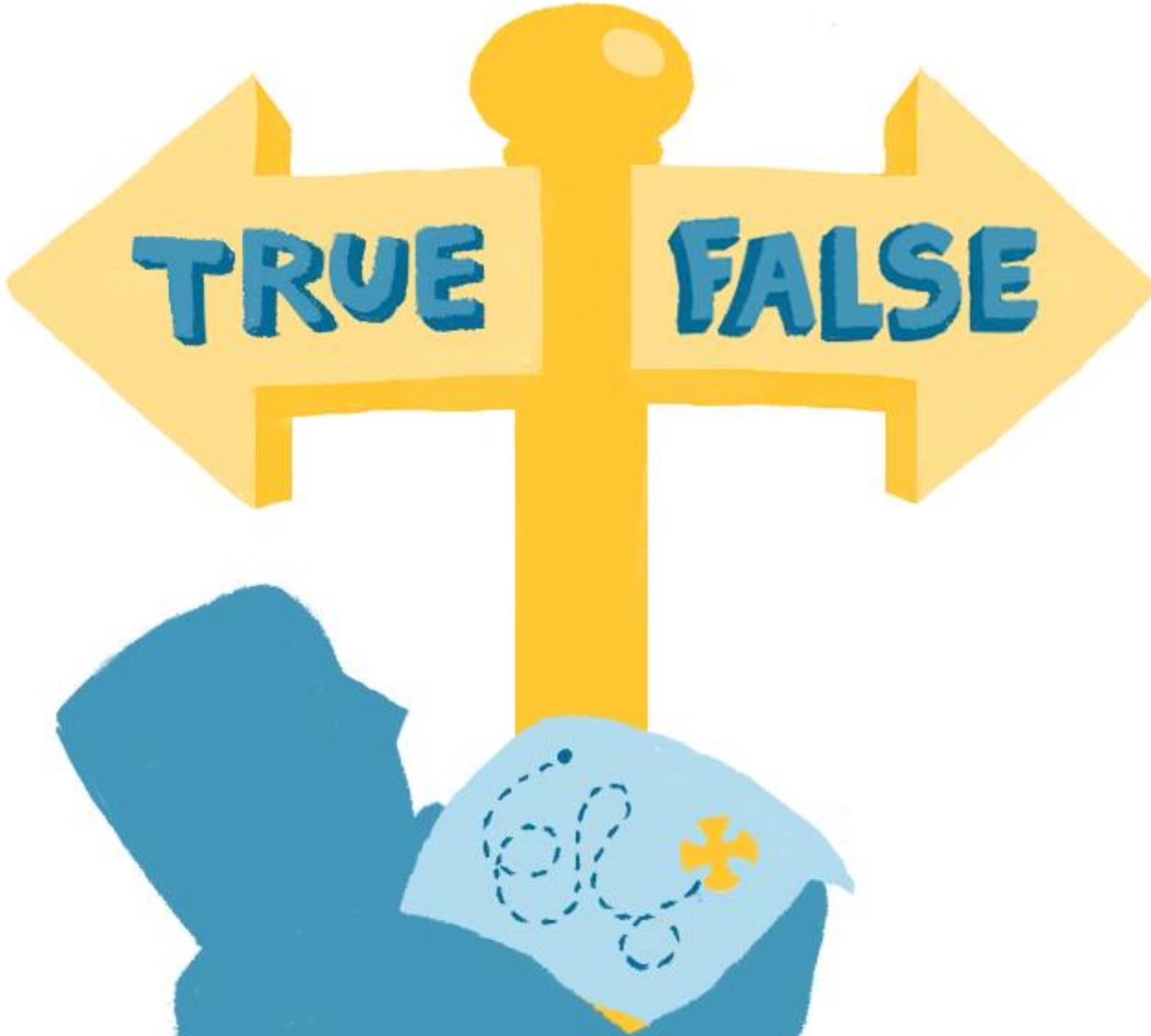
Programming for Social Scientists

Conditional expressions

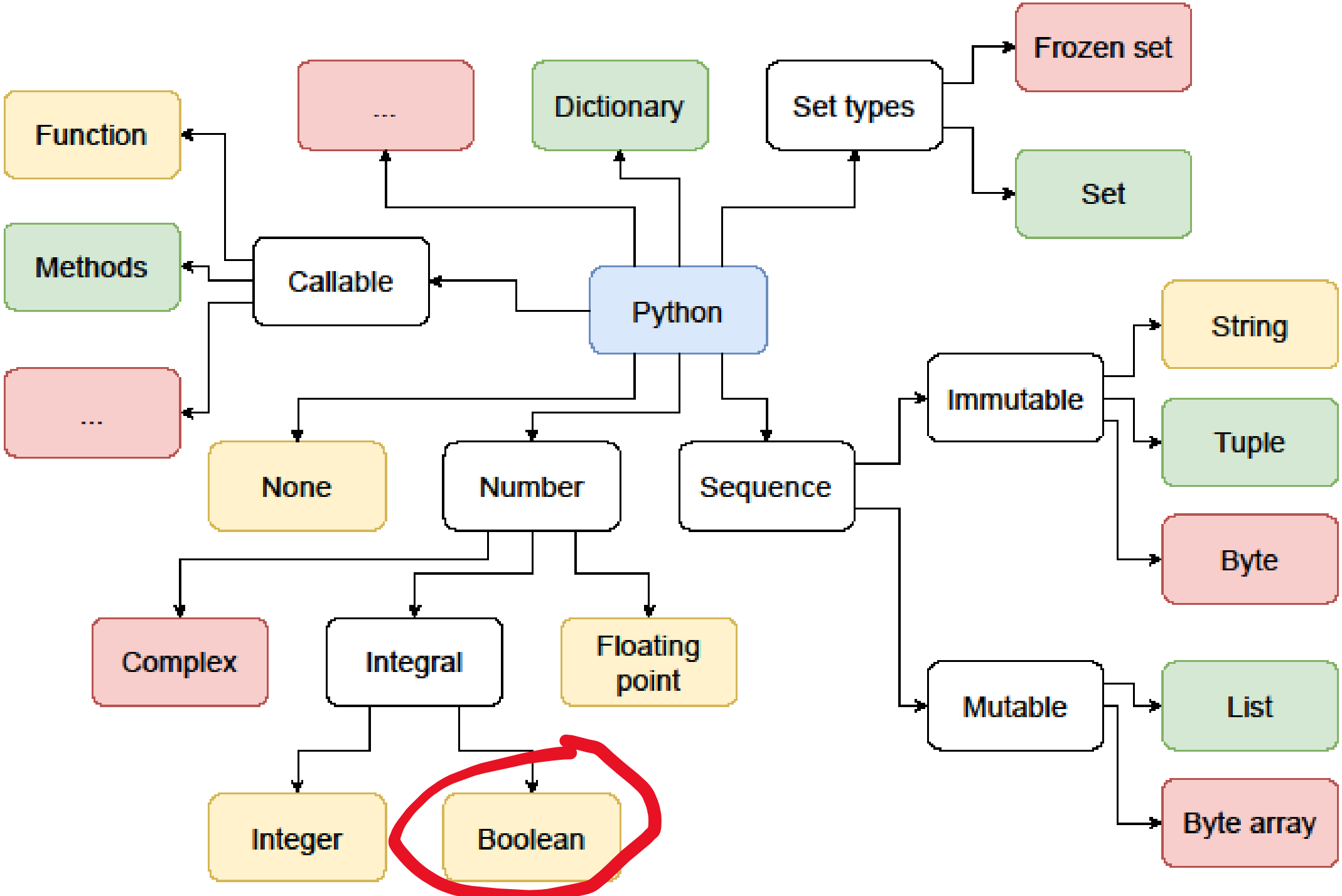
Johan A. Dornschneider-Elkink


TRUE
FALSE

```
> chat = True
> print(chat)
True
> print(type(chat))
<class 'bool'>
> if (chat):
...     print("Hey there!")
... else:
...     print("")
...
Hey there!
> chat = False
> if (chat):
...     print("Hey there!")
... else:
...     print("")
...
```

```
chat = True


if (chat):
  print("Hey there!")
else:
  print("")
```


Function
...
Dictionary
Set types
Frozen set
Set
Methods
Callable
Python
...
None
Number
Sequence
Immutable
String
Tuple
Byte
Complex
Integral
Floating point
Mutable
List
Byte array
Integer
Boolean

==	equal	!= <>	not equal
>	greater than	<	less than
>=	greater than or equal	<=	less than or equal

```python
import random

a = random.randint(0, 100)
b = random.randint(0, 100)

print("a = %d and b = %d" % (a, b))
```

```
a = 12 and b = 86
a == b
False
a != b
True
```

```python
print("a == b")
print(a == b)

print("a != b")
print(a != b)
```

```python
import random

a = random.randint(0, 100)
b = random.randint(0, 100)

print("a = %d and b = %d" % (a, b))
```

```
a = 12 and b = 86
a == b
False
a != b
True
```

```python
print("a == b")
print(a == b)

print("a != b")
print(a != b)
```

```
a = 83 and b = 83
a == b
True
a != b
False
```

```
a = 12 and b = 86
a == b
False
a != b
True
a < b
True
a > b
False
a <= b
True
a >= b
False
```

```
a = 83 and b = 83
a == b
True
a != b
False
a < b
False
a > b
False
a <= b
True
a >= b
True
```

```
continue_program = False

continue_program == True

if continue_program:
  print("Cool!")
else:
  print("Ok, bye :-(")
```

Assignment

```
continue_program = False

continue_program == True

if continue_program:
  print("Cool!")
else:
  print("Ok, bye :-(")
```

Comparison

```
continue_program = False

continue_program == True

if continue_program:
    print("Cool!")
else:
    print("Ok, bye :-(")
```

Comparison to True is unnecessary

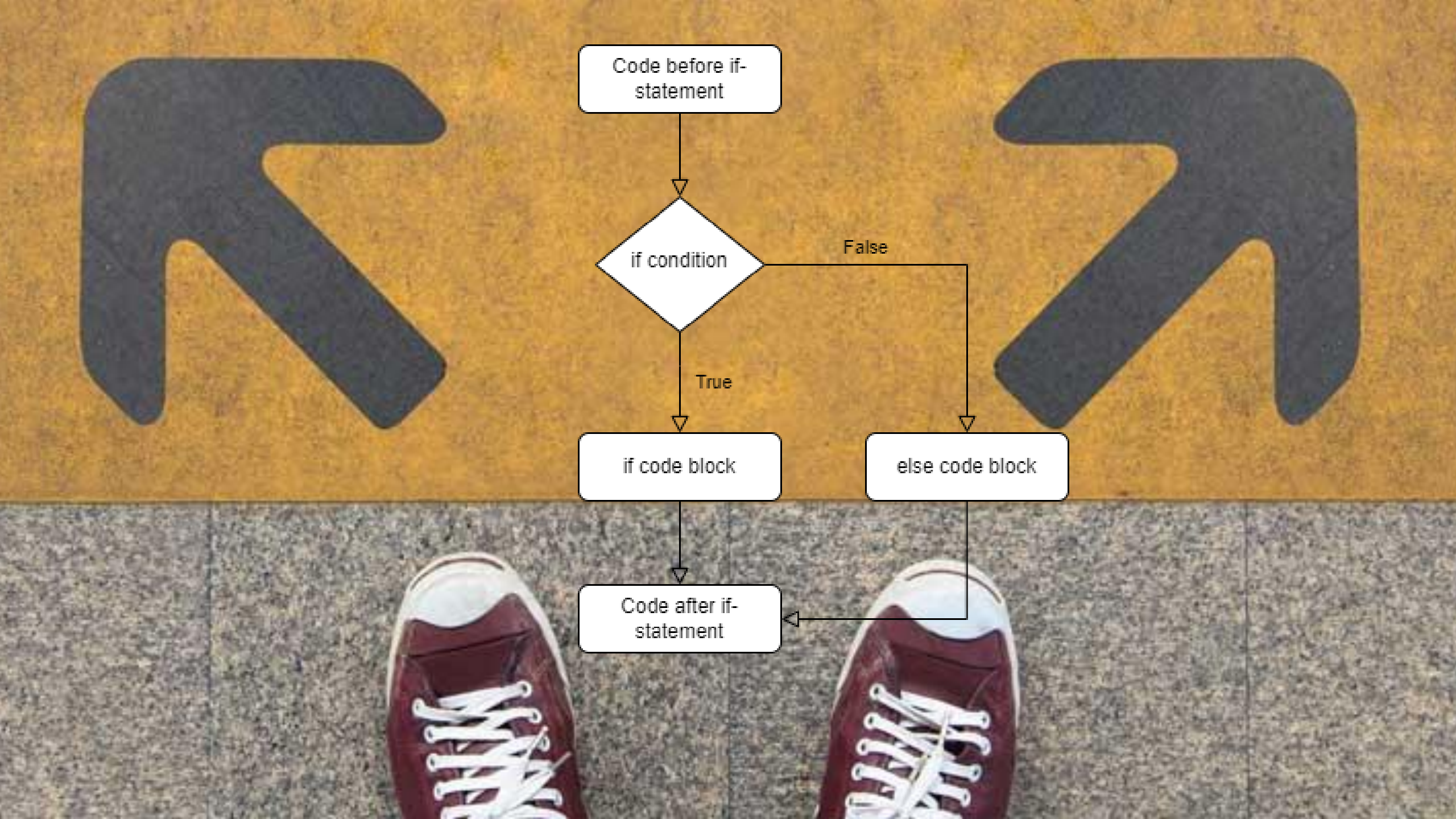

Code before if-statement
if condition
False
True
if code block
else code block
Code after if-statement

Photo by Gage Skidmore

```python
import random

perc_trump = random.random() * 100
perc_biden = 100 - perc_trump

if perc_trump > perc_biden:
  print("Trump wins the election!")
else:
  print("Biden wins the election!")
```

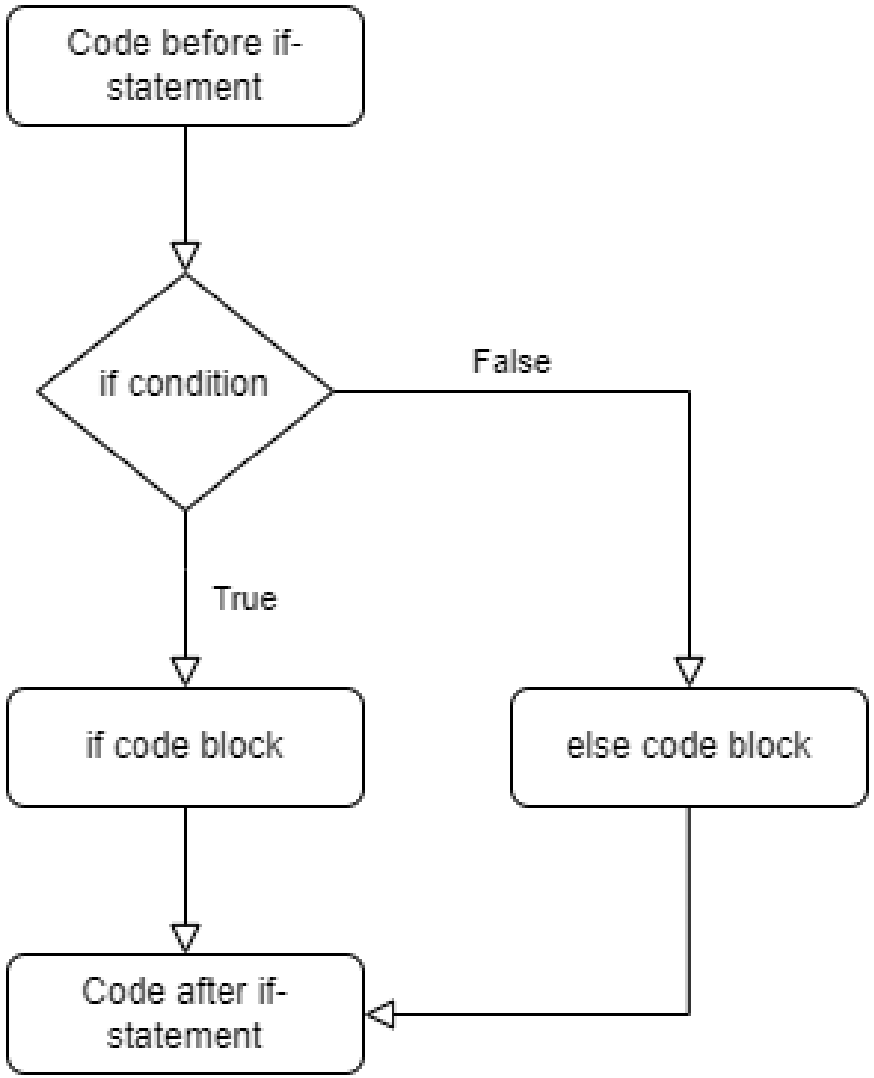
Photo by Gage Skidmore

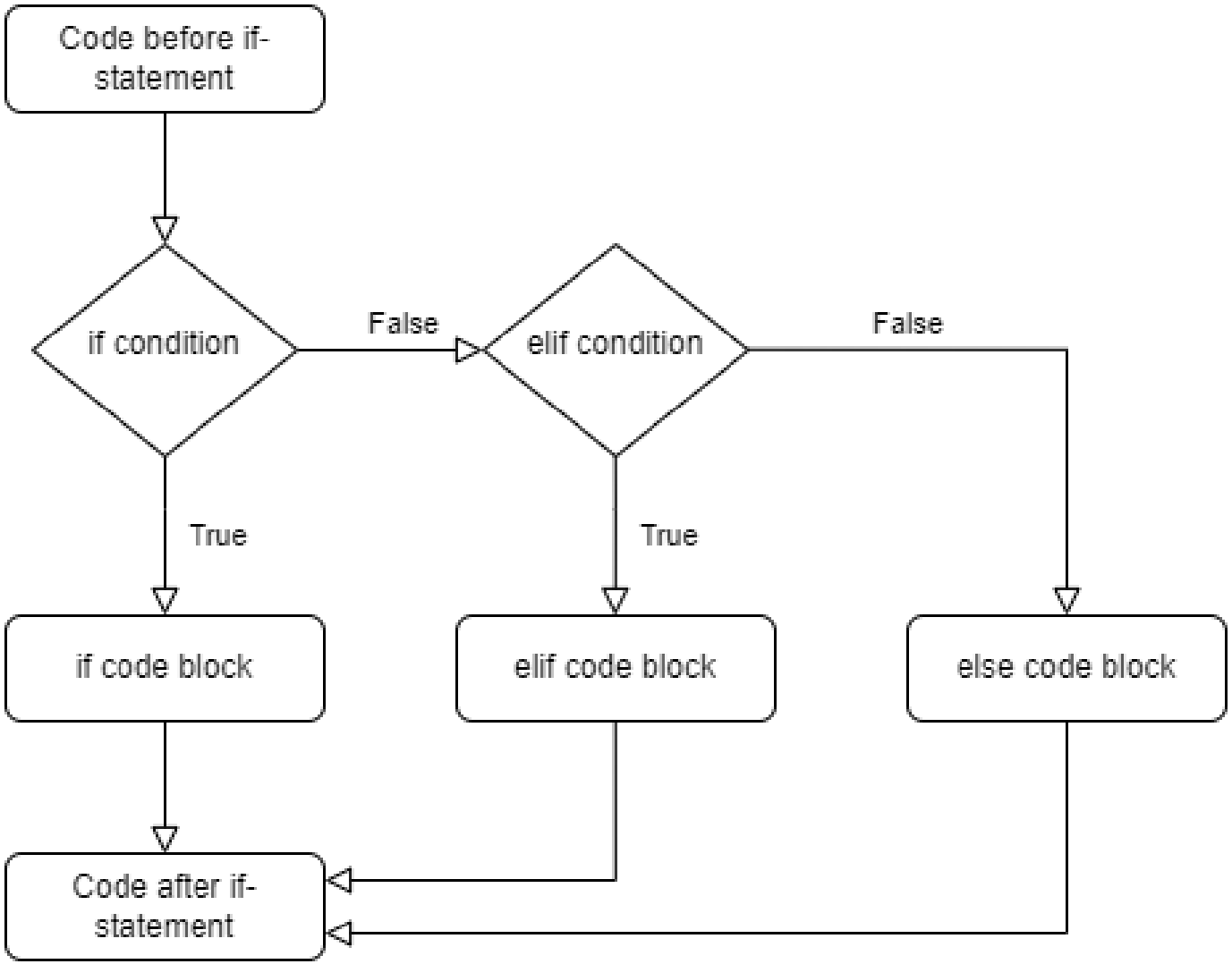
```
import random

perc_trump = random.random() * 100
perc_biden = 100 - perc_trump

if perc_trump > perc_biden:
  print("Trump wins the election!")
  winner = "Trump"
else:
  print("Biden wins the election!")
  winner = "Biden"

print("So the winner is %s" % winner)
```


Code before if-statement
if condition
False
True
if code block
else code block
Code after if-statement


Code before if-statement
if condition
False
elif condition
False
True
True
if code block
elif code block
else code block
Code after if-statement

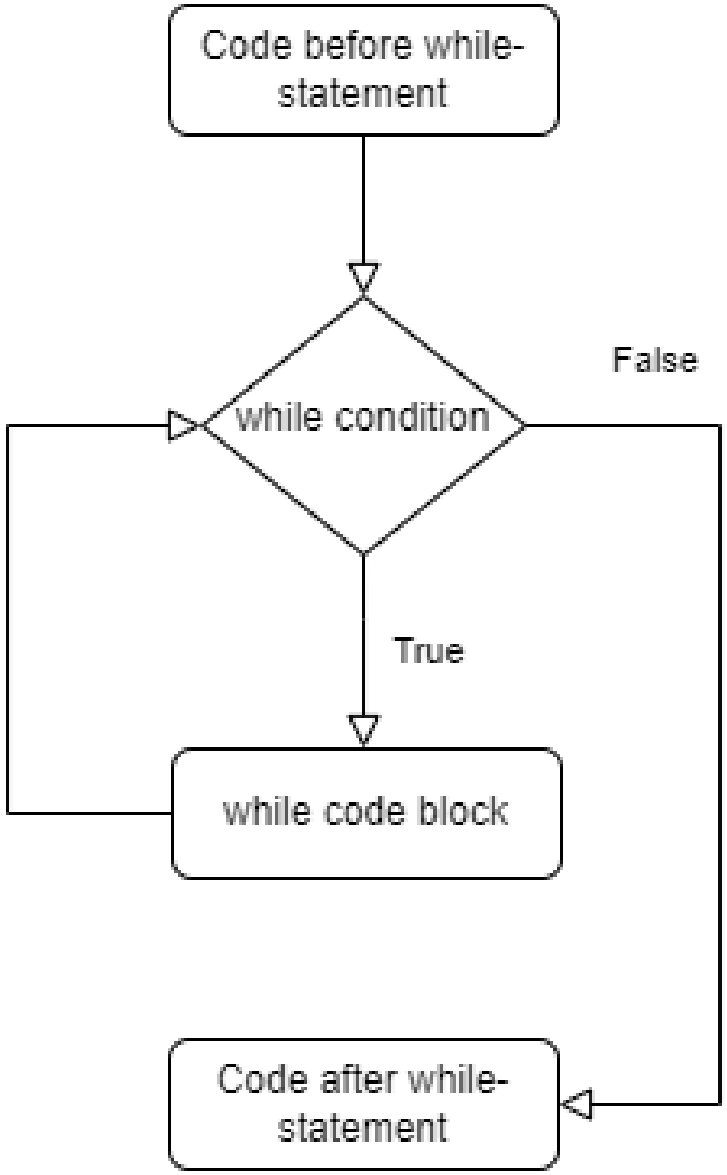
```python
if first == "Djokovic":
  print("Novak is first!")
elif first == "Alcaraz":
  print("Carlos is first!")
else:
  print("Neither Novak nor Carlos is first ...")
```

pepperstone ATP RANKINGS

Singles | Doubles | Race To Turin | Race to Jeddah | Doubles Race | No 1s

Live | Top 100 | All Countries | Current Week

Rank	Player	Age	Official Points	+/-	Tourn Played
1	Novak Djokovic	36	**9,855**	-1200	19
2	Carlos Alcaraz	20	**9,255**	+400	18
3	Daniil Medvedev	27	**8,765**	+1210	21
4	Jannik Sinner	22	**8,310**	+1820	22



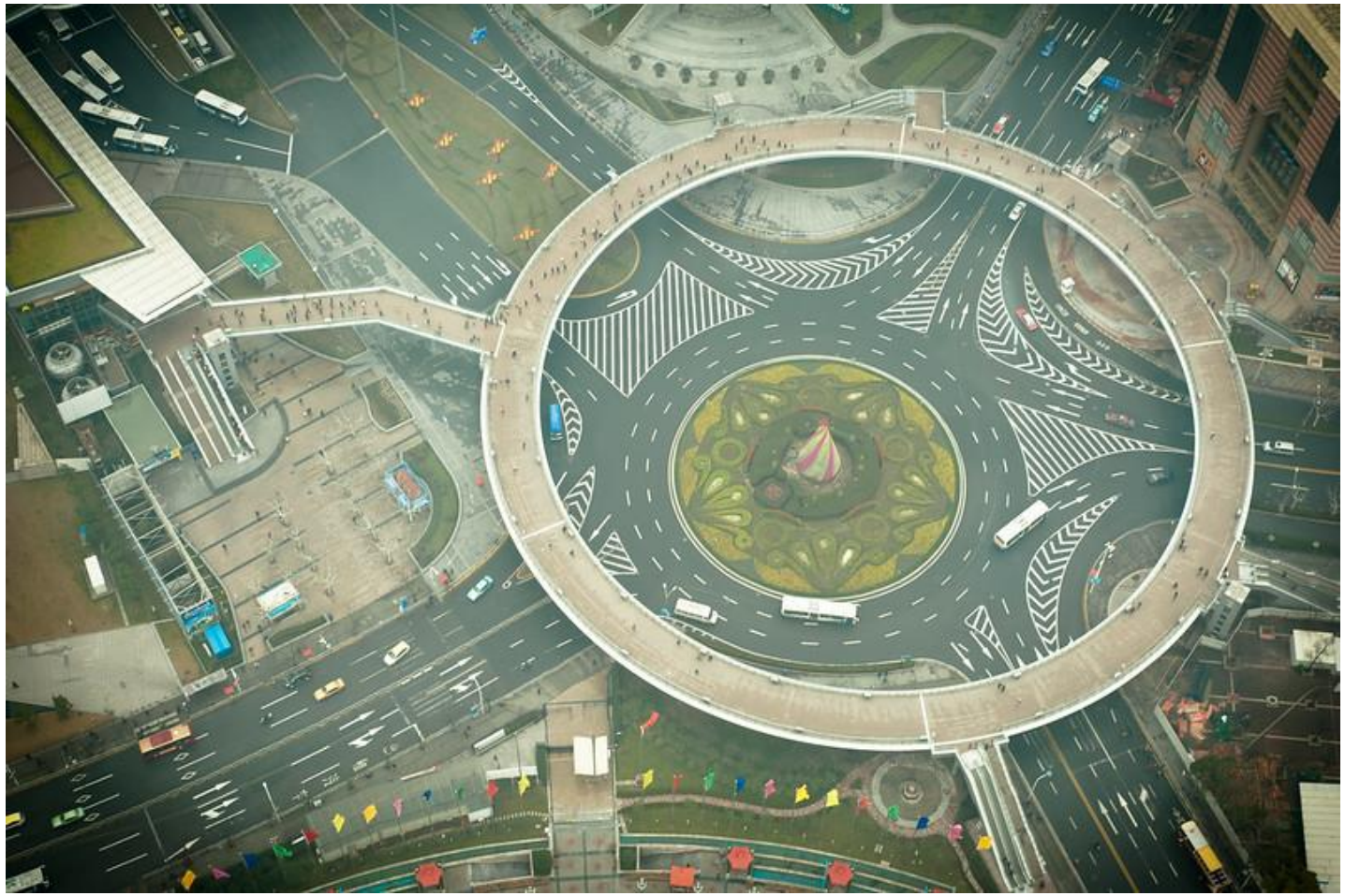


Photo by Tauno Tohk

```
import random

perc_yes = 0
nr_referendums = 0

while perc_yes < 50:
  perc_yes = random.random() * 100
  print("Yes vote: %.1f" % perc_yes)
  nr_referendums += 1

print("This required %d referendums"
% nr_referendums)
```

```
Yes vote: 31.3
Yes vote: 29.6
Yes vote: 66.0
This required 3 referendums
```

```
This is round nr. 0
This is round nr. 1
This is round nr. 2
This is round nr. 3
This is round nr. 4
This is round nr. 5
This is round nr. 6
This is round nr. 7
This is round nr. 8
This is round nr. 9
Now the loop has finished.
```

```
loop = 0

while loop < 10:
  print("This is round nr. %d" % loop)
  loop += 1

print("Now the loop has finished.")
```

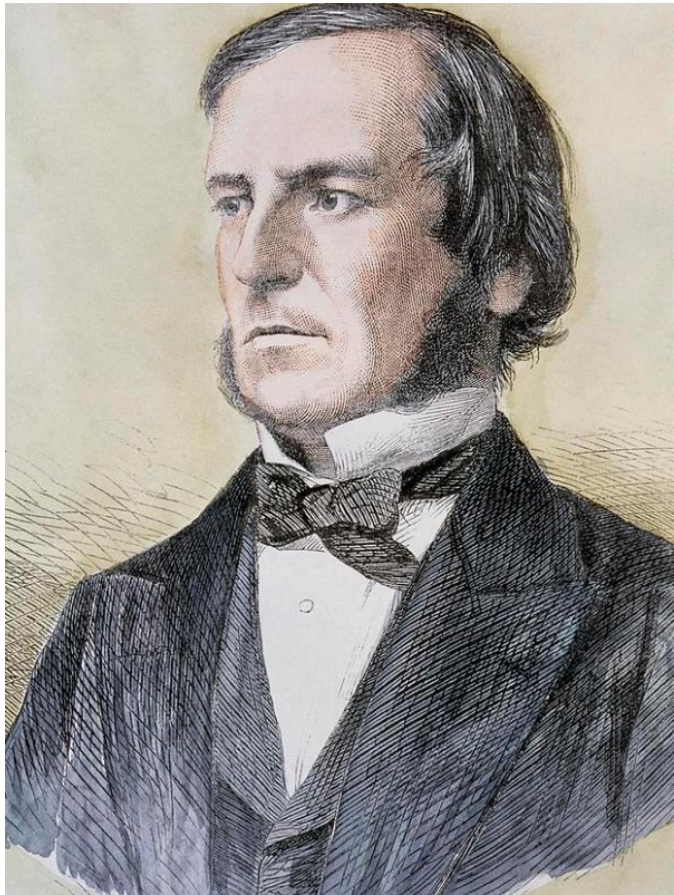
False	and	False	=	False
True	and	False	=	False
False	and	True	=	False
True	and	True	=	True

False	or	False	=	False
True	or	False	=	True
False	or	True	=	True
True	or	True	=	True

not	False	=	True
not	True	=	False

((A or C) and ((A and D) or (A and not D))) or (A and C) or C

((A or C) and ((A and D) or (A and not D))) or (A and C) or C



((A or C) and ((A and D) or (A and not D))) or (A and C) or C =

((A or C) and A and (D or not D)) or (A and C) or C =

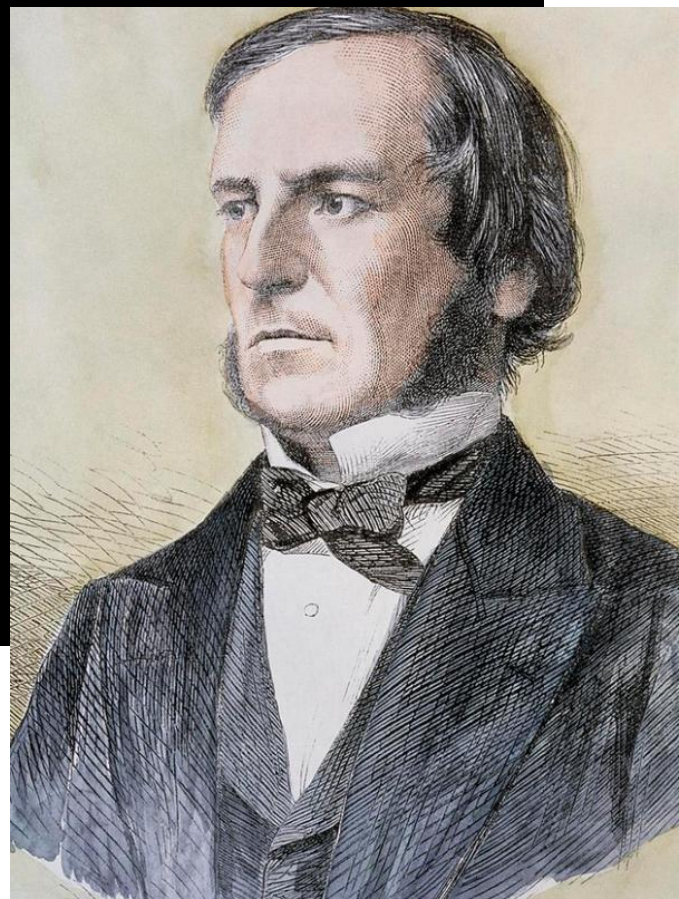
((A or C) and A) or (A and C) or C =

(A and ((A or C) or C)) or C =

(A and (A or C)) or C =

(A and A) or (A and C) or C =

A or C



Pair programming

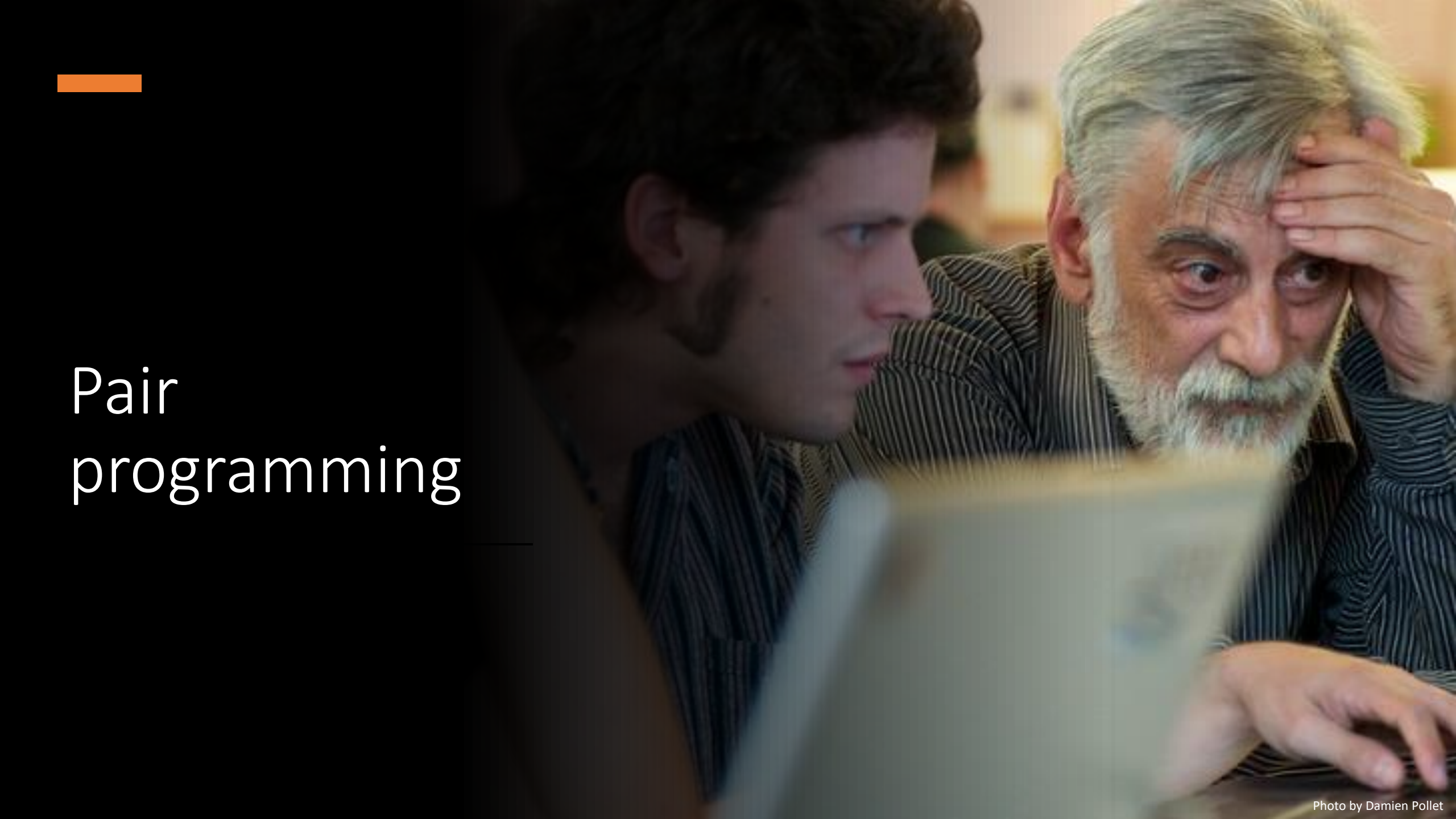


Photo by Damien Pollet