Fastcampus

Computer Science School

Python Basic_Day3

Fizzbuzz

1부터 100까지 반복

3의 배수 = "Fizz"
5의 배수 = "Buzz"
15의 배수 = "FizzBuzz"
나머지 = 그 숫자

Fizzbuzz

```
num = eval(input("type the number: "))

for i in range(1, num + 1):
        if i % 15 == 0:
                print("fizzbuzz")
        elif i % 3 == 0:
                print("fizz")
        elif i % 5 == 0:
                print("buzz")
        else:
                print(i)
```

For, while

```
while 조건:
        실행문1
        ...
```

```
while name != "foo bar":
        name = input("What's your name? ")
        print("Hi, " + name + "So, where is foo bar?")
```

```
while 1:
        print("Hello world!")
```

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!!")
```

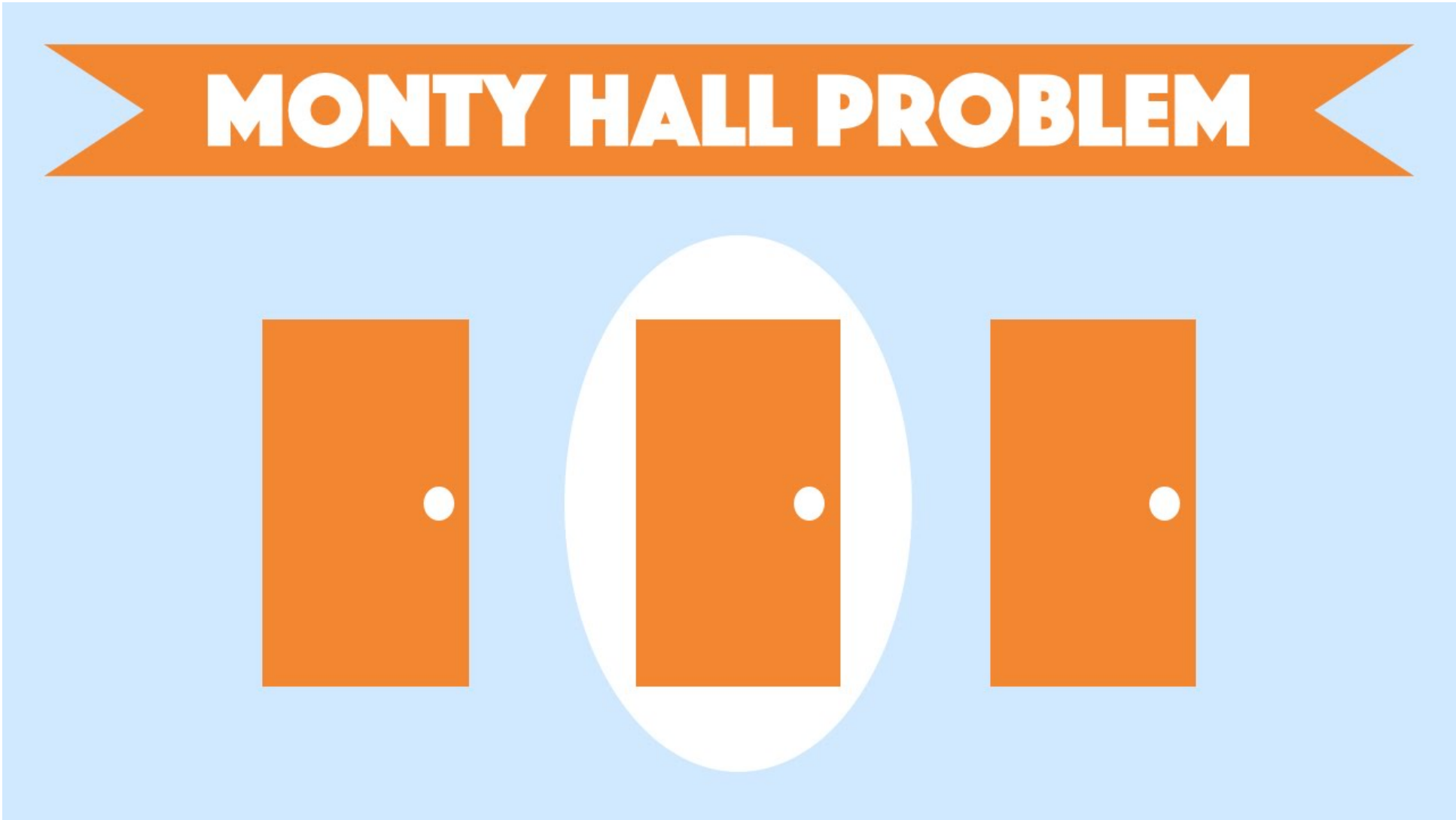
give a hint!!

```
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!!")
```

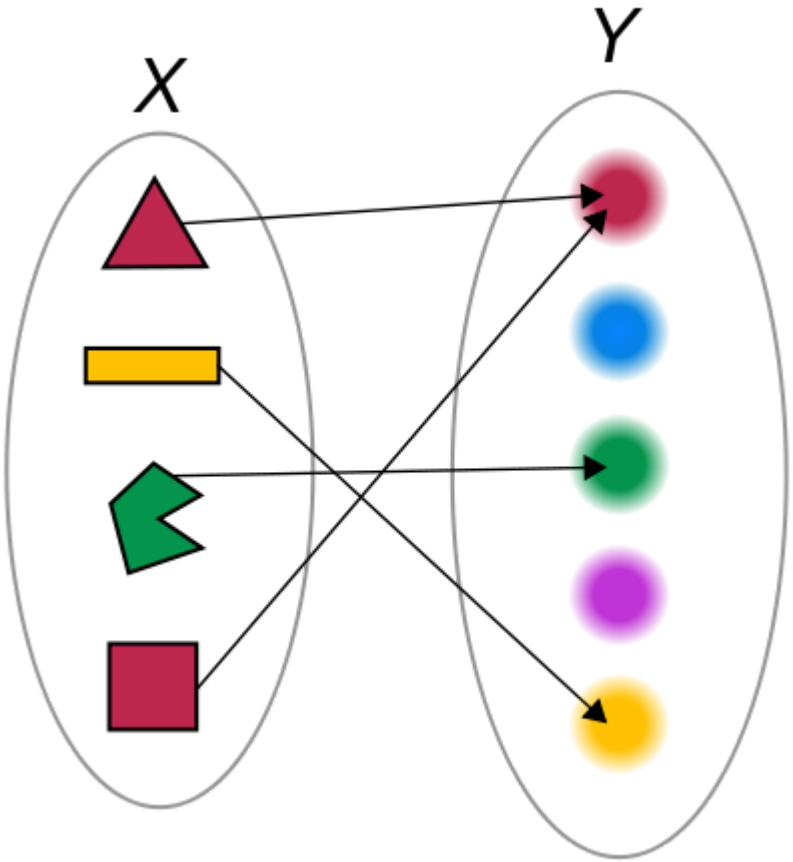
limit trial

```
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))
```

Monty Hall Problem

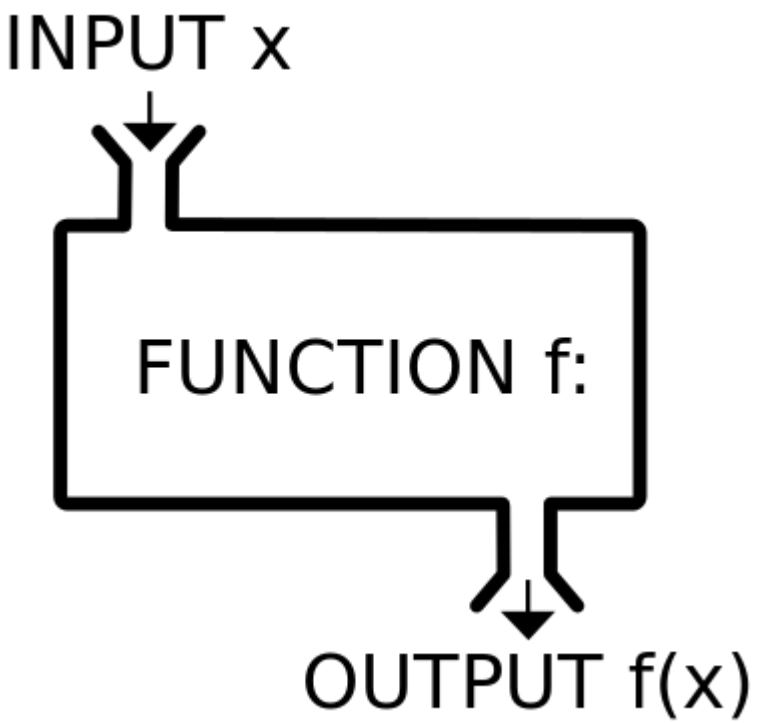

MONTY HALL PROBLEM

function



- 수학적 정의: 첫 번째 집합의 임의의 한 원소를 두 번째 집합의 오직 한 원소에 대응시키는 대응 관계
- x: 정의역 y: 공역

function



- 프로그래밍에서의 함수: 입력값을 내부에서 어떤 처리를 통해 결과값을 출력하는 것

function

```
def function(parameter):
        실행문1
        실행문2
        ...
        return output
```

function

```
def awe_sum(a,b):
        result = a + b
    return result

a = 2
b = 3
print(awe_sum(a,b))
```

function without input

```
def print_hello():
    return "hello"

result_hello = print_hello()
print(result_hello)
```

function without return

```
def func_wo_return(a):
    print("This is function without return for " + str(a) + " ti

func_wo_return()
```

function with multiple return

```
def mul_return(a):
    b = a + 1
        return a,b
```

return skill

```
def id_check(id):
        if id == "admin":
                print("invalid id: admin")
                return
        print("valid id: ", id)
```

parameter with initialize

```
def say_hello(name="Fool", nick=True):
        print("Hi, ", name)
        if nick == True:
                print("But, you are Fool")
        else:
                print("Oh, you are not Fool")
```

초기값을 설정할땐 항상 그 인자를 마지막에 두어야 합니다.

arguments

```
def mul_sum(*args):
        sum = 0
        for i in args:
                sum += i
        return sum
```

keyword arguments

```
def show_kwargs(**kwargs):
        print(str(kwargs))

show_kwargs(a=10, b="google")
```

keyword arguments

```
def kwargs_url(server, port, **query):
        url = "https://" + server + ":" + port + "?"
        for key in query.keys():
                url += key + "=" + query[key] + "&"
        return url

kwargs_url("localhost","8080", utm_source="google", keyword="nav
```

variable outside function

```
a = "hello"
def glob_test(a):
        a += "world"
        return a

glob_test(a)
print(a)
```

```
a = "hello"
def glob_test(x):
        x += "world"
        return x

glob_test(a)
print(a)
```

variable outside function

```
def glob_test2(x):
        x += "world"
        return x

glob_test2("hello")
glob_test2(x)
```

So, how to globalize

(1) using return

```
a = "hello"
def glob_test(a):
        a += "world"
    return a

a = glob_test(a)
print(a)
```

So, how to globalize

(2) use global

```
a = "hello"
def glob_test(a):
        global a
        a += "world"
    return a

glob_test(a)
print(a)
```

global 이라는 명령을 사용하여 전역변수로 사용하게 되면 함수는 독립성을 잃게 되어 함수가 외부변수에 의존적이게 됩니다.

Leap year

4로 나뉘어 떨어지면 윤년,
100으로 나뉘어 떨어지면 평년,
400으로 나뉘어 떨어질땐 윤년

Leap year(answer)

```
leap = False
def is_leap(y):
        if y % 4 == 0 and (y % 100 != 0 or y % 400 == 0)
                leap = True
        return leap

y = int(input("Is leap?? "))
print(is_leap(y))
```

numguess with function

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

Recursive

```
times = int(input("How many times want to curse the beast??: "))
def recurse_beast(a):
        if a == 0:
                print("curse complete!")
        else:
                print("Fusion!!!(%d times left)" % a - 1)
                recurse_beast(a-1)

recurse_beast(times)
```

variable outside function

```
a = "hello"
def glob_test(a):
        a += "world"
        return a

glob_test(a)
print(a)
```

```
a = "hello"
def glob_test(x):
        x += "world"
        return x

glob_test(a)
print(a)
```

variable outside function

```
def glob_test2(x):
        x += "world"
        return x

glob_test2("hello")
glob_test2(x)
```

So, how to globalize

(1) using return

```
a = "hello"
def glob_test(a):
        a += "world"
    return a

a = glob_test(a)
print(a)
```

So, how to globalize

(2) use global

```
a = "hello"
def glob_test(a):
        global a
        a += "world"
    return a

glob_test(a)
print(a)
```

global 이라는 명령을 사용하여 전역변수로 사용하게 되면 함수는 독립성을 잃게 되어 함수가 외부변수에 의존적이게 됩니다.

numguess with function

```
def guesser(guess):
        if guess == answer:
                print("Correct! The answer was ", str(answer))
                break
        else:
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```

Recursive

```
times = int(input("How many times want to curse the beast??: "))
def recurse_beast(a):
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                print("curse complete!")
        else:
                print("Fusion!!!(%d times left)" % a - 1)
                recurse_beast(a-1)

recurse_beast(times)
```

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 comprehension 으로 FizzBuzz 한줄로 구현하기