

2301173 programming → dou midterm
 comsci only
 5 choices 40 items
 Lab 3 Exercises

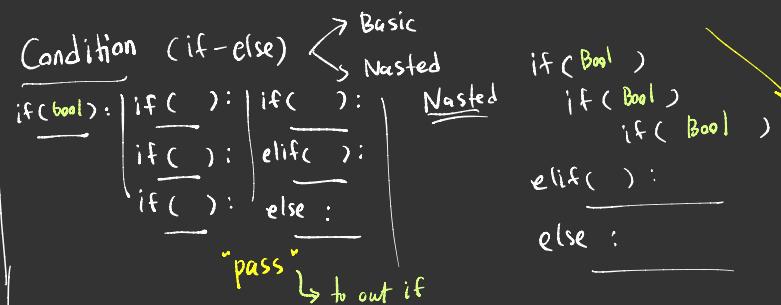
Basic Python

8/1 → input output
 → variable (datatype)
 → operation : Relation & Capability of variable.
 → condition (if-else)
 → loop : by condition or specific times
 → collection : packing large data & Manage
 → function : Real program is very big and need many capabilities
 → text file : Cope with Big Data

Operation → Arithmetics (math) : +, -, *, /, //, **, %, () → compare
 Boolean : and (u), or (v), ==, !=, <, >, <=, >=

Package (import) : math.sqrt(), numpy, matplotlib, pandas
 function Math Library

order Arithmetic () → ** → + / %. → + -
 power



Looping

while (bool) : by condition

for (iterator) : round

"break" : out loop.

for (5): for (5)
 for (6): for (6)
 print(5) for (6)
 for (6)
 for (6)

Nested : $O(n^m)$ m n. loop

80% Mix if-else

- Draw Shape
- Matrix Expression & Operations
- Collection : list, Tuple

input-output

var = input() → (string) convert int float char list .ipynb

print(string) → print format
 print(f"---") 3.141 → %.if format

variable : (int, float, string, boolean)

String : [c s t c u] : list of characters.
 [c s t c u] [c s t c u] .ipynb

Boolean : True-false True-false

a = True
 b = False
 speed = 90
 speed_over = speed > 90
 chula = department == 'comsci'

.ipynb

Collection (in Python)

Why Collection? STILL

- List : Mutable Object
 - Tuple : Immutable Object
 - Dictionary : "Key-Value"
 - Set tailorise
intersec, union

Dictionary : Morse Code

$$P = \{A; \dots, B; \dots\}$$

~~D[0]~~ → D['A']

index .ipynb

list =

A	B	C	D	E	F
i = 0	1	2	3	4	5

 list [0] = A list =

 list [1] = B for i in range (0, len(list), 2):

 list [2] = C start, stop, step

 list [3] = D print (list [i])

 list [4] = E

 list [5] = F

 size-1

```
    in range (0, len (list), 2):  
        ↳ start, stop, step  
        print (list [i])
```

Function ↪ Built-in : Python already have
Build-in : ~~defining~~

print(function) int() ~ integer
str() ~ string

package : import math
 math.sqrt(16)
 package

Recursive Function (loop)

Fib (n) : x for, while
return Fib (n-1) (copy n).

than already have
already have → void (Takes return)
Build to → return
def name (P) ↑ parameter → returns to you → function
function name

def run (): → ~~osztály~~
 pass

3 in

def Pythagorus (a, b, c):
 if (c² == a² + b²):
 return True 1 boolean

Text file → .txt
 open → read 90% (r)
 write 5% form. (w)
 run memory folder name txt
 $f = \text{open}(\underline{\text{"file01.txt"}}, "r")$
 input output file
 f.read() : อ่านทั้งหมด
 f.readline() : อ่าน 1 บรรทัด (line) 1st line
 f.readlines() : อ่านทั้งหมดเป็น List 1st line
 f.close() 關 file 2nd line
 r+ w+ wt
 last line