CSE324 SPR2021 Smalltalk Programming Assignment Due: Wednesday **April** 28. 2021

**Write Smalltalk code for the "squeak" interpreter to perform the following (in order)**:

***You are to write Smalltalk code to carry out the following tasks in the SAME order as given below and MUST maintain the same used object names.***

1. **Smalltalk Basic: (40 pts)**
   1. Declare all necessary variables **|a1 a2 s1 s2 s3 oddSum|**
   2. Bind **a1, a2** to instances of the class "**OrderedCollection**", each of size 100 elements
   3. Bind **s1**, **s2**, and **s3** to instances of the class "**SortedCollection**", each of size 100 elements.
   4. Assign **a1** to (8 1 2 3 4 5 77 99 33 10 11 22 33 44 55 66 7 2 3 4 7 8 0).
   5. In the last **10** items of **a1** (in general):
      1. detect **odd** numbers and **store** them in **a2** (in the order you found them)
      2. as you are detecting them, **add** them up and **store** their summation in object "**oddSum**".
   6. **Sort** the items in **a1** (in ascending order) and place the result in **s1**.
   7. **Sort** the items in **a1** (in descending order) and place the result in **s2**.
   8. **Multiply** the corresponding elements of **s1** and **s2** and **sort** the result in **s3**.
   9. Use “**Transcript show:**” to show the value of each variable.

Example: Smalltalk code to print **a1**-> **Transcript show: 'a1: '; show:a1; cr.**

Do not change the variable names given above, i.e**. a1, a2, s1, s2, s3, oddSum**, etc. However, you can add other variable when necessary.

There are many ways to do the same thing, thus your code will be graded for efficiency, i.e., the least number of messages to carry out the above goals.

Your code **must be well commented** (anything between double quotations " " is a comment), and written **in the exact above order** i) to ix) using the **same objects names**, **otherwise** the graders **will not be able to assign any grades** for your assignment!

**B) "Matrices Multiplication": (60 pts)**

Declare three integer matrices **A** (), **B** (), **C** (), and multiply A and B then store the result in matrix **C** () and carry out the following operations (in order):

1. Declare all necessary variables |**A B C SUMDIAGONAL EGTH MAXC S**|
2. Initialize **A** () **B** () **C** ().
3. Initialize elements in **A** with [[5,5], [30,2], [14,1]] and in **B** with [[8,5,20], [12,15,8]]
4. **C :**= **A** **B** (store the multiplication of **A** and **B** in **C**).
5. Add the diagonal element of **C**, store the result in “**SUMDIAGONAL**”.
6. Find all elements in C that are **even and** **greater than 100** and store them in an array called **EGTH**.
7. Zero the diagonal elements of **C**.
8. Convert **C** to be an array (**OrderedCollection**) with element moved from matrix **C** to the array **C** "**columnwise**", then find the maximum element in **C** and call it **MAXC**.
9. Move elements of **C** to **S** while being sorted in an ascending order.

There are many ways to implement the answer, you MUST write the most efficient code. i.e., least number of Smalltalk statements.

**Submission:**

**Your homework must be submitted on the Canvas as a text file.**

Example: “name\_hw5.txt”

***Warning:*** If you fail to submit according to the above criteria, your project may not beaccepted. If any of the above requirements are not understood, contact the TA for this course, immediately.

***Note:*** All work must be **your own** and failure to do so will result in a **zero** assigned grade for the homework. Allrules in the Academic Honesty Policy strictly apply.