

## 9 FF Sales Example

- In this section we are going to use the following set of hypothetical tables about a company (called F&F). When writing queries about this data you can assume that all tables are within the same schema.
- For this company, each transaction (or sale) has a single item and sales person attached to it.
- All columns with the same name can be assumed to match and merge.
- Transaction Table:
  - SID, ItemID and TID are all integers, Amount is a float and TransTS is a timestamp<sup>1</sup>
  - TID is unique per transaction and stands for “Transaction ID”
  - SID is unique per sales person and stands for “SalesPersonID”
  - ItemID is an ID that is unique to an item.
- Refund Table:
  - RefundTS is a timestamp
  - RefundAmount is a float, it is always less than or equal to the transaction amount
  - A transaction can only have a single refund, but not all transactions will have refunds.

Table D.11: *Transaction* Table, 12,525 Rows

SID	TransTS	ItemID	TID	Amount
1	01-01-14 08:10:25 PST	124	1	15000.18
3	01-21-14 18:10:25 PST	888	2	25000.45
2	11-08-14 12:09:25 PST	125	12	1854.65

Table D.12: *Refund* Table, 385 Rows

TID	RefundTS	RefundAmount
12	03-14-14 14:12:18 PST	1,854.65

Table D.13: *SalesPerson* Table, 50 Rows

SID	Name	MobilePhone	State	BonusStructure
1	Brian O’Conner	111-222-3333	CA	High
2	Dominic Torretto	444-555-6666	CA	High
3	Letty	777-888-9999	CA	High
4	Lightning McQueen	111-333-5555	AZ	Low
5	Tow Mater	222-444-6666	AZ	Low

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<sup>1</sup>You can assume that the date functions introduced in class work on this data.

Table D.14: *Item* Table, 50 Rows

ItemID	BaseCost	Name
1	4.99	Washer Fluid
2	14.89	Brake Fluid
3	56.78	Brake Pads (Generic)

1. What are the top five sales people (SID only) in terms of number of sales?

```
select
    count(1) as numsales
    , sid
from
    transaction
group by 2
order by 1 desc
limit 5;
```

2. What are the top five sales people (Name) in terms of number of sales?

```
select
    count(1) as numsales
    , name
from
    transaction
left join
    salesperson
using( sid )
group by name
order by 1 desc
limit 5;
```

3. What are the top 10 sales people (Name) in terms of dollars of sales?

```
select
    name
from
    transaction
left join
    salesperson
using(sid)
group by 1
order by sum( amount) desc
limit 10;
```

4. Which mobile phone area code (first three digits) has the highest number of sales?

```
select
    left( mobilePhone, 3) as areaCode
from
    transaction
left join
    salesperson
using(sid)
group by 1
order by sum( amount) desc
limit 10;
```

5. Calculate the total of revenue from each state.

```
select
    state
    , sum( amount) as state_amt
from
    transaction
left join
    salesperson
using(sid)
group by 1
```

6. Calculate the total revenue from all states.

```
select sum(amount) as totalsales from transaction;
```

7. Calculate the *percentage* of revenue from each state.

```
select lhs.state, lhs.state_amt / rhs.totalsales
from
    (select
        state
        , sum( amount) as state_amt
    from
        transaction
    left join
        salesperson
    using(sid)
    group by 1) as lhs
cross join
    (select sum( amount) as totalsales from transaction ) as rhs;
```

8. What was the total refunded amount for each sales person (SID only)?

```
select
    SID
    , sum( refundamount) as refamt
from
    transactions
left join
    refunds
using( TID )
group by 1;
```

9. How many sales people had no refunds? When thinking about this problem remember that a sales person has multiple transactions and each transaction *may* have a refund. We need to make sure that there are no refunds for any of the transactions for a sales person.

```

select
    sid
from
    transactions
left join
    refunds
using( TID )
group by 1
having count( refunds.refundamount ) = 0;

```

10. Which sales person (name only) had the highest percentage of refunds, based on number of transactions?

```

select
    sid
from
    transaction
left join
    refund
on transactions.tid = refund.tid
left join
    salesperson
on transaction.sid = salesperson.sid
group by 1
order by sum(refundamount)

```

11. For each salesperson (Name), what percentage of their sales were refunded?

```

select
    name
    , sum(refundamount)/sum(amount) as pct_refund
from
    transactions
left join
    salesperson
using(sid)
left join
    refunds
using(tid)
group by 1;

```

12. What is the average percentage refunded, on those transactions with refunds?

```

select
    avg( refundamount / amount ) as avg_ref_pct
from
    transactions
inner join
    refunds
    using( tid );

```

13. For each month, report the percentage of sales refunded by both number of refunds and dollars. Assume that a refund can occur in any month after a sale, but that all refunds are in these tables.

```

select
    date_part('month', transTS) as sales_month
    , count( refunds.refundamount )::float
      / count(transactions.amount) as pct_ref
    , sum( refunds.refundamount )
      / sum(transactions.amount) as pct_dol_ref
from
    transactions
left join
    refunds
    using( tid )
group by 1;

```

14. What percentage of sales had (1) returns above 20% (by dollar) and (2) returns above 50% (by dollar) of their value? Write a single query that returns two values.

```

select
    sum( case when refundamount > .2 * amount then 1 else 0 end)
      / count(1) as pct_above_20
    , sum( case when refundamount > .5 * amount then 1 else 0 end)
      / count(1) as pct_above_50
FROM
    transactions
left join
    refunds
    using(tid)

```

15. Let's calculate which item (Name) is the most returned, by percent of returns:

```
select
    item.name
from
    transactions
left join
    refunds
    using(tid)
left join
    item
    using( itemID)
group by item.name
order by count(refunds.tid)::float / count( transactions.tid) desc
limit 1;
```

16. Calculate the total amount of BaseCost returned, by item name.

```
select
    item.name
    , sum( BaseCost) as amtReturned
from
    refunds
left join
    transactions
    using(tid)
left join
    item
    using( itemID)
group by item.name;
```