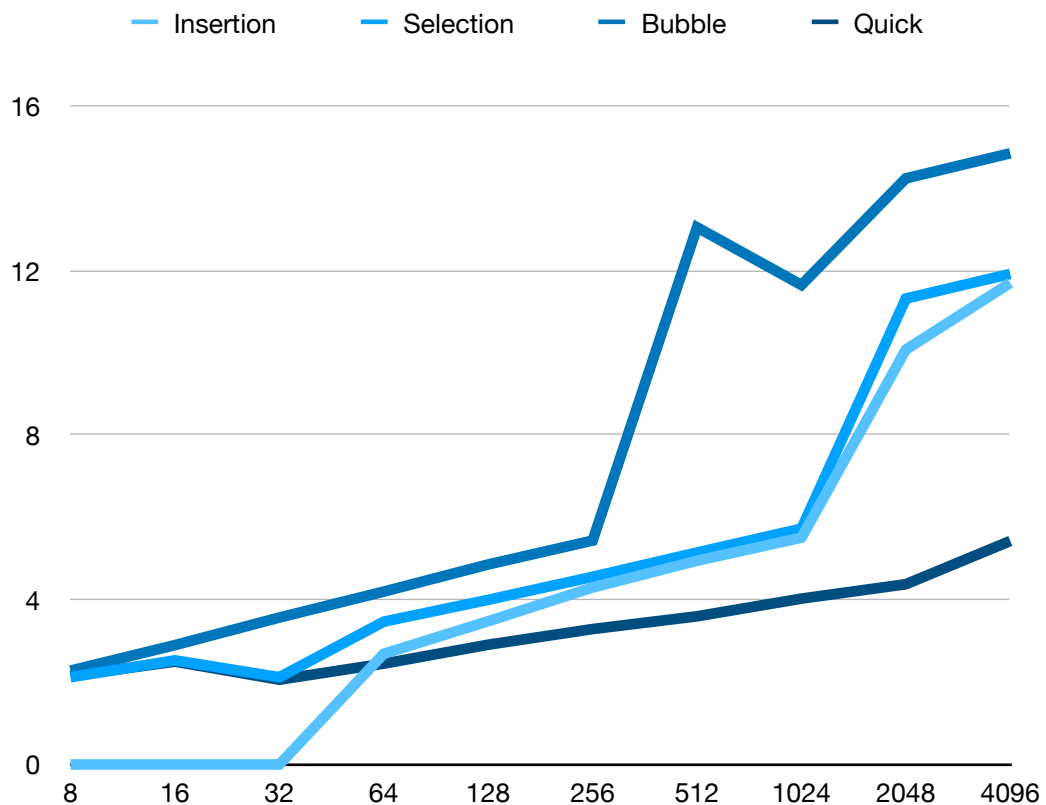| Size	Insertion Sort Duration	Selection Sort Duration	Bubble Sort Duration	Quick Sort Duration
8	228	133	237.75	142.25
16	876	345	938	333.5
32	4048	961	4283.5	855
64	16868	2961	17809	1980.5
128	68948	10033	72743,75	4714,25
256	260520	36465	276765	10506.5
512	1.0605975e+06	138481	1.1259425e+06	23998.5
1024	4.20484e+06	539121	4.48312e+06	54274.5
2048	1.670845e+07	2.12683e+06	1.7755725e+07	122290.5
4096	6.699575e+07	8.44798e+06	7.1120925e+07	273756
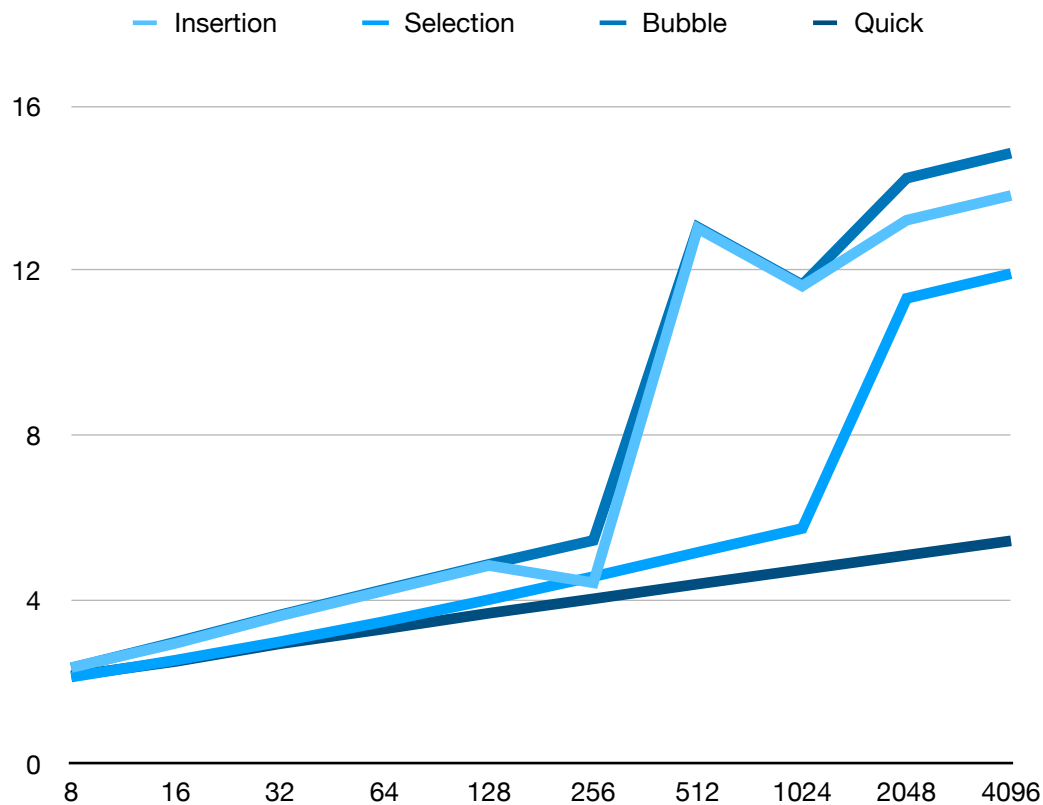
(log scaled Graph)

Average time complexity of O(nlogn), it shows lower total durations of labor work compared to the other algorithms, especially as the size of the truck increases. Quick Sort is more suitable than other algorithms since efficient sorting mechanism and scalability.

So, quick sort minimizes the total duration of labor work and its duration so low than others also itsm more stable for different truck sizes.

Question 2

Size	Insertion Sort Duration	Selection Sort Duration	Bubble Sort Duration	Quick Sort Duration
8	0	133	192	117
16	0	345	802	288
32	0	935	3798	825
64	496	2961	15873	1960
128	3088	10033	72743,75	4714,25
256	20048	36465	276765	10860
512	89616	138481	1.1259425e+06	23998
1024	325840	539121	4.48312e+06	54274
2048	1.2151e+06	2.12683e+06	1.7755725e+07	122290
4096	5.07722e+06	8.44798e+06	7.1120925e+07	273756

I would recommend Insertion Sort.

Insertion Sort demonstrates consistently low duration, especially for almost sorted arrays and small array sizes.

Its simplicity and stability make it easy to implement and understand.
Insertion Sort has an average and best-case time complexity of O(n), making it efficient for nearly sorted data.
Given the requirement to minimize labor without empirical results, Insertion Sort's reliable performance on almost sorted data makes it a suitable choice for sorting the cargo of trucks.

Question3

Merge Sort is a highly efficient sorting algorithm with a time complexity of O(n log n) in all cases.
It is easily parallelizable, making it suitable for leveraging multiple workers efficiently.
Merge Sort divides the array into smaller sub-arrays recursively, allowing each worker to independently sort a portion of the data.
After sorting, the sorted sub-arrays can be efficiently merged.

Truck Size	Maximum Time Estimation (seconds)	Minimum Time Estimation (seconds)
8	475.5	371
16	1812	1467.5
32	8567	693.5
64	35618	2892.5
128	144282	11782.5
256	521040	4246
512	2121195	17260.5
1024	8468240	68863
2048	33569050	272842.5
4096	133991500	1091529.75

Size	Maximum Cost (TL)	Minimum Cost (TL)
8	263.75	205.56
16	1008	816.25
32	4769.17	387.36
64	1981.28	160.31
128	8042.25	655.63
256	29029.33	236.28
512	118399.86	963.91
1024	472451.11	3841.75
2048	1871362.5	15168.97
4096	7454708.33	60648.61

If we use Merge Sort, the administration can take advantage of the increased number of workers without sacrificing sorting speed or accuracy.
The maximum and minimum time estimations provide a range within which the sorting duration for each worker is expected to fall, allowing for better resource planning and workload distribution.