IT214: Database Management Systems

Database Project - SQL Queries

FarmConnect: A Farmer-Buyer Bidding System

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SQL - Query 1

Retrive a list of farmer who have a quantity of available wheat exceeding 100 and a price per kg lower than 120.

```sql
SELECT farmer.farmerid,
       farmer."name",
       market.qtyremaining,
       market.start_price
FROM   farmer
       natural JOIN market
WHERE  market.cropname = 'Wheat'
       AND market.qtyremaining >= 100
       AND start_price < 120;
```

SQL - Query 2

Retrieve the names of farmers who have crops with the longest remaining shelf life, provided that the shelf life is positive and the crops are currently available. The list is sorted in descending order based on the remaining shelf life and limited to the top 10 results.

```sql
SELECT farmer."name",
       cropname,
       ( shelflife - ( CURRENT_DATE - harvesttime ) ) AS
    RemainingShelfLife
FROM   farmer
       NATURAL JOIN market
       NATURAL JOIN crop
WHERE  ( shelflife - ( CURRENT_DATE - harvesttime ) ) > 0
       AND status = 'available'
ORDER  BY remainingshelflife DESC
LIMIT  10;
```

SQL - Query 3

Retrieve the information of the farmers who fall in the same district with Buyer with specified ID 209.

```sql
SELECT farmer.farmerid ,
       farmer."name" AS FarmerName ,
       farmer.city ,
       farmer.rating
FROM   farmer
       INNER JOIN location
               ON farmer.locationid = location.locationid
       INNER JOIN buyer
               ON location.district
              = (SELECT district
                 FROM   location
                 WHERE  locationid = buyer.locationid)
WHERE  buyer.buyerid = 209;
```

SQL - Query 4

Retrieve the information of the Buyer who have purchased 20 kg or more of wheat at a price of Rs.22 or higher per kg.

```sql
SELECT buyerid ,
       buyer."name",
       quantity ,
       bidamount ,
       totalpayablecharges
FROM   buyer
       natural JOIN bid
       JOIN TRANSACTION
         ON bid.bidid = TRANSACTION.bidid
WHERE  bid.quantity >= 20
       AND bid.cropname = 'Wheat'
       AND bid.bidamount >= 22;
```

SQL - Query 5

Retrieve the number of farmer sold 'Wheat' more than 10 kg till Now.

```sql
SELECT Count(farmerid) AS NoOfFarmerSoldWheat
FROM   (SELECT farmerid,
               Sum(bid.quantity) AS Sold_Qty
        FROM   market
               natural JOIN bid
        WHERE  cropname = 'Wheat'
               AND bid.bidstatus = 'accepted'
        GROUP  BY farmerid) AS SoldQtyTable
WHERE  sold_qty >= 10;
```

SQL - Query 6

Retrieve the information of the buyer who requested for Millet which are not yet accepeted by any farmer.

```sql
SELECT croprequested.buyerid,
       buyer."name",
       qtyrequired,
       price,
       reqtime
FROM   croprequested
       natural JOIN buyer
WHERE  cropname = 'Millet'
       AND status = 'available';
```

SQL - Query 7

Retrieve the information for the buyer who is located in the same district as the farmer (let's say the farmer's ID is 12) and has requested a crop whose status is available.

```sql
SELECT buyerid,
       buyer."name",
       buyer.city,
       cropname,
       price,
       qtyrequired
FROM   croprequested
       natural JOIN buyer
       natural JOIN location
       natural JOIN (SELECT locationid,
                            farmerid
                     FROM   farmer
                     WHERE  farmerid = 12) AS F
WHERE   status = 'available';
```

SQL - Query 8

Retrieve the Total amount of money a Buyer has requested on a particular day assuming that all the request will be accepeted.

```sql
SELECT SUM(QTYREQUIRED * PRICE) AS TOTALMONEY
FROM CROPREQUESTED
WHERE BUYERID = 2
  AND date(REQTIME) = '2022-10-05';
```

SQL - Query 9

Retrieve the total income of all farmer in year 2021.

```sql
SELECT farmer.farmerid,
       farmer."name",
       Sum(TRANSACTION.totalpayablecharges) AS TotalRevenue
FROM   farmer
       natural JOIN market
       natural JOIN bid
       natural JOIN TRANSACTION
WHERE  Extract(year FROM TRANSACTION.transtime) = 2022
GROUP  BY farmer.farmerid,
          farmer."name"
ORDER  BY totalrevenue DESC;
```

SQL - Query 10

Retrieve the different crop whose cropcategory is Cereals and are available in market and seller having rating greater than 4 and resident of Chhattisgarh.

```sql
SELECT farmerid,
       cropname
FROM   (SELECT farmerid
        FROM   location
               natural JOIN farmer
        WHERE  "state" = 'Chhattisgarh'
               AND farmer.rating > 2) AS F
       natural JOIN farmer
       natural JOIN market
       natural JOIN crop
WHERE  cropcategory = 'Cereals'
       AND market.status = 'available';
```

SQL - Query 11

Retrieve the total Transaction and Total Transaction amount done by buyers on any particular day.

```sql
SELECT buyer.buyerid,
       Count(transactionid)     AS TOTALTRANSACTION,
       Sum(totalpayablecharges) AS TotalAMount
FROM   buyer
       INNER JOIN bid
               ON buyer.buyerid = bid.buyerid
       INNER JOIN TRANSACTION
               ON bid.bidid = TRANSACTION.bidid
WHERE  Date(transtime) = '2021-02-05'
GROUP  BY buyer.buyerid;
```

SQL - Query 12

Retrieve the total money a specific buyer has spent on Wheat in a particular month.

```sql
SELECT Sum(totalpayablecharges) AS TotalAmount
FROM   TRANSACTION
       INNER JOIN bid
               ON TRANSACTION.bidid = bid.bidid
WHERE  bid.buyerid = 1
       AND bid.cropname = 'Wheat'
       AND Date(transtime) BETWEEN '2021-02-02' AND '2021-10-30'
```

SQL - Query 13

Retrieve the total income and information of farmer who has sold wheat and has Conventional farming type For a given year.

```sql
SELECT farmer.farmerid,
       farmer."name",
       farmingtype,
       Sum(T.totalpayablecharges) AS Total_Income
FROM   farmer
       INNER JOIN market
               ON farmer.farmerid = market.farmerid
       INNER JOIN bid B
               ON market.farmerid = B.farmerid
                  AND market.cropname = B.cropname
                  AND market.harvesttime = B.bidtime
       INNER JOIN TRANSACTION T
               ON B.bidid = T.bidid
WHERE  market.cropname = 'wheat'
       AND farmer.farmingtype = 'conventional'
GROUP  BY farmer.farmerid,
          farmer."name",
          farmer.farmingtype
```

SQL - Query 14

Retrieve the total number of bid done on a crop in year 2022 (include all the bid (accepted and rejected) and bidamount is greater than a specific price

```sql
SELECT cropname,
       Count(*) AS NumOfBids
FROM   bid
WHERE  bidamount >= 20
GROUP  BY cropname;
```

SQL - Query 15

Retrieve the Top 10 Buyer of a specific crop on maximum quantity.

```sql
SELECT buyer.buyerid,
       buyer."name",
       Max(quantity) AS MaxPurchase
FROM   buyer
       JOIN bid
         ON buyer.buyerid = bid.buyerid
       JOIN transaction
         ON bid.bidid = transaction.bidid
WHERE  bid.cropname = 'Wheat'
       AND bid.bidstatus = 'accepted'
GROUP  BY buyer.buyerid,
          buyer."name"
ORDER  BY maxpurchase DESC
LIMIT  10;
```

SQL - Query 16

Retrieve the information of the buyer who has made transaction greater or equal of 50000 ruppes.

```sql
SELECT buyer.buyerid,
       buyer."name",
       totalpayablecharges AS MaxPurchase,
       Date(transtime)
FROM   buyer
       JOIN bid
         ON buyer.buyerid = bid.buyerid
       JOIN transaction
         ON bid.bidid = transaction.bidid
WHERE  bid.cropname = 'Wheat'
       AND bid.bidstatus = 'accepted'
       AND transaction.totalpayablecharges > 50000
GROUP  BY buyer."name",
          totalpayablecharges,
          buyer.buyerid,
          transtime
```

SQL - Query 17

Retrieve The Information of Farmer's which are in radius of 200 Km to a specific buyer
and has rating greater than or equal to 3.5.

```sql
SELECT farmerid ,
       city ,
       rating ,
       Abs(F.relativedistance - P.relativedistance) AS
   At_Distance_in_KM
FROM   (SELECT farmerid ,
               city ,
               rating ,
               relativedistance
        FROM   farmer
               natural JOIN location
        WHERE  rating > 3.5) AS F
       CROSS JOIN (SELECT buyerid ,
                          relativedistance
                   FROM   buyer
                          natural JOIN location
                   WHERE  buyerid = 1) AS P
WHERE  Abs(F.relativedistance - P. relativedistance) < 200
ORDER  BY at_distance_in_km ASC;
```

SQL - Query 18

Retrieve the information about Top Selling 10 Crops according to their BuyerType.

```sql
SELECT cropname ,
       buyertype ,
       Count(*) AS Buyer_Type_Total
FROM   bid
       JOIN buyer
         ON bid.buyerid = buyer.buyerid
WHERE  bid.bidstatus = 'accepted'
GROUP  BY cropname ,
          buyertype
ORDER  BY buyer_type_total DESC
LIMIT  10;
```

SQL - Query 19

Retrieve the total revenue generated by each crop category in the specific year.

```sql
SELECT cropcategory ,
       Sum(totalpayablecharges) AS TotalRevenue
FROM   crop
       JOIN market
         ON crop.cropname = market.cropname
       JOIN bid
         ON market.farmerid = bid.farmerid
            AND market.cropname = bid.cropname
            AND market.harvesttime = bid.harvesttime
       JOIN TRANSACTION
         ON bid.bidid = TRANSACTION.bidid
WHERE  Extract(year FROM TRANSACTION.transtime) = 2022
GROUP  BY crop.cropcategory
ORDER  BY totalrevenue DESC;
```

SQL - Query 20

Retrieve the profitable crop by taking average margin as (Accepted BidAmount - Start_Price) for a given year. so that farmer can predict which crop will be profitable in future.

```sql
SELECT market.cropname ,
       Avg(bid.bidamount - market.start_price) AS AverageMargin
FROM   market
       JOIN bid
         ON market.cropname = bid.cropname
            AND market.harvesttime = bid.harvesttime
            AND market.farmerid = bid.farmerid
WHERE  Extract(year FROM bid.bidtime) = 2022
GROUP  BY market.cropname
ORDER  BY averagemargin DESC;
```