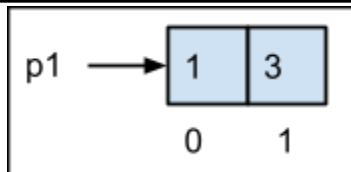# Tuples

TOC:

References

- tutorialspoint: Python Tuples

Tuples

- A **tuple** is a collection of data enclosed in parentheses.
  - **Tuple packing** is the assignment of data to a tuple variable.
  - **Tuple unpacking** is the extraction of data from a tuple.
- **tuple indexes** are determined by their order in the tuple, and begin with zero.
  - Access an individual element from a tuple using the **index operator**: [ ].

```
# tuple basics
p1 = (1, 3)                # packing
x1, y1 = p1                # unpacking
print( x1, y1 )            # prints '1 3'
print( p1[0], p1[1] )      # indexing - prints '1 3'
```


Tuples in Functions

- Tuples can allow you to return multiple data values from a function.

```
# tuples and functions
def scale( pt, factor ):
    x,y = pt
    x *= factor               # same as:  x = x * factor
    y *= factor
    return (x,y)

def main():
    p1 = (1, 3)
    p2 = scale(p1, 2)
    print(p2)                      # (2, 6)

main()
```

global

p1 → (1, 3)
x1 → 1
y1 → 3

scale(p1, 2)

p2 → (2, 6)

scale

pt → (1, 3)
factor → 2
x → 1 → 2
y → 3 → 6

return (x, y)