

CS 61A

June 23rd, 2021

Intro to Python

1. What Would Python Display?

```
>>> 3
```

3

```
>>> "cs61a"
```

'cs61a'

```
>>> x = 3
```

```
>>> x
```

3

```
>>> x = print("cs61a")
```

```
cs61a
```

```
>>> x
```

None

```
>>> print(print(print("cs61a")))
```

cs61a

None

None

```
>>> def f1(x):
```

```
...     return x + 1
```

```
>>> f1(3)
```

4

```
>>> f1(2) + f1(2 + 3)
```

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```
>>> def f2(y):
```

```
...     return y / 0
```

```
>>> f2(4)
```

ZeroDivisionError: division by zero

```
>>> def f3(x, y):
```

```
...     if x > y:
```

```
...         return x
```

```
...     elif x == y:
```

```
...         return x + y
```

```

...     else:
...         return y
>>> f3(1, 2)
2
>>> f3(5, 5)
10
>>> 1 or 2 or 3
1
>>> 1 or 0 or 3
1
>>> 4 and (2 or 1/0)
2
>>> 0 or (not 1 and 3)
False
>>> (2 or 1/0) and (False or (True and (0 or 1)))
1

```

2. For the following expressions, list the order of evaluation of the operators and operands of the expression. Finally also write what the expression evaluates to.

Example: `add(3, mul(4, 5))`
 Order of Evaluation: `add, 3, mul, 4, 5`
 Evaluation: 23

(a) `add(1, mul(2, 3))`

`add, 1, mul, 2, 3`

7

(b) `add(mul(2, 3), add(1, 4))`

`add, mul, 2, 3, add, 1, 4`

11

(c) `max(mul(1, 2), add(5, 6), 3, mul(mul(3, 4), 1), 7)`

`max, mul, 1, 2, add, 5, 6, 3, mul, mul, 3, 4, 1, 7`

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1. Write a function that returns true if a number is divisible by 4 and false otherwise.

```
def is_divisible_by_4(num):  
    return num % 4 == 0
```

2. Write a function, `is_leap_year`, that returns true if a number is a leap year and false otherwise. A *leap year* is a year that is divisible by 4 but not divisible by 400.

```
def is_leap_year(year):  
    return year % 4 == 0 and year % 400 != 0
```

3. Write a function `find_max` that will take in 3 numbers, `x`, `y`, `z`, and return the max value. Assume that `x`, `y`, and `z` are unique. Do not use Python's built-in `max` function.

```
def find_max(x, y, z):  
    def find_max(x, y, z):  
        if x > y and x > z:  
            return x  
        elif y > x and y > z:  
            return y  
        else:  
            return z
```