Python - Work with Spreadsheets

- Level: Basic

In this example, we illustrate how Python can be used within MatDeck to work with spreadsheets, which includes Microsoft Excel files (various versions and formats), Open Office / Libre Office Calc, and CSV. In order to work with spreadsheets, it is necessary to install openpyxl library. The easiest way to install is to use following command in command prompt: pip install openpyxl

Create an Excel file from scratch

The task is to create Excel file with given file name, and to write date and time at cell A2.

Input : File name as string

Output : File

file_name **:=** "first.xlsx"

Code

```py
#py
import openpyxl
import datetime

wb = openpyxl.Workbook()
ws = wb.active
ws['A1'] = "Date and Time"
ws['A2'] = datetime.datetime.now()
wb.save(file_name)
###
```

Add expressions to Excel

The task is to write data into given cells, and to add expression which determines value of the third cell.

Variable1 **:=** 13

Variable2 **:=** 25

file_namee **:=** "expression.xlsx"

```
11  #py
12  import openpyxl
13  wb = openpyxl.Workbook()
14  ws = wb.active
15  ws['A1'] = Variable2
16  ws['A2'] = Variable1
17  ws['A3'] = "=A1+A2"
18  wb.save(file_namee)
19  ###
```

Number series and chart

The following Python code defines number series which are written in Excel file. After that, Excel chart is defined as two line chart.

```
20  #py
21  import openpyxl
22  wb = openpyxl.Workbook()
23  ws = wb.active
24  ws.title = "Chart"
25
26  a = ["First", 20, 28, 30, 37, 18, 47]
27  b = ["Second", 35, 30, 40, 40, 38, 35]
28
29  # write series as columns
30  for i in range(len(a)):
31      ws.cell(row=i+1, column=1).value = a[i]
32      ws.cell(row=i+1, column=2).value = b[i]
33  lc = openpyxl.chart.LineChart()
34  lc.title = "Two Lines Chart"
35
36  data = openpyxl.chart.Reference(ws,
37  min_col=1,
38  min_row=1,
39  max_col=2,
40  max_row=len(a))
41  lc.add_data(data, titles_from_data=True)
42
43  ws.add_chart(lc, "D1")
44  wb.save("chart.xlsx")
45  ###
```

Read Excel File

Next code chunk illustrates how Excel file can be read using Python code directly form MatDeck

```
46  #py
47  import openpyxl
48  wb = openpyxl.load_workbook(filename = 'chart.xlsx')
49  for ws in wb.worksheets:
50      print(ws.title)
51  ws = wb.worksheets[0]
52  print(ws['A1'].value)
53  ###
```