PYTHON CLASS 1

INTRODUCTION AND COURSE OVERVIEW

WHO IS MR. HUNTER?

Born in Michigan, US

Lived in Japan for 13 years

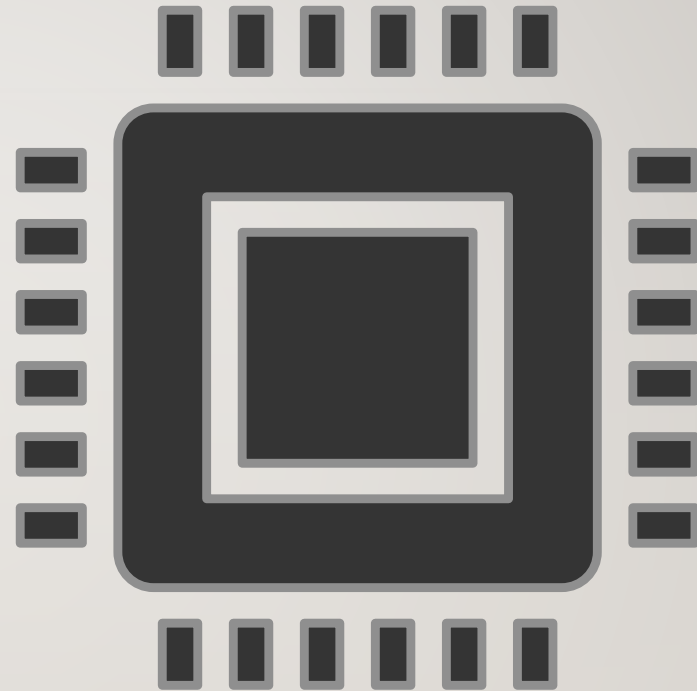Enjoys rock climbing, reading books, programming, playing video games

MICHIGAN

PROGRAMMING LANGUAGES

- C#

- Java

- C++

- Python

- Any questions?

- 質問ありませんか？

STUDENT INTRODUCTIONS
生徒たちの自己紹介

- Name 名前→ I'm ~~~~~~~~~~.

- Favorite food (好きな食べ物)→ My favorite food is ~~~~~~~~.

- Hobbies (趣味) → I enjoy ~~~~~~~~~ and ~~~~~~~~.

- Class Goal (クラスの目的) → I want to learn how to ~~~~~~~~ (make apps, make games, etc).

COURSE OVERVIEW (科目の概要)

Introduction to Python Programming

Why use Python?

The "flow" of a program (プログラミングの流れ)

Your first Python program

Important ideas in programming – variables (変数), functions (関数), lists(列挙), looping(繰り返し), control (分岐命令)

COURSE OVERVIEW, 2

Using Python for Simple Projects

Creating loops

Using if-statements

Creating functions

Creating classes

WHERE DOES THE NAME PYTHON COME FROM?

- The creator of the Python language, Guido van Rossum, is a big fan of the British comedy group, Monty Python.

If you like comedy and silly things, please watch their TV show, Flying Circus, or their movies (Quest for the Holy Grail, The Life of Brian, The Meaning of Life)

WHY USE PYTHON?

Fast development

It is easy and fast to create a prototype (原型) of your idea using Python.

It is much faster to test ideas using Python than another language, like C, C++, or Java.

Why is development fast in Python??????

WHY USE PYTHON?, 2

- Clean Syntax (きれいな／簡単な構文規則)

こうぶんきそく

```cpp
// This C++ program prints Hello, World!
#include <iostream>

int main()
{
    std::cout << "Hello, World! \n";
    return 0;
}
```

```python
# This Python program prints Hello, World!
print("Hello, World! \n")
```

WHY USE PYTHON?, 3

Python programs are shorter than C, C++, C#, or Java programs.

Python has very clean syntax, so it is easy to read and understand. (Pythonの構文規則は簡単なので、読みやすく、理解しやすいです。）

WHY USE PYTHON?, 3

LANGUAGES WITH CLEAN
SYNTAX ARE EASIER TO WRITE.

LANGUAGES WITH CLEAN
SYNTAX ARE EASIER TO DEBUG.
→ （構文がきれいな言語は、誤
りを見つけやすいです。）

WHY USE PYTHON?,4

- Python is used for:
- AI and Machine Learning (ML)

- Web development (ウェブサイトを作る)

- Data extraction and analysis (データの抽出と分析)

- Game development　(ゲームを作る)

- Prototyping (原型を作る)

WHY USE PYTHON?, 5

WHAT IS PROGRAMMING?

What is programming?

What do programmers do?

How do programmers think?

THE "FLOW" (流れ) OF PROGRAMMING

```python
import random

chemicals  = ["A","T","C","G"]
start = "ATG"
end = ["TAG","TGA","TAA"]

class Gene:
    #we need a function to make a group of three chemicals
    def make_codon(self):
        codon = ""
        for x in range(3):
            codon = codon + chemicals[random.randint(0,3)]
        if codon == start:
            return self.make_codon()
            #print("start")
        if codon in end:
            return self.make_codon()
        return codon

    def __init__(self,codon_number):
        self.codon_list = []
        self.codon_list.append(start)
        for x in range(codon_number):
            self.codon_list.append(self.make_codon())
        self.codon_list.append(end[random.randint(0,2)])


gene1 = Gene(24)

for codon in gene1.codon_list:
    print(codon)
```
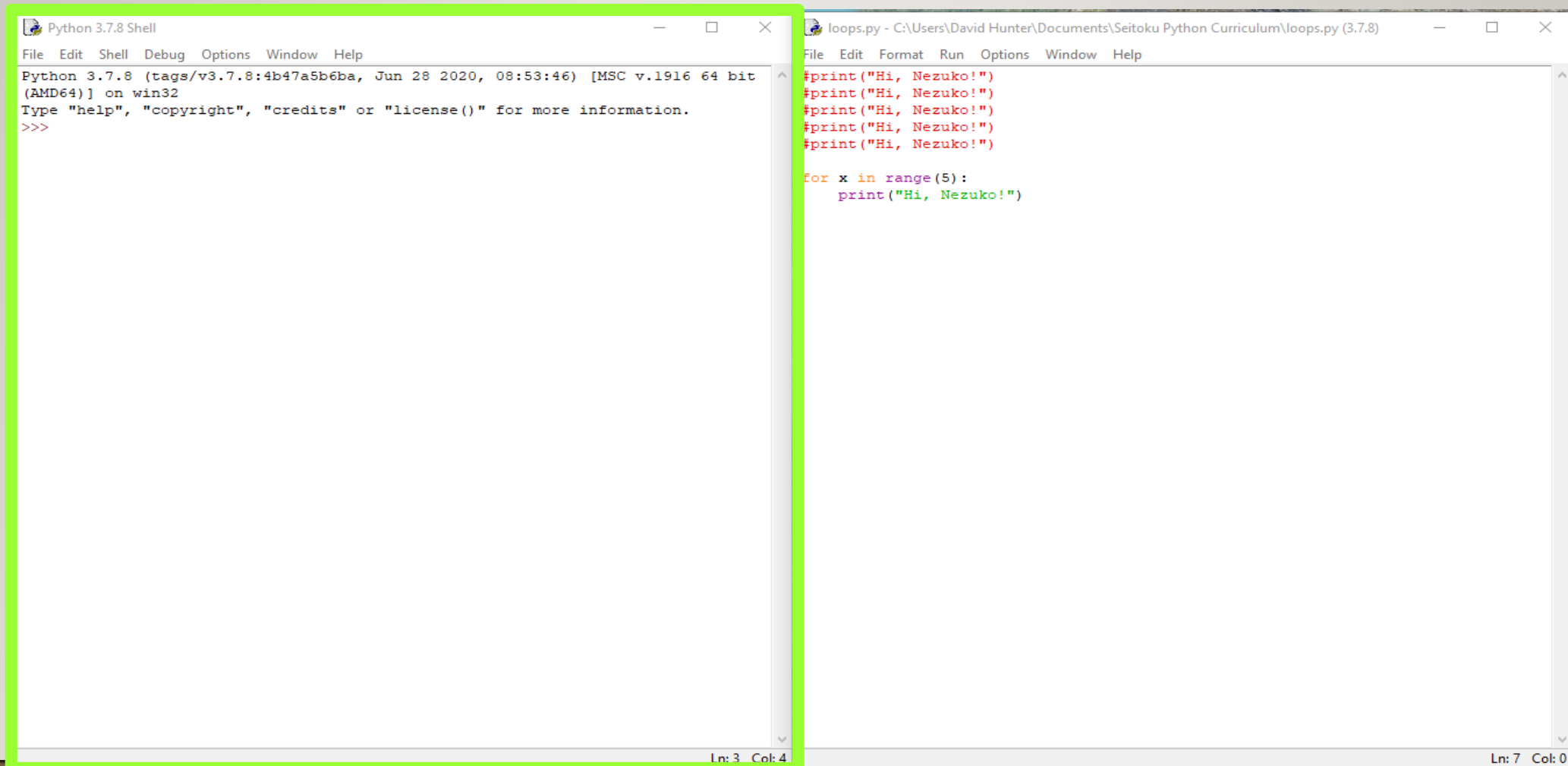
- A program starts at the top.

- It runs line (行) by line from top to bottom.

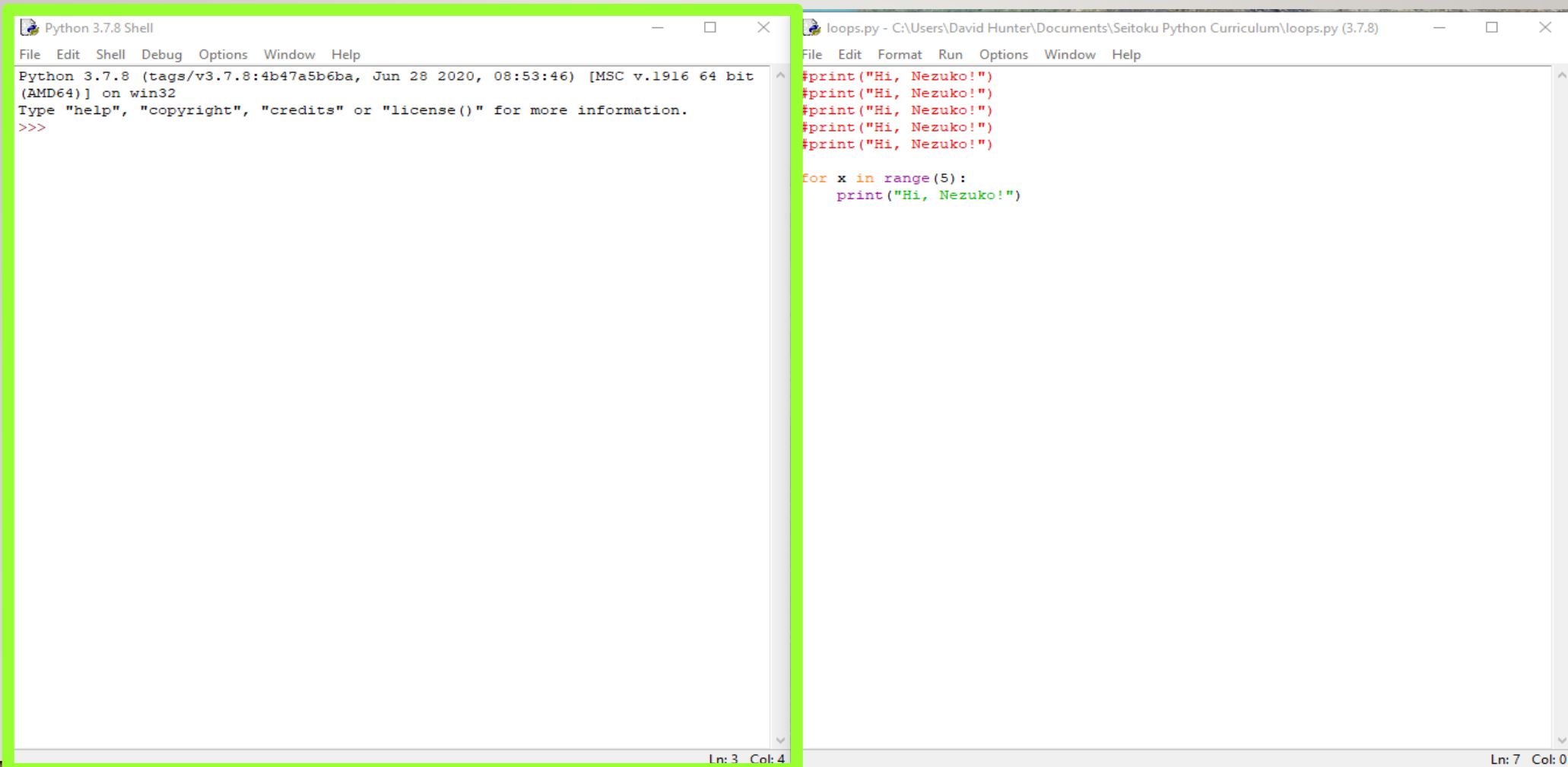- If there are any errors (誤り), the program stops.

PYTHON SHELL AND IDLE
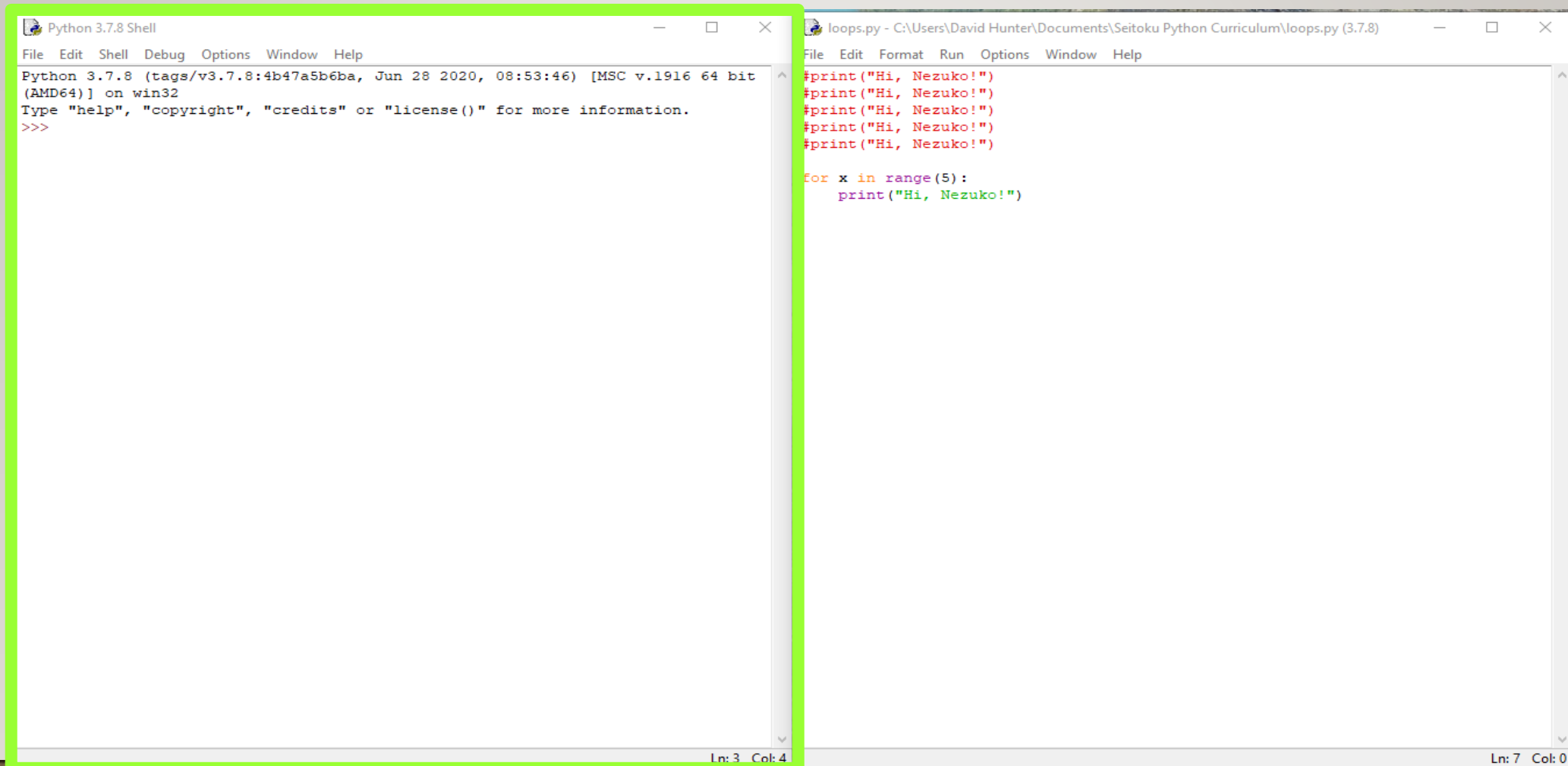
This is the Python Shell.

PYTHON SHELL AND IDLE
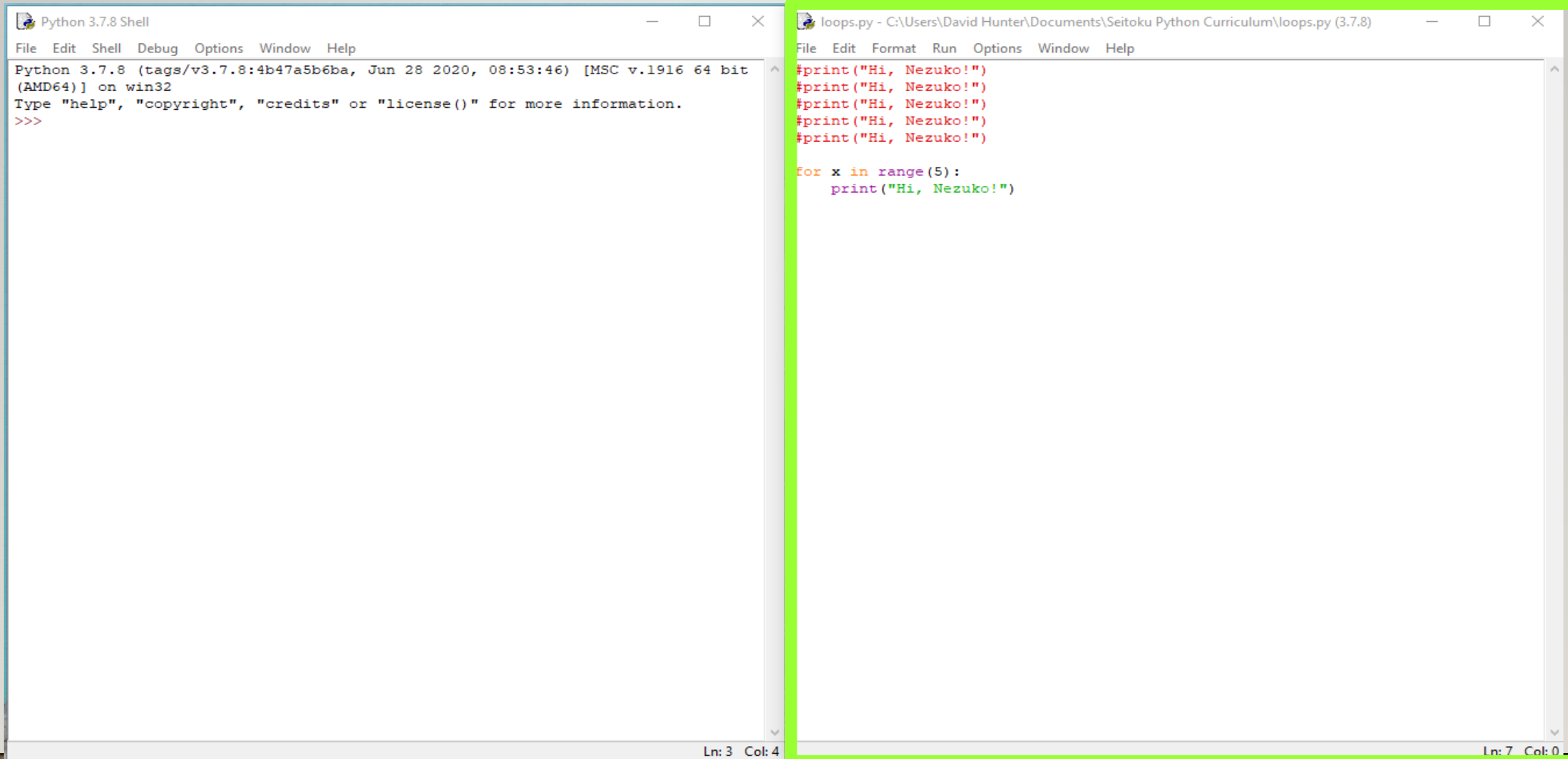
Any printed information appears here

PYTHON SHELL AND IDLE

Any errors and information about them also appear here

PYTHON SHELL AND IDLE

This is a Python script.

PYTHON SHELL AND IDLE

This is where we will write our programs.
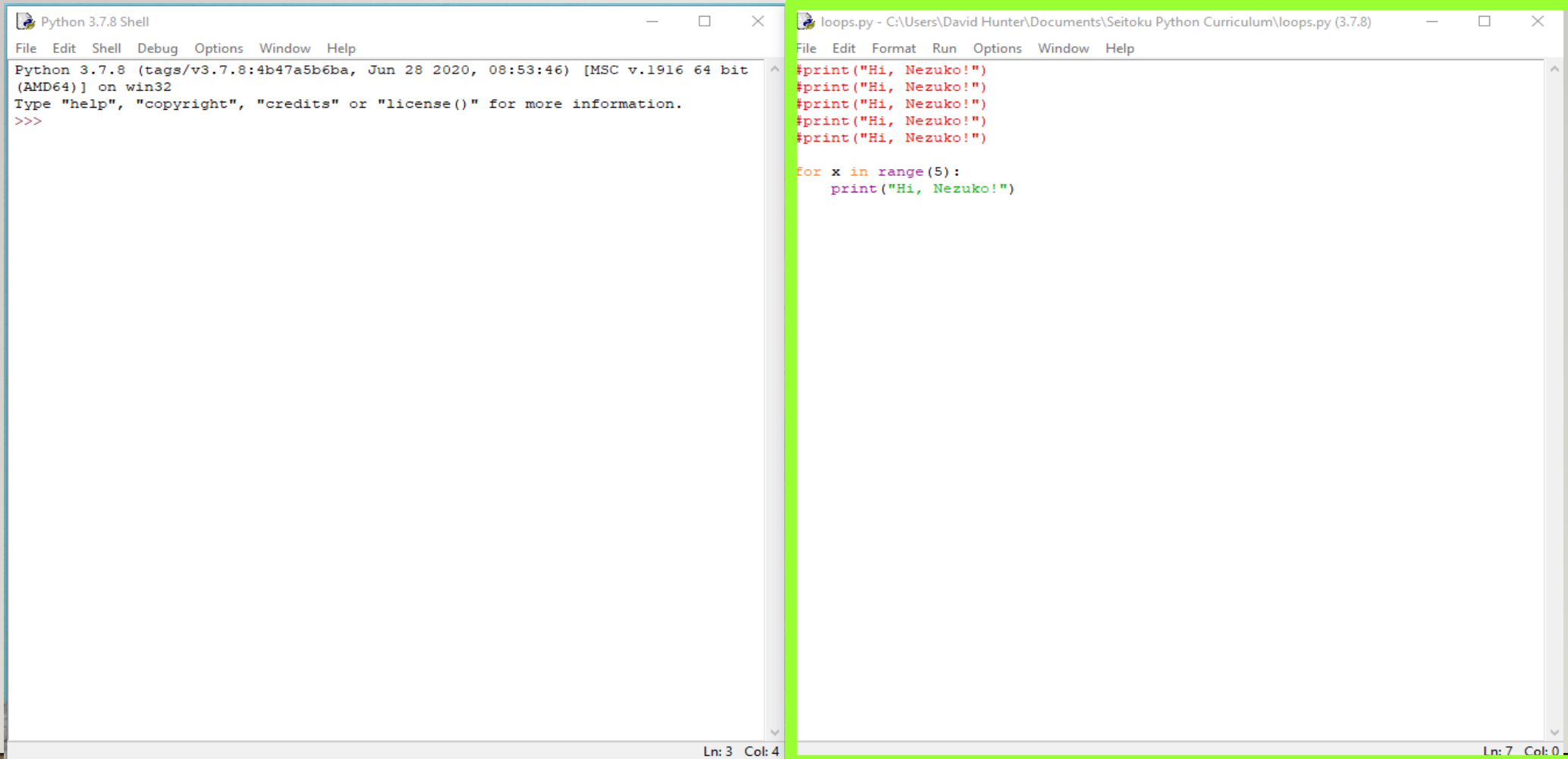
USING IDLE TO MAKE YOUR FIRST PYTHON PROGRAM

Open IDLE

The Python shell

Make a new file

Let's type together!!!

HELLO, WORLD!

Original Hello, world! Program from 1978.

This is a programming tradition (伝統).