**Exercises**

***1.1-1***

Give a real-world example that requires sorting or a real-world example that requires computing with a convex hull.

*Answer:* Let’s say that we are turning JPG files in a certain folder to PNG files. To make keep track of how many files that have been converted, we can sort the converted files in alphabetical order, and we could put a number in front of it to show whether it is the first, second, third, and so on.

***1.1-2***

Other than speed, what other measures of efficiency might one use in a real-world setting?

*Answer:* Another measure of efficiency is space efficiency, i.e., how much memory is needed for an algorithm to run. If a algorithm needs less memory from the computer to run, then it probably will run faster than an algorithm that takes a lot of memory from the computer.

***1.1-3***

Select a data structure you have seen previously and discuss its strengths and limitations.

*Answer:* One type of data structure is the array data structure. It has many advantages and drawbacks. One major advantage is that an array can store multiple data of the same type with the same name. On the contrary, if the size of the declared array is more than the required size then, it can lead to memory wastage. Therefore, we need to make sure we’re using it properly.