Python as a Calculator

Blank notebook to be used for class exercises.

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Exercise 1

Change Hello to Goodbye, then run the cell.

In [3]:
```
print("GOODBYE YEAR 2020!")
```

```
GOODBYE YEAR 2020!
```

Exercise 2

In the cell below, calculate the following expressions (cast to integers using int()):

a	b
12 + 4	12 + 5
12 -4	12 - 5
12 $\times$ 4	12 $\times$ 5
12 $\div$ 4	12 $\div$ 5
12^4	12^5

Which is wrong?

In [7]:
```
# This is  a comment. Make sure you wrap all the expressions like the example below.
# Also, create a new cell for each expression (i.e., press the + button in Jupyter Lab)
int(12 + 4) # I have done the first one for you. You can create new cells for the other
```

Out[7]: 16

In [37]:
```
int(12 +5)
```

Out[37]: 17

In [38]:
```
int(12 -4)
```

Out[38]: 8

In [39]:
```
int(12 - 5)
```

Out[39]: 7

In [40]:
```
int(12 * 4)
```

Out[40]: 48

In [41]:
```
int(12 * 5)
```

Out[41]: 60

In [42]:
```
int(12 / 4)
```

Out[42]: 3

In [43]:
```
int(12/5)
```

Out[43]: 2

In [44]:
```
int(12**4)
```

Out[44]: 20736

In [45]:
```
int(12**5)
```

Out[45]: 248832

Exercise 3

In a cell for each item, alculate the following expressions one at a time:

1. 12.0 + 4.0
2. 12.0 $\div$ 4.0
3. $25.0^{0.5}$
4. $5.0^{-1.0}$
5. 5.0 $\div$ 2

In [29]:
```
12.0 +4.0
```

Out[29]: 16.0

In [47]:
```
12.0/4.0
```

Out[47]: 3.0

In [31]:
```
25.0**0.5
```

Out[31]: 5.0

In [32]:
```
5.0**-1.0
```

Out[32]: 0.2

In [46]:
```
5.0/2
```

Out[46]: 2.5

Exercise 4

First, predict what the python result will be. Next, in the cell below, calculate the following expressions one at a time:

1. 'Hello, ' + "world!"
2. 'Hello!' * 3
3. '' * 10000000000 # two adjacent single quotes
4. '4' + '2'

In [48]:
```
#'Hello, world!'
'Hello, ' + "world!"
```

Out[48]: 'Hello, world!'

In [49]:
```
# 'Hello!Hello!Hello!'
'Hello!' * 3
```

Out[49]: 'Hello!Hello!Hello!'

In [65]:
```
# ''
'' * 1000000000
```

Out[65]: ''

In [51]:
```
'42'
'4' + '2'
```

Out[51]: '42'

Exercise 5

Predict whether Python will print True or False before you type the following expressions.

1. 1 > 2 or 2 > 1
2. 1 > 2 or not 2 > 1
3. not True
4. 1 > 2 or True

In [71]:
```
# False or True -> True
1 > 2 or 2 > 1
```

Out[71]: True

In [67]:
```
# False or not True -> False or False -> False
1 > 2 or not 2 > 1
```

Out[67]: False

In [68]:
```
# False
not True
```

Out[68]: False

In [69]:
```
# False or True -> True
1 > 2 or True
```

Out[69]: True

Exercise 6

Write the if, elif, else statements to process a score between 0.0 and 1.0. If the score is out of range, print an error message. If the score is between 0.0 and 1.0, print the grade using the following table:

Score	Grade
$\geq$ 0.9	A
$\geq$ 0.8	B
$\geq$ 0.7	C
$\geq$ 0.6	D
$<$ 0.6	F

In [102…
```
score = .72
```

In [103…
```
if score <= 0 or score >= 1:
    print('ERROR')
elif score >= 0.9:
    print('A')
elif score >= 0.8:
    print('B')
elif score >= 0.7:
    print('C')
elif score >= 0.6:
    print('D')
else:
    print('F')
```

C