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15-112 Term Project
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Design Explanation

My idea for this project came from personal experience. I am currently taking the course 21-241 Matrices and Linear Transformations, and at the start of the semester I struggled because I had to teach myself the fundamentals of matrices. I realized that matrices are not commonly taught in pre-college education despite being very important in many STEM disciplines. I believe that the generations younger than us should be smarter than we were at their age so we as a society can improve intellectually. As a result, I set out to create a teaching module so kids can learn the basics of matrix algebra.

I wanted my project to include two main features. The first would be lessons that teach simple matrix algebra. After doing some research on education, I learned that kids learn better visually and interactively, so I incorporated that into my project by using colors and visual examples that the kids could manipulate to learn. I decided to focus on the basics of matrix algebra, such as structure of matrices and the three main operations: addition, subtraction, and multiplication. The second feature I wanted to include was a workspace so that anyone could create and modify matrices and work on math problems visually and interactively. After researching and taking my matrix course, I decided on the most important matrix operations and included those in the workspace.

For the UI, I wanted it to look visually appealing and would easy for kids to use. I kept the functionality and buttons simple, involving only key presses and clicks. By looking at other matrix lessons for kids, I saw a big use of colors both to keep it interesting and to indicate matching or corresponding elements. Research also showed that a larger font and comic sans makes it easier and quicker for kids to read, so I incorporated those ideas in my project.