EECS 16A   Designing Information Devices and Systems I
Fall 2023
Homework 0

This homework is due September 1, 2023 at 23:00.
Self-grades are due September 4, 2023 at 23:00.

Submission Format

Your homework submission should consist of **one** file.

- `hw0.pdf`: A single PDF file that contains all of your answers (any handwritten answers should be scanned).

Submit the file to the appropriate assignment on Gradescope.

1. **Reading Assignment**

   For this homework, please read Note 0 and Note 1 until Section 1.6. This will provide an overview of linear equations and augmented matrices. You are always welcome and encouraged to read ahead beyond this as well. Write a paragraph about how this relates to what you have learned before and what is new.

2. **Study Groups** To complete this part of the HW, you only have to fill out the following survey and indicate in your submitted answer that you filled it out. Nothing else is required.

   (a) We highly encourage working with your peers to complete homework assignments and work through course content together and are offering a platform for you to find study groups! Study groups are optional, but we strongly recommend them. In addition, we are offering a 1 unit P/NP class, EE194-3, in which you will meet and work with your assigned group. If interested, please fill out the following group matching form:
   https://forms.gle/toUttRRnHoP5ZyiS7

3. **Syllabus**

   Read the course syllabus and answer the following questions. The syllabus can be found here: https://eecs16a.org/policies.html.

   (a) When is homework 0 due? When is homework 0's self-grade due? In general, what day of the week is the homework due and at what time? In general, what day of the week are the self-grades due and at what time?

   (b) When are homework parties? Homework parties are where groups of students can get together to work on the homework together.

   (c) How many homework drops do you get? Reminder, the homework drop is for extenuating circumstance such as getting sick, family emergencies etc. You should plan on completing and submitting all homeworks and self-grades.

   (d) What is the penalty if you turn in your self-grades up to one week late?

   (e) What score will you get on a homework if you do not submit your self-grades?

(f) How would you opt in for discussion attendance to count to your grade? Can you change it after your decision? How will the grade for discussion attendance be calculated?

(g) Fill in the blank: You should attend one discussion section on _____ and one discussion section on _____ each week. These sections need not be taught by the same instructor.

(h) Provide a complete list of everything you must do in order to receive credit for your homework assignments.

(i) Read the following guide: www.tinyurl.com/ee16a-gradescope. What are the five steps in the submission process for a PDF on Gradescope? Please note that if you do not select pages for each question/subquestion we cannot grade your homework and we will be forced to give you a 0.

(j) If you submit your homework but forget to select pages, can you reselect pages?

(k) What percentage do you need to get on a homework assignment for you to get full credit for the assignment?

(l) Will the exams in this class be in person? How many cheatsheet can you have in each exam?

(m) Fill in the blank:
If you miss ___ or more labs you will fail the class.

(n) Fill in the blank:

During buffer lab periods, you may get checked off for at most _____ missed lab that occurred during that lab module by attending your _____ section.

4. Homework resources

If you need help on a homework problem or have a question about the material, what are some of the resources you might be able to use?

(i) Homework party

(ii) TA office hours

(iii) Professor office hours

(iv) Asking a friend taking 16A

(v) Posting on ED

(vi) Going to discussion

(vii) All of the above

5. Counting Solutions

Learning Goal: *(This problem is meant to illustrate the different types of systems of equations. Some have a unique solution and others have no solutions or infinitely many solutions. We will learn in this class how to systematically figure out which of the three above cases holds.)*

Directions: For each of the following systems of linear equations, determine if there is a unique solution, no solution, or an infinite number of solutions. If there is a unique solution, find it. If there is an infinite number of solutions, describe the set of solutions. If there is no solution, explain why. **Show your work**.

Example: We will provide an example to show a way of solving systems of linear equations.

$$\begin{aligned} 2x &+ 3y &= 5 \\ x &+ y &= 2 \end{aligned}$$

$$2x+3y = 5 \tag{1}$$
$$x+ y = 2 \tag{2}$$

Subtract: (1) - 2*(2)

$$y = 1 \tag{3}$$

Now we plug in (3) into (2) and solve for x

$$x+ 1 = 2$$
$$\rightarrow \quad x = 1 \tag{4}$$

From (3) and (4), we get the unique solution:

$$x = 1$$
$$y = 1$$

(a)

$$
\begin{array}{rcrcrcl}
x & + & y & + & z & = & 3 \\
2x & + & 2y & + & 2z & = & 5
\end{array}
$$

(b)

$$
\begin{array}{rcrcrcl}
 & - & y & + & 2z & = & 1 \\
2x & & & + & z & = & 2
\end{array}
$$

(c)

$$
\begin{array}{rcrcl}
x & + & 2y & = & 3 \\
2x & - & y & = & 1 \\
3x & + & y & = & 4
\end{array}
$$

(d)

$$
\begin{array}{rcrcl}
x & + & 2y & = & 3 \\
2x & - & y & = & 1 \\
x & - & 3y & = & -5
\end{array}
$$