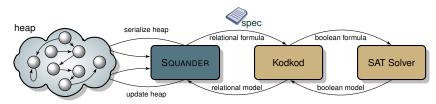
## **Squander** - Unifying Execution of Imperative and Declarative Code



```
public class Sudoku {
 private int[][] grid = new int[9][9];
                                               specify and solve constraint problems in place
@Ensures({
   "all row in \{0 ... 8\} | this.grid[row][int] = \{1 ... 9\}",
   "all col in \{0, \dots, 8\} | this grid[int][col] = \{1, \dots, 9\}".
   "all r, c in \{0, 1, 2\} | this.grid[\{r*3 ... r*3+2\}][\{c*3 ... c*3+2\}] = \{1 ... 9\}"})
@Modifies ("this. grid [int]. elems | -<2> = 0")
 public void solve() { Squander.exe(this); }
                                                        no manual translation to/from an external solver
 public static void main(String[] ares)
   Sudoku s = new Sudoku();
   s.qrid[0][3] = 1; ...; s.qrid[8][5] = 1;
   s.solve():
   System.out.println(s);
                                       executable first-order, relational specifications for Java
```

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