In this assignment, a simple management system of a cargo company should be made. Items come to the cargo company and they need to be loaded into the cargo truck. The company has a primitive system.

• Each cargo truck can carry a maximum of 8 items and has volume of 500 unit. So, an item with a volume of more than 500 units cannot loaded to any truck.

• When a new item arrives, if there is an empty place in the existing trucks, that truck must be filled. If all trucks are full, one more truck must be added to the end of the queue.

• The company is also capable of removing an item in the desired truck and position. After the operation, there is no item remains from the desired truck, need to extract that truck also.

• The company can depart the full cargo trucks at any time.

• The company can receive status reports in two different ways, one in summary and the other in detail.

It was decided to create a simple simulation to make this system. Both trucks and items will be represented as two different node types. While the truck nodes were creating a doubly linked list, it was deemed to create a one-way linked list with items. The reason for this was to provide efficient traversal as the number of trucks could never be determined. However, since there will be a maximum of 8 node linked lists in a single truck, a one-way linked list was found appropriate.

Item node is expected to keep these variables:

• Volume of the item

• Position of the item (starts with 1)

• Address of the next item

Truck node is expected to keep these variables:

• Total volume of the items

• Address of the next truck

• Address of the previous truck

• Address of the head item

• Address of the tail item

Also, system is expected to keep these variables:

• Total number of trucks

• Address of the head truck

• Address of the tail truck

In this assignment, you are expected to code the desired system. Your code should perform the

following commands in the most efficient way, specific to the given system. For submission just one

".cpp" file required. (If you want to design your code object-oriented, you can submit up to 5 files.)

Commands:

• ai <itemValue> => for adding an item

• ri <truckPosition> <itemPosition> => for removing an item (positions start from 1)

• depart => for departing the full cargo trucks

• rd => detailed report

• rs => summary report

• q => quit