Control Flow

Alssong Dalssong Pythong
김진우

Schedule

30일	31일 ● 운동 오전 9시	1월 1일 새해	2일	3일 ● 알쏭달쏭 파이쏭 오후 6시	4일	5일 ● 야구 직관 오후 5시
6일	7일 ● 운동 오전 9시	8일	9일	10일 ● 영화 오후 3시 ● 알쏭달쏭 파이쏭 오후 6시	11일	12일 ● 야구 직관 오후 5시
13일 여행 !	14일	15일	16일	17일	18일	19일
20일 ● 영화 오후 3시	21일 ● 운동 오전 9시	22일	23일	24일 ● 알쏭달쏭 파이쏭 오후 6시	25일	26일 ● 야구 직관 오후 5시
27일	28일 ● 운동 오전 9시	29일	30일 ● 영화 오후 3시	31일 ● 알쏭달쏭 파이쏭 오후 6시 ● 월말 파티 오후 9시	2월 1일	2일 ● 야구 직관 오후 5시

Schedule

매주)
- 월: 운동
- 목: 알쏭달쏭 파이쏭
- 토: 야구 직관

기념일)
- 1/1 : 새해
- 1/31: 월말 파티

둘째 주)
- 여행

매 10일)
- 영화

조건 & 반복

조건

“If I were a bird, I would fly to you”

- Unknown ..

1. 홀, 짝

1. 홀, 짝

```python
a = int(input("Enter a number: "))

if a%2 == 0:
    print("It's even number!")
else:
    print("It's odd number!")
```

2. +, - / 정수형, 실수형

2. +, - / 정수형, 실수형

```python
a = int(input("Enter a number: "))

if a > 0 and a %2 == 0:
    print(f"{a} is positive even number!")
if a < 0 and a%2 == 0:
    print(f"{a} is negative even number!")
if a > 0 and a%2 == 1:
    print(f"{a} is positive odd number!")
if a < 0 and a%2 == 1:
    print(f"{a} is negative odd number!")
```

2. +, - / 정수형, 실수형

```python
a = int(input("Enter a number: "))

if a > 0 and a %2 == 0:
    print(f"{a} is positive even number!")
elif a < 0 and a%2 == 0:
    print(f"{a} is negative even number!")
elif a > 0 and a%2 == 1:
    print(f"{a} is positive odd number!")
elif a < 0 and a%2 == 1:
    print(f"{a} is negative odd number!")
else:
    print(f"{a} is zero!")
```

3. 몇 자리 수 ?

3. 몇 자리 수 ?

```
a = int(input("Enter a number: "))

if a >= 0:
    print(f"{a} is 1-digit number!")
if a >= 10:
    print(f"{a} is 2-digit number!")
if a >= 100:
    print(f"{a} is 3-digit number!")
if a >= 1000:
    print(f"{a} is 4-digit number!")
```

3. 몇 자리 수 ?

```
Enter a number: 345
345 is 1-digit number!
345 is 2-digit number!
345 is 3-digit number!
```

Error !!

3. 몇 자리 수 ?

```python
a = int(input("Enter a number: "))

if a >= 0:
    print(f"{a} is 1-digit number!")
elif a >= 10:
    print(f"{a} is 2-digit number!")
elif a >= 100:
    print(f"{a} is 3-digit number!")
elif a >= 1000:
    print(f"{a} is 4-digit number!")
```

3. 몇 자리 수 ?

Go Further . . .

1. Negative number ?
2. Infinitely typing ?

4. 2의 배수, 3의 배수

4. 2의 배수, 3의 배수

이중 반복문

```
a = int(input("Enter a number: "))

if a%2 == 0:
    if a%3 == 0:
        print(f"{a} is a multiple of both 2 and 3.")
    else:
        print(f"{a} is a multiple of 2 but not 3.")
else:
    if a%3 == 0:
        print(f"{a} is a multiple of 3 but not 2.")
    else:
        print(f"{a} is not a multiple of 2 or 3.")
```

4. 2의 배수, 3의 배수

```python
a = int(input("Enter a number: "))

if a%2 == 0 and b%3 == 0:
    print(f"{a} is a multiple of both 2 and 3.")
elif a%2 == 0 and b%3 != 0:
    print(f"{a} is a multiple of 2 but not 3.")
elif a%2 != 0 and b%3 == 0:
     print(f"{a} is a multiple of 3 but not 2.")
else:
    print(f"{a} is not a multiple of 2 or 3.")
```

반복

“3 + 3 + 3 + 3 + 3 + 3 + 3 = 21”

- 3 x 7

컴식이 ??

1. 3+3+3+3+3+3+3 = 21

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```
total = 0

for i in range(7):
    total += 3

print(f"3 x 7 = {total}")
```

1. 3+3+3+3+3+3+3 = 21

```python
a = int(input("Enter a number: "))

total = 0

for i in range(a):
    total += 3

print(f"3 x {a} = {total}")
```

2. 3^4 = 3*3*3*3 = 81

```python
a = int(input("Enter a number: "))

result = 1

for i in range(a):
    result *= 3

print(f"3 ^ {a} = {result}")
```

* Inverse Element *

```python
a = int(input("Enter a number: "))

result = 1

for i in range(a):
    result *= 3

print(f"3 ^ {a} = {result}")
```

```python
a = int(input("Enter a number: "))

total = 0

for i in range(a):
    total += 3

print(f"3 x {a} = {total}")
```

3. P(n, r)

3. P(n, r)

$$\mathrm{P}_{\mathrm{k}}^{\mathrm{n}} = \frac{\mathrm{n}!}{(\mathrm{n}-\mathrm{k})!}$$

https://medium.com/i-math/combinations-permutations-fa7ac680f0ac

$$P(n,k) = \underbrace{n \cdot (n-1) \cdot (n-2) \cdots (n-k+1)}_{k \text{ factors}}$$

https://twpower.github.io/62-permutation-by-recursion

3. P(n, r)

```python
n = int(input("Enter 'n' for P(n, r): "))
r = int(input("Enter 'r' for P(n, r): "))

P = 1 # Permutation

for i in range(n, n-r, -1):
    P *= i

print(f"P({n}, {r}) = {P}")
```

3. P(n, r)

```python
n = int(input("Enter 'n' for P(n, r): "))
r = int(input("Enter 'r' for P(n, r): "))

P = 1 # Permutation

for i in range(n, n-r, -1):
    P *= i

print(f"P({n}, {r}) = {P}")
```

range()

Syntax

```
range(start, stop, step)
```

Parameter Values

Parameter	Description
start	Optional. An integer number specifying at which position to start. Default is 0
stop	Optional. An integer number specifying at which position to endt.
step	Optional. An integer number specifying the incrementation. Default is 1

https://www.w3schools.com/python/ref_func_range.asp

4. Loop with List

4. Loop with List

```
month = ["january", "february", "march", "april",
         "may", "june", "july", "august",
         "september", "october", "november", "december"]

for m in month:
    print(month.index(m)+1, m.capitalize())
```

4. Loop with String

4. Loop with String

```
string = "Hello World!"

for c in string:
    print(c*2, end='')
```

조건 & 반복

“If I were a bird, I would fly to you.

If I were a flower, I would smile to you.

If I were a poet, I would sing to you.

If I were younger, I would love you.”

- J. W. Kim

1. Alssong Dalssong Pythong

1. Alssong Dalssong Pythong

```
s = "AlsongDalsongPythong" # From this string, we want to print the right one

for c in s:
    print(c, end='')

    # 's' one more
    if(c == "s"):
        print(c, end='') # or just print("s", end='')

    # blank after 'g'
    if(c == "g"):
        print(end=' ') # or print(' ', end='') or print('', end=' ')
```

2. How much did I pay..?

```
# list for account, - for pay, + for get
account = [-100, 30, 51, -35, 20, -82, 14]

pay_or_get = input("Want to know 'pay' or 'get'?: ")

total = 0

for money in account:
    if pay_or_get == "pay":
        if money < 0:
            total += money
    else:
        if money > 0:
            total += money

total = abs(total)

print(f"{pay_or_get}: {total}")
```

3. How many days are there in a year?

```
total = 0

days_30 = [4, 6, 9, 11]
days_31 = [1, 3, 5, 7, 8, 10, 12]

for i in range(1, 13):
    if i in days_30:
        total += 30
    elif i in days_31:
        total += 31
    else:
        total += 28

print(f"There are {total} days in a year!")
```

Life is short, you need Python

Life is short, you need Python

```
days_30 = [4, 6, 9, 11]
days_31 = [1, 3, 5, 7, 8, 10, 12]

total = 30 * len(days_30) + 31 * len(days_31) + 28

print(f"There are {total} days in a year!")
```

Practice !!