FOUNDATION LESSON

WEEK 6 · LESSON 7

A capstone question and portable project structure

A scoped question determines inputs, reporting grain, outputs and limitations.

THE MENTAL MODEL

MENTAL MODEL

The mental model

A scoped question determines inputs, reporting grain, outputs and limitations.

CREATE THE PROJECT FOLDERS

CODE WALKTHROUGH W06-L07-S03

```
01  from pathlib import Path
02  root=Path("capstone")
03  for folder in ["data/raw","data/processed","src","outputs","con
↪   fig"]:
04      (root/folder).mkdir(parents=True,exist_ok=True)
05  print((root/"data"/"raw").as_posix())
06  print((root/"outputs").exists())
```

WHAT TO TRACK

Create the project folders

PREDICT THE RESULT

Predict the output.
Explain each operation.
Pause before continuing.

CREATE THE PROJECT FOLDERS · RESULT

CODE WALKTHROUGH W06-L07-S04

```
01  from pathlib import Path
02  root=Path("capstone")
03  for folder in ["data/raw","data/processed","src","outputs","con
↪   fig"]:
04      (root/folder).mkdir(parents=True,exist_ok=True)
05  print((root/"data"/"raw").as_posix())
06  print((root/"outputs").exists())
```

WHAT TO TRACK

Create the project folders

VALIDATE THE RESULT

```
capstone/data/raw
True
```

A BOUNDED ANALYTICAL QUESTION

CODE WALKTHROUGH W06-L07-S05

```
01  question={"period":"2025 Q1","entities":["A","B"],
02   "measures":["revenue","profit","fcf"],"cost_factor":1.1}
03  print("Period:",question["period"])
04  print("Measures:",", ".join(question["measures"]))
05  print("Scenario changes cost only:",question["cost_factor"])
```

WHAT TO TRACK

A bounded analytical question

PREDICT THE RESULT

Predict the output.
Explain each operation.
Pause before continuing.

A BOUNDED ANALYTICAL QUESTION · RESULT

CODE WALKTHROUGH W06-L07-S06

```
01 question={"period":"2025 Q1","entities":["A","B"],
02  "measures":["revenue","profit","fcf"],"cost_factor":1.1}
03 print("Period:",question["period"])
04 print("Measures:",", ".join(question["measures"]))
05 print("Scenario changes cost only:",question["cost_factor"])
```

WHAT TO TRACK

A bounded analytical question

VALIDATE THE RESULT

```
Period: 2025 Q1
Measures: revenue, profit,
fcf
Scenario changes cost only:
1.1
```

MISSING REQUIRED INPUT

CODE WALKTHROUGH W06-L07-S07

```
01  from pathlib import Path
02  source=Path("data/raw/flows.csv")
03  if not source.is_file():
04      raise FileNotFoundError("Place flows.csv in data/raw before
↪    running")
```

WHAT TO TRACK

Missing required input

PREDICT THE RESULT

Predict the output.
Explain each operation.
Pause before continuing.

MISSING REQUIRED INPUT · RESULT

CODE WALKTHROUGH W06-L07-S08

```
01  from pathlib import Path
02  source=Path("data/raw/flows.csv")
03  if not source.is_file():
04      raise FileNotFoundError("Place flows.csv in data/raw before
↪    running")
```

WHAT TO TRACK

Missing required input

VALIDATE THE RESULT

```
FileNotFoundError: Place
flows.csv in data/raw before
running
```

GUIDED PRACTICE

LEARNER PRACTICE

Guided practice

Create data/raw and outputs below a project folder named practice. Print both portable paths.

PREDICT · MODIFY · RUN

01 Restate the supplied rules.

02 Predict the result.

03 Modify and run the code.

04 Compare actual output.

05 Explain any difference.

INDEPENDENT PRACTICE

LEARNER PRACTICE

Independent practice

Write a scoped question dictionary for two branches during February with revenue and profit only.

PREDICT · MODIFY · RUN

01 Restate the supplied rules.

02 Predict the result.

03 Modify and run the code.

04 Compare actual output.

05 Explain any difference.

CHECK YOUR UNDERSTANDING

MENTAL MODEL

Check your understanding

Diagnostic: Should rerunning the project delete raw data to start clean? No.
Regenerate outputs while preserving original inputs.

RECAP AND NEXT STEP

Recap and next step

Scope the capstone around available evidence. Separate raw files, source, configuration and outputs, and use portable paths.

UNDERSTAND APPLY VALIDATE EXPLAIN