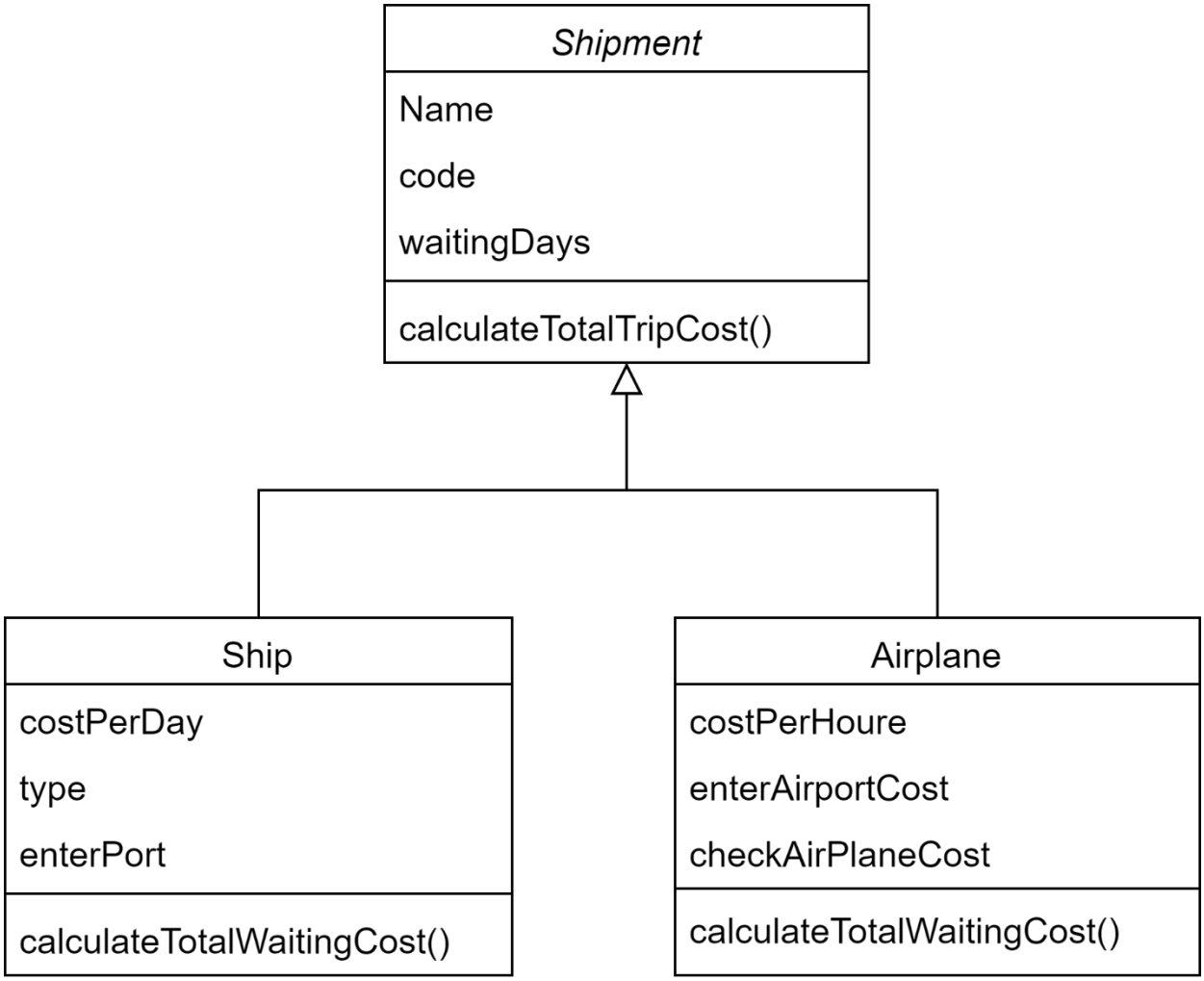
Question 1

Shipment Problem



We have two types of shipment methods

- Via ship
- Via airplane

Notes

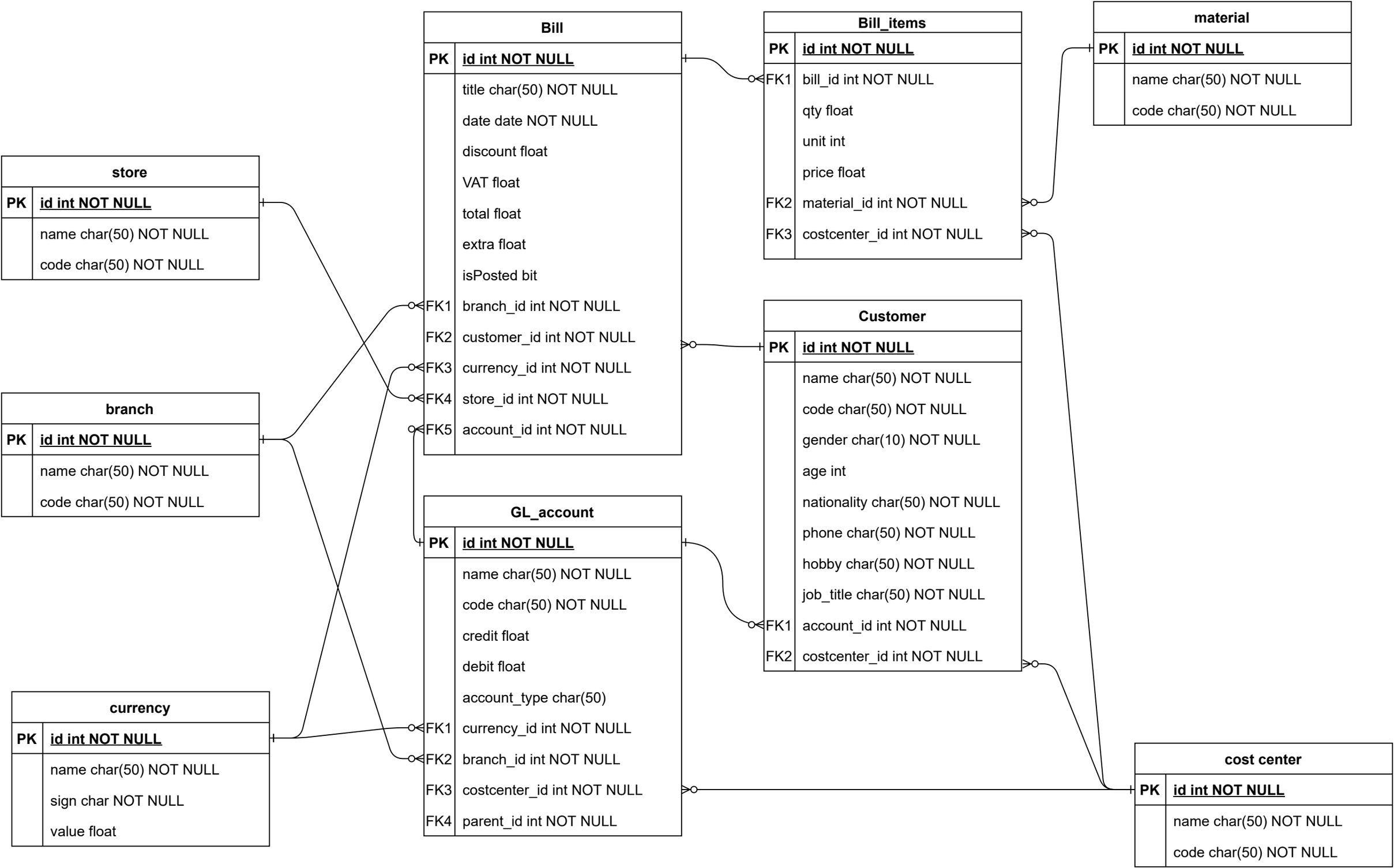
- Ship has one type of (Container Ships, Bulk Carrier, and Tanker Ships).
- Ship waiting time cost per day
    - Container Ships is 5,000
    - Bulk Carrier is 10,000

    - Tanker Ships is 15,000
- The ship waiting cost is waiting days multiple by cost per day.
- Airplane waiting cost is total waiting time in hours multiples by cost per hour.
  (hint: maybe you need to convert waiting days to waiting hours)

- Total ship trip cost is waiting time cost plus enter the port cost.
- Total airplane trip cost is waiting time cost plus enter airport cost plus airplane check cost.

Please implement the following methods:

- `calculateTotalWaitingCost()`
- `calculateTotalTripCost()`


Bill
PK id int NOT NULL
title char(50) NOT NULL
date date NOT NULL
discount float
VAT float
total float
extra float
isPosted bit
FK1 branch_id int NOT NULL
FK2 customer_id int NOT NULL
FK3 currency_id int NOT NULL
FK4 store_id int NOT NULL
FK5 account_id int NOT NULL
Bill_items
PK id int NOT NULL
FK1 bill_id int NOT NULL
qty float
unit int
price float
FK2 material_id int NOT NULL
FK3 costcenter_id int NOT NULL
material
PK id int NOT NULL
name char(50) NOT NULL
code char(50) NOT NULL
store
PK id int NOT NULL
name char(50) NOT NULL
code char(50) NOT NULL
branch
PK id int NOT NULL
name char(50) NOT NULL
code char(50) NOT NULL
Customer
PK id int NOT NULL
name char(50) NOT NULL
code char(50) NOT NULL
gender char(10) NOT NULL
age int
nationality char(50) NOT NULL
phone char(50) NOT NULL
hobby char(50) NOT NULL
job_title char(50) NOT NULL
FK1 account_id int NOT NULL
FK2 costcenter_id int NOT NULL
GL_account
PK id int NOT NULL
name char(50) NOT NULL
code char(50) NOT NULL
credit float
debit float
account_type char(50)
FK1 currency_id int NOT NULL
FK2 branch_id int NOT NULL
FK3 costcenter_id int NOT NULL
FK4 parent_id int NOT NULL
currency
PK id int NOT NULL
name char(50) NOT NULL
sign char NOT NULL
value float
cost center
PK id int NOT NULL
name char(50) NOT NULL
code char(50) NOT NULL

Question 2

Hint: solve this question using entity diagram in previous page

Write query

1. List name, age and nationally of customers grandmother with age greater than forty-five years old, have many hobbies like “swimming”, “reading’, ‘writing’.
2. List name and code of account receive money in day “10-1-2020”.
3. List name and code of stores used with branch his code ‘st-1234’
4. List name, debit and credit of customer for every account even unassigned with account.
5. List total, VAT, extra, quantity and price for every cost center name and code
6. Explain ACID Database principles

Question 3

Delete Middle Node: Implement an algorithm to delete a node in the middle (i.e., any node but

the first and last node, not necessarily the exact middle) of a singly linked list, given only access to

that node.

EXAMPLE

input: the node c from the linked list a -> b -> c -> d -> e -> f

Result: nothing is returned, but the new linked list looks like a -> b -> d -> e ->f