Computing in 2: Spring 2023
ROLL NUMBER: _____

Quiz is for 90 min, and consists of a single question, broken into TWO sections.
SECTION-I: Write below, no additional / rough sheets will be provided.
SECTION-II: After handing over your answer for Section-I, open laptop and finish coding in the task. Read given info/hints, before handing over!!

SECTION-I: Your task is to balance any given chemical equation, by determining the appropriate stochiometric coefficients. Find the appropriate mathematical expressions, whose solutions will provide these stochiometric coefficients, and suggest method to solve these expression/s.

SECTION-II: Given input , return the balanced equation.
Eample input string: " K Mn O 4 + H 2 O 2 = Mn O 2 + H 2 O + O 2 + K O H ". Assume input has spaces separating every element name and numbers as shown, also for '+' and '='.
Example output: " 2 K Mn O 4 + 3 H 2 O 2 = 2 Mn O 2 + 2 H 2 O + 3 O 2 + 2 K O H " and " [-2,- 3, 2, 3, 3, 2]", i.e. output string for balanced chemical equation and the vector of stochiometric coefficients with negative values for reactants.
HINT: (a) For the above reaction, atomList is 'K', 'Mn', 'O', 'H'
(b) chemVectors for ' K Mn O 4' is [1,1,4,0] and ' K O H ' is [1,0,1,1]
(c) construct matrix equation for chemical equation.