Q) We want to generate an inventory age report which would show the distribution of remaining inventory across the length of time the inventory has been sitting at the warehouse. We are trying to classify the inventory on hand across the below 4 buckets to denote the time the inventory has been lying the warehouse.

0-90 days old
91-180 days old
181-270 days old
271 – 365 days old

For example, the warehouse received 100 units yesterday and shipped 30 units today, then there are 70 units which are a day old.

The warehouses use FIFO (first in first out) approach to manage inventory, i.e., the inventory that comes first will be sent out first.

ID	OnHandQuantity	OnHandQuantityDelta	event_type	event_datetime
TR0013	278	99	OutBound	25/05/2020 00:25
TR0012	377	31	InBound	24/05/2020 22:00
TR0011	346	1	OutBound	24/05/2020 15:01
TR0010	346	1	OutBound	23/05/2020 05:00
TR009	348	102	InBound	25/04/2020 18:00
TR008	246	43	InBound	25/04/2020 02:00
TR007	203	2	OutBound	25/02/2020 09:00
TR006	205	129	OutBound	18/02/2020 07:00
TR005	334	1	OutBound	18/02/2020 08:00
TR004	335	27	OutBound	29/01/2020 05:00
TR003	362	120	InBound	31/12/2019 02:00
TR002	242	8	OutBound	22/05/2019 00:50
TR001	250	250	InBound	20/05/2019 00:45

For example, on 20th May 2019, 250 units were inbounded into the FC. On 22nd May 2019, 8 units were shipped out (outbound) from the FC, reducing inventory on hand to 242 units. On 31st December, 120 units were further inbounded into the FC increasing the inventory on hand from 242 to 362.On 29th January 2020, 27 units were shipped out reducing the inventory on hand to 335 units.
On 29th January, of the 335 units on hands, 120 units were 0-90 days old (29 days old) and 215 units were 181-270 days old (254 days old).

Columns:
ID of the log entry
OnHandQuantity: Quantity in warehouse after an event
OnHandQuantityDelta: Change in on-hand quantity due to an event
event_type: Inbound – inventory being brought into the warehouse; Outbound – inventory being sent out of warehouse
event_datetime: date- time of event
The data is sorted with latest entry at top.

Sample output:

0-90 days old	91-180 days old	181-270 days old	271-365 days old
176	102	0	0

SOLUTIONS from an ex-PhD and MBA graduate

FIFO only

Pseudocode logic

Look at the time period look for the oldest inventory, check to see if the total outbound exceeds the oldest inventory and if the total outbound exceeds the oldest inventory, then we know that the total inbound – the amount exceeded by the oldest inventory will give us the amount sitting in the warehouse.

The sweetest part of the logic is if inbound < onhand day 0 then we know for sure we have those in the warehouse but if inbound > onhand0 then we know to consider what we have onhand or more accurately subtract to show that we have more going out than coming in and that should in effect be -ve or 0

Mathematical solution

Sitting inventory within a time period using FIFO = (oldest inventory – total outbound) + inbound

Trust me this is not perfectly accurate as some minute-minute transactions can throw this off but this is a good general formula

LIFO scenario

(Latest inventory – total inbound) + outbound

NOTE:

Linked to the database script for the supply chain warehouse. So, look at that under databases if you want a go at it. Before I have some sql mastery I just understood the solution given but I will be writing my own query on this.

If I fail at the logic fine but I need to write queries that meet my own intended logic showing understanding then I can use other sources to determine the logic missed.