FOUNDATION LESSON

WEEK 2 · LESSON 11

Aliasing and shallow copies

Copying, aliasing and Week 2 record practice

ALIASING AND SHALLOW COPIES

MENTAL MODEL

Aliasing and shallow copies

Assignment may create two names for the same list. A shallow copy creates a different outer list while sharing nested mutable objects.
Distinguish value equality (==) from identity (is). Test nested edits when claiming a copy is independent.

ALIAS OR COPY

CODE WALKTHROUGH W02-L11-S03

```
01  a = [1, 2]
02  b = a
03  c = a.copy()
04  a.append(3)
05  print(b)
06  print(c)
```

WHAT TO TRACK

Alias or copy

PREDICT THE RESULT

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

ALIAS OR COPY

CODE WALKTHROUGH W02-L11-S04

```
01  a = [1, 2]
02  b = a
03  c = a.copy()
04  a.append(3)
05  print(b)
06  print(c)
```

WHAT TO TRACK

Alias or copy

VALIDATE THE RESULT

```
[1, 2, 3]
[1, 2]
```

SHALLOW NESTED COPY

CODE WALKTHROUGH W02-L11-S05

```
01  original = [{"id": 1, "balance": 1200}]
02  outer_copy = original.copy()
03  outer_copy[0]["balance"] = 1500
04  print(original[0]["balance"])
05  print(outer_copy is original)
06  print(outer_copy[0] is original[0])
```

WHAT TO TRACK

Shallow nested copy

PREDICT THE RESULT

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

SHALLOW NESTED COPY

CODE WALKTHROUGH W02-L11-S06

```
01  original = [{"id": 1, "balance": 1200}]
02  outer_copy = original.copy()
03  outer_copy[0]["balance"] = 1500
04  print(original[0]["balance"])
05  print(outer_copy is original)
06  print(outer_copy[0] is original[0])
```

WHAT TO TRACK

Shallow nested copy

VALIDATE THE RESULT

```
1500
False
True
```

EQUALITY VERSUS IDENTITY

CODE WALKTHROUGH W02-L11-S07

```
01  first = [100]
02  second = [100]
03  print(first == second)
04  print(first is second)
```

WHAT TO TRACK

Equality versus identity

PREDICT THE RESULT

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

EQUALITY VERSUS IDENTITY

CODE WALKTHROUGH W02-L11-S08

```
01  first = [100]
02  second = [100]
03  print(first == second)
04  print(first is second)
```

WHAT TO TRACK

Equality versus identity

VALIDATE THE RESULT

```
True
False
```

INDEPENDENT PREDICTION

LEARNER PRACTICE

Independent prediction

Change one input in aliasing and shallow copies 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.

ALIASING AND SHALLOW COPIES

Recap and next step

Assignment may create two names for the same list. A shallow copy creates a different outer list while sharing nested mutable objects. Distinguish value equality (==) from identity (is). Test nested edits when claiming a copy is independent.

UNDERSTAND APPLY VALIDATE EXPLAIN