LEC 04

CSE 121

for Loops

Questions during Class?

Raise hand or send here

sli.do #cse121

BEFORE WE START

Talk to your neighbors:

Have you heard of corgi yoga?

Music: ♣ CSE 121 25su Lecture Tunes ♣

Instructor: Hannah Swoffer

TAs: Abby, Hannah, Julia, Merav, Trey

Agenda

- **Announcements, Reminders** ⟵
- Strings and Characters Review
- Code example!
- for Loop Review
- Code example!

Announcements, Reminders

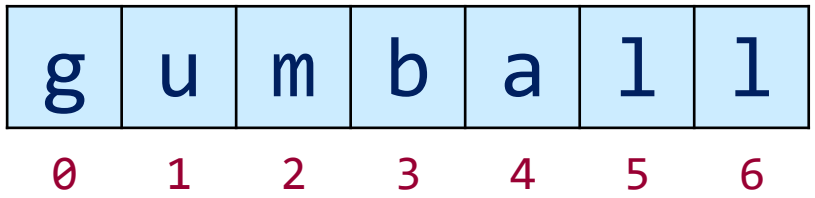
- Feedback for C0 released!
  - Please view your feedback – crucial part of learning process
  - For regrades (not resubs), please make a private Ed post
- Grade calculator
- C1 and R1 releasing later today, both due Tuesday, July 15th
- Quiz 0 is on Thursday, July 17th (in your registered quiz section)
  - Can't make it? Email Hannah ASAP

Agenda

- Announcements, Reminders
- **Strings and Characters Review** ⟵
- Code example!
- for Loop Review
- Code example!

PCM: Strings & chars

- Recall: String literals are a sequence of characters that are *strung* together, begin and end with ""
  - Use zero-based indexing
- A `char` represents a single character
  - Begin and end with single quotes (')
  - Strings are made up of `char`s!




```
char letter = 'g';
char anotherLetter = 'b';
```

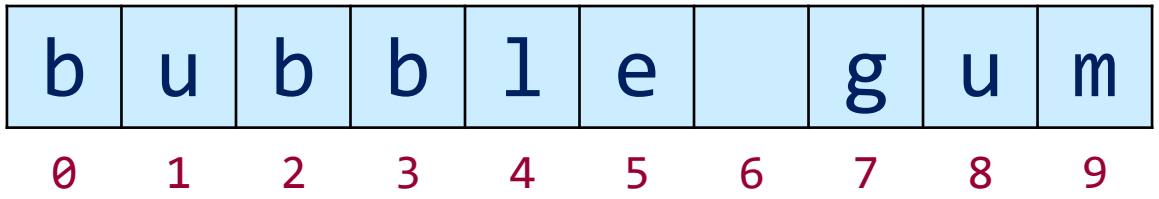
PCM: String Methods

Usage: `<string_variable>.<method>(…)`

Method	Description
`length()`	Returns the length of the string.
`charAt(i)`	Returns the character at index *i* of the string
`indexOf(s)`	Returns the index of the first occurrence of *s* in the string; returns -1 if *s* doesn't appear in the string
`substring(i, j)` or `substring(i)`	Returns the characters in this string from *i* (inclusive) to *j* (exclusive); if *j* is omitted, goes until the end of the string
`contains(s)`	Returns whether or not the string contains *s*
`equals(s)`	Returns whether or not the string is equal to *s* (case-sensitive)
`equalsIgnoreCase(s)`	Returns whether or not the string is equal to *s* ignoring case
`toUpperCase()`	Returns an uppercase version of the string
`toLowerCase()`	Returns a lowercase version of the string

Variables and Strings

- Variables
  - Container that stores a specific data type
  - Must declare and initialize
    - `int version = 5;`
- Strings
  - Sequence of characters treated as one, yet can be indexed as individual parts
  - `char` represents a single character

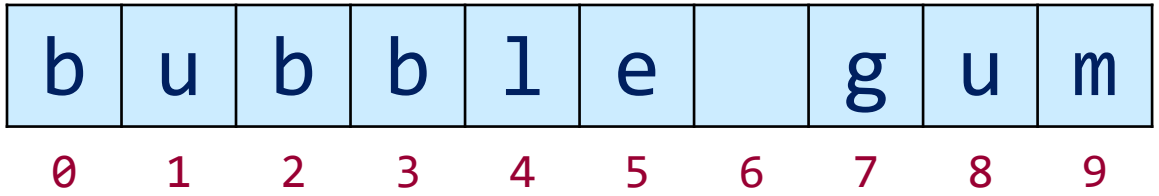


Practice: Think

sli.do #cse121

Suppose `s` contains the String `"bubble gum"`.

Which statement would result in `s` containing `"Gumball"` instead?



A.
```
s.substring(7) + "ball";
```

B.
```
s = s.substring(7, 9) + "ball";
```

C.
```
s = ("" + s.charAt(7)).toUpperCase()
  + "ball";
```

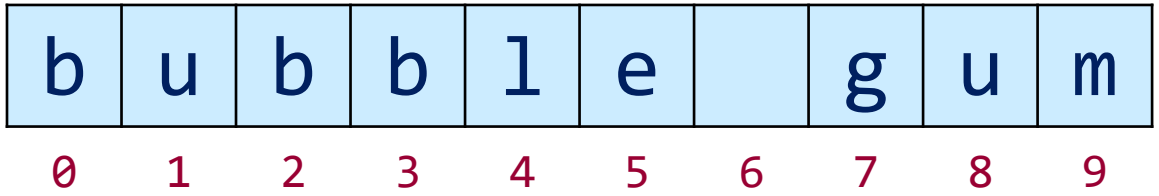
D.
```
s = s.substring(7, 8).toUpperCase()
      + s.substring(8) + "ball";
```

Practice: Pair

sli.do #cse121

Suppose `s` contains the String `"bubble gum"`.

Which statement would result in `s` containing `"Gumball"` instead?



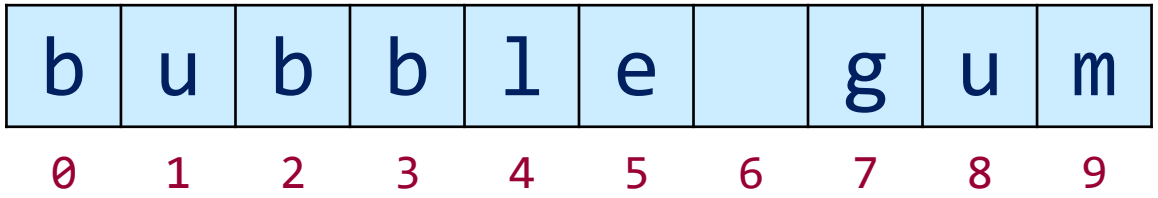
A.
```
s.substring(7) + "ball";
```

B.
```
s = s.substring(7, 9) + "ball";
```

C.
```
s = ("" + s.charAt(7)).toUpperCase()
  + "ball";
```

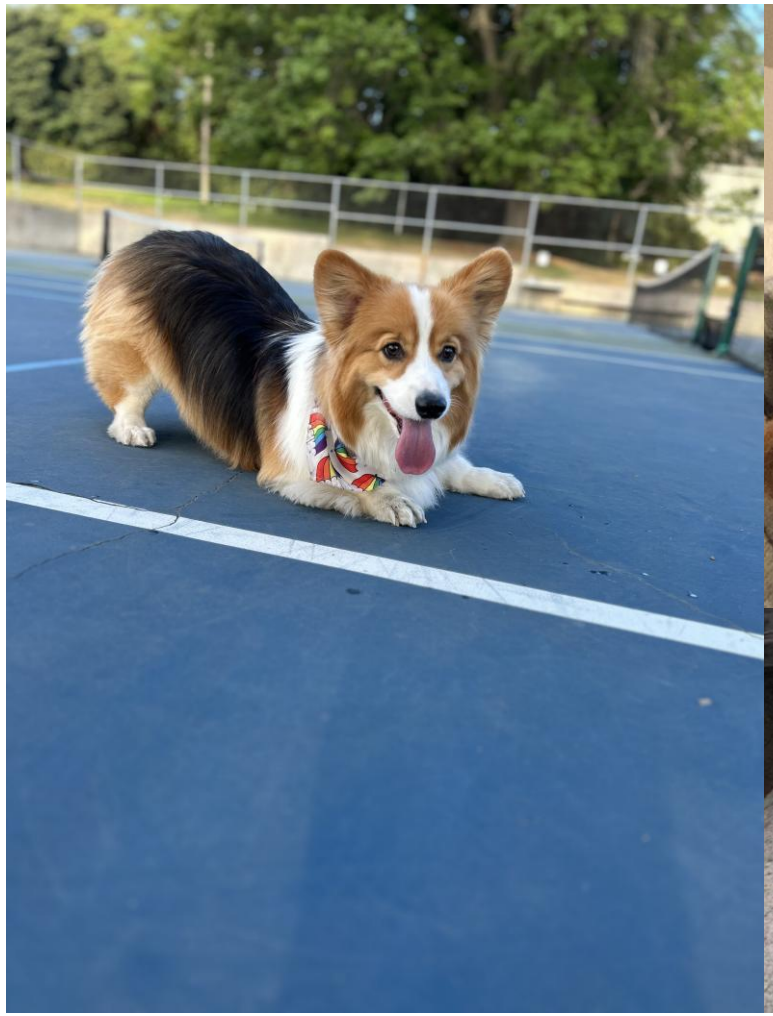
D.
```
s = s.substring(7, 8).toUpperCase()
      + s.substring(8) + "ball";
```

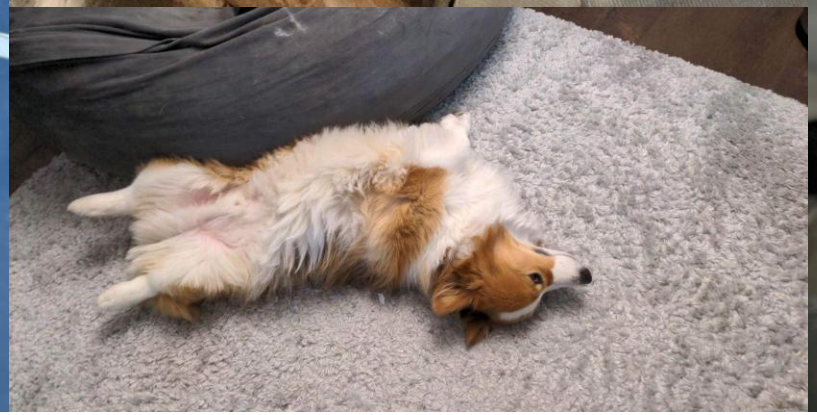
Chaining methods in expressions

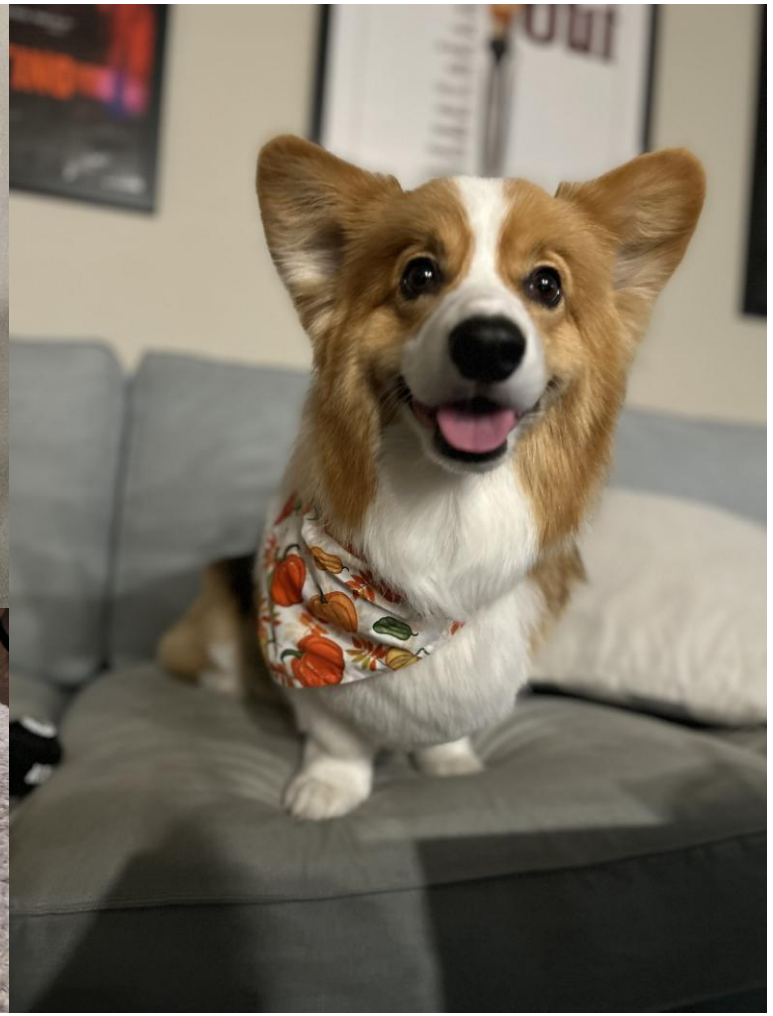



```
s.substring(7, 8).toUpperCase() + s.substring(8) + "ball"

"g".toUpperCase() + s.substring(8) + "ball"

"G" + s.substring(8) + "ball"

"G" +      "um"      + "ball"
```

Aside: Gumball







Agenda

- Announcements, Reminders
- Strings and Characters Review
- **Code Example! Strings, Names, and Substrings** ⟵
- For Loop Review
- Code Example! Countdown
- Code Example! Spelling

Agenda

- Announcements, Reminders
- Strings and Characters Review
- Code Example! Strings, Names, and Substrings
- **For Loop Review** ⟵
- Code Example! Countdown
- Code Example! Spelling

PCM Review: for loops!

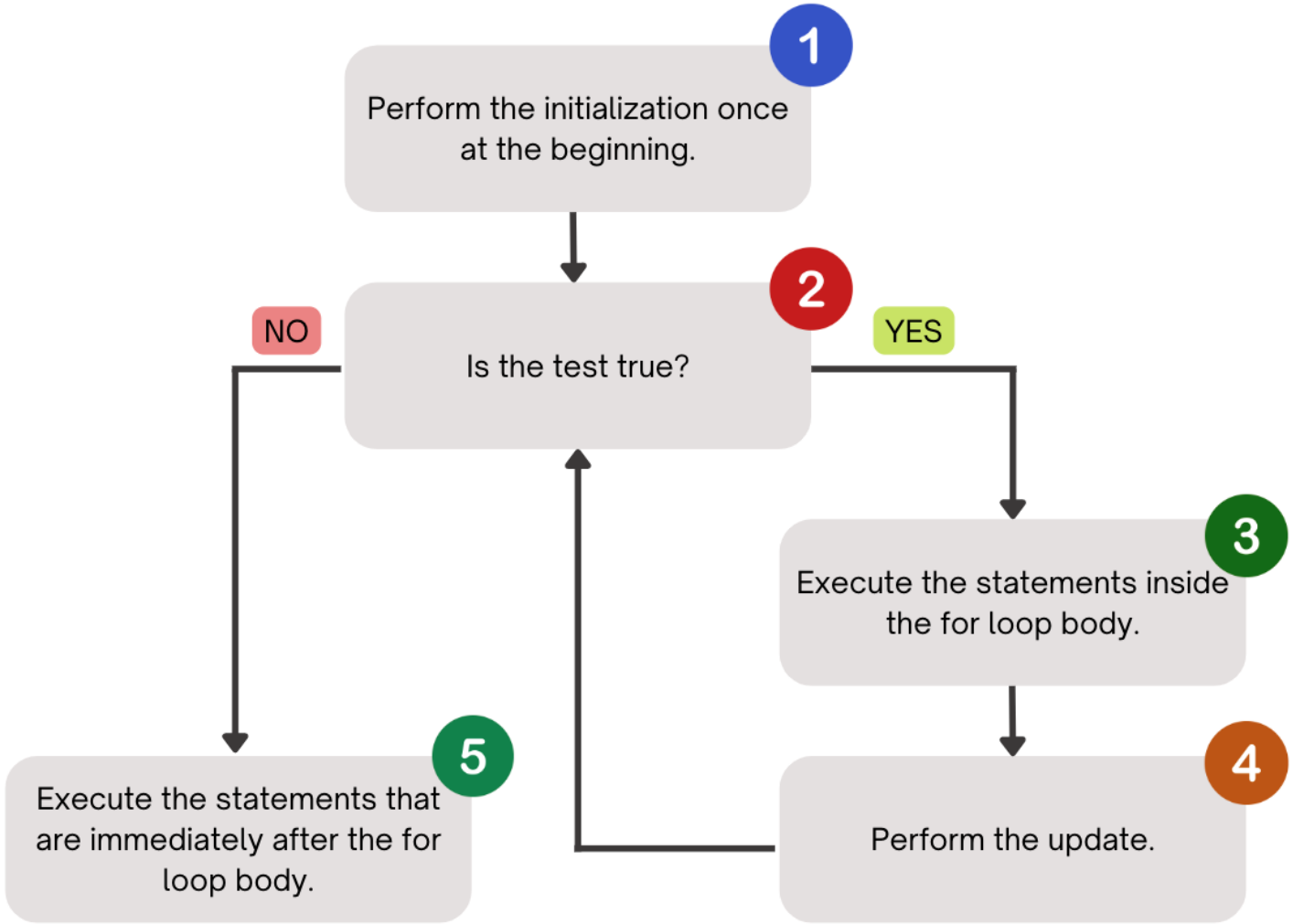
For loops are our first **control structure**: a syntax *structure* that *controls* the execution of other statements.

```
for ( initialization ; test ; update ) {
    body (statements to be repeated)
}
```

PCM Review: for loops (example)

```
for (int counter = 1; counter <= 5; counter++) {
    System.out.println("I love CSE 121!");
}
```

PCM Review: for loops (a helpful flowchart)



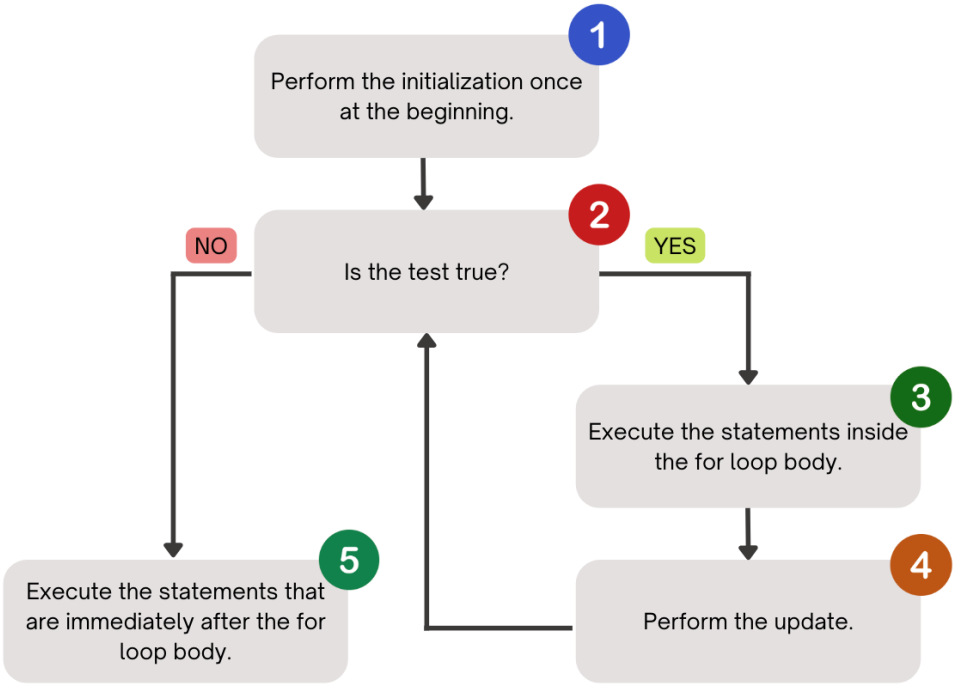
Thinking about for loops

counter

6

```
for (int counter = 1; counter <= 5; counter++) {
    System.out.println("I love CSE 121!");
}
```

```
I love CSE 121!
I love CSE 121!
I love CSE 121!
I love CSE 121!
I love CSE 121!
```



Practice: Think

sli.do #cse121

What output does the following code produce?

```
for (int i = 1; i <= 7; i++) {
  System.out.println(i + " squared = " + i * i);
}
```

A.

```
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
```

B.

```
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
```

C.

```
1 squared = 1
2 squared = 4
3 squared = 9
4 squared = 16
5 squared = 25
6 squared = 36
```

D.

```
1 squared = 1
2 squared = 4
3 squared = 9
4 squared = 16
5 squared = 25
6 squared = 36
7 squared = 49
```

Practice: Pair

sli.do #cse121

What output does the following code produce?

```
for (int i = 1; i <= 7; i++) {
  System.out.println(i + " squared = " + i * i);
}
```

A.

```
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
```

B.

```
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
i squared = i * i
```

C.

```
1 squared = 1
2 squared = 4
3 squared = 9
4 squared = 16
5 squared = 25
6 squared = 36
```

D.

```
1 squared = 1
2 squared = 4
3 squared = 9
4 squared = 16
5 squared = 25
6 squared = 36
7 squared = 49
```

Agenda

- Announcements, Reminders
- Strings and Characters Review
- Code Example! Strings, Names, and Substrings
- for Loop Review
- **Code Example! Countdown** ⟵
- Code Example! Spelling

PCM Review: String Traversals

```
// For some String s
for (int i = 0; i < s.length(); i++) {
    // do something with s.charAt(i)
}
```

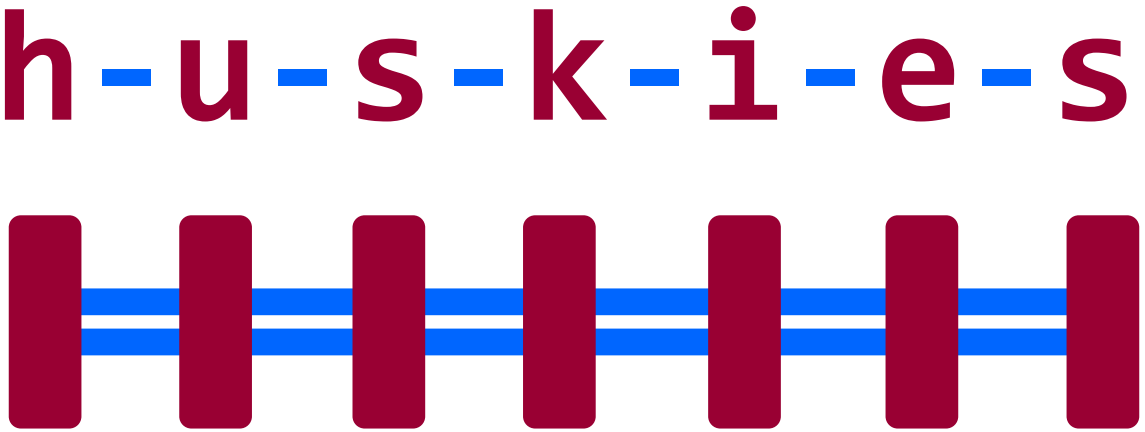
b	u	b	b	l	e		g	u	m
0	1	2	3	4	5	6	7	8	9

Go Huskies?

```
h-u-s-k-i-e-s
```

The Fencepost Pattern

Some task where one piece is repeated *n* times, and another piece is repeated *n-1* times and they alternate



Agenda

- Announcements, Reminders
- Strings and Characters Review
- Code Example! Strings, Names, and Substrings
- for Loop Review
- Code Example! Countdown
- **Code Example! Spelling** ⟵