Cs 313 project

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Question # 7

The question asks to time the speed of constructing a list or vector or same size. To test this, the vector and list are filled with random numbers and strings. Classes for the abstract data types list/vectors are created, containing important functions to be usable, such as inserting new elements to the list. To create random strings of ascii letters, initially a random size of string is generated. Next a for loop adds random letters based on the size of the string, while the random numbers are generated from random ascii decimals from 65-90 converted to type char. Filling in vector/list was timed using the chrono library by looping ‘n’ times and using the add function of both classes that had been created. Another way to fill a vector or list object is to move the contents of an existing object to the list, using move constructor. The move constructor copies the contents of the object by setting the pointers to the new object and copying the new values while the other object is reinitialized to null pointer or 0.

As a result, filling element into a vector is faster because vectors do not need to allocate memory for every element that is added, due to already having excess of available memory, as they are always doubled when capacity has been reached. Whereas for a list, as each new element is added a new node must be created and added to the end of the list.