

PYTHON CLASS 3

VARIABLES (変数) AND TYPES (種)
REVIEW (復習); FUNCTIONS (関数)



MONTY PYTHON VIDEOS

[The Knights Who Say "Ni!" - Monty Python and the Holy Grail - YouTube](#)

[Monty Python SPAM - YouTube](#)



VARIABLE TYPES REVIEW

•used for words, sentences	•used for whole numbers, +/-
•used for fractional numbers,+/-	•used for True/False

CAT PROGRAMMING CHALLENGE

EXPLANATION



- You left your keyboard.
- Your cat tried to program, but there are many mistakes!
- Find all the mistakes.

CAT PROGRAMMING CHALLENGE, PART I

Yellow = “Look at the stars, Look how they shine for you And everything you
do Yeah, they were all yellow”

print Yellow

Beethoven age = 56

peach = momo



CAT PROGRAMMING CHALLENGE, PART 2

this_is_a_really_long_variable_name = "hi"

ShortVariable = 189.52

_var = 45

NewVariable = ShortVariable + var



CAT PROGRAMMING CHALLENGE, PART 3

```
name = "Nezuko"
```

```
age = 20
```

```
new = name + age
```

```
print(Name)
```

CAT PROGRAMMING CHALLENGE, PART 4

```
race_name = "100m dash"
```

```
100race_length = 100
```

```
print(race_name)
```

```
print(10race_length)
```


THINKING ABOUT TYPES

- Think about types/classes like tools
- Tools are good at different things
- What tool you use depends on what you want to do
- In programming, what type/class you use depends on what you want to do



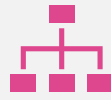
REMEMBER,
THERE ARE
TWO
IMPORTANT
THINGS...

?????

Actions

Today, we will mostly
focus on actions.

FUNCTIONS (ACTIONS)



A function (関数) is a piece of code that does a job.



We already saw one function: print



Some functions have an argument (引数). Some do not have an argument.



Some functions return a value, and some do not.

FUNCTIONS, CONT.



Functions are the actions or behaviors.



Functions change variables or tell us about variables.



Let's look at some functions for strings, bools, floats, and integers.

STRING FUNCTIONS

- To use a function of a class/type, use . and the function name.
- Here are a few functions in the string class
- You can see a complete list here: [Built-in Types — Python 3.10.4 documentation](#)

capitalize()	find(str)	islower()	isspace()
count(str)	isalphanum()	isupper()	join(str)
endswith(str)	isalpha()	isnumeric()	lower()

FLOAT FUNCTIONS

- Here are a few functions in the float and integer classes
- You can see a complete list here [Built-in Types — Python 3.10.4 documentation](#)

<code>f.is_integer()</code>	<code>f.hex()</code>	<code>pow(x,y)</code>	<code>abs(x)</code>
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FUNCTION SYNTAX

- Here is how to use a function.

```
name = "Mr. Hunter"
```

```
print(name.isupper())
```

```
print(name.endswith("ter"))
```

```
name = name.lower() #this one is a  
little special
```

```
print(name)
```

FUNCTION PRACTICE

01

Let's practice
using float and
string
functions.

02

First, make
some float and
string
variables.

03

Use the
functions and
print the
results.

GETTING HELP

- In the IDLE console, you can use the `dir` function and the `help` function.

```
>>> name = "Nezuko"

>>> dir(name)

['_add_', '__class__', '__contains__', '__delattr__', '__dir__', '__doc__', '__eq__', '__format__', '__ge__',
 '__getattr__', '__getitem__', '__getnewargs__', '__gt__', '__hash__', '__init__', '__init_subclass__', '__iter__',
 '__le__', '__len__', '__lt__', '__mod__', '__mul__', '__ne__', '__new__', '__reduce__', '__reduce_ex__', '__repr__',
 '__rmod__', '__rmul__', '__setattr__', '__sizeof__', '__str__', '__subclasshook__', 'capitalize', 'casefold', 'center',
 'count', 'encode', 'endswith', 'expandtabs', 'find', 'format', 'format_map', 'index', 'isalnum', 'isalpha', 'isascii',
 'isdecimal', 'isdigit', 'isidentifier', 'islower', 'isnumeric', 'isprintable', 'isspace', 'istitle', 'isupper', 'join', 'ljust',
 'lower', 'lstrip', 'maketrans', 'partition', 'removeprefix', 'removesuffix', 'replace', 'rfind', 'rindex', 'rjust',
 'rpartition', 'rsplit', 'rstrip', 'split', 'splitlines', 'startswith', 'strip', 'swapcase', 'title', 'translate', 'upper', 'zfill']
```

- `dir` gives you all the variables and functions for a variable.

GETTING HELP, 2

- In the IDLE console, you can use the dir function and the help function.

```
>>> name = "Nezuko"
```

```
>>> help(name.replace)
```

Help on built-in function replace:

replace(old, new, count=-1, /) method of builtins.str instance

Return a copy with all occurrences of substring old replaced by new.

count

Maximum number of occurrences to replace.

-1 (the default value) means replace all occurrences.

If the optional argument count is given, only the first count occurrences are replaced.

- help tells you what the function does

ONLINE PYTHON COMPILER

- If you don't have Python at home, you can use this website: [Online Python Compiler - online editor \(onlinegdb.com\)](https://onlinegdb.com)

THE TYPE() FUNCTION

- You can use the `type()` function to check the type of a variable.
- Open up IDLE.
- Create a new file.
- Create four variables: one string, one float, one integer, and one boolean.
- Use `type()` to check what type they are.

fix



LINE COUNTERS

- In IDLE, you can turn line counters on or off.
- Line counters are useful!
- You should always turn them on.

LINE COUNTERS, CONT.

- Why do you think line counters are useful?



LINE COUNTERS, CONT.

- Debugging
- Finding changes
- Finding a piece of code

LIBRARIES

- There are several types built-in to Python.
- Str, float, integer, and bool are some of them.
- There are also many different functions built-in to Python.
- print, type, len, and many more are good examples.
- BUT!!!

LIBRARIES, CONT

- There are many more types and functions.
- These are found in libraries.
- In programming, a library is a collection of types and functions that is separate from the main language.

LIBRARIES, CONT

- To use a library in Python, you need to use import.

IMPORT

```
import datetime.date
```

- If you don't import, you cannot use the classes and functions inside the library

Remember to import!



HOW MANY LIBRARIES ARE THERE?

- Try this: type

```
help('modules')
```

in the Python Idle shell



DELICIOUS!!



IMAGINE TWO CASES

- Buy chicken, ketchup, kochijian, honey, lemon juice, chili powder, flour, sesame seeds, sesame oil
- Cut the chicken, bread the chicken.
- Make the sauce.
- Fry the chicken, then add the sauce. Top with sesame seeds.

A

- Buy frozen fried chicken, sesame seeds, and yang nyeom sauce.
- Cook the fried chicken, then fry with the sauce.
- Top with sesame seeds.

B

Which is easier?



SAVE TIME AND EFFORT

- We can save time by using a library.
- Many programmers have worked hard to create these libraries.

Don't reinvent the wheel!



PYTHON CLASS 2 EXTRA

- Using Github

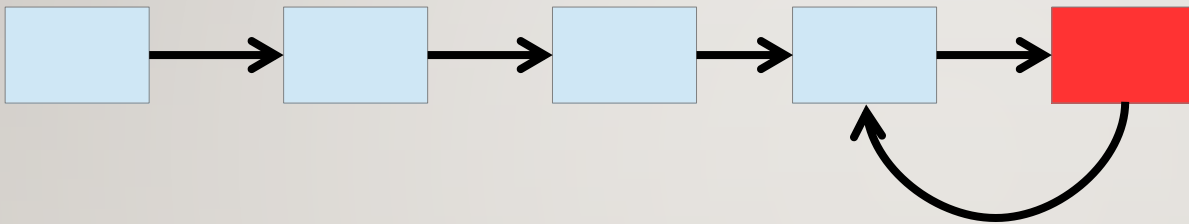
WHAT IS GIT?

- Git is software that records changes in files.(変更履歴を記録・追跡するためのソフトウェア)
- It was created in 2005 by Linus Torvalds.

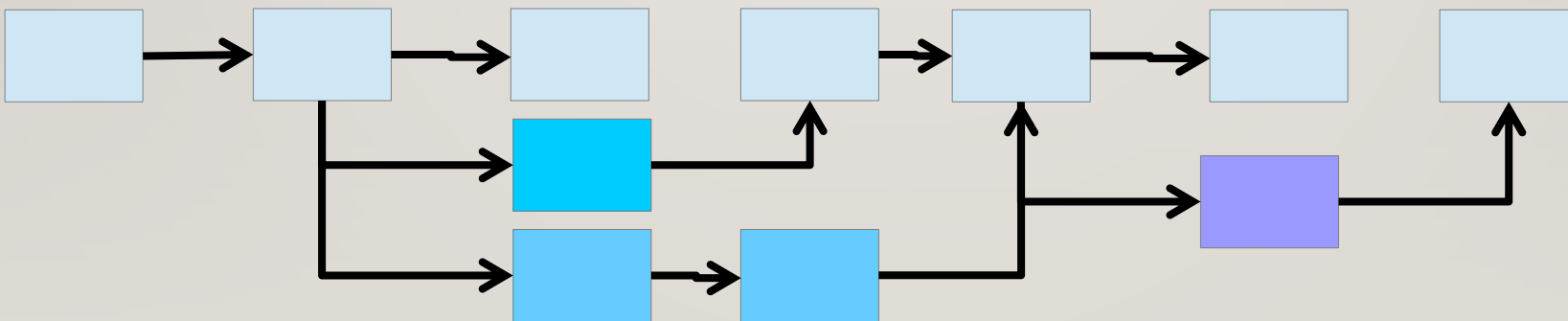


WHY USE GIT?

- As you program something new, it is easy to break a working program.
- Git lets you go back to the working version.



- Git lets many team members work on the project at the same time.



WHY USE GITHUB?

- Github is a website that lets you save your programming projects online.
- You can make these private, or you can share them.

WHY USE GITHUB?, 2

- You can access and save your files from any computer that has internet.
- You can use this to show companies your skills.
- You can share your code for other people to learn from and use.

HOW TO MAKE AN ACCOUNT

- Go to <https://github.co.jp/>
- Click サインアップ
- Enter a username, your email, and a password.
- Select the free option.
- Verify your email address.

HOW TO MAKE A REPOSITORY

- Login to your git account.
- Click the plus button in the right corner.
- Select New Repository (リポジトリ).
- Give your repository a name.

HOW TO UPLOAD A FILE

- Click on the add file button.
- Select upload files.

HOW TO DOWNLOAD A FILE

- Option 1: Copy and paste the code directly.
 - Option 2: Click Code.
- Select Download zip.

