

Python Class 22

Review – Classes
Recipe GUI

Making an instance of a class

- When you make a new string, integer, bool, or float, you don't need to use `string()`, `integer()` or `float()`.
- This is because string, integer, bool and float are built in to Python. (ないぞう / ていぎずみ 内蔵 / 定義済み)

Library Classes

- If you import a class from a library, for example, you need to use the class constructor (構築子).
- The class constructor uses the same name as the class.

The class is named date, so the constructor is called date, too.

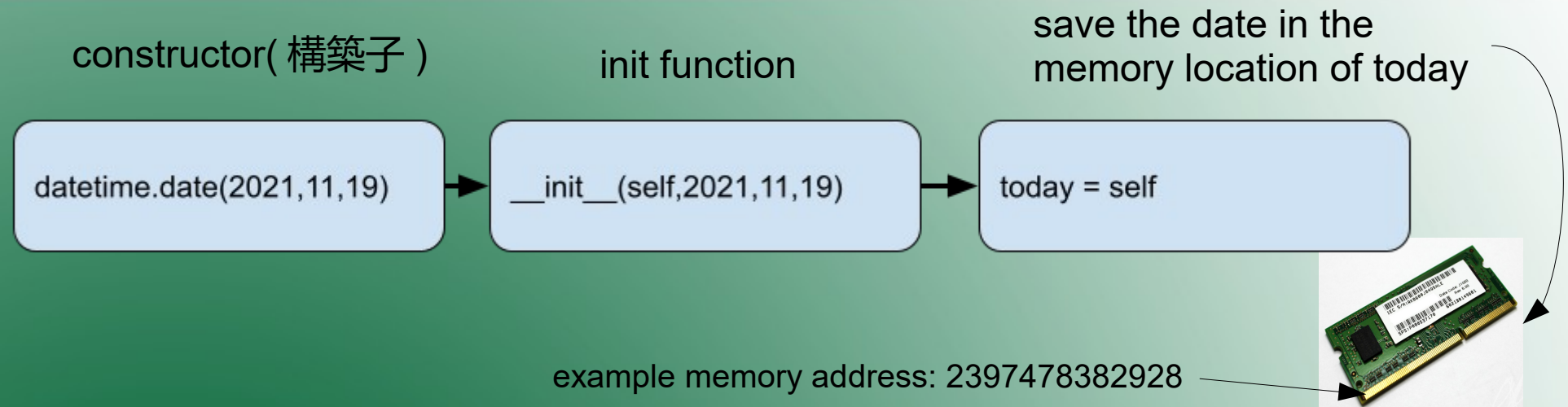
```
1 import datetime
2
3 today = datetime.date(2021, 11, 19)
```

What happens

- When you use the constructor, it actually calls the `__init__` function.
- We do not see this, but this is what happens.

```
1 import datetime
2
3 today = datetime.date(2021, 11, 19)
```

In the Background

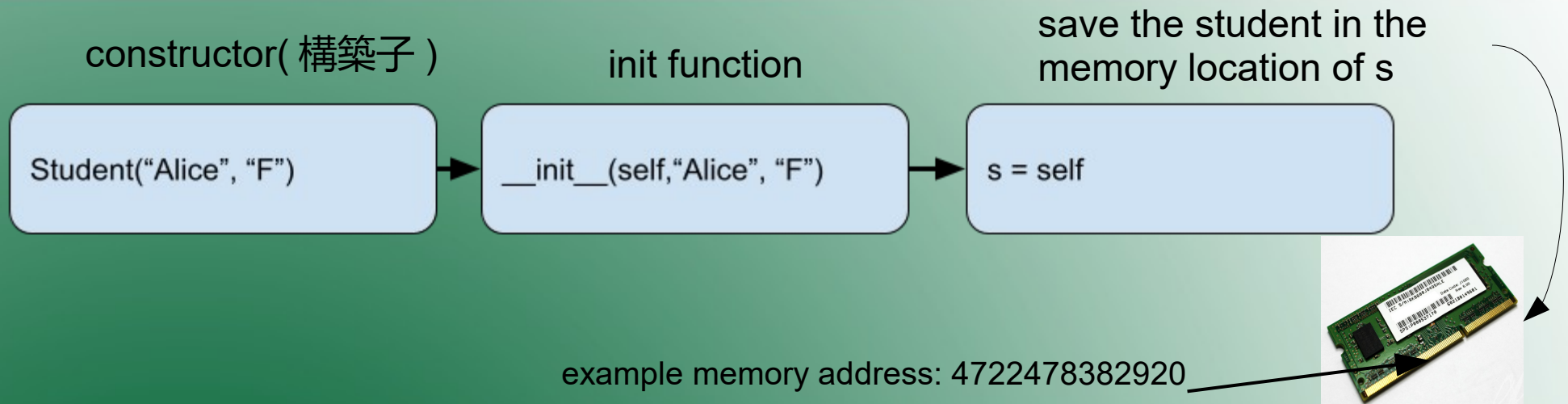


```
1 import datetime
2
3 today = datetime.date(2021,11,19)
```

Making your own classes

- When you make a new class, you also need to use that class's ^{こうちくし} constructor to create a new instance/object of the class.

In the Background



```
1 class Student:
2     def __init__(self, n, g):
3         self.name = n
4         self.gender = g
5
6 s = Student("Alice", "F")
```

Making a new sprite in Scratch

- This is a little bit similar to making an instance of a class in Python.
- Let's practice making a copy of a new cat.

Making cats and dogs in Python

- Let's make two classes – Cat and Dog.
- Let's make two cats and two dogs.

Classes, Variables and Functions

- To use a function of a class, we use `obj.function()`
- To use a variable of a class, we use `obj.variable`
- `.` is like \mathcal{O} in Japanese
- `coolWords` is a list object.
- We can use the list function *append* to add a word to the list.

```
1 coolWords = ["apex", "yabou", "bedouin"]
2
3 coolWords.append("antifragile")
```

Functions for the string class

- Visit
https://www.w3schools.com/python/python_ref_string.asp
- Let's use some of the different functions of strings.

What???

- In programming, there are only two types of things: data and behavior.
- The data is the information (variables). (情報)
- The behavior is the actions (functions). (行動)
- A class combines the data and behavior in one place.

Make some functions (blocks) in Scratch

- Let's go to Scratch and make some functions for a sprite.

Classes and functions in Python

- Let's come back to Python and add some functions to our dog and cat classes.
- Let's use those functions!

Function Syntax

- We use , to separate arguments (引数) in a function.
This is the same as math.
- <https://www.geogebra.org/3d>

Return to Recipe GUI

- If we have time, let's do a little work on the recipe GUI.