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Linked List vs Array analysis using box-whisker plots

"ds_swap" Reads and Writes with List for files of n elements
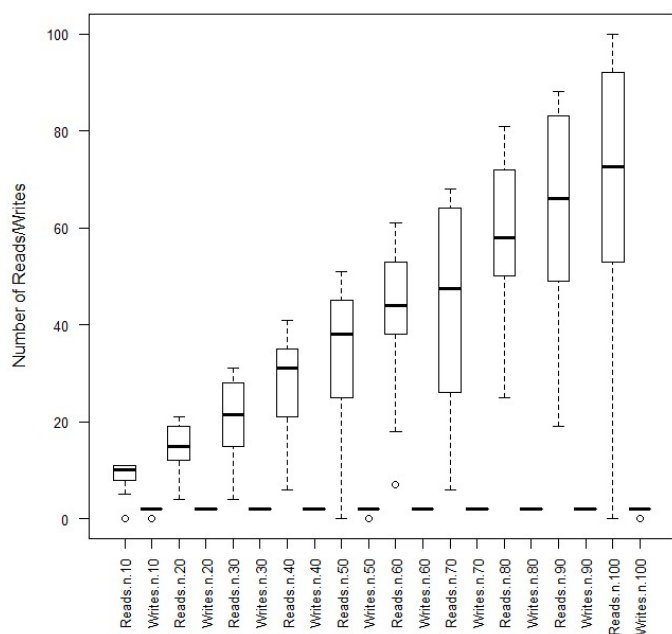
"ds_swap" Reads and Writes with Array for files of n elements
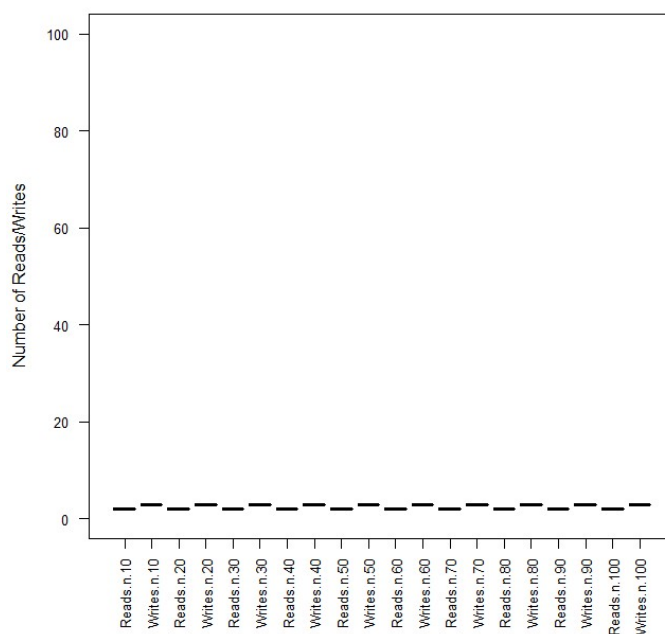
"ds_replace" Reads and Writes with List for files of n elements
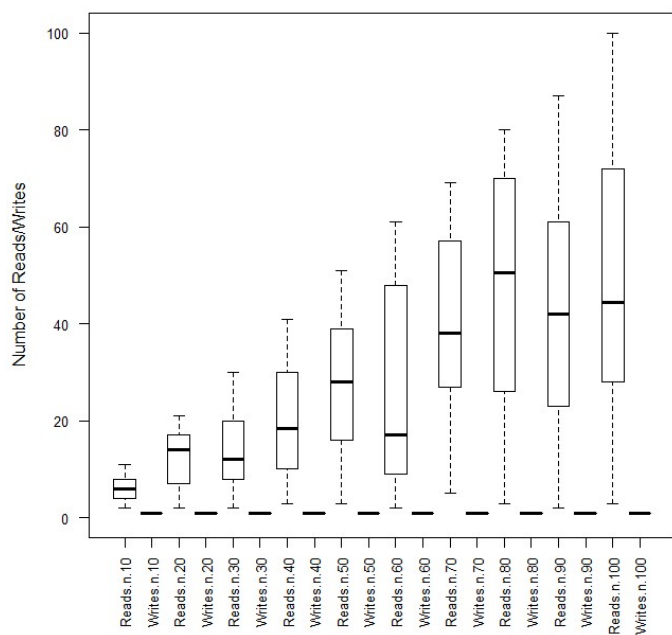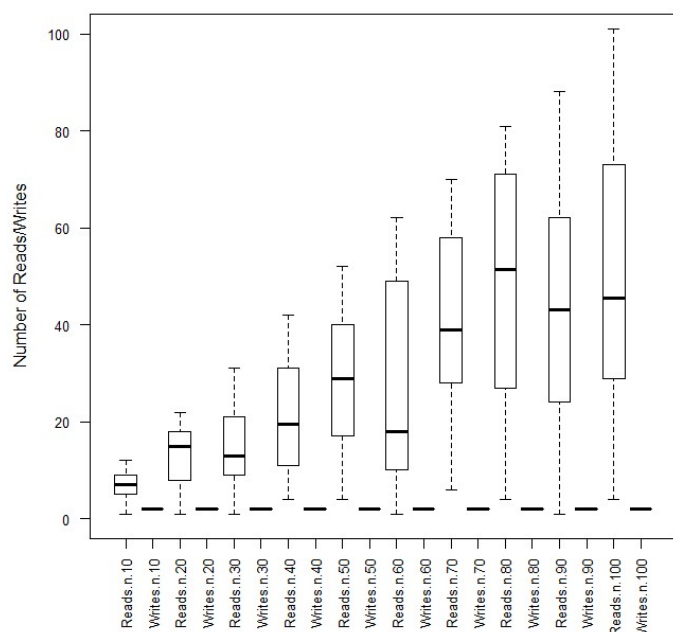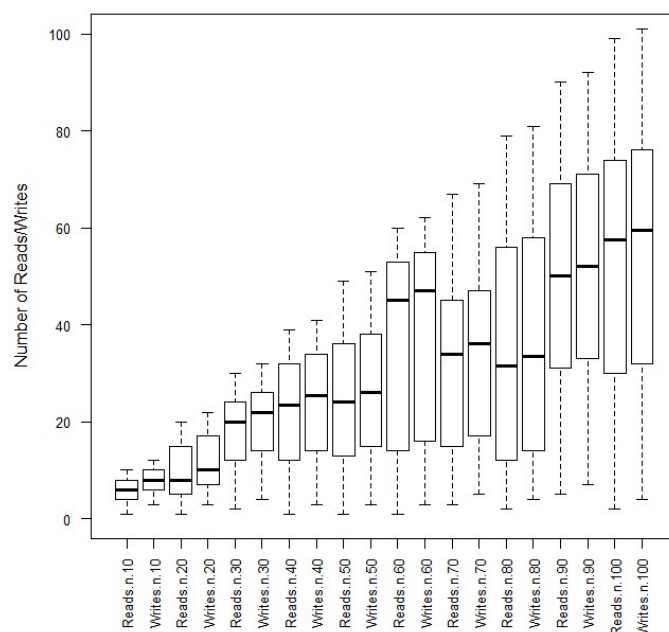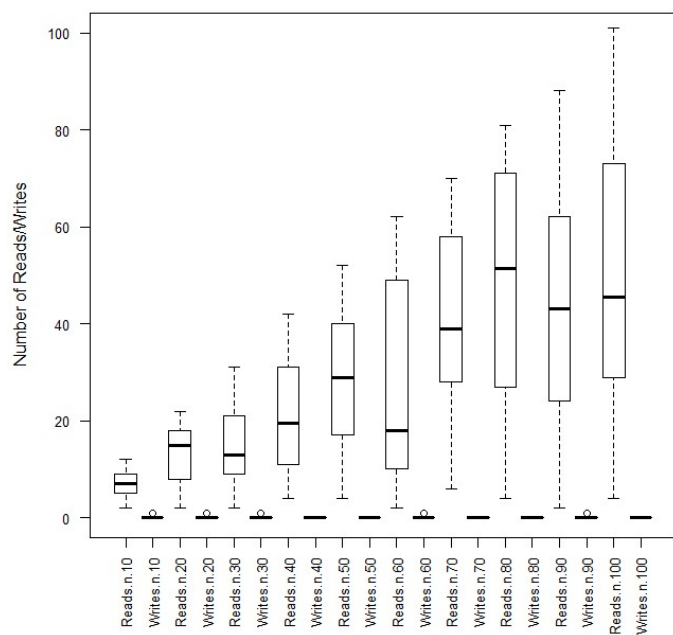
"ds_replace" Reads and Writes with Array for files of n elements
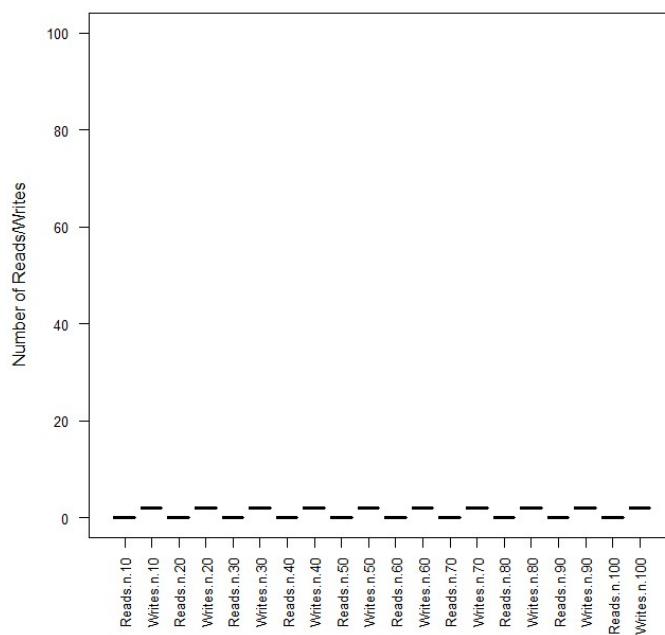
"ds_insert" Reads and Writes with List for files of n elements

"ds_insert" Reads and Writes with Array for files of n elements

"ds_delete" Reads and Writes with List for files of n elements

"ds_delete" Reads and Writes with Array for files of n elements
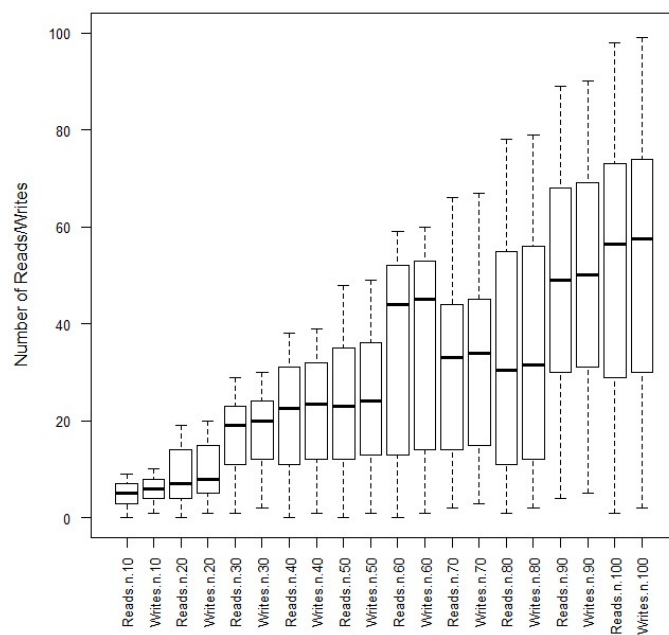
According the above box and whisker plots it can be seen that an array is more efficient in terms of combined reads and writes for the replace and swap operations (as an array does not have to be traversed to get to the next element), while a linked list is more efficient in terms of combined reads and writes for the delete and insert operations (as a list does not have to shift all subsequent elements if one is taken out or inserted).

Based on this information, arrays would be more suited for when data needs to be changed, without altering the amount of data points, such as sorting some a list of names alphabetically (because the amount of data will remain constant and have to be swapped a lot), or keeping track of whether each spot in a parking lot is empty of full (as the amount of spots will remain constant, and the data will have to be replaced from taken to empty and vice versa). While linked lists would be more suited to when there are a lot of insertions or deletions happening to some data, such as a server handling a que of requests (as the amount of data would decrease as a request is handled and increase when a new request is added), or for keeping track of the cars on a stretch of a one lane highway where cars can leave and enter it (as data is deleted and added often).