FOUNDATION LESSON

WEEK 2 · LESSON 12

Iterate with for and range

for loops over lists / range and counting loops

ITERATE WITH FOR AND RANGE

MENTAL MODEL

Iterate with for and range

A for loop visits the supplied items in order. range generates integers with an excluded stop.
Rebinding a loop variable does not mutate the original list. Build a separate result list when transforming values.

LOOP WITHOUT MUTATION

CODE WALKTHROUGH W02-L12-S03

```
01  values = [100, 200, 300]
02  for value in values:
03      print(value + 10)
04  print(values)
```

WHAT TO TRACK

Loop without mutation

PREDICT THE RESULT

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

LOOP WITHOUT MUTATION

CODE WALKTHROUGH W02-L12-S04

```
01  values = [100, 200, 300]
02  for value in values:
03      print(value + 10)
04  print(values)
```

WHAT TO TRACK

Loop without mutation

VALIDATE THE RESULT

```
110
210
310
[100, 200, 300]
```

RANGE STOP

CODE WALKTHROUGH W02-L12-S05

```
01  for month in range(1, 4):
02      print("Month", month)
```

WHAT TO TRACK

Range stop

PREDICT THE RESULT

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

RANGE STOP

CODE WALKTHROUGH W02-L12-S06

```
01  for month in range(1, 4):
02      print("Month", month)
```

WHAT TO TRACK

Range stop

VALIDATE THE RESULT

```
Month 1
Month 2
Month 3
```

BUILD A NEW LIST

CODE WALKTHROUGH W02-L12-S07

```
01  amounts = [100, -20, 0, 300]
02  positive = []
03  for amount in amounts:
04      if amount > 0:
05          positive.append(amount)
06  print(amounts)
07  print(positive)
```

WHAT TO TRACK

Build a new list

PREDICT THE RESULT

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

BUILD A NEW LIST

CODE WALKTHROUGH W02-L12-S08

```
01  amounts = [100, -20, 0, 300]
02  positive = []
03  for amount in amounts:
04      if amount > 0:
05          positive.append(amount)
06  print(amounts)
07  print(positive)
```

WHAT TO TRACK

Build a new list

VALIDATE THE RESULT

```
[100, -20, 0, 300]
[100, 300]
```

INDEPENDENT PREDICTION

LEARNER PRACTICE

Independent prediction

Change one input in iterate with for and range 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.

ITERATE WITH FOR AND RANGE

Recap and next step

A for loop visits the supplied items in order. range generates integers with an excluded stop. Rebinding a loop variable does not mutate the original list. Build a separate result list when transforming values.

UNDERSTAND APPLY VALIDATE EXPLAIN