

## CSCI-300 Database Management

### Design Project: Contract-Supplies System

Due: May 10, 2021

Turner Construction company was founded in New York in 1902 and its first project was a reinforced concrete cooper shop for the manufacturer J.B King & Company. The company negotiates **contracts** with several **suppliers** for the supply of various amounts of selected item kinds at a price that forms part of the **contract**. Orders are placed against any of the negotiated **contracts** for the supply of items at the price quoted in the **contract**. The price of an item quoted in a **contract** is called **CONTRACT-PRICE**. An order can consist of any amount of those items that are in that **contract**. The quantity of an item in an order is called ORDER-QTY. Any number of orders can be made against a **contract**. However, the sum of any given item kind in all orders against one **contract** cannot exceed the amount of that item kind quoted in that **contract**. This is called **CONTRACT-AMOUNT** in the database. An inquiry would be made to establish if a sufficient quantity of an item is available before an order for that item is placed. All the items in an order must be supplied as part of the same **contract**. Each order is placed only against one **contract** and is made on behalf of one project. An order is made for one or more item kinds in that **contract**. DATE-REQUIRED specifies the date of an order which is placed and DATE-COMPLETED specifies the date of an order which is filled.

The access requirements for this system are given as follows:

#### On-line transactions:

1. Enter a new SUPPLIER-NO with SUPPLIER-ADDRESS and SUPPLIER-NAME. (infrequent)
2. Enter a new ITEM-NO with ITEM-DESCRIPTION. (infrequent)
3. Enter a new PROJECT-NO with PROJECT-DATA. (infrequent)
4. Enter a new CONTRACT-NO with DATE-OF-CONTRACT together with the ITEM-NO, CONTRACT-PRICE, and CONTRACT-AMOUNT for all items in the contract. (infrequent)
5. Enter a new order (100/day)  
Enter ORDER-NO, DATE-REQUIRED, PROJECT-NO, CONTRACT-NO  
For each ordered item  
Begin  
Enter ITEM-NO, ORDER-NO, ORDER-QTY  
End
6. Find the items in an order (30/day)
7. Find the price of an item in an order. The price of the item is the price negotiated for the order's contract (5/day)
8. Find the orders in which a particular item appears (20/day)

9. Find the price for a given item in a contract (150/day)
10. Find a particular contract together with its supplier (20/day)
11. Find the quantity of a given item still available under a given contract (100/day)

Detailed pseudocode of the access requirement is:

Find the CONTRACT-AMOUNT for the ITEM-NO in the CONTRACT-NO

Amount-available = CONTRACT-AMOUNT

For all orders in the contract

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If the order contains the given ITEM-NO

Then amount-available = amount-available – ORDER-QTY

End

Output amount-available

#### Batch Requirement:

1. Summarize the purchases by CONTRACT-NO of all items ordered in ITEM-NO order.  
Produce the summary with ITEM-NO listed within CONTRACT-NO (weekly)  
For each CONTRACT-NO  
    For each ORDER-NO in CONTRACT  
        For each ITEM-NO in ORDER  
            Create <CONTRACT-NO, ITEM-NO, ORDER-QTY> temporary record  
Sort in <CONTRACT-NO, ITEM-NO> sequence  
Sum all ORDER-QTY for same CONTRACT-NO and ITEO  
output the summary

The volume data are given as follows:

- |                                      |      |
|--------------------------------------|------|
| 1. Number of contract                | 50   |
| 2. Average no. of items/contract     | 100  |
| 3. Max no. of items/contract         | 500  |
| 4. Average no. of orders/contract    | 1200 |
| 5. Max no. of orders/contract        | 6000 |
| 6. Average no. of contracts/supplier | 3    |
| 7. Max no. contracts/supplier        | 10   |
| 8. Average no. of items/orders       | 10   |
| 9. Max no. of items/order            | 100  |
| 10. Average no. of orders/month      | 5000 |
| 11. Number of items                  | 2000 |
| 12. Number of projects/month         | 50   |

The data item sizes are given as follows:

1.	SUPPLIER-NO	6
2.	SUPPLIER-ADDRESS	30
3.	SUPPLIER-NAME	20
4.	CONTRACT-NO	6
5.	DATE-OF-CONTRACT	6
6.	ITEM-NO	8
7.	ITEM-DESCRIPTION	20
8.	CONTRACT-PRICE	8
9.	CONTRACT-AMOUNT	6
10.	ORDER-NO	6
11.	DATE-REQUIRED	6
12.	DATE-COMPLETED	6
13.	ORDER-QTY	6
14.	PROJECT-DATA	20
15.	PROJECT-NO	6

```
create database if not exists turner_construction;
use turner_construction;
create table SUPPLIERS(SUPPLIER_NO integer key, SUPPLIER_ADDRESS char(40),
SUPPLIER_NAME char(20));
```