Recursion

A recursive method calls itself.

* Leads to very simple implementations of algorithms
* For recursive algorithms, you can prove:
  + That the result is correct
  + That the method will terminate
* Recursion is used in the most sophisticated known sorting algorithms (Merge Sort, Quick Sort)

What kind of problems can be solved recursively?

* Any problem that can be broken up as follows:
  + One simple problem that is easily solved by itself, and
  + One or more problems that are similar to the main problem

A recursive method has two parts:

* the “recursive case” – the problem is broken up into a small problem and the main problem, and then calls itself on the main problem; and
* the “base case” or “stopping case” – when we split the problem up, the small problem can be solved, and the main part of the problem is trivial, so the method does NOT call itself – this halts the program and prevents it from calling itself forever