Assessment 7 - Computer Science

Part 1

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| Array Size | Size Quantified | Insert (µs) | Append (µs) |
| extraLargeArray | 100000 | 824047.1 | 2989.5 |
| largeArray | 10000 | 8561.7 | 531.5 |
| mediumArray | 1000 | 156.6 | 144.3 |
| smallArray | 100 | 52.3 | 180.9 |
| tinyArray | 10 | 39.9 | 120.7 |

Looking at the results, when implementing the insert (.push) version of the function it can potentially increase the runtime by 20,000 times the original rate as the array size grows. This means that scaling this function up will massively increase the time it takes for the operation to run. This does not scale up as well. It has a runtime of O(n^2), which is a quadratic time increase. Dangerous to scale up to a certain point. It should either have a limit on the array size used or not be used at all. The append version of the function has a linear runtime, denoted as O(n). This version would scale up at a consistently increasing rate, the size array increasing the time it takes proportionally. The graph shows how the insert functions time shoots up very quickly as the array size is changed. Alternatively the append function chugs along at a time increasing at a directly proportional rate as the size.