

Fastcampus

**컴퓨터공학 입문 스쿨**

Python Basic\_Day3

# 어제의 숙제!

## Monty Hall Simulation

## Monty Hall Simulation

```
import random
```

```
stay = 0  
switch = 0
```

## Monty Hall Simulation

```
for i in range(1000):  
    doors = [1,0,0]  
    random.shuffle(doors)  
  
    choice = random.randrange(3)  
  
    user = doors[choice]  
  
    if user == 1:  
        stay = stay + 1  
    else:  
        switch = switch + 1
```

## Monty Hall Simulation

```
print("stay: %4d" % stay)  
print("switch: %4d" % switch)
```

# Ethiopian Multiplication

2로 나누고 곱하는 과정으로 두 수의 곱을 구현하는 방법

[https://en.wikipedia.org/wiki/Ancient\\_Egyptian\\_multiplication](https://en.wikipedia.org/wiki/Ancient_Egyptian_multiplication)

12	*	7		struck	---
6		14		struck	---
3		28		keep	28
1		56		keep	56
--> 28 + 56 = 84					

# Ethiopian Multiplication

```
numbers = str(input("two nums with space: ")).split()

result = 0
num1 = int(numbers[0])
num2 = int(numbers[1])
```

# Ethiopian Multiplication

```
while num1 >= 1:
    if num1 % 2 == 0:
        print("%4d %7d struck" % (num1, num2))
    else:
        print("%4d %7d keep" % (num1, num2))
        result += num2

    num1 = num1 // 2
    num2 = num2 * 2
```



## Ethiopian Multiplication

```
print("The result is ", result)
```

# Toggl

<https://blog.toggl.com/wp-content/uploads/2016/12/toggl-it-jobs-explained-with-changing-lightbulb.jpg>

<https://assets.toggl.com/images/toggl-how-to-save-the-princess-in-8-programming-languages.jpg>

# Dictionary, Set

## dictionary의 선언

```
dict1 = {}  
print(dict1)
```

dictionary는 key와 value로 이루어져 있으며, 추가하는 법은 다음과 같습니다.

```
dict1 = {'name': 'foo bar'}  
print(dict1)
```

```
dict1 = {'korean': 95, 'math': 100, 'science': [80, 70, 90, 60]}  
print(dict1)
```

```
dict1['english'] = "pass"  
print(dict1)
```

**요소 삭제는 del을 활용합니다.**

```
del dict1['math']  
print(dict1)
```

key를 활용해 value를 출력하는 법을 알아보시다.

```
print(dict1['korean'])
```

key만 출력하는 법을 알아보시다.

```
print(dict1.keys())
```

value만 출력할때 이렇게 합니다.

```
print(dict1.values())
```

key와 value를 함께 출력합니다.

```
print(dict1.items())
```

## Small Quiz

$A = \text{'fastcampus'}$

$B = \text{'python'}$

$A \cup B$

$A \cap B$

$A - B$

$A \Delta B$

# Set

- 수학 집합 연산을 쉽게 하기 위해 만든 자료형
- 순서없음
- 중복없음

# Set

## Set 선언

```
ppap = {'pen', 'apple', 'pineapple', 'pen'}  
print(ppap)
```

```
'apple' in ppap  
'applepen' in ppap
```

```
pineapple = set('pineapple')  
pineapple
```



# Set

A = 'fastcampus'

B = 'python'

$A \cup B == A \mid B$

$A \cap B == A \& B$

$A - B == A - B$

$A \Delta B == A \wedge B$

## Refactoring numguess

```
import random

answer = random.randint(1,100)
username = input("Hi there, What's your name?? ")

while True:
    guess = eval(input("Hi "+ username + ", guess the number"))

    if guess == answer:
        print("Correct! The answer was ", str(answer))
        break
    else:
        print("That's not what I wanted!! Try again!!!")
```

give a hint!!

```
import random

answer = random.randint(1,100)
username = input("Hi there, What's your name?? ")

while True:
    guess = eval(input("Hi, "+ username + "guess the number: "))

    if guess == answer:
        print("Correct! The answer was ", str(answer))
        break
    elif guess > answer:
        print("Too high!! Try again!!")
    elif guess < answer:
        print("Too Low!! Try again!!")
```

# limit trial

```
import random

answer = random.randint(1,100)
username = input("Hi there, What's your name?? ")
trial = 5
while trial:
    guess = eval(input("Hi, "+ username + ". guess the number: "))

    if guess == answer:
        print("Correct! The answer was ", str(answer))
        break
    elif guess > answer:
        trial -= 1
        print("Too high!! Try again!!(%d times left)" % (trial))
    elif guess < answer:
        trial -= 1
        print("Too Low!! Try again!!(%d times left)" % (trial))

if trial == 0:
    print("You are Wrong! The answer was ", str(answer))
```

# List Comprehension

존재하는 리스트를 활용하여 새로운 리스트를 생성하는 방법

비슷한 표현들

- Set Comprehension
- Dictionary Comprehension
- Parallel list Comprehension

## List Comprehension

```
old_list = [1, 2, 3, 4, 5,]  
  
doubled_list = []  
for i in old_list:  
    doubled_list.append(i * 2)
```

# List Comprehension

```
old_list = [1, 2, 3, 4, 5,]  
  
doubled_list = []  
for i in old_list:  
    doubled_list.append(i * 2)
```

```
doubled_list = []
```

# List Comprehension

```
old_list = [1, 2, 3, 4, 5,]  
  
doubled_list = []  
for i in old_list:  
    doubled_list.append(i * 2)
```

```
doubled_list = [i * 2]
```



## List Comprehension

```
old_list = [1, 2, 3, 4, 5,]  
  
doubled_list = []  
for i in old_list:  
    doubled_list.append(i * 2)
```

```
doubled_list = [i * 2 for i in old_list]
```

## List Comprehension - another example

```
old_list = [1, 2, 3, 4, 5,]

doubled_list = []
for i in old_list:
    if i % 2 == 0:
        doubled_list.append(i * 2)
```

## List Comprehension - another example

```
old_list = [1, 2, 3, 4, 5,]

doubled_list = []
for i in old_list:
    if i % 2 == 0:
        doubled_list.append(i * 2)
```

```
doubled_list = []
```

## List Comprehension - another example

```
old_list = [1, 2, 3, 4, 5,]

doubled_list = []
for i in old_list:
    if i % 2 == 0:
        doubled_list.append(i * 2)
```

```
doubled_list = [i * 2]
```

## List Comprehension - another example

```
old_list = [1, 2, 3, 4, 5,]

doubled_list = []
for i in old_list:
    if i % 2 == 0:
        doubled_list.append(i * 2)
```

```
doubled_list = [i * 2 for i in old_list]
```

## List Comprehension - another example

```
old_list = [1, 2, 3, 4, 5,]

doubled_list = []
for i in old_list:
    if i % 2 == 0:
        doubled_list.append(i * 2)
```

```
doubled_list = [i * 2 for i in old_list if i % 2 == 0]
```

## Mini Project!

- List Comprehension으로 FizzBuzz 한 줄로 구현하기