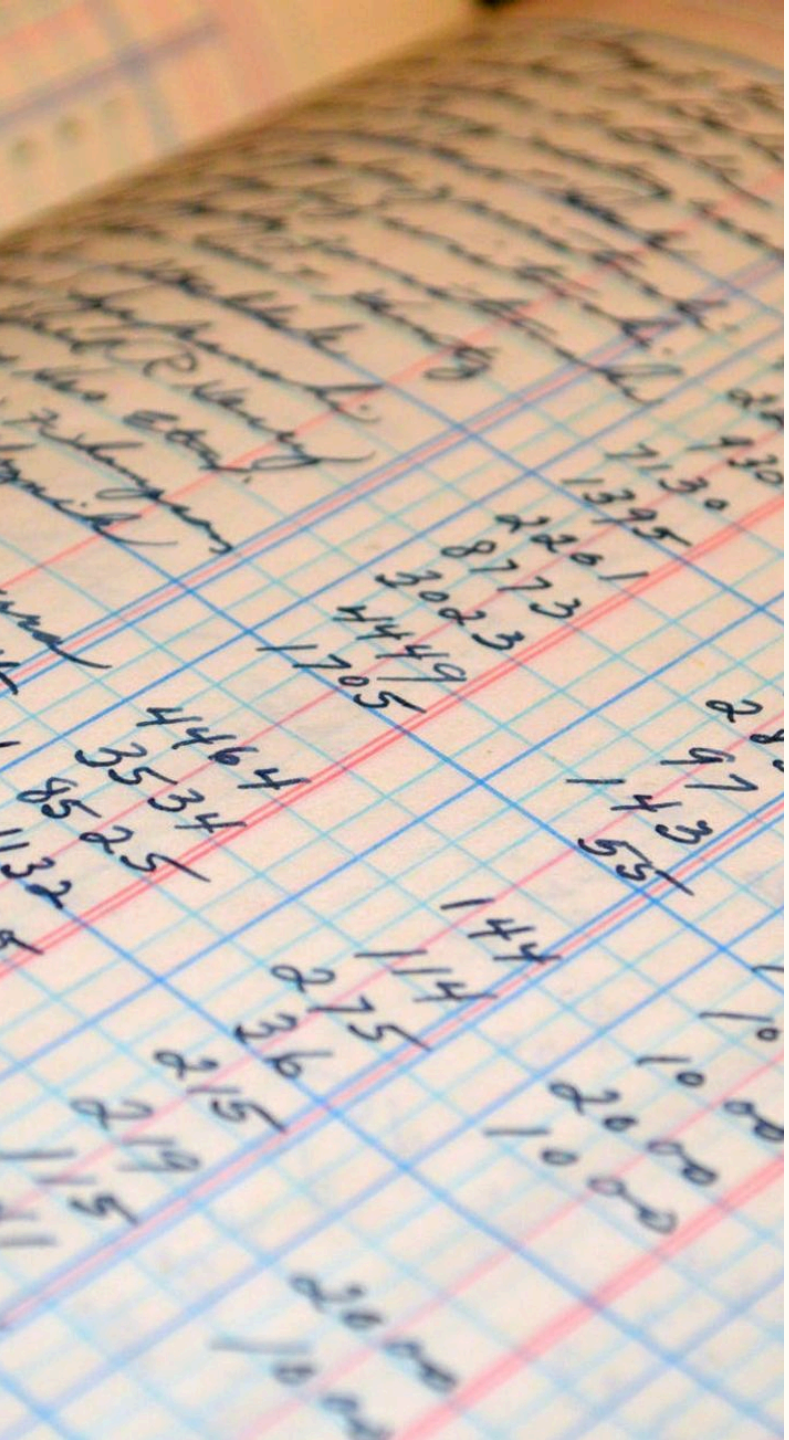
e.g. imagine we want to get the average monthly sales of business over 3 months, in python the code might look something like this:

```
total_sales = 100 + 200 + 300

average_sales = total_sales / 3
```

But we have to repeat the code for each quarter, solution:

```
def avg_sales(sales_m1, sales_m2, sales_m3):
    result = (sales_m1 + sales_m2 + sales_m3) / 3
    return(result)
```



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Quiz

The final exam is available ***here*** or below at:

https://pfda-completion-exam.streamlit.app/

5 Questions, pass mark is 80%

Once you've passed you'll be given a code, email this code to me with your full name to receive your completion e-badge for LinkedIn

Feedback Survey

Your feedback is invaluable!

The survey can be found **here** or via the url below

https://forms.gle/njrn5UxQSQUZM8dH8

That's it for the course!

Thank you

Disclaimer

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