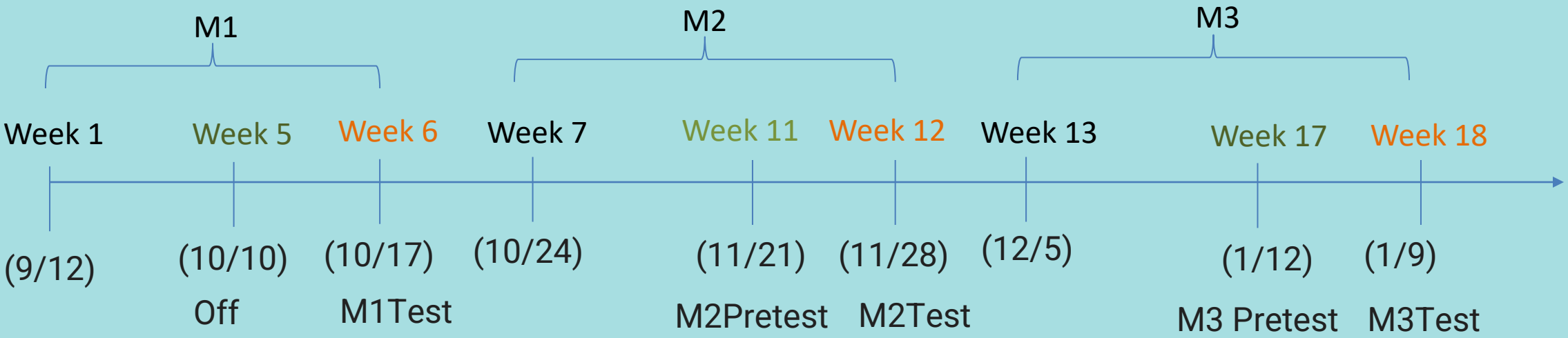
Fundamental Programming Course

Week 11

Huseh-Ting Chu@Asia University, 2022

Schedule


M1
M2
M3
Week 1
Week 5
Week 6
Week 7
Week 11
Week 12
Week 13
Week 17
Week 18
(9/12)
(10/10)
Off
(10/17)
M1Test
(10/24)
(11/21)
M2Pretest
(11/28)
M2Test
(12/5)
(1/12)
M3 Pretest
(1/9)
M3Test

Syllabus

- W1-Python Introduction and Programming Tools
- W2-Variables and Operations
- W3-Loop and formatted output
- W4-Condition and Containers
- W5-String and built-in functions
- W6-M1 test
- W07-Dictionary Container
- W08-File I/O
- W09-Function
- W10-Advanced flow control
- W11-Advanced operations and generators
- W12-M2 test

- W13-Advanced functions
- W14-Class fundamentals (classes, objects, properties, constructors, methods)
- W15-Advanced Classes (Static methods, class Methods and class decorators)
- W16-Modules and Packages
- W17-Advanced programming(Argparse and Venv)
- W18-M3 test

Content

- Week11-Advanced Operations
  - Topic 1 - Review of Basic Operations
  - Topic 2 - Even, odd, number of digits
  - Topic 3 - Factors, Multiples, Prime Numbers
  - Topic 4 - Factorial calculation and Fischer series calculation
  - Topic 5 -Membership Operators
  - Topic 6 -Identity Operators
  - Topic 7 - Review of Process Control
  - Topic 8 - The establishment of the generator
  - Topic 9 - generator function (yield)

Topic 1- Review of Basic Operations

- Arithmetic operators
  - + - * / // % **
- Bitwise operators
  - & | ~ ^ >> <<
- Comparison operators
  - == != > >= < <=
- Logical operators
  - and or not

Topic 2-Even, odd, number of digits

```
if a %2==0:
  print("even")
else:
  print("odd")
```

```
a =4567
d4 = (a%10000)//1000
d3 = (a%1000)//100
d2 = (a%100)//10
d1 = (a%10)
print(f"{d4} {d3} {d2} {d1}")
```

Topic 3- Factors, Multiples, Prime Numbers

```
a= 124
for n in range(1,a+1):
  if a%n ==0:
    print(n, end=" ")
print()
```

```
a= 124
for n in range(a,1000+1):
  if n%a ==0:
    print(n, end=" ")
print()
```

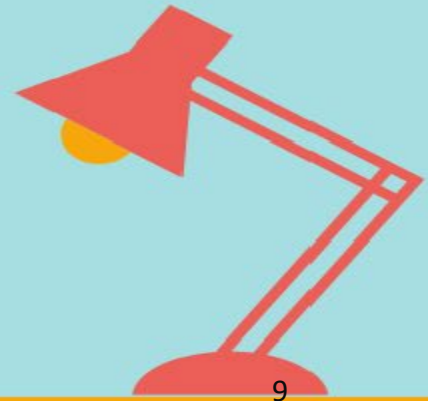
Topic 4- Factorial calculation and Fischer series calculation

- Factorial calculation
  - $n!=1*2*...*n$

- Fischer series calculation
  - $F(n)=F(n-1)+F(n-2)$, $F(0)=0$, $F(1)=1$

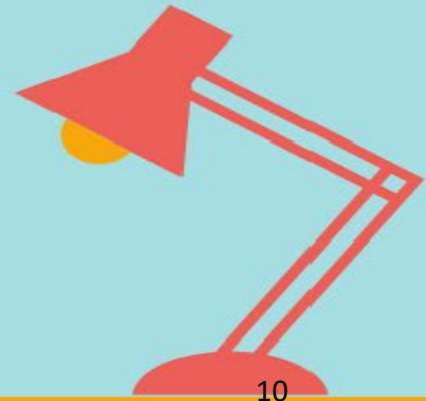
Topic 5- Membership Operators

```
aa = [1, 3, 5, 7]
tt = (9, 11, 13)

bb = 4
if bb in aa:
  print(f"{bb} found")
else:
  print(f"{bb} not found")

bb = 11
if bb not in tt:
  print(f"{bb} not found")
else:
  print(f"{bb} found")
```



Topic 6- Identity Operators

- Numerical check
- String check
- Inspection of objects

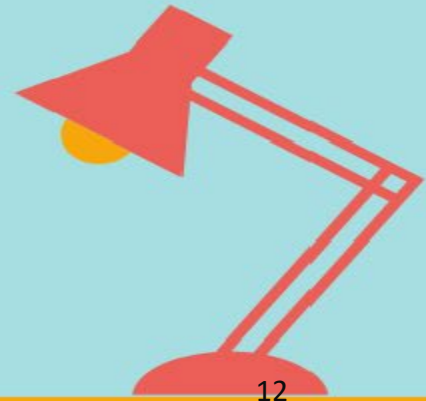


Topic 7- Review of Process Control

- if conditional
- for loop
- while loop
- reverse of a string

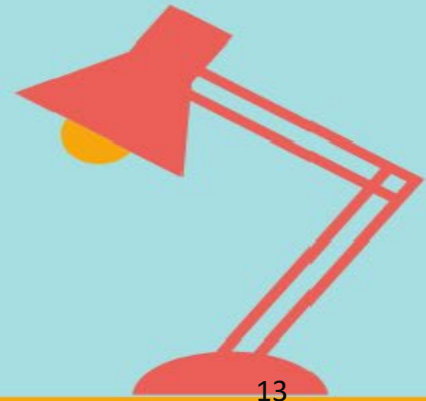
Topic 8-Generator

```
li = [x * x for x in range(10)]
print(li)

g = (x * x for x in range(10))
print(g)
```



Topic 9-yield function

```
def odd():
    print('step 1')
    yield 1
    print('step 2')
    yield(3)
    print('step 3')
    yield(5)
```



Thanks!

Q&A