Recursion

What is recursion?

- Method of solving a problem
  - breaks a problem into smaller forms of the same problem
  - solve by using functions that call themselves
- Not the only way of implementing, one choice

Recursive function

- Base case:
  - specific results for one or more inputs
- Recursive case:
  - compute the result by combining one or more calls to the same function with inputs reduced somehow

When to Use Recursion

- Depends on the problem
- Some problems are naturally recursive
  - bunny modeling (Fibonacci) is described recursively -> makes sense to implement recursively
- For some problems, far easier to implement with recursion
- Can produce far more elegant and easier to understand code
- Don't have to, can always express iteratively (but may be difficult/messy)

Recursion - Common Mistakes

- Forget the base case
- Forget to reduce input when calling recursively