SCHOOL OF
INFORMATION TECHNOLOGY
AND INNOVATION
BANGKOK UNIVERSITY

CS310
Computer Programming I

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School of Information Technology and Innovation

Learning Outline

01. Class Orientation

02. Introduction to Python

03. Variable Type and Expression

04. Class Activity

01.

Class Orientation

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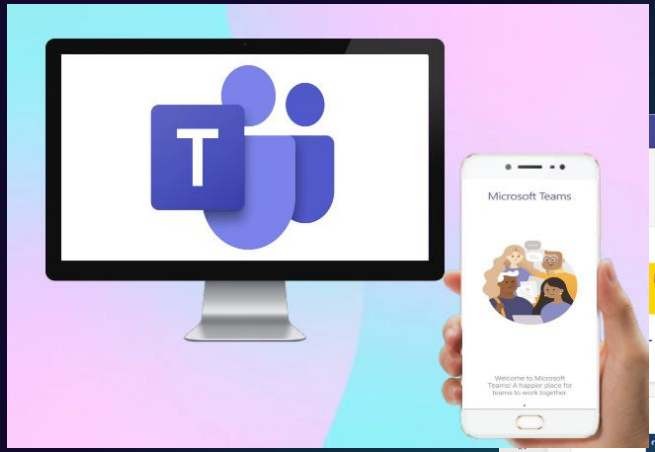
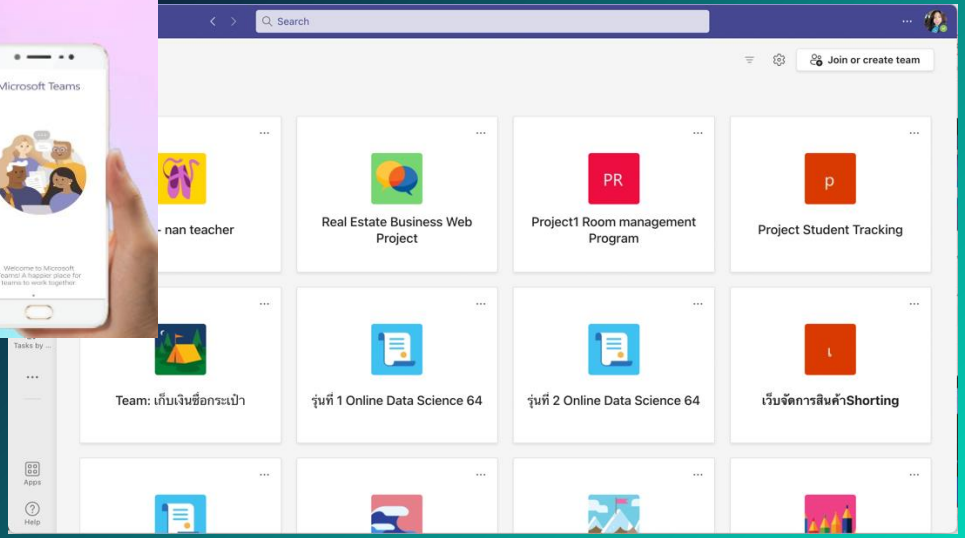
Online Platform



Microsoft Team



Have you enroll in CS310 class ?

Score Marking

45%	Test (Midterm,Final,Quiz)
10%	Attendance (เข้าเรียนตรงเวลา)
25%	LAB + Class Activity
10%	HW/Assignment
10%	Final Project

Total 100%

01.

02.

Introduction to Python

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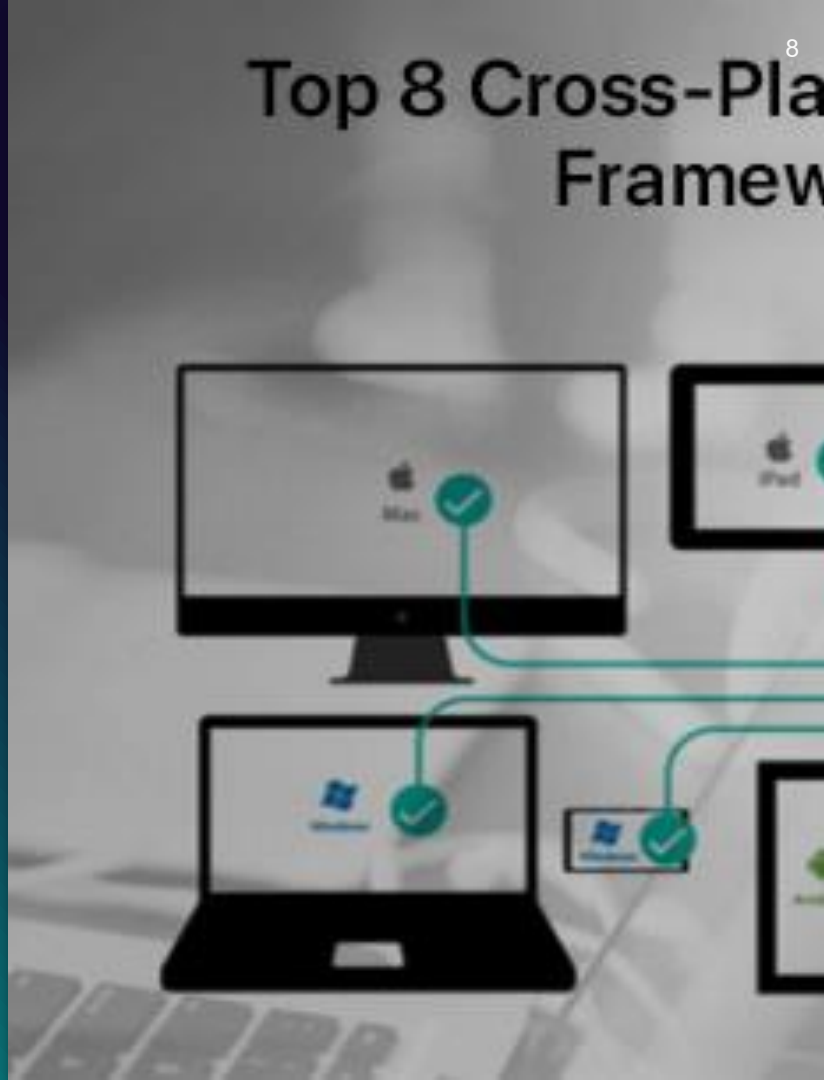
What is Python

Python is a high-level, interpreted, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation.



01.

03.

Variable Types and Expression

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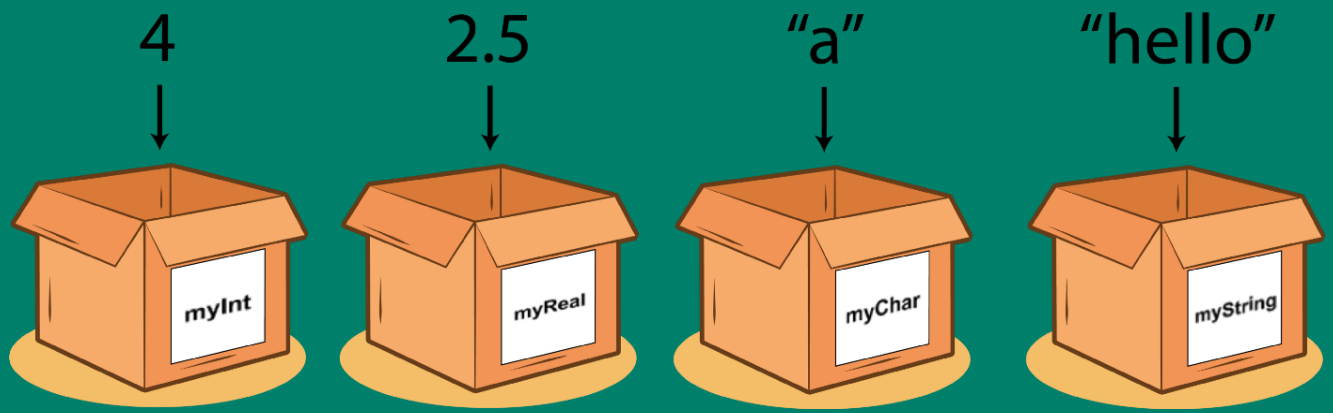
Variables and Constants

In a program, data values can be constant or variable. If values are variable, they can be changed by the program and the user.

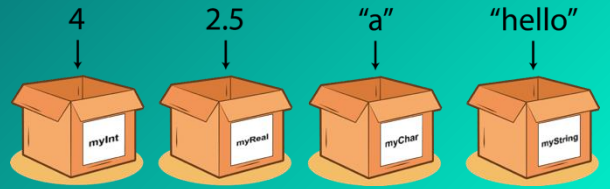
A variable is a memory location. It has a name that is associated with that location. The memory location is used to hold data. The key difference when comparing a constant to a variable is that the value associated with a variable name may change during program execution. For example, 'highScore' would need to be variable to change throughout a game.

Variables and Constants

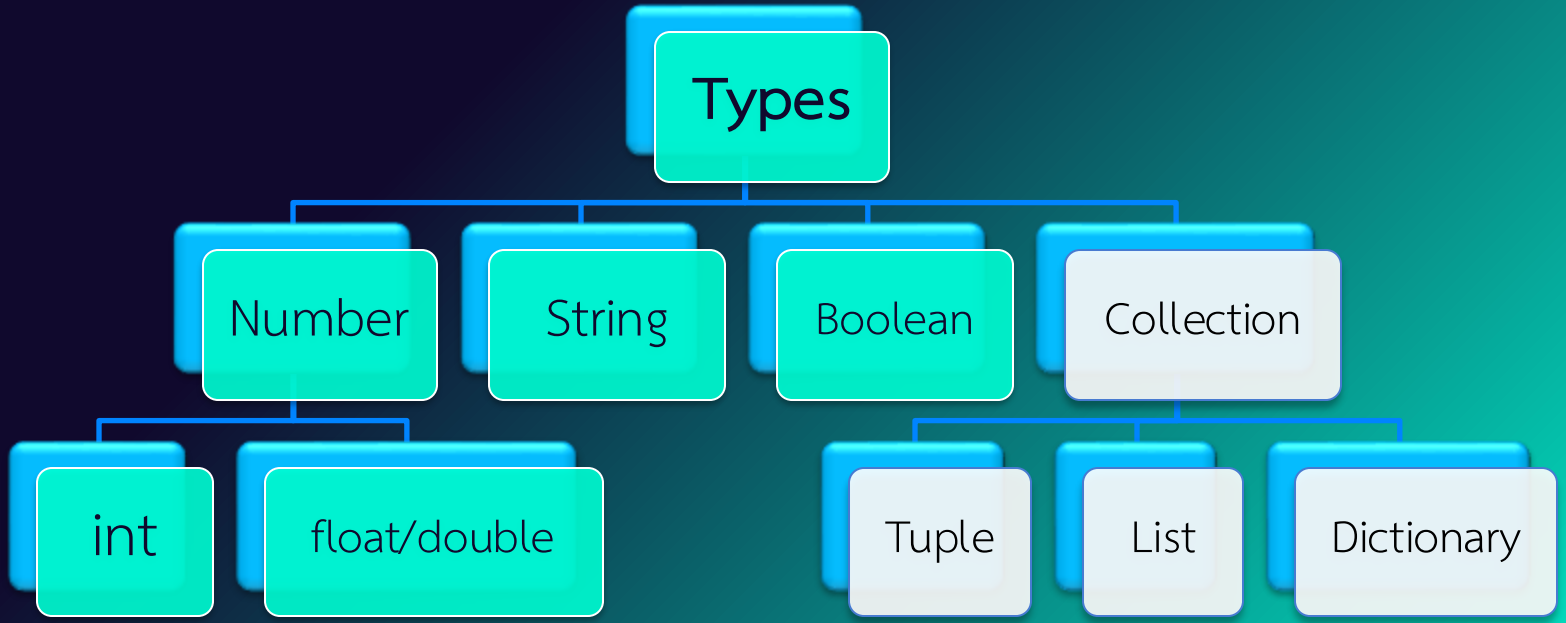


Variables Naming

- Rules for Python variables:
- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
- Variable names are **case-sensitive** (age, Age and AGE are three different variables)

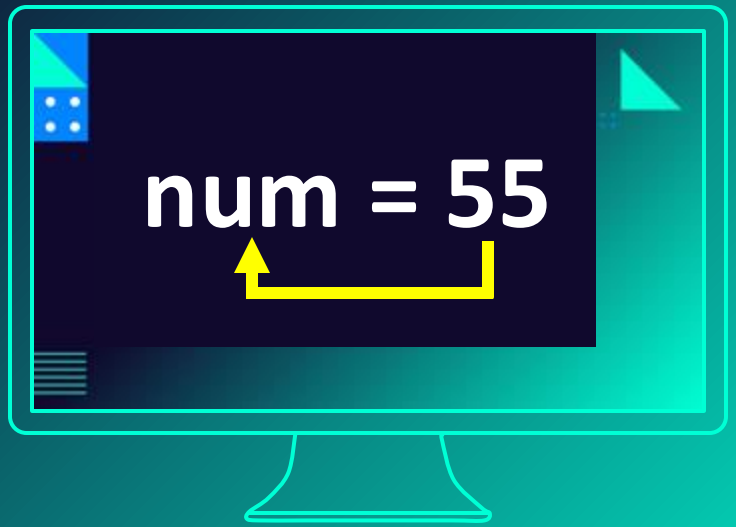


Python Data Types



Assigning Values to Variables

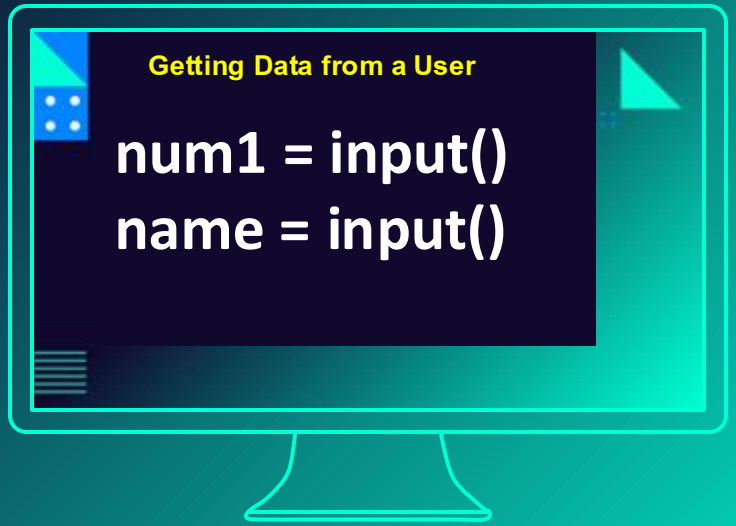
```
num1 = 10
num2, num3 = 22, 33
score1, score2 = 10.5, 20.55
word1 = “Hello World”
word2 = ‘python’
status = ‘y’
```



Assigning Values to Variables

Getting Data from a User

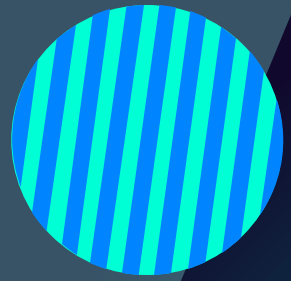
You have been able to assign data to variables from within the program.

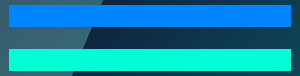


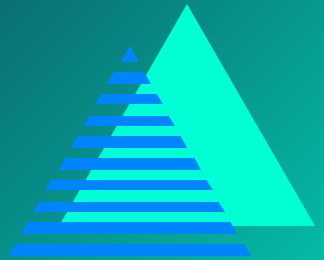
Global and Local Variables

Variables are classified into Global variables and Local variables based on their scope. The main difference between Global and local variables is that global variables can be accessed globally in the entire program, whereas local variables can be accessed only within the function or block in which they are defined.

Python Operators



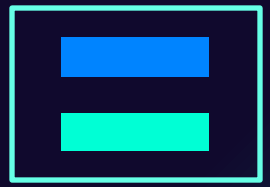





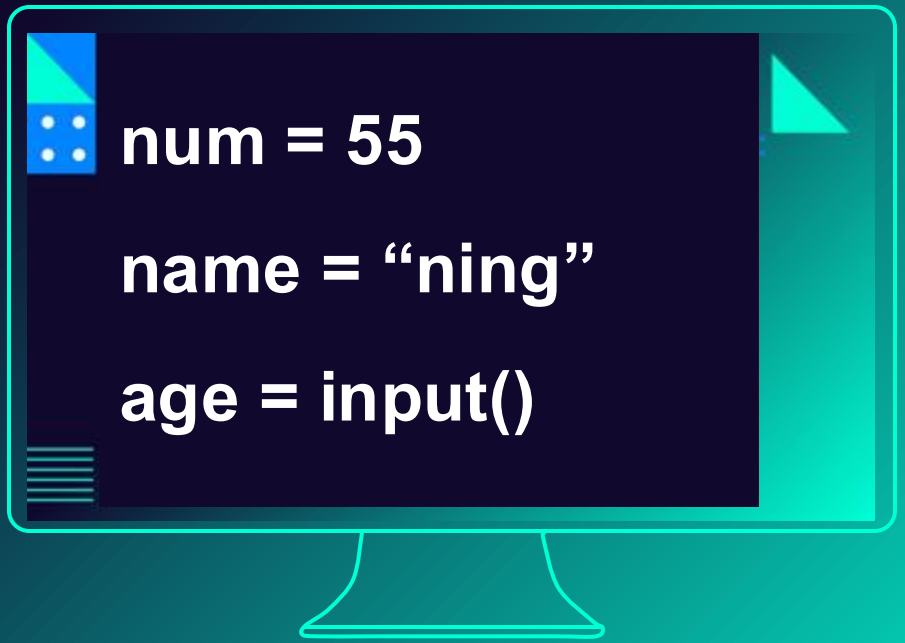
Arithmetic Operators

Operator	Name	Example
+	Addition	x + y
-	Subtraction	x - y
*	Multiplication	x * y
/	Division	x / y
%	Modulus	x % y
**	Exponentiation	x ** y
//	Floor division	x // y

Assignment Operator



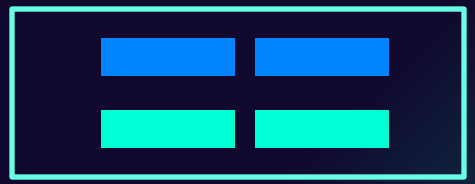
operator



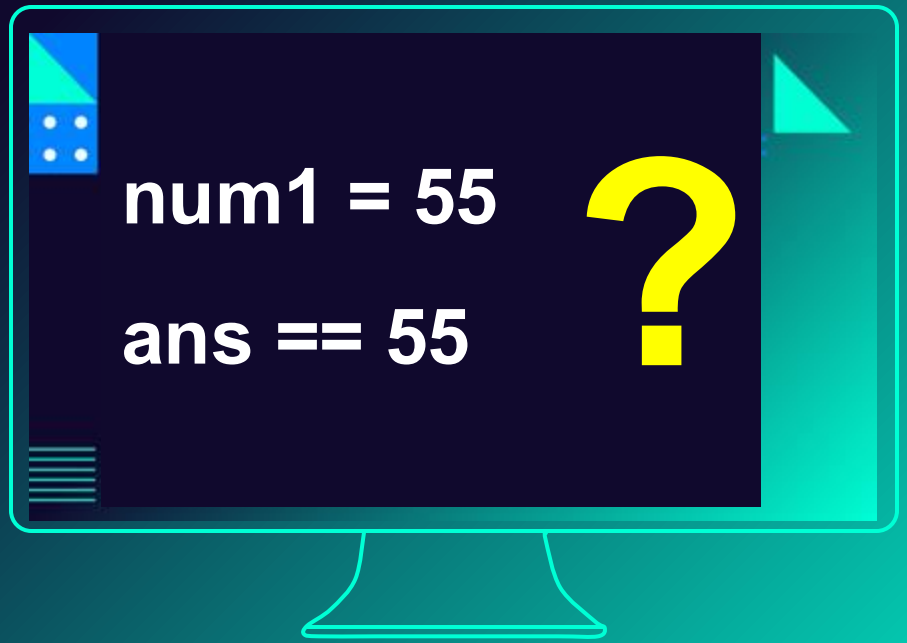
Assignment Operator

Operator	Example	Same As
=	x = 5	x = 5
+=	x += 3	x = x + 3
-=	x -= 3	x = x - 3
*=	x *= 3	x = x * 3
/=	x /= 3	x = x / 3
%=	x %= 3	x = x % 3
//=	x //= 3	x = x // 3
**=	x **= 3	x = x ** 3

Comparison Operator



operator



Comparison Operator

Operator	Name	Example
==	Equal	x == y
!=	Not equal	x != y
>	Greater than	x > y
<	Less than	x < y
>=	Greater than or equal to	x >= y
<=	Less than or equal to	x <= y

Logical Operator

Operator	Description	Example
and	Returns True if both statements are true	x < 5 **and** x < 10
or	Returns True if one of the statements is true	x < 5 **or** x < 4
not	Reverse the result, returns False if the result is true	**not**(x < 5 and x < 10)

The Operator Precedence

Operators	Meaning
()	Parentheses
**	Exponent
*, /, //, %	Multiplication, Division, Floor division, Modulus
+, -	Addition, Subtraction

Example

Find answers of following expression

Ex1. 2 ** 3 ** 2

Ex2. 1 + 2 * 3 / 4.0

Ex3. 2 + (3 - 1) * 10 / 5 * (2 + 3)

Ex4. 5 + (3 + 1) * 10 / 5 * (4 + 3 ** 2)

Output Formatting

There are several ways to format output using String Method in Python

- Using String Modulo Operator(%)
- Using Format Method
- **Using The String Method (***)**
- Python's Format Conversion Rule

Output Formatting

In Python, there are multiple ways to format data:

- String Formatting (.format() method)
- **Formatted String Literals (f-strings) (Python 3.6+)**
- Old-style String Formatting (% operator): This method is less preferred in newer Python code but still works

source : https://www.geeksforgeeks.org/python-output-formatting/

Output Formatting

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Output Formatting Examples

1

```
name = "Sirinthorn"
age = 30
print("Name: {}, Age: {}".format(name, age))
# Output: Name: Sirinthorn, Age: 30
```

format method

2

```
name = "Sirinthorn"
age = 30
print(f"Name: {name}, Age: {age}")
# Output: Name: Sirinthorn, Age: 30
```

f-strings

3

```
name = "Sirinthorn"
age = 30
print("Name: %s, Age: %d" % (name, age))
# Output: Name: Sirinthorn, Age: 30
```

Old-style string

source : https://www.geeksforgeeks.org/python-output-formatting/

To Format a floating-point number

1

```
value = 3.14159
print("{:.2f}".format(value))
# Output: 3.14
```

Using format method

2

```
value = 3.14159
print(f"{value:.2f}")
# Output: 3.14
```

Using f-strings

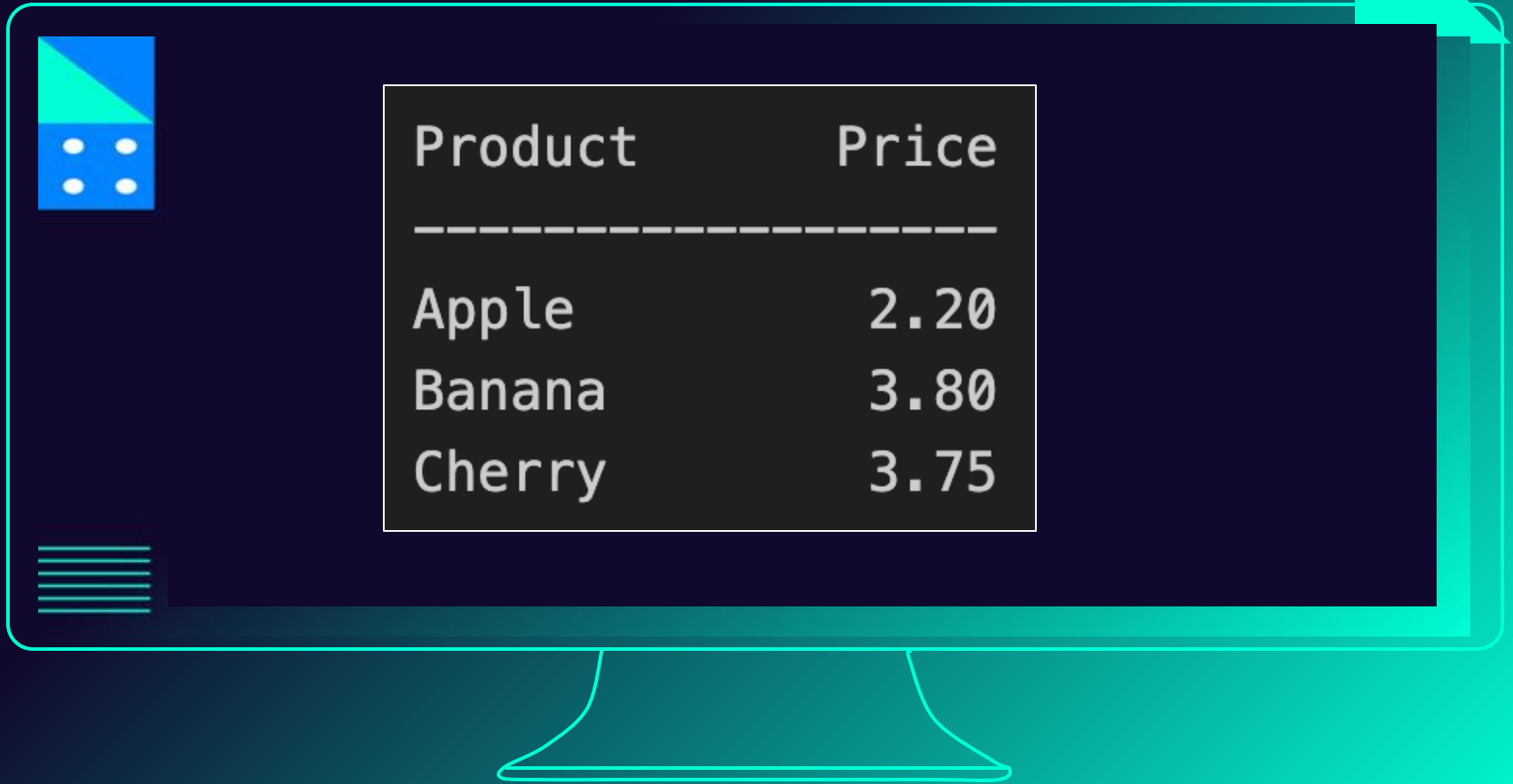
3

```
value = 3.14159
print("Output: %0.2f"%(value))
# Output: 3.14
```

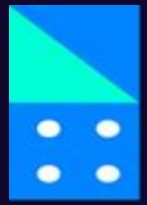
Using Old-style string

source : https://www.geeksforgeeks.org/python-output-formatting/

Class Activity



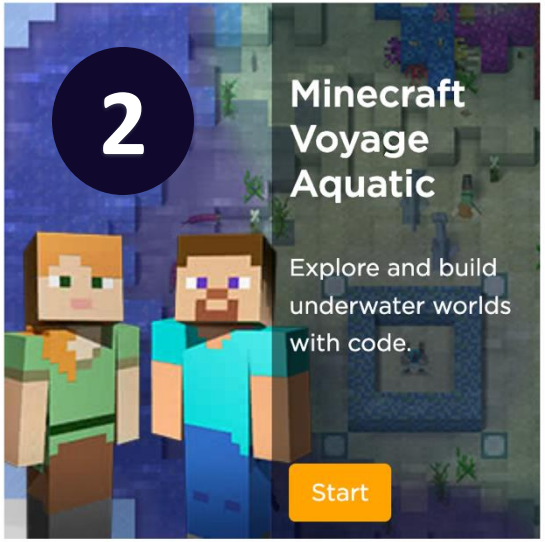
LAB1

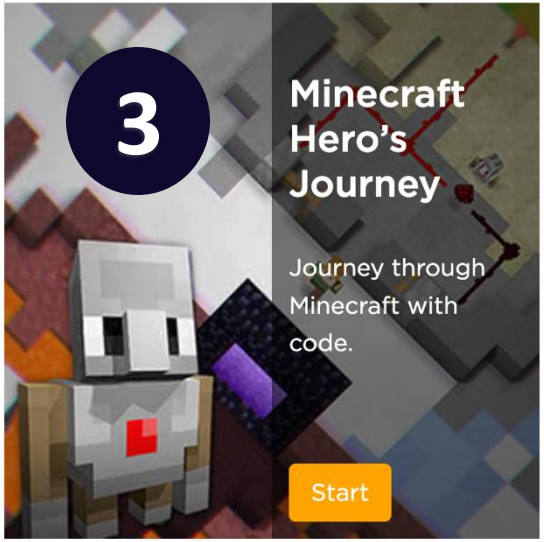


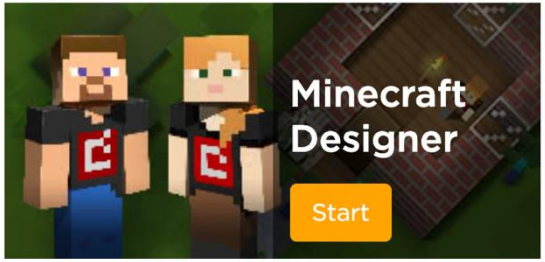
```
----------------------------------------
Name            : Sirinthorn Cheyasak
Height          :   173.0  CM
Weight          :    65.0  KG
----------------------------------------
Your BMI        :   21.72
----------------------------------------
```

***เปลี่ยนเป็นข้อมูลของนักศึกษาทั้งdชื่อ-นามสกุลdส่วนสูงdและน้ำหนักdสำหรับ BMI ใช้สูตร

Homework







https://code.org/minecraft


CERTIFICATE OF COMPLETION
This certificate is awarded to
Sirinthorn Cheyasak
for successful completion of
HOUR OF CODE
and demonstrating an understanding of
the basic concepts of Computer Science.
C O
D E
Hadi Partovi
Co-founder and Chief Executive Officer, Code.org
Jens Bergensten
Lead Creative Designer, Mojang
MINECRAFT
Microsoft
To learn beyond the first hour, visit code.org or microsoft.com/hourofcode
Microsoft made the generous gift to sponsor your learning.

Assignment of Week2

Thank you

Any question?

You can contact me

sirinthorn.c@bu.ac.th or

MS Team Chat