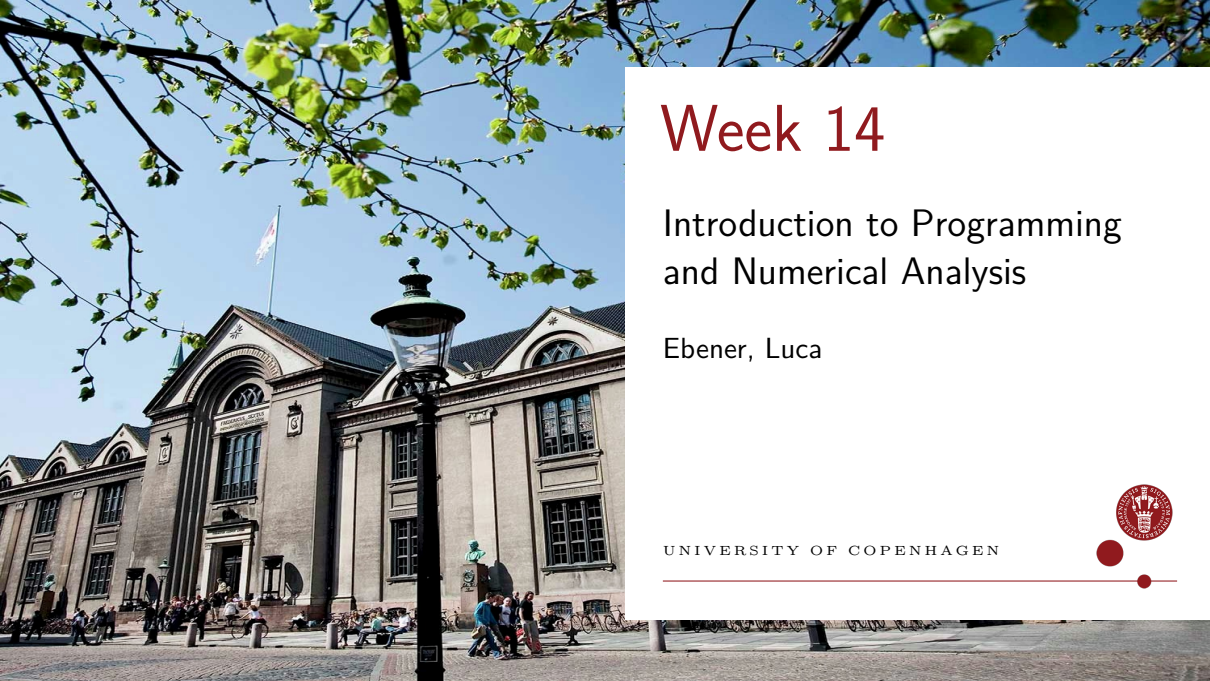

Week 14

Introduction to Programming and Numerical Analysis

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Overview

- About the data project
- Datasources
- Work on data project

Objectives

- Apply data cleaning and structuring methods.
- Apply data analysis methods.
- Structure code project.
- Document code.
- Present results visually and in text form.

Content

- Choose a subject of interest.
- Emphasis on the quality of the code not acquiring new economic knowledge.

Minimum requirements

- Import data from an online source (download or API).
- Present data visually (perhaps interactively).
- Apply descriptive economics methods (make a report that tells a story in numbers and graphs about an economic phenomenon or trend).

Ideas for data sources

- **Google Trends**: Analyze website traffic and user behavior.
- **OpenWeatherMap**: Study weather patterns and trends.
- **Financial APIs (e.g., Alpha Vantage)**: Analyze stock market performance.
- **Government APIs (e.g., Data.gov)**: Analyze public policies and societal trends.
- **Yahoo Finance**: Access historical or real-time financial data.
- **IMF Economic Data**: International financial statistics, regional economic reports, financial stability reports, directions of trade.
- **DB-nomics**: Huge amount of datasets and providers.
- **OECD Toolbox**

Statistical Analyses Suggestions

- **Regression Analysis**: Explore relationships between variables and predict outcomes.
- **Hypothesis Testing**: Test hypotheses about population parameters using sample data.
- **Time Series Analysis**: Analyze data collected over time to identify patterns.
- **Cluster Analysis**: Group data points into clusters based on similarity.
- **Factor Analysis**: Identify factors that explain patterns in observed variables.
- **Correlation Analysis**: Strength and direction of the relationship between variables.
- **Survival Analysis**: Analyze time-to-event data, such as time until failure.

Some general thoughts

- Open with a clear introduction of what you will analyze, which data you use and the results that you find.
- Cleaning and merging the data correctly might be the hardest part so put special emphasis on that.
- Add some descriptive statistics early (could be means, standard deviations etc. but also bar graphs or scatter plots).
- Find creative ways to plot your data.
- Explain what your code is doing as you go.
- Explain figures.
- Explain what you infer from your results and how it plays into your overall conclusion.
- Provide a final conclusion.