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Faculty: Faculty of Exact Sciences
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Module: Scientific Programming
Level: 2nd Year LMD
Specialty: Physics/MCPC
Session: Practical Work N°8
Subject: Pandas – Introduction to DataFrames

SESSION 8
Pandas – Introduction to DataFrames

LEARNING GOALS

- Understand the purpose of Pandas.
- Create a DataFrame from simple data.
- Create a DataFrame from a dictionary.
- Display and inspect basic tabular data.

SHORT THEORY

Pandas is a Python library for working with tables. The main object introduced here is the **DataFrame**.

1. DataFrame from a dictionary

LET'S TRY

```
import pandas as pd

data = {
"time":[0,1,2,3],
"position":[0,3,6,9]
}

df = pd.DataFrame(data)

print(df)

```

2. Select a column

GUIDED PRACTICE

```
print(df["time"])
print(df["position"])

```

A column can be selected using its name.

Guided practice – student and measurement tables

GUIDED PRACTICE

```
data = {
"Student":["Ali","Sara","Omar"],
"Physics":[14,17,13],
"Math":[15,16,12]
}

df = pd.DataFrame(data)
print(df)
print(df["Physics"])

```

PHYSICS CONNECTION

A DataFrame is convenient when measurements have several named columns:

```
data = {"time":[0,1,2], "velocity":[2.0,2.4,2.8]}
df = pd.DataFrame(data)
print(df)

```

SHORT THEORY

What to remember

`pd.DataFrame(...)` creates a table; column names identify variables. At this level, the objective is to become comfortable reading and displaying tabular data.

TRY IT YOURSELF – NO SOLUTION

1. Create a DataFrame with three students and two marks.
2. Create a DataFrame with `time`, `position` and `velocity`.
3. Display one selected column.
4. Add one more column to your dictionary and recreate the DataFrame.