Example Program

1. Prompt for input file name

2. File format:
    a. 1st list : number of data items (an integer, n)
    b. Followed by n lines, each is an integer

3. Displays:
    a. Total of values
    b. Largest
    c. Smallest
    d. Average

4. Sample input file

```
6
100
200
150
75
125
120
```

5. Output

```
Largest: 200
Smallest: 75
Average: 128.33
```

See 05-04-process-data.py

While loops

Syntax

```
while Boolean-Expression:
    statement 1
    statement 2
    …
```

Example – Sum numbers from 1 to n

See 05-05-sum-with-while.py

Example – Simple guessing game

See 05-06-guessing-game.py

Example – Input validation

See 05-07-input-validation-with-while.py

Infinite Loops

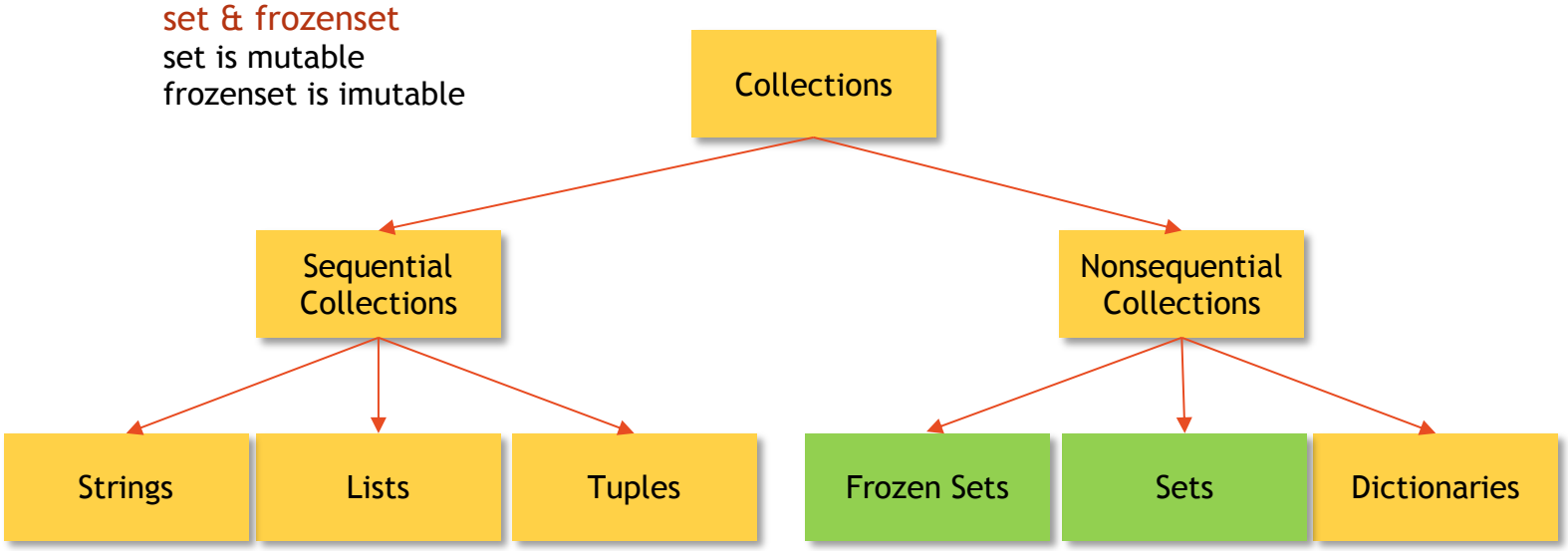
If you're not careful, you can get a while loop that never terminates

→ The Boolean-Expression is never True

See 05-08-infinite-while-loops.py

set & frozenset

set is mutable
frozenset is imutable



Creating a Set

- S = {1, 2, 3, 4}
- S = {x for x in range(1, 5)} → {1, 2, 3, 4}
- No literal for the empty set → {} is a dictionary
- S = set() → An empty set

Adding elements to a Set

- S.add(item)

Removing elements to a Set

- S.remove(item) → error of item ∉ S
- S.discard(item) → no error when item ∉ S
- S.pop() → removes and returns arbitrary element. Error if S = {}

Set operations

- Union |
- Intersection &
- Difference -
- Symmetric Difference ^

Predicates on Sets

- Is equal / not equal == and !=
- Is subset <=
- Is superset >=
- Is disjoint .isdisjoint

See 05-09-sets.py