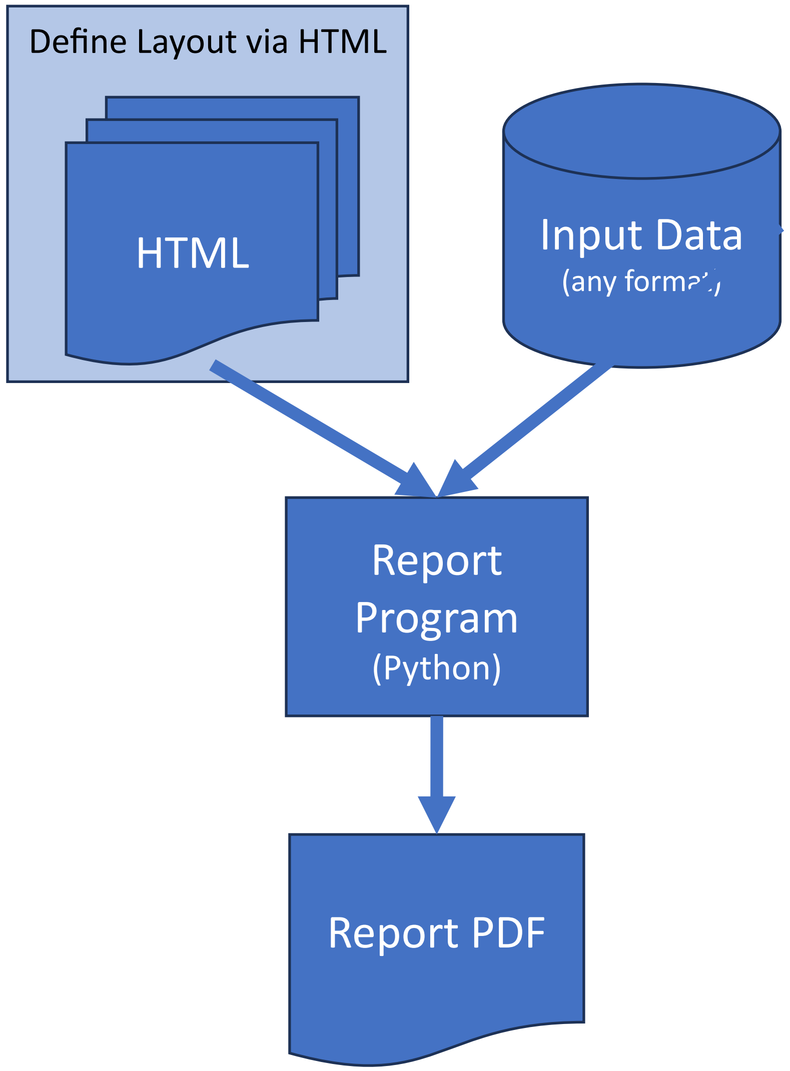
Overview: Effective Report Generation Using PyMuPDF



Simple, intuitive approach:

- Define the layout via HTML and CSS sources
- Develop the report program in simple steps:
  - Implement access to databases
  - Convert HTML to ***building blocks*** (logo, header, text, table, footer, etc.)
  - Compose the report by simply naming the ***building blocks***
- Execute PDF generation

PyMuPDF Reporting: Features

PyMuPDF Reporting supports multiple advanced features

- The report layout is defined using the powerful HTML and CSS languages.
- Multiple HTML sources can be used to deal with report sections separately like header, footer, images or tables.
- Support of standard fonts like Helvetica, Times-Roman and CJK (Droid Sans Fallback) is included. Falling back to CJK happens automatically basd on the text.
- User fonts can be included via appropriate CSS definitions. Elegant support for pymupdf-fonts.
- Support for multi-column pages and multiple page formats in the same report.
- Report data may reside on any Python-supported storage like databases or JSON- and CSV-files, or containers like dictionaries, lists, pandas DataFrames and more.
- Easy variable substitution using the Story interface.
- Table building blocks support top-row repetition as an option, *alternating* row and *final* row background colors and images in table cells.
- Changing page size, page orientation, columns per page, etc. **require no coding** effort: any layout adjustments are automatically carried out by the underlying Story.

PyMuPDF Report Creation Overview

Reports are composed from **building blocks**

- Identify layout segments
  - Header, footer, logo
  - Text (prolog, intermediate, trailer, etc.)
  - Tabular data
- Identify input data sources (SQL, CSV, JSON, DataFrames (pandas), text, etc.)
- Code
  - HTML / CSS sources for layout segments
  - Accessing external data

- Define building blocks
  - Header, footer, text: `Block`
  - Tabular data: `Table`
- Compose the report object
  - Assign `report.header`, `report.footer` to their building blocks
  - Assign `report.sections` to the list of building blocks
- Generate the report
  `report.run(filename)`

PyMuPDF Reports Have a Common Structure

```
# import required objects
from fitz.reports import Report, Table, Block
# define the report object
report = Report(mediabox)  # choose report page size
```

```
header = Block(html=header_html, report=report)
footer = Block(html=footer_html, report=report)
prolog = Block(html=prolog_html, report=report)
epilog = Block(html=epilog_html, report=report)
```

To construct a **simple** block, the HTML source is sufficient

```
def fetch_rows():
    ""Access databases and return row items."""
    ...
    return rows
```

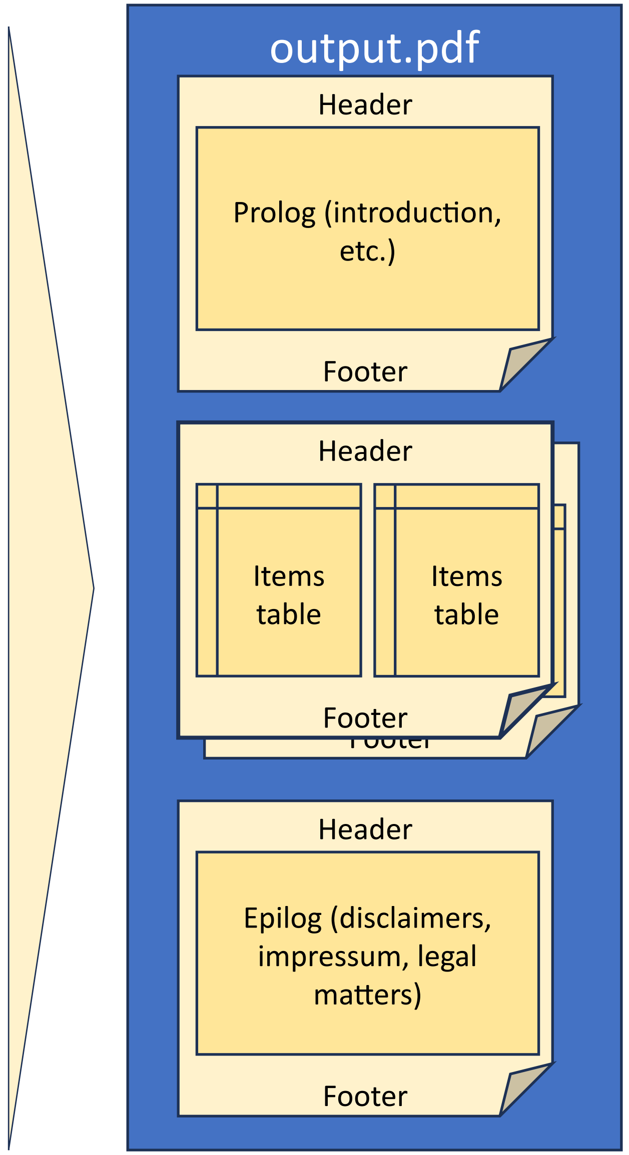
Access any data format supported by Python to return a list of item rows

```
items = Table(
    report=report,  # point to owning report
    html=items_html,  # HTML definition of table items
    top_row="toprow",  # name of top row in table
    fetch_rows=fetch_rows,  # call this to get item data
    # alternating background colors of rows
    alternating_bg=("#ccc", "#aaa", "#fff"),
)
```

A table supports several parameters

```
report.header = header
report.footer = footer
report.sections = [prolog, [items, 2], epilog]
report.run("output.pdf")
```

This report will output the prolog, then the items table (two columns per page), and finally the epilog.


output.pdf
Header
Prolog (introduction, etc.)
Footer
Header
Items table
Items table
Footer
Footer
Header
Epilog (disclaimers, impressum, legal matters)
Footer