CSCA08F18

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Primitive Types

- int
- float
- bool
- None

Non-Primitive Types

- str
- function / method
- Objects

Operator vs Operands

Arithmetic Operators

- **
- *, /, //, %
- +, -

Logical Operators

- ()
- >, <, >=, <=, ==, !=, in (not in)
- not
- and, or

evaluate (not 4 / 2 > 3 + 5 ** 2) == (not (3+ 5) ** 2 / 4 + 54 / 3 - 10 < 2)

Strings

- Single quotes (‘)
- double quotes(“ not 2 single quotes)
- triple quotes (three of only single or double quotes)

Strings

- a = ‘01234’
- a[0]
- a[-1]
- a[:3]
- a[1:]
- a[:-1]

String with Operators

- Compare with <, <=, >, >=, ==, !=
- *

Functions & Methods

- A short hand name for a bunch of code
- Function: standalone obj
- Method: function part of a obj

```
def area(width, length):
print(‘Hi’)

return width * length
```

Function Design Recipe

- Examples
- Header & Type Annotation
- Description
- Body
- Test

Docstring

- Description
- Precondition
- Examples

Type Annotation

- Annotate type of each parameter
- Annotate return type
- def summation(first: int, second: int) -> int:

```
def area(width: float, length: float) -> float:
 """Return 'Hi' and displays 'Hi' on the screen.
 Examples:
   >>> area(3.0, 2.0)
  Hi
 6.0
 >>> area(0.1, 2.0)
 Hi
 0.2
 """
 print('Hi')
 return width * length
```

Nested Functions

- Can call a function in a function
- Can call a function as an argument

Rules of Evaluation

- Left to right
- Variables and literals
- Operands
- Arguments
- Nested functions

x = 24

min(max(x, 15 + 2), 44, 32 / 3) / 4 + 2

```
max(44, sqrt(144) / 2 + 5) * min(15, 5**2)
```

Range Function

- Used in for loops (usually)
- range(start, stop, step)

For Loops

- for i in range(start, end, step)
- Includes start but excludes end
- Iterates on step
- Can be negative!

if

- Give you an option to run or not run the code
- if boolean expression
- Brackets optional

elif

- Requires an if statement to be used
- Only executed if preceding if statement fails
- elif boolean expression:

else

- Must be used in conjunction with an if statement
- Code ran only if all if and elif statements fails
- else:

Memory Model