

# 1. Time and space complexity

# Motivation

- We need a way to say "how fast" or "how slow" something is
- Timing something isn't super useful because runtime can have random variation from run to run, and can vary by input
- Function runtimes vary with their inputs:

```
def myFunction(n):  
    total = 0  
    for i in range(n):  
        total += i  
    return total
```