# 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/lenght

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

# ACCUMULATORS

A variable to record quantities seen during the iteration

Example: 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  if l > 0:
 9    average =  accumulator / l # this will be a float
10
11  print(f'There are {l} values and their average is {average}')
```

# TRAILING VARIABLES

# A variable that *remembers* past values during an iteration

## Example: find the biggestn *temperature increase* in a list

```python
 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
```