Lab 01 - Numerical Problem Solving Solution

Part A: In class

Your objective is to determine all possible solutions for the given arithmetic request by using only the digits 1 through 9. If there are no possible solutions, write no solution. For instance, if the request is `"Product of two numbers that equals 16"`, then the solutions would be $\{4,4\}$ and $\{2,8\}$.

- ☐ Sum of two distinct numbers that equals 10.

  Solution

  $$\{9,1\},\{8,2\},\{7,3\},\{6,4\}$$

- ☐ Product of three distinct numbers that equals 30.

  Solution

  $$\{6,5,1\},\{5,3,2\}$$

- ☐ Sum of three numbers that equals 17 with at most one duplicate.

  Solution

  $$\{9,7,1\},\{9,6,2\},\{9,5,3\},\{9,4,4\}$$
  $$\{8,8,1\},\{8,7,2\},\{8,6,3\},\{8,5,4\}$$
  $$\{7,7,3\},\{7,6,4\},\{7,5,5\},\{6,6,5\}$$

- ☐ Product of four numbers that equals 540 with at most one duplicate.

  Solution

  $$\{9,6,5,2\},\{9,5,4,3\},\{6,6,5,3\}$$

Part B: Take home

Your objective is to write the solution to the 9×9 sudoku puzzle below. You must write in the digits 1 through 9 in each row such that no digit is repeated vertically, horizontally and in each box. In your solution, write each row on its own line; and for each row, write each digit enclosed in square braces. For instance, if the row is $(1,2,3,4,5,6,7,8,9)$, then you would type `[1] [2] [3] [4] [5] [6] [7] [8] [9]` for that row.

Solution

5	4	8	7	3	9	1	2	6
9	3	2	4	6	1	7	5	8
6	1	7	2	5	8	9	3	4
2	5	3	6	7	4	8	1	9
4	7	9	8	1	5	3	6	2
8	6	1	9	2	3	4	7	5
3	8	6	1	9	2	5	4	7
1	2	4	5	8	7	6	9	3
7	9	5	3	4	6	2	8	1