Python3 Builtins

marco milanesio
MScDSAI

Tuple ()

- Record, Structure
- IMMUTABLE
- Packing and unpacking
- A row in a database

```
record = (val1, val2, val3)
a, b, c = record
val = record[0]
```

List []

- Mutable sequence, Array
- Enforcing order

```
items = [val1, val2, val3]
x = items[2]
items[0] = x
del items[1]
items.append(value)
items.sort()
new_items = sorted(items)
```

Set { }

- Set
- Uniqueness, membership tests

```
s = {val1, val2, val3}
s.add(val4)
s.remove(val2)
val in s

s1 | s2  s1.union(s2)
s1 & s2  s1.intersection(s2)
```

Dict {:}

- Mapping, Associative array
- Lookup tables, indices

```
d = {key1: val1, key2:val2, key3:val3}
val = d[key]
d[key] = val
del d[key]
key in d
```

Iterations & Co.

- Iterations

```
for item in sequence:
    …
```

- Variants

```
for pos, item in enumerate(sequence):
    …
for x, y in zip(sequence1, sequence2):
    …
```

- Reductions

```
sum(sequence)
min(sequence)
max(sequence)
any(sequence)
all(sequence)
```

[list,set,dict]-comprehension

- List comprehension

```
[ expr for x in iterable if condition ]
```

- Set comprehension

```
{ expr for x in iterable if condition }
```

- Dict comprehension

```
{ k:v for k,v in iterable if condition}
```

Generators

- Generator expression

```
( expr for x in iterable if condition )
```

- Combined with reduction

```
sum(expr for x in iterable if condition)
```

- This allows you to process HUGE amounts of data **incrementally** saving tons of memory!
  – feed loops...