

# PYTHON CLASS 2

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IMPORTANT IDEAS AND WORDS IN  
PROGRAMMING



# WHAT IS PROGRAMMING?

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Giving orders game

What did you notice  
about the game?

How is a person different  
from a computer?

# STRUCTURE OF A PROGRAM

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A program starts at the top of a script.

It runs line by line.

Check IDLE and turn on line numbers

THESE ARE REALLY  
USEFUL!!!

# STRUCTURE OF A PROGRAM

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The order of lines in a program is important.

You cannot use something before you tell the computer what it is.

# TWO IMPORTANT THINGS

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Information

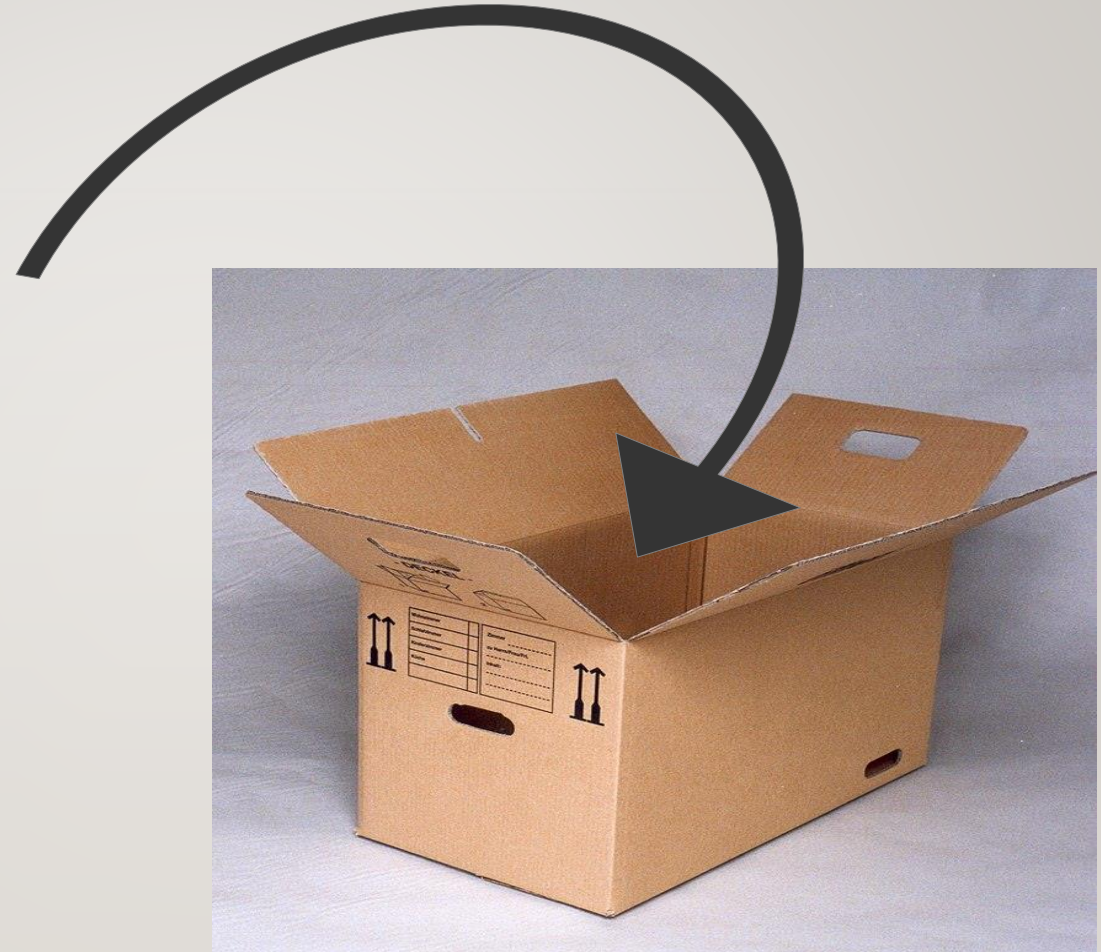
Actions

Today, we will mostly  
focus on information.



# VARIABLES (INFORMATION)

- A variable (変数) is like a box.
- It holds information inside (値).
- It has a label or name  
(識別子／名札).



# VARIABLE EXAMPLES

my\_name = “Mr. Hunter”

my\_age = 900

my\_height = 175.43

is\_Japanese = False

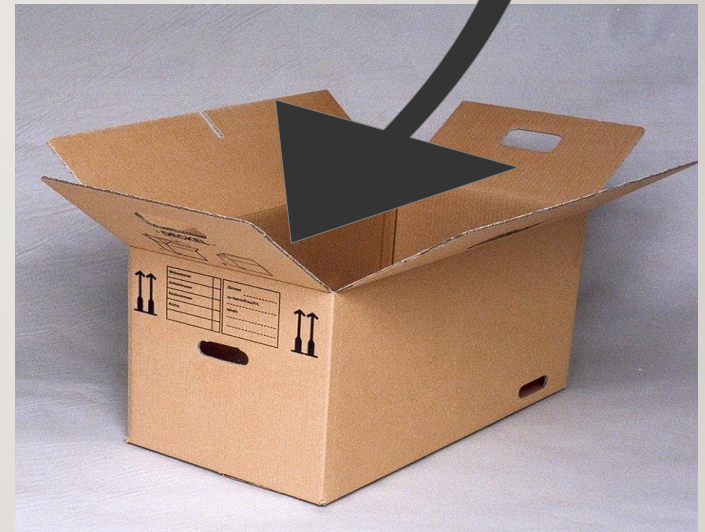
my\_hair\_color = “Brown”

is\_male = True



# VARIABLE EXAMPLES

```
my_name = "Mr. Hunter"  
my_age = 900  
my_height = 175.43  
is_Japanese = False  
my_hair_color = "Brown"  
is_male = True
```



This is a memory location in the computer



## WHAT DO YOU NOTICE ABOUT THE VARIABLES?

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`my_name = "Mr. Hunter"`

`my_age = 900`

`my_height = 175.43`

`is_Japanese = False`

`my_hair_color = "Brown"`

`is_male = True`



# VARIABLE TYPES

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<b>.String</b> .used for words, sentences	<b>.Integer (int)</b> .used for whole numbers, +/-
<b>.Floating point number (float)</b> .used for fractional numbers,+/-	<b>.Boolean (bool)</b> .used for True/False

- Variables hold information and have labels.
- They also have **types**.
- **Types** are different kinds of things.
- Here are four important **types** we will use everyday:



# GEORGE BOOLE

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- Wrote books about logic (論理), and how to think about statements.
- This is where the type “Boolean” comes from.



# VARIABLE TYPE EXERCISE/QUIZ

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my\_name = "Mr. Hunter"

my\_age = 900

my\_height = 175.43

is\_Japanese = False

my\_hair\_color = "Brown"

is\_male = True

my\_weight = 145.672

<b>.String</b> .used for words, sentences	<b>.Integer</b> .used for whole numbers, +/-
<b>.Floating point number</b> .used for fractional numbers,+/-	<b>.Boolean</b> .used for True/False





# OPERATORS

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We can use different operators to change the value or to access the value of variables.

Operators are things  
like - + / \* %  
// \*\* []

# USING OPERATORS

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Let's make some variables and use the operators below.



-   +   /   \*   %   //  
\*\*   [ ]

# RULES ABOUT VARIABLE NAMES

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A variable name must start with a letter or underscore.

A variable name cannot start with a number

Variable names are case-sensitive (gender, Gender, GENDER, gEnDeR are different variables)

Variable names can only have letters, numbers and underscores in them.

# KEYWORDS, VARIABLES AND FUNCTIONS

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- All programming languages have keywords (予約語).
- You **cannot** use keywords as variable or function names.

and	as	assert	break	class	continue	def	del
elif	else	except	False	finally	for	from	global
if	import	in	is	lambda	None	nonlocal	not
or	pass	raise	return	True	try	while	with



# VARIABLE NAME QUIZ

---

23neko

num\_to\_5

BigClass

First

Hi there

\_\_up\_\_

one.hundred

9days

\_down\_

BIGCLASS

5\_hour

?why

\_var

If

Because!

for

Bigclass

\*pi



# BEFORE WE PROGRAM...

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Spelling in programming is important.

If you make a spelling mistake, you will probably break the program.: (

Grammar (構文規則) is extremely important for programming.

Please remember: Computers are stupid!!!

Computers only do what you tell them to do.

# ASSIGNING VALUE TO A VARIABLE

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- We use the equals sign (=) to assign value to a variable.
- Open IDLE.
- Let's practice making some variables and assigning value.
- Let's practice changing the value of a variable and printing it.

# CAT PROGRAMMING CHALLENGE

## EXPLANATION

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



# CAT PROGRAMMING CHALLENGE, PART I

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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

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this\_is\_a\_really\_long\_variable\_name = "hi"

ShortVariable = 189.52

\_var = 45

NewVariable = ShortVariable + var



# CAT PROGRAMMING CHALLENGE, PART 3

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```
name = "Nezuko"
```

```
age = 20
```

```
new = name + age
```

```
print(Name)
```

# CAT PROGRAMMING CHALLENGE, PART 4

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

```
100race_length = 100
```

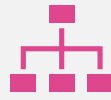
```
print(race_name)
```

```
print(10race_length)
```



# FUNCTIONS (ACTIONS)

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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.

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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

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- 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

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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.

# 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)