

SSW215-A Individual Software Engineering
Fall 2022
Assignment #7
Due November 28, 11:00 pm

There are 3 problems in this assignment. Please submit a single Python file including the full working code of all problems with the logical order. The text file named salary.txt is posted on canvas showing the data.

Problem 1

- Create a 3 by 5 matrix (called A) which its elements are random numbers between 50 and 120.
- Create a 5 by 6 matrix (called B) which its elements are random numbers between 10 and 60.
- Create matrix C which is a product of A and B.
- Create a matrix (called R) which its elements are equal to elements of C*10.

Problem 2

Solve the following systems of equations:

$$\begin{aligned}4x_1 - 8x_2 - 2x_3 + 7x_4 &= 9 \\ -4x_1 + x_2 - 9x_3 - 4x_4 &= -5 \\ -2x_1 - 64x_2 - 6x_3 + 5x_4 &= 5 \\ -7x_1 - 8x_2 - 25x_3 - 2x_4 &= 2\end{aligned}$$

Problem 3

- Read salary.txt file into pandas DataFrame and create the header: Employee, Salary, Year, and Gender. Print the data in a tabular format.
- Create the subset above data using **.iloc()** such that it shows all rows just for Employee, Salary
- Calculate the maximum, standard deviation, and mean of salaries based on the gender.
- Show the scatter plot of salaries against years.