CSC721 Algorithms Fall 2015

General Outline for Backtracking Methods

```
// Input:  X is a representation of a current problem state.
//         I.e., a data struture representing moves made up to this
//         point in the search and (possibly) a current position.

// Output:  A solution to the problem of interest

// Method:

   ResultType Backtrack( X )
   {
      if (X is a solution) then {
         record the solution ;
         if we only seek one solution, return "success and stop"
         otherwise return "success and continue"
      }
      if (there is no place left to search) {
         return "failure" ;
      }
      else {
         loop over all possible moves M, starting in position X {
            apply move M to X to get Y ;
            // Recursively explore the consequences of our choice.
            r = Backtrack(Y) ;
            if we are only seeking one solution, and r indicates "success", then {
               return r ;
            }
            undo the changes caused by move M and continue the loop ;
         }
      }
   }
```