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Homework 5

1. What is the problem with two-dimensional arrays in C/C++?
   1. The support for two-dimensional arrays in C/C++ are poor. When passing two dimensional arrays to a function, the dimensions need to be specified at compile time if one of the arguments of a function require a two-dimensional array.
2. Describe two ways to work around C/C++’s problems with two dimensional arrays.
   1. Store data in a flat array: Store data in a one-dimensional array and compute the offset into the array to access the elements. The advantage to this is that you can pass an array to a function with a pointer since the data is stored in a one-dimensional array. The only disadvantages are that multiplication needs to be done each time an element needs to be accessed, which takes up time, and the code is difficult to read and the structure is ugly.
   2. Use the “Numerical Recipes Trick”: Use two arrays. First, make a flat array, and then make an array of pointers in which each pointer in that array points to the start of a row in the flat array. It increases the efficiency by using one for loop instead of two.
3. Is your computer big endian or little endian? Hint: write a small program to find out.
   1. My Macbook is using big endian.