Exercise 0
Warmup!
(a) True or False: Expected runtime averages the runtime over the outcomes of random events within the algorithm and make no assumption about the input.
(b) I have an algorithm that takes positive integers \((n, i)\) where \(1 \leq i \leq n\). The algorithm rolls a \(n\)-sided die repeatedly until the die returns any value \(\leq i\). What is the expected runtime in \(n\)? Worst-case runtime? Rigorous proof not necessary :)
• Your expected running time may also be expressed as $O(k^2 n)$.
• You algorithm might not terminate!

For your own reflection: Imagine that you, an algorithm designer, had to pick one of the algorithms in part (a) or (b) to implement in the autopilot of an airplane, as part of the route-planning of a self driving car, or in any other scenario in which human lives are at stake. Given what you know about the performance and worst-case scenario of each of the algorithms, which algorithm would you choose and why?