

# LEARN CODING

ale66

# AUXILIARY VARIABLES

# TOPICS

- counters
- accumulators
- trailers

# COUNTERS

A variable, normally of type integer, that is incremented as we *parse* an iterable

Example: compute list size/length

```
1 l = 0
2
3 for f in fruits:
4     l = l + 1
5
6 print(f'The length of list {fruits} is {l}')
```

Syntax: `l += 1` is shorthand for `l = l + 1`

# ANONYMOUS VARIABLES

In fact, we are not operating on `f`

it can be omitted in favour of an *anonymous variable* `_`

```
1 l = 0
2
3 for _ in fruits:
4     l += 1
5
6 print(f'The lenght of list {fruits} is {l}')
```

# ACCUMULATORS

A variable to record quantities seen during the iteration

Example: compute the average of an arbitrary list of positive numbers

```
1 l = 0
2 accumulator = 0
3
4 for val in mylist:
5     l += 1
6     accumulator += val
7
8 average = accumulator / l # this will be a float
9
10 print(f'There are {l} values and their average is {average}')
```



# TRAILING VARIABLES

A variable that 'remembers' past values during an iteration

Example: record the biggest temperature increase ever seen in the list

```
1 maxincrease = 0
2
3 trailer = temperaturelist[0]
4
5 for temp in temperaturelist:
6
7     current_increase = temp - trailer
8
9     if current_increase > maxincrease:
10         maxincrease = current_increase # a new max is found
11
12     # we are finished with this value, assign it to the trailer
13     trailer = temp
14
15 print(f'The maximum day-on-day increase has been {maxincrease} degrees')
```

# PROGRAMME COMPREHENSION

To grasp how trailers work, put extra `print()` commands to see what the variables contain

Rename variables:

```
1 yesterday = temperaturelist[0]
2
3 for today in temperaturelist:
4
5     current_increase = today - yesterday
6
7     ...
8
9     yesterday = today
```

# QUIZ

Complete code for searching a given number in a sequence

```
1 KEY = 22
2
3 mylist = [1, 6, 3, 9, 10]
4
5 ___ item ___ mylist:
6     if ___ == ___:
7         found = True
8     else:
9         found = False
```