FOUNDATION LESSON

WEEK 2 · LESSON 6

Lists and safe indexing

Lists: ordered mutable collections / Indexing and negative indexing

LISTS AND SAFE INDEXING

MENTAL MODEL

Lists and safe indexing

A list is an ordered mutable sequence. Indices start at zero, and negative indices count backward from the end.
Indexing an empty list raises IndexError. Check the sequence is non-empty before using the final element.

ORDERED RETURNS

CODE WALKTHROUGH W02-L06-S03

```
01  returns = [0.01, -0.02, 0.015]
02  print(returns)
03  print(len(returns))
```

WHAT TO TRACK

Ordered returns

PREDICT THE RESULT

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

ORDERED RETURNS

CODE WALKTHROUGH W02-L06-S04

```
01  returns = [0.01, -0.02, 0.015]
02  print(returns)
03  print(len(returns))
```

WHAT TO TRACK

Ordered returns

VALIDATE THE RESULT

```
[0.01, -0.02, 0.015]
3
```

FIRST AND LAST

CODE WALKTHROUGH W02-L06-S05

```
01  prices = [100, 102, 99, 105]
02  print(prices[0])
03  print(prices[-1])
```

WHAT TO TRACK

First and last

PREDICT THE RESULT

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

FIRST AND LAST

CODE WALKTHROUGH W02-L06-S06

```
01  prices = [100, 102, 99, 105]
02  print(prices[0])
03  print(prices[-1])
```

WHAT TO TRACK

First and last

VALIDATE THE RESULT

```
100
105
```

EMPTY INDEXING

CODE WALKTHROUGH W02-L06-S07

```
01  values = []
02  print(values[-1])
```

WHAT TO TRACK

Empty indexing

PREDICT THE RESULT

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

EMPTY INDEXING

CODE WALKTHROUGH W02-L06-S08

```
01  values = []
02  print(values[-1])
```

WHAT TO TRACK

Empty indexing

VALIDATE THE RESULT

```
IndexError: list index out
of range
```

INDEPENDENT PREDICTION

LEARNER PRACTICE

Independent prediction

Change one input in lists and safe indexing and test a boundary or edge case.

01 Predict the exact output.
02 Change only one input.
03 Run in a fresh Python process.
04 Explain any difference.

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.

LISTS AND SAFE INDEXING

Recap and next step

A list is an ordered mutable sequence. Indices start at zero, and negative indices count backward from the end. Indexing an empty list raises IndexError. Check the sequence is non-empty before using the final element.

UNDERSTAND APPLY VALIDATE EXPLAIN