

Ex. Better-Sort.Py

	<u>x</u>	<u>y</u>	<u>temp</u>
temp = x	7	6	7
x = y	6	6	7
y = temp	6	7	7

Exercise: figure out howto swap two variables without
use of a temporary variable,

Run Prog on inputs 8, 7, 6

x y z

8 7 6 ← not sorted

lines 11-15

7 8 6

lines 17-21

7 6 8

lines 23-27

6 7 8 ← sorted

Ex. Sort4.py

Chap 6: more functions

Exercise: write a fn. that returns the absolute value of a number.

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

Answer: Return None if $x == 0$.

def f(x):

```

if x < 0:
    return -x
elif x > 0:
    return x

```

end if-elif

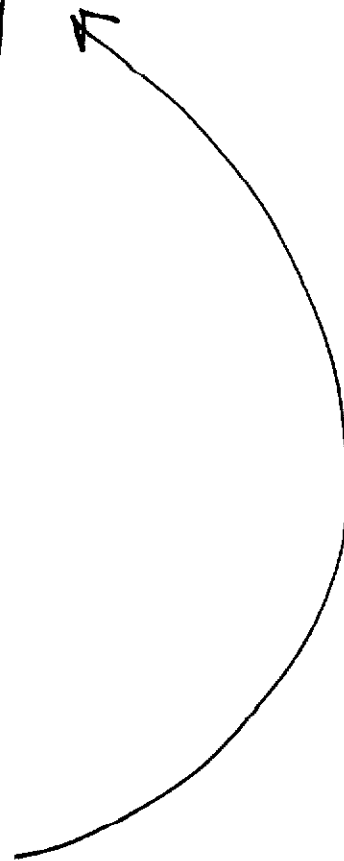
end f().

better:

```

if x < 0:
    return -x
else
    return x

```



Ex. words.py

len main() is entry point
for program execution.

Ex. Break.py

exit a loop early

Ex. GeneralTemplate.py

Ex. Functions.py

$$n! = 1 \cdot 2 \cdot 3 \cdots n$$

equivalently:

$$n! = \begin{cases} 1 & \text{if } n = 0 \\ n \cdot (n-1)! & \text{if } n > 0 \end{cases}$$

Trace fact2(5)

main() : $n = 5$

fact(5) : $n = 5, n-1 = 4$

$$5 \cdot \text{fact}(4) \rightarrow \underbrace{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \cdot 1}_{= 120}$$

fact(4) : $n = 4, n-1 = 3$

$$4 \cdot \text{fact}(3) \rightarrow \underbrace{4 \cdot 3 \cdot 2 \cdot 1 \cdot 1}_{= 24}$$

fact(3) : $n = 3, n-1 = 2$

$$3 \cdot \text{fact}(2) \rightarrow 3 \cdot 2 \cdot 1 \cdot 1 = 6$$

fact(2) : $n = 2, n-1 = 1$

$$2 \cdot \text{fact}(1) \rightarrow 2 \cdot 1 \cdot 1 = 2$$

fact(1) : $n = 1, n-1 = 0$

$$1 \cdot \text{fact}(0) \rightarrow 1 \cdot 1 = 1$$

fact(0) : $n = 0 \rightarrow 1 = 1$

Conditional expressions

$\text{var} = \text{exp1 if cond else exp2}$

equivalent to

if cond:
 $\text{var} = \text{exp1}$
else:
 $\text{var} = \text{exp2}$

Chap 7 : more loops

The list object

$L = ['one', 'two', 'three']$

$L = [1, 2, 3]$

$L = ['one', 2, 3.0]$

$$L[\text{len}(L) - k] = L[-k]$$

$\underbrace{\hspace{1.5cm}}$
 k^{th} element
from the right

more on thursday

Real to swap $x \Leftrightarrow y$

$\left\{ \begin{array}{l} \text{temp} = x \\ x = y \\ y = \text{temp} \end{array} \right.$

can we write a function
for this?