Fundamental Programming Course
Week 9

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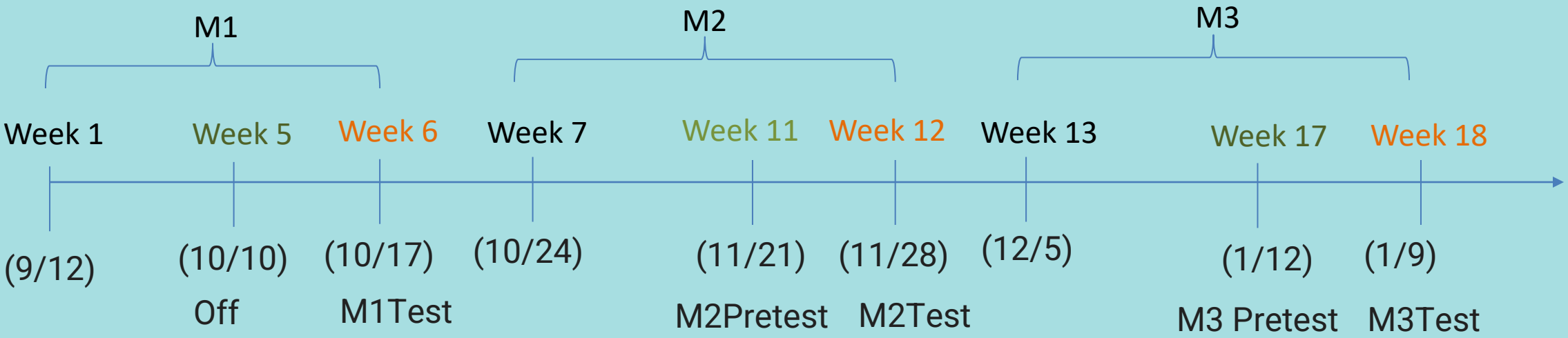
Schedule


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

- Week9 - Function
  - Topic 1 - definition and calling of functions
  - Topic 2 - function parameters and return values
  - Topic 3 - Built-in functions
  - Topic 4 - String functions
  - Topic 5 - re-regular expressions

Topic 1- definition and calling of functions

- parameters：variables in function definition def gcd(x, y)
- arguments： variables when the function is called gcd(a,b)

```
def gcd(x, y):
    r=x%y
    while r!=0:
        x=y;y=r
        r=x%y
    return y
```

```
a=240; b=96
print(f"{a}, {b}, {gcd(a,b)}")
```

Topic 2- function parameters and return values

- Step 5: Default parameters of the function
- Step 6: Keyword Arguments to Functions
- Step 7: The return value of the function return
- Step 8: Multiple return values of the function return

Topic 3- Built-in functions

- Type conversion: int(), float(), str()
- Container construction : list(), set(), tuple(), dict(),
- Object property: len(), type(), dir()
- Object generation : range(), zip(), enumerate()
- Calculation : max()/min()/abs()/round()
- Function execution : map()/exec()

Topic 4- String functions

- string.find(substring, start, end)
- string.index(substring, start, end)
- string.count(substring, start, end)
- string.replace(old, new, count)
- string.split(separator, maxsplit)

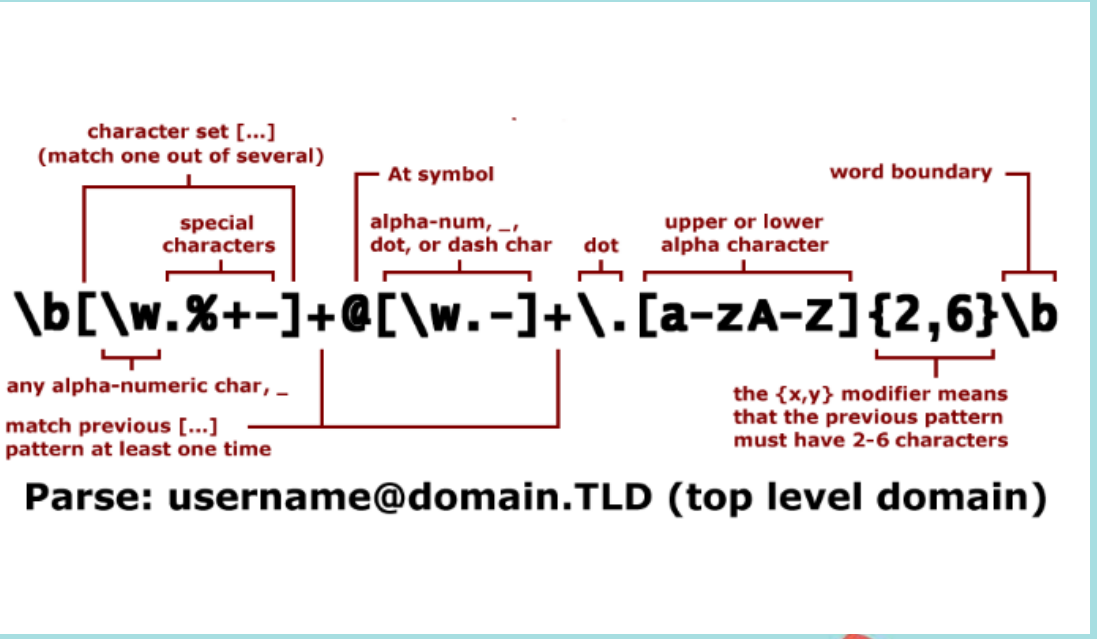
Topic 5-re-regular expressions

Python14.1.py

```
1  import re
2  xx = "guru99,education is fun"
3  r1 = re.findall(r"^\w+",xx)
4  print(r1)
5
6
```

Run Python14.1

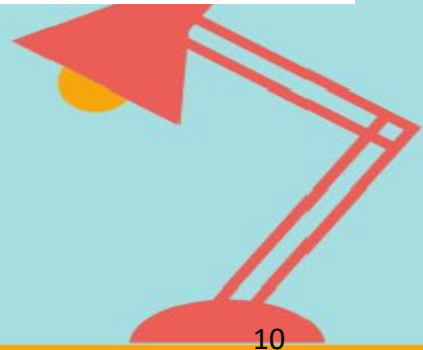
```
"C:\Python Code\Python14.1\venv\Script
['guru99']
```



Topic 5-re symbols

Character	Description	Example
[]	A set of characters	"[a-m]"
\	Signals a special sequence (can also be used to escape special characters)	"\d"
.	Any character (except newline character)	"he..o"
^	Starts with	"^hello"
$	Ends with	"world$"
*	Zero or more occurrences	"aix*"
+	One or more occurrences	"aix+"
{}	Exactly the specified number of occurrences	"al{2}"
|	Either or	"falls|stays"
()	Capture and group	

Sequence	Meaning
\d	This matches any digit [0-9]
\D	This matches non-digit characters [^0-9]
\w	This matches alphanumeric character [a-zA-Z0-9_]
\W	This matches any non-alphanumeric character [^a-zA-Z0-9]
\A	Returns a match if the specified characters are at the beginning of the string
\b	Returns a match where the specified characters are at the beginning or at the end of a word
\B	Returns a match where the specified characters are present, but NOT at the beginning (or at the end) of a word
\s	This matches whitespace character [\t\n\r\f\v]
\S	This matches non-whitespace character [^ \t\n\r\f\v]
\Z	Returns a match if the specified characters are at the end of the string



Topic 5-re functions

Function	Method	Description
search	re.search(pattern, str)	Search for occurrences of the regex pattern inside the target string.
findall	re.findall(pattern, str)	Returns all the matches.
split	re.split(pattern, str)	Breaks a string into a list of matches.
sub	re.sub(pattern,replacement,str)	Replace one or more pattern in the string with replacement.
match	re.findall(pattern, str)	Match the regex pattern at the start of the string.

Thanks!

Q&A