

For the final project, I intend to extend IMP by adding an array construct to the language on top of the existing implementation. This structure will allow you to create lists of numbers (ANum expressions), or potentially lists of aexps to be more general.

In addition to the array structure itself, I'll also need to add functionality for accessing the individual elements of the list and inserting new elements into it after creation.

I will then implement insertion sort in IMP using this new type and verify its correctness using Coq along the lines of the proof shown in the Verified Functional Algorithms volume.

Initially, this will likely be implemented as a single global array with only ANums (nat values) allowed, but can be generalized as time allows to include aexps and multiple arrays.