ch_2_assignment

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0.1 ch_2_assignment

[ ]:
```
from IPython.core.interactiveshell import InteractiveShell
InteractiveShell.ast_node_interactivity = 'all'
```

0.1.1 Arithmetic

[ ]:
```
# Addition
4 + 13

print("#"*30)

# Substraction
15 - 3

print("#"*30)

# Multiplication
4 * 7

print("#"*30)

#Division
5/2
4/2
```

[ ]:
```
17

##############################

12

##############################

28
```

```
##############################
```

[ ]: 2.5

[ ]: 2.0

0.1.2 Types

[ ]:
```
# two floats
17.0 - 10.0

print("#"*30)

# int and float
17.0 - 10
17 - 10.0

print("#"*30)

# omit zero_float
17 - 10.
17. - 10
```

[ ]: 7.0

```
##############################
```

[ ]: 7.0

[ ]: 7.0

```
##############################
```

[ ]: 7.0

[ ]: 7.0

0.1.3 Integer Division, Modulo, and Exponentiation

[ ]:
```
# Integer division (quotient)
17 // 10
-17 // 10

print("#"*30)

# Modulo operator (remainder)
53 % 24
```

```
-17 % 10
17 % -10

print("#"*30)

# Exponentiation
3 ** 6

print("#"*30)

# Negation
-5
--5
---5
```

[ ]: 1

[ ]: -2

```
##############################
```

[ ]: 5

[ ]: 3

[ ]: -3

```
##############################
```

[ ]: 729

```
##############################
```

[ ]: -5

[ ]: 5

[ ]: -5

0.1.4 What is a type?

[ ]:
```
# Finite Precision

2 / 3
5 / 3

print("#"*30)
```

```
2 / 3 + 1
5 / 3

print("#"*30)

10000000000 + 0.00000000001

print("#"*30)

# Operator Precedence
    ## Converting Fahrenheit to Celsius

212 - 32 * 5 / 9
(212 - 32) * 5 /9
```

[ ]: 0.6666666666666666

[ ]: 1.6666666666666667

```
##############################
```

[ ]: 1.6666666666666665

[ ]: 1.6666666666666667

```
##############################
```

[ ]: 10000000000.0

```
##############################
```

[ ]: 194.22222222222223

[ ]: 100.0

0.1.5 Variables and Computer Memory

[ ]:
```
# Assigning a new variable a value
degrees_celsius = 26.0
9 / 5 * degrees_celsius + 32

print("#"*30)

degrees_celsius = 0.0
9 / 5 + degrees_celsius + 32

print("#"*30)
```

```
degrees_celsius = 15.5
difference = 100 - degrees_celsius
difference

print("#"*30)

# Assignment Statement
degrees_celsius = 26.0 + 5
degrees_celsius

print("#"*30)

# Reassigning to Variables
difference = 20
double = 2 * difference
double

print("#"*30)

difference = 5
double

print("#"*30)

# Reassigning to Variables
number = 3
number

print("#"*30)

number = 2 * number
number

print("#"*30)

number = number * number
number

# Augmented Assignment
score = 50
score

print("#"*30)

score = score + 20
score
```

```
print("#"*30)

score = 50
score

print("#"*30)

score += 20
score

print("#"*30)

d = 2
d *= 3 + 4
d

print("#"*30)

number = 10
number *= number
number
```

[ ]: 78.80000000000001

```
##############################
```

[ ]: 33.8

```
##############################
```

[ ]: 84.5

```
##############################
```

[ ]: 31.0

```
##############################
```

[ ]: 40

```
##############################
```

[ ]: 40

```
##############################
```

[ ]: 3

```
##############################
```

[ ]: 6

```
##############################
```

[ ]: 36

[ ]: 50

```
##############################
```

[ ]: 70

```
##############################
```

[ ]: 50

```
##############################
```

[ ]: 70

```
##############################
```

[ ]: 14

```
##############################
```

[ ]: 100

0.1.6 How Python Tell You something Went Wrong

[ ]:
```
# The name moogah wasn't recognized.
3 + moogah
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
/Users/Kim_Tein/INU/inu_data/physics_programming/assignment/Ch_1_2/
 ↪ch_2_assignment.ipynb Cell 15 in <cell line: 2>()
      <a href='vscode-notebook-cell:/Users/Kim_Tein/INU/inu_data/
 ↪physics_programming/assignment/Ch_1_2/ch_2_assignment.ipynb#X24sZmlsZQ%3D%3D?
 ↪line=0'>1</a> # The name moogah wasn't recognized.
----> <a href='vscode-notebook-cell:/Users/Kim_Tein/INU/inu_data/
 ↪physics_programming/assignment/Ch_1_2/ch_2_assignment.ipynb#X24sZmlsZQ%3D%3D?
 ↪line=1'>2</a> 3 + moogah

NameError: name 'moogah' is not defined
```

[ ]:
```
# The rules governing what is and isn't legal in a programming language are␣
 ↪called its syntax.
```

```
2 +
```

```
  Input In [9]
    2 +
       ^
SyntaxError: invalid syntax
```

[ ]:
```
# A literal is any value, like 12 and 26.0
# you can't assign a value to a number even before it tries to execute it

12 = x
```

```
  Input In [10]
    12 = x
    ^
SyntaxError: cannot assign to literal
```

0.1.7 A Single Statement That Spans Multiple Lines

[ ]:
```
# How to split?
(2 +
 3)

print("#"*30)

2 + \
 3

print("#"*30)

# Example) Converting Fahrenheit to Celsius when you are cooking (the oven␣
 ↪heats up at the rate of 20 degree/min to 350 degree)

room_temperature_c = 20
cooking_temperature_f = 350
oven_heating_rate_c = 20
oven_heating_time = ( # parentheses
    ((cooking_temperature_f - 32) * 5 / 9) - room_temperature_c) / \
        oven_heating_rate_c
oven_heating_time
```

[ ]:
```
5
```

```
##############################
```

[ ]:
```
5
```

```
##############################
```

[ ]:
```
7.833333333333333
```

0.1.8 Describing Code

[ ]:
```
# Python ignores this sentence because of the # symbol

(212 - 32) * 5 / 9 # Convert 212 degrees Fahrenheit to Celsius
```

[ ]:
```
100.0
```

Reference * Title: Physics Programming Lecture Note (INU) * Author: Jeongwoo Kim, Ph.D. * Availability: https://sites.google.com/view/jeongwookim

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