3주차-01
파이썬 기초 프로그래밍

지난주 복습

sys.stdin

```python
import sys

for line in sys.stdin:
    if 'q' == line.rstrip():
        break
    print(f'input: {line}')

print('Exit')
```

fileinput

```python
import fileinput

with fileinput.input(files = ('sample.txt', 'no.txt')) as f:
    for line in f:
        print(line)
```

f-string

- 파이썬 3.6부터 .format 대신 f-string 사용 가능

```python
a = 'a'
print(f'a is {a}')

x, y, z = 1, 2, 3
print(f'a is {x}, {y}, {z}')
print(f'a is {z}, {y}, {x}')

name = 'Jun'
family = 'Sakai'
print(f'My name is {name} {family}.
I am {family} {name}')
```

실습 문제 01

- f-string 코드를 .format 코드로 변경하시오.

```python
a = 'a'
print(f'a is {a}')

x, y, z = 1, 2, 3
print(f'a is {x}, {y}, {z}')
print(f'a is {z}, {y}, {x}')

name = 'Jun'
family = 'Sakai'
print(f'My name is {name} {family}.
I am {family} {name}')
```

한 줄이 길어질 경우

```python
s1 = 'aaaaaaaaaaa' \
    + 'bbbbbbbbbbbbbb'
print(s1)

s2 = ('aaaaaaaaa'
      + 'bbbbbbbbbbbbbb')
print(s2)

x1 = 1 + 1 + 1 + 1 + 1 + 1 + 1 \
    + 1 + 1 + 1 + 1 + 1 + 1 + 1
print(x1)

x2 = (1 + 1 + 1 + 1 + 1 + 1 + 1
    + 1 + 1 + 1 + 1 + 1 + 1 +
1)
print(x2)
```

output :

aaaaaaaaaaabbbbbbbbbbbbbb
aaaaaaaaaabbbbbbbbbbbbbb
14
14

출력 결과는?

```python
print("hello")
print('\hello')

print("I don't know")
print('I don\t know')

print(r'c:\usr\bin')

print("""\
line1
line2
line3\
""")

print("""aaaaaaaaaaaaaaa
      bbbbbbbbbbbbbbb
""")
```

제어문

- if, if~else, if~elif~else
- while
- break, continue
- for
- range
- for – else
- nested loop

if

```
i = 10
if (i > 15):
    print ("10 is less than 15")
print ("I am Not in if")
```

if-else

```
i = 20;
if (i < 15):
    print ("i is smaller than 15")
    print ("i'm in if Block")
else:
    print ("i is greater than 15")
    print ("i'm in else Block")
print ("i'm not in if and not in else Block")
```

nested if

```python
i = 10
if (i == 10):
    # First if statement
    if (i < 15):
        print ("i is smaller than 15")
    # Nested - if statement
    # Will only be executed if statement above
    # it is true
    if (i < 12):
        print ("i is smaller than 12 too")
    else:
        print ("i is greater than 15")
```

```
Output:

i is smaller than 15

i is smaller than 12 too
```

if-elif-else

```
i = 20
if (i == 10):
    print ("i is 10")
elif (i == 15):
    print ("i is 15")
elif (i == 20):
    print ("i is 20")
else:
    print ("i is not present")
```

output :

i is 20

단축형 if

```
i = 10
if i < 15: print("i is less than 15")

output :
i is less than 15
```

```
i = 10
print(True) if i < 15 else print(False)

output :
True
```
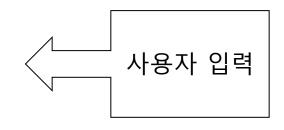
실습 문제 02

- 정수를 입력 받아 짝수인지. 홀수인지 판별하여 출력하시오. 'q'를 입력하면 프로그램이 종료 되도록!

정수를 입력하세요: 123
홀수 입니다

사용자 입력

while

```
count = 0
while (count < 3):
    count = count + 1
    print("Hello Geek")

print()

# checks if list still
# contains any element
a = [1, 2, 3, 4]
while a:
    print(a.pop())
```

```
output:

Hello Geek
Hello Geek
Hello Geek

4
3
2
1
```

단일 문장 while 문

```
count = 0
while (count < 5): count += 1; print("Hello Geek")
```

```
output :

Hello Geek
Hello Geek
Hello Geek
Hello Geek
Hello Geek
```

continue in while

```python
# Prints all letters except 'e' and
's'
i = 0
a = 'geeksforgeeks'

while i < len(a):
    if a[i] == 'e' or a[i] == 's':
        i += 1
        continue
    print('Current Letter :', a[i])
    i += 1
```

```
output :

Current Letter : g

Current Letter : k

Current Letter : f

Current Letter : o

Current Letter : r

Current Letter : g

Current Letter : k
```

break in while

```
# break the loop as soon it sees 'e'
# or 's'
i = 0
a = 'geeksforgeeks'

while i < len(a):
    if a[i] == 'e' or a[i] == 's':
        i += 1
        break
    print('Current Letter :', a[i])
    i += 1
```

output :

Current Letter : g

while-else

```
i = 0
while i < 4:
        i += 1
        print(i)
# break 문이 없으므로 else 실행
else:
        print("No Break\n")
```

```
i = 0
while i < 4:
        i += 1
        print(i)
        break
else: # break 문이 있으므로 else 실행 안함
        print("No Break")
```

output :

1

2

3

4

No Break

1

for 루프(1)

```python
# 리스트 반복(mutable)
print("List Iteration")
l = ["geeks", "for", "geeks"]
for i in l:
    print(i)

# 튜플 반복(immutable)
print("\nTuple Iteration")
t = ("geeks", "for", "geeks")
for i in t:
    print(i)
```

```
output :

List Iteration

geeks

for

geeks


Tuple Iteration

geeks

for

geeks
```

for 루프(2)

```python
# 스트링 반복
s = "Geeks"
for i in s :
      print(i)

# 딕셔너리 반복(1)
d = dict()
d['xyz'] = 123
d['abc'] = 345
for i in d :
      print("% s % d" %(i, d[i]))
```

```
output :

G
e
e
k
s

xyz 123
abc 345
```

for 루프 : Dictionary items

```python
# 딕셔너리 반복 : items
print("\nDictionary Iteration")

d = dict()
d['xyz'] = 123
d['abc'] = 345
D['xxx'] = 678

print(d.items())

for key, value in d.items():
    print(key, value)
```

```
output :

Dictionary Iteration

xyz 123
abc 345
xxx 678
```

enumerate

```python
i = 0
for j in ['a', 'b', 'c']:
    print(i, j)
    i += 1

# enumerate 사용
for i, j in enumerate(['a', 'b', 'c']):
    print(i, j)
```

Output :

0 a
1 b
2 c

0 a
1 b
2 c

중첩 for 문

- 구구단 계산하기

```python
for x in range(2, 4):
    for y in range(1, 10):
        print(x, '*', y, '=', x*y)


print('.........................')
```

```
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
...................
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27

...................
```

실습 문제 03

- 구구단의 2단, 4단, 6간, 8단을 출력하는 프로그램을 작성하시오.

continue in for

```
# 'e'와 's'를 제외하고 모두 출력
for letter in 'geeksforgeeks':
        if letter == 'e' or letter == 's':
                continue
        print('Current Letter :', letter)
        var = 10
```

output :

Current Letter : g

Current Letter : k

Current Letter : f

Current Letter : o

Current Letter : r

Current Letter : g

Current Letter : k

break in for

```
for letter in 'geeksforgeeks':

    # 'e'나 's'를 만나면 반복문을 완전히 빠져 나옴
    if letter == 'e' or letter == 's':
        break
print('Current Letter :', letter)
```

output :

Current Letter : e

range() 함수

```python
for i in range(10):
    print(i, end=" ")
print()

l = [10, 20, 30, 40]
for i in range(len(l)):
    print(l[i], end=" ")
print()

sum = 0
for i in range(1, 10):
    sum = sum + i
print("Sum of first 10 numbers :", sum)
```

```
output :

0 1 2 3 4 5 6 7 8 9

10 20 30 40

Sum of first 10 numbers :

45
```

for-else

```python
for i in range(1, 4):
    print(i)
else:
    print("No Break\n")
```

```python
for i in range(1, 4):
    print(i)
    break
else:
    print("No Break")
```

output :

1
2
3
No Break

1

실습 문제 04 : for 문

- 1부터 10까지 합을 구하는 프로그램을 작성 하시오.

- 100부터 200까지의 짝수의 합을 계산하여 출력하는 프로그램을 작성 하시오.