



NESTED LOOPS

Loop Basics

For Loops

While Loops

Nested Loops

Loop Control

Loops can be **nested** within another loop

- The nested loop is referred to as an *inner* loop (the other is an *outer* loop)
- These are often used for navigating nested lists and similar data structures

EXAMPLE *Printing items along with their sizes*

```
item_list = ['Snowboard', 'Boots']
size_list = ['small', 'medium', 'large']

for item in item_list:
    for size in size_list:
        print(f"{item} is available in {size}.")
```

```
Snowboard is available in small. ← item_list[0], size_list[0]
Snowboard is available in medium. ← item_list[0], size_list[1]
Snowboard is available in large. ← item_list[0], size_list[2]
Boots is available in small. ← item_list[1], size_list[0]
Boots is available in medium. ← item_list[1], size_list[1]
Boots is available in large. ← item_list[1], size_list[2]
```



How does this code work?

- The inner loop (size_list) will run completely for each iteration of the outer loop (item_list)
- In this case, the inner loop iterated three times for each of the two iterations of the outer loop, for a total of six print statements
- **NOTE:** There is no limit to how many layers of nested loops can occur



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```

Snowboard is available in small.



item_list (outer loop)

0	Snowboard
1	Boots

size_list (inner loop)

0	small
1	medium
2	large



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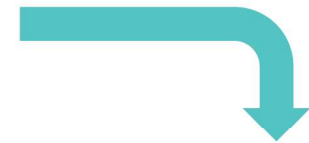
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Snowboard is available in small.
Snowboard is available in medium.



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Snowboard is available in small.
Snowboard is available in medium.
Snowboard is available in large.
Boots is available in small.



item_list (outer loop)

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Snowboard is available in small.
Snowboard is available in medium.
Snowboard is available in large.
Boots is available in small.
Boots is available in medium.



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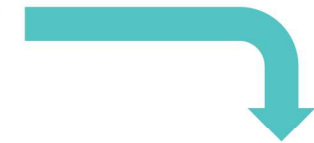
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Snowboard is available in small.
Snowboard is available in medium.
Snowboard is available in large.
Boots is available in small.
Boots is available in medium.
Boots is available in large.

*You exit a nested loop when
all its loops are completed*



item_list (outer loop)

0 Snowboard
1 **Boots**

size_list (inner loop)

0 small
1 medium
2 **large**