Python Programming

```
print("I am learning Python 101")
```

```
I am learning Python 101
```

```
# comment
```

```
# basic calculation
print(1+1)

pow(5, 2)
```

```
2

25
```

```
# assign a variable
# case sensitive
my_name = "toy"
age = 34
gpa = 2.78
movie_lover = True #False

print(my_name, age, gpa, movie_lover)
```

```
toy 34 2.78 True
```

```
s23_price = 30000
discount = 0.15
new_s23_price = s23_price*(1-discount)

print(new_s23_price)
```

```
25500.0
```

```
# remove variable
del s23_price
```

```
#count variable
age=34
age = age+1
age += 1
age -= 2
print(age)
```

```
34
```

```
# data types
# int float str bool
age = 28
gpa = 2.87
school = "Kasetsart"
movie_lover = True
```

```
# chek data type
print( type(age))
print( type(gpa))
print( type(school))
print( type(movie_lover))
```

```
<class 'int'>
<class 'float'>
<class 'str'>
<class 'bool'>
```

```
# convert type
x = 100
x = str(x)
print( x, type(x))
```

```
100 <class 'str'>
```

```
y = True #T=1, F=0
y = int(y)
print( y, type(y))
```

```
1 <class 'int'>
```

```
z = 1
z = bool(z)
print(z, type(z))
```

```
True <class 'bool'>
```

```
age = 28
print(age+age, age*2, age/2)
```

```
56 56 14.0
```

```
text = "hello"
text+text
```

```
'hellohello'
```

```
# type hint
age: int = 34
my_name: str = "toy"
gpa: float = 3.41
seafood: bool = True
```

```
#function
print("hello", "kiki")
print(pow(5, 2), abs(-5))
```

```
hello kiki
25 5
```

```
# greeting()
def greeting(name = "Pasit", location= "London"):
    print("Hello! "+ name)
    print("He is in " + location)
```

```
greeting("Jojo")
```

```
Hello! Jojo
He is in London
```

```python
def add_two_nums(a: int, b: int) -> int:
    return a+b
```

```python
add_two_nums(5,15)
```

```
20
```

```python
# work with string
text = "Hello World"

long_text= """
    this is a
    very long text
    this is a new line"""
```

```python
print(long_text)
```

```

    this is a
    very long text
    this is a new line
```

```python
# String template : fstrstring
my_name = "John Wick"
location = "London"

text= f"Hi! myname is {my_name} and I live in {location}."

print(text)
```

```
Hi! myname is John Wick and I live in London.
```

```python
text = "a duck walks into a bar"
print(text)
```

```
a duck walks into a bar
```

```python
#slicing, index starts with 0
print(text[0], text[-1], text[22])
```

```
a r r
```

```
# string is immutable
name = "Python" # ->Cython
name = "C" + name[1:]
print(name)
```

```
Cython
```

```
name = "Python"
name = "Cython"
```

```
text = "a duck walks into a bar"
```

```
len(text)
```

```
23
```

```
# function vs. method
# string methods
text.upper()
```

```
'A DUCK WALKS INTO A BAR'
```

```
text.replace("duck", "lion")
```

```
'a lion walks into a bar'
```

```
words = text.split(" ")
words
```

```
['a', 'duck', 'walks', 'into', 'a', 'bar']
```

```
" ".join(words)
```

```
'a duck walks into a bar'
```

```python
# method = function สร้างขึ้นมาสำหรับ object
# string methods
# string is immutable
```

```python
# data structures
# 1.list[]
# 2. tuple()
# 3. dictionary{}
# 4. set{unique}
```

```python
# list
shopping_items = ["banana", "egg", "milk"]
print(shopping_items)
print(shopping_items[0])
print(shopping_items[0:2])
```

```
['banana', 'egg', 'milk']
banana
['banana', 'egg']
```

```python
shopping_items[0] = "Pineapple"

print(shopping_items)
```

```
['Pineapple', 'egg', 'milk']
```

```python
# list methods
shopping_items.append("egg")
print(shopping_items)
```

```
['Pineapple', 'egg', 'milk', 'egg', 'egg']
```

```python
# sort items (ascending order, A-Z)
shopping_items.sort(reverse = True)
print(shopping_items)
```

```
['milk', 'egg', 'egg', 'egg', 'Pineapple']
```

```python
# reuseable
def mean(scores):
    return sum(scores)/ len(scores)
```

```python
scores = [90, 88, 85, 92, 75]
print(sum(scores), min(scores), max(scores))
```

```
430 75 92
```

```python
#remove last item
shopping_items.pop()
```

```
'Pineapple'
```

```python
shopping_items
```

```
['milk', 'egg', 'egg', 'egg']
```

```python
shopping_items.remove("milk")
```

```python
shopping_items
```

```
['egg', 'egg', 'egg']
```

```python
# .insert()
shopping_items.insert(1, "milk")
```

```python
# list+ list
item1 = ["egg", "milk"]
item2 = ["banana", "bread"]

print(item1+ item2)
```

```
['egg', 'milk', 'banana', 'bread']
```

```python
# tuple() is immutable
tup_items = ("egg", "bread", "coke")
tup_items
```

```
('egg', 'bread', 'coke')
```

```python
tup_items.count("egg")
```

```
1
```

```python
# username password
# student1, student2
s1 = ("id001", "123456")
s2 = ("id002", "654321")
user_pw = (s1, s2)

print(user_pw)
```

```
(('id001', '123456'), ('id002', '654321'))
```

```python
# tuple unpacking
username, password =s1

print(username, password)
```

```
id001 123456
```

```python
# tuple unpacking 3 values
name, age, gpa = ("John Wick", 42, 2.87)
print( name, age, gpa)
```

```
John Wick 42 2.87
```

```python
# set {unique}
courses = ["Python", "Python", "R", "SQL"]
set(courses)
```

```
{'Python', 'R', 'SQL'}
```

```python
# dictionary key: value pairs
courses = {
    "name": "Data Science Bootcamp",
    "duration": "4 months",
    "students": 200,
    "replay": True,
    "skills": ["Google Sheets", "SQL", "R", "Python"]
    }
```

```python
courses
```

```
{'name': 'Data Science Bootcamp',
 'duration': '4 months',
 'students': 200,
 'replay': True,
 'skills': ['Google Sheets', 'SQL', 'R', 'Python']}
```

```python
courses["name"]
```

```
'Data Science Bootcamp'
```

```python
# delete
courses["replay"] = False
courses
```

```
{'name': 'Data Science Bootcamp',
 'duration': '4 months',
 'students': 200,
 'replay': False,
 'skills': ['Google Sheets', 'SQL', 'R', 'Python']}
```

```python
list(courses.items())
```

```
[('name', 'Data Science Bootcamp'),
 ('duration', '4 months'),
 ('students', 200),
 ('replay', False),
 ('skills', ['Google Sheets', 'SQL', 'R', 'Python'])]
```

```python
# Recap
# list, dictionary = mutable
# tuple, string = immutable
```

```
# control flow
# if for while
```

```
# final exam 150 questions, pass >= 120

def grade(score):
    if score >= 120:
        return "Excellent"
    elif score >= 100:
        return  "Good"
    elif score >= 80:
        return "Okay"
    else:
        return "Need to read more!"
```

```
grade(99)
```

```
'Okay'
```

```
def grade (course, score):
    if course == "english" and score >= 70:
        return "passed"
    elif course == "data science" and score >= 80:
        return "passed"
    else:
        return "failed"
```

```
grade("english", 70)
```

```
'passed'
```

```
# for loop
# if score >= 80, passed
def grading_all(scores):
    new_scores = []
    for score in scores:
        new_scores.append(score+2)
    return new_scores
```

```
grading_all([75, 88, 90, 95, 52])
```

```
[77, 90, 92, 97, 54]
```

```
# list comprehension
scores = [75, 88, 90, 95, 52]
```

```
[ s*2 for s in scores]
```

```
[150, 176, 180, 190, 104]
```

```
friends = ["toy", "ink", "bee", "zue", "yos"]
[f.upper() for f in friends]
```

```
['TOY', 'INK', 'BEE', 'ZUE', 'YOS']
```

```
# while loop
count = 0

while count <5:
    print("hello")
    count += 1
```

```
hello
hello
hello
hello
hello
```

```
# chatbot for fruit order
user_name = input("What is your name?")
```

```
What is your name? sss

KeyboardInterrupt: Interrupted by user
```

```
def chatbot():
    fruits =[]
    while True:
        fruit = input("What fruit do you want to order?")
        fruits.append(fruit)
        if fruit == "exit":
            return fruits
```

```python
# OOP - Object Oriented Programming
# Dog Class
class Dog:
    pass
```

```python
dog = Dog()
print (dog)
```

```
<__main__.Dog object at 0x7fb73ec793d0>
```

```python
class Dog:
    def __init__(self, name, age, breed):
        self.name = name
        self.age = age
        self.breed = breed
```

```python
dog1 = Dog("ovaltine", 2, "chihuhua")
dog2 = Dog("milo", 3, "bulldog")
dog3 = Dog("pepsi", 3.4, "german ")
```

```python
print(dog1.name)
print(dog2.name)
print(dog3.name)
```

```
ovaltine
milo
pepsi
```