

Final Recap

* សំគាល់លេខ និងសម្រាប់រាយការ

→ math operators, print, input, f-string,
Named Constants

→ if, else, ifelifelse, boolean operators
↑ និមួយនូវ function ទូទៅ

→ while, for loop, range
↳ Input Validation
↳ ស្ថិតិយោគ នៃលេខ និងលេខក្នុង loop និងនានា
↳ ចំណាំបញ្ជាក់លេខ

១០៣ ពីទី២
ហើយ ធ្វើ midterm
ជាកំណត់ទី២

លេខល្អ:

i) List & Tuple

. List: my_list = [1, 2, 3]

. Tuple: my_tuple = (1, 2, 3)

↳ នៃបញ្ហាឌីថា Tuple is immutable.

↳ និមួយនូវ function tuple() → បង្កើតនូវ tuple
list() → បង្កើតនូវ list

Ex: my_list = [1, 2, 3]
print(my_list) → [1, 2, 3] ← នៅលើ
print(tuple(my_list)) → (1, 2, 3) ← នៅលើ

indexing: - index បានពី ០

- negative index នៃចាប់ពី -1

my_list = [1, 2, 3, 4]
-4 -3 -2 -1

update: my_list[index] = new_value

និមួយនូវនឹងនិរន័យ

slicing: my_list[start: end: step]

↳ បាន index រាយការ

| Logic | run from end |

↳ list index range
 ↳ any list/tuple/string selection

Logic 1) in range <u>as index</u> 2) <u>iteration</u>	<u>end</u>
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Ex numbers = [10, 20, 30, 40, 50, 60]

list1 = numbers [0:6:2] → [0, 2, 4]
 list2 = numbers [1:5:^{step=1}] → [10, 30, 50],
 list3 = numbers [:3] → [1, 2, 3, 4]
 start=0 ↓
 1) [0, 1, 2]
 2) [10, 20, 30]

print(f"1: {list1}, 2: {list2}, 3: {list3}")

1: [10, 30, 50], 2: [20, 30, 40, 50], 3: [1, 2, 3]

List Methods

- .append(), .insert(), .remove(), .sort()

(*) .append(item) ✕

↳ to add an item to list

my_list = ['A', 'B', 'C']
 my_list.append('X') → remove
 print(my_list) → ['A', 'B', 'C', 'X']

↳ if list is empty then append ✕

Ex if n in user then user in list
 user → input → list.

✓ n = int(input("Enter n: "))
 numbers = [] ← empty list!

✓ for i in range(n):

 num = float(input())

 numbers.append(num)

print(numbers)

* List comprehension
 ↳ using for

numbers = [float(input()) for i in range(n)]

for in append in

Ex my_list = [(i+1)*2 for i in range(5)]
 print(my_list) ↓
 (1, 2, 3, 4)

print(numbers)

Ex: my_list = [(i+1)*2 for i in range(4)]
 print(my_list)
 [4, 9, 16, 25] [4, 9, 16, 25]

List Operators : +, *, in for each element in list you will get

2D-list: lst = [[1, 2, 3], [2, 3, 2], [4, 5, 6]]
 print(lst[0][2], lst[2][2])
 2 6

String

↳ both tuple and str

↳ both index, slicing, and loops

my_str = "Hello There"
 0 1 2 3 4 5 6 7 8 9 10

print(my_str[6]) → T

print(my_str[0:3:1]) → Hel

1) [0, 1, 2]
 ↓ ↓ ↓
 H e l

string operators : +, *, in for both string you can do operation

"He" + "lo" → "Hello"

→ string question from question

String methods

1) .lower(), .upper()

↳ string Quiz it's difficult to learn

Ex: my_string = "Hello"
 your_string = my_string.lower()

print(my_string, your_string)

Hello hello

2) `.strip()`, `.lstrip()`, `.rstrip()`

↳ ໂກສ່ານ ມີກຳລັງ / ເນັ້ນ ຂອບ ແລະ ຖໍ່ມີກຳລັງ

3) `.find(substring)`, `.replace(substring, new_string)`, `.join(list)`

4) `.split()`



↳ ອີ່ນ string ມີກຳລັງ ແລະ ນີ້ຈະ ໄດ້ກຳລັງ ໃຫ້ **[list ມີ string]**

↳ Ex1 `my_str = "Hello; there; How; are; you"`

`my_list = my_str.split(" ")`

`print(my_list) → ["Hello", "there", "How", "are", "you"]`

↳ Ex2 `my_str = "10.23 5.79 20.1"`

`numbers = my_str.split("//")`

`["10.23", "5.79", "20.1"]`

`num1 = float(numbers[0])`

`num2 = float(numbers[1])`

`print(num1 + num2) → 10.23 + 5.79 = 16.02`

Dictionary

- Syntax: `my_dict = {key: value1, key: value2, key: value3}`

pair

- for value of key 1: `my_dict[key1] → value1`

for value and key

- Update / new pair: `my_dict[key1] = new_value`

Ex `my_dict = {}` ຕິດກຳທັດ

`my_dict['A'] = 20 → 'A': 20`

`my_dict['B'] = 50 → 'B': 50`

`my_dict['A'] = 90 → 'A': 90`

`print(my_dict) → {'A': 90, 'B': 50}`

my_dict['A'] = 90 → A: 90
print(my_dict) → {'A': 90, 'B': 50}

- 26 27 → 26 27 key : for key in dict:

for key in

- dictionary methods: keys(), values(), items(), get()

- logic with other dict,



* Functions

[Importance:

needed for solving problems 25% marks
A function is a block of code which performs a specific task
- return 2-5 functions

1) फ़ंक्शन :

def function_name (param1, param2):

statement

statement

↑ parameters = एक बार बनाया जाता है और उसकी कॉपी दोनों स्थानों पर बदलता है।

return value1, value2, value3

↓
इन सभी

Local Variable: फ़ंक्शन में बनाये गए वर्षों को इनमें से किसी भी वर्ष को भी लोकल वर्ष कहा जाता है।

2) बड़े नियम : ① var1, var2, var3 = function_name (value1, value2)

(value1, value2, value3)

② variables = function_name (value1, value2)

→ यह फ़ंक्शन का नाम है।

Ex1: नियमों का अध्ययन

↳ तीन नियमों में से किसी भी function cal_BMI, main

↳ cal_BMI (w, h) : यह एक विद्युत उपकरण का नाम है।

- ↳ Cal_BMI(w,h) : für was ist das? Welche Anwendung?
- ↳ main() : wie kann man user!

```
def cal_BMI(w, h):  
    result = (w / h**2)  
    return result
```

* నీడు ఆ బ్లగ్ పోర్ట్‌లోనే డైప్రోగ్.

ఈ కొన్ని రిటర్న్ ఫంక్షన్లలో నీడు కొన్ని విధానాలు ఉన్నాయి.

```
def main():
    weight = float(input("Weight: "))
    height = float(input("Height: "))
    BMI = Cal_BMI(weight, height) # now return BMI
    print(BMI)
main()
```

EX2

Input Validation on function

↳ If a age only written 18
↳ OR Named Constants ✓ ← function It will do what??

$$AGE - T = 18$$

def check_age(age):
 if age < 18:

If age >= AGE_T

```
Print("Pass")
```

return True

print("Under age") ✓

return false ✓

```
def main():
```

while True:

```
age = int(input("Enter age:"))
```

~~fake~~ status; check age (~~age~~) \rightarrow if

~~False~~ `status = check_age(age)` if `check_age(age) == True`

```

age = input("Enter age: ")
status = check_age(age)
if status:
    print(status)
    break

```

Ex

```

Enter age: 15
Underage
Enter age: 20
20

```

Library / Module

1) random library : random.randint(start, end)

2) math library : math.cos(), math.sin(), ...
1. constant: math.e, math.pi

* ways import library like

* how to use : library_name.function_name()

Ex to list of random numbers from 1 to 5
↳ function random_list, main

```
import random
```

```

def random_list(n):
    results = []
    for i in range(n):
        num = random.randint(1, 5)
        results.append(num)

```

function
name
return results ← list

```

def count_even(numbers):

```

return results ← list

```
def count_even(numbers):
    count = 0
    for num in numbers:
        if num % 2 == 0:
            count += 1
    return count ← ans 122
```

def main():
 n = int(input("n: "))
 my_list = random_list(n)
 even = count_even(my_list)
 print(even)

main()