```sql
USE INSPECTIONS;

-- Are there more licensed food or liquor establishments in Boston?
SELECT *
FROM (
        SELECT Count(FoodEstablishmentKey) AS food_count
    FROM FoodEstablishments fe
        JOIN Establishments es
        ON fe.EstablishmentFK = es.EstablishmentKey
        JOIN Licenses l
        ON l.LicenseKey = es.LicenseFK
    WHERE l.LicenseStatus = 'Active'
    ) food,
    (
        SELECT Count(LiquorEstablishmentKey) AS liquor_count
        FROM LiquorEstablishments le
        JOIN Establishments es
        ON le.EstablishmentFK = es.EstablishmentKey
        JOIN Licenses l
        ON l.LicenseKey = es.LicenseFK
    WHERE l.LicenseStatus = 'Active'
    ) liquor;
```

food_count	liquor_count
3277	1109

```sql
-- What percentage of food establishments didn't pass inspection in a given year?

SELECT IF(Failures IS NULL, 0, Failures)/Total * 100 AS Percent, ty FROM (
        SELECT Count(InspectionResult) AS Failures, YEAR(InspectionDate) AS fy
        FROM InspectionHistory
        WHERE InspectionResult != 'HE_Pass' -- the wheres make these two very differnt tables
    GROUP BY fy
    ORDER BY fy
        ) failure_table
        RIGHT JOIN (  -- joins whether or not there are failures that year
                SELECT COUNT(InspectionResult) AS Total, YEAR(InspectionDate) AS ty
                FROM InspectionHistory
                GROUP BY ty
                ORDER BY ty) total_table
        ON failure_table.fy = total_table.ty;
```

Percent	ty
▶ 0.0000	NULL
92.8571	2006
64.6626	2007
59.7129	2008
55.5591	2009
53.2673	2010
51.5552	2011
67.7845	2012
63.6951	2013
57.6286	2014
57.2801	2015
56.1915	2016
53.9333	2017
55.8214	2018
54.8387	2019

-- What percentage of food establishments have a violation of any type in a given year?

```
SELECT IF(Failures IS NULL, 0, Failures)/Total * 100 AS Percent, ty FROM
    (
    SELECT Count(ViolationHistory.ViolationStatus) AS Failures,
                YEAR(ViolationHistory.ViolationDate) as fy
    FROM ViolationHistory
    JOIN FoodEstablishments
        ON ViolationHistory.EstablishmentName = FoodEstablishments.EstablishmentName
    WHERE ViolationHistory.ViolationStatus = 'Fail'
    GROUP BY fy
    ) failure_table
    RIGHT JOIN (
        SELECT Count(ViolationHistory.ViolationStatus) AS Total,
                    YEAR(ViolationHistory.ViolationDate) as ty
        FROM ViolationHistory
        JOIN FoodEstablishments
            ON ViolationHistory.EstablishmentName = FoodEstablishments.EstablishmentName
        GROUP BY ty
        ORDER BY ty) total_table
    ON failure_table.fy = total_table.ty;
```

Percent	ty
▶ NULL	NULL
49.4513	2007
56.3262	2008
55.2189	2009
55.8379	2010
55.7485	2011
55.9700	2012
55.4578	2013
56.8925	2014
55.6117	2015
55.3740	2016
54.9787	2017
54.7173	2018
55.0218	2019

-- What Food Establishments are also Liquor Establishments?

SELECT FoodEstablishments.EstablishmentName
FROM FoodEstablishments,
        (
    SELECT * FROM LiquorEstablishments
        JOIN Establishments
        ON EstablishmentFK = EstablishmentKey) table1
WHERE FoodEstablishments.EstablishmentName = table1.EstablishmentName;

EstablishmentName
▶ Chilton Club
HARVARD CLUB OF BOSTON
HARVARD CLUB OF BOSTON
LONGWOOD HOTEL CORP.
Museum of Science
NEW ENGLAND AQUARIUM CO…
PUSHCART CAFE
Somerset Club
SOUTH BOSTON YACHT CLUB
ALGONQUIN CLUB OF BOSTON
Savin Hill Yacht Club
T.G.I. FRIDAY'S INC.

Business insight: Of establishments with inactive licenses, how many had failed any inspection?

```
SELECT (
(SELECT COUNT(*) # 2690 inactive with fails
FROM (
        SELECT InspectionHistory.EstablishmentName
        FROM Licenses
        INNER JOIN Establishments
            ON Licenses.LicenseKey = Establishments.LicenseFK
        INNER JOIN FoodEstablishments
            ON Establishments.EstablishmentName = FoodEstablishments.EstablishmentName
        INNER JOIN InspectionHistory
            ON FoodEstablishments.EstablishmentName = InspectionHistory.EstablishmentName
        WHERE LicenseStatus LIKE 'Inactive'
            AND (InspectionResult LIKE 'HE_Fail'
                OR InspectionResult LIKE 'HE_FailExt')
        GROUP BY InspectionHistory.EstablishmentName
        LIMIT 600000
) AS CNT_INACTIVE_W_FAILS) / # divided by
(SELECT COUNT(*) # 3792 total inactive
FROM (
        SELECT FoodEstablishments.EstablishmentName
        FROM Licenses
        INNER JOIN Establishments
            ON Licenses.LicenseKey = Establishments.LicenseFK
        INNER JOIN FoodEstablishments
            ON Establishments.EstablishmentName = FoodEstablishments.EstablishmentName
        WHERE LicenseStatus LIKE 'Inactive'
        GROUP BY FoodEstablishments.EstablishmentName
        LIMIT 600000
) AS CNT_INACTIVE)
)  * 100 AS INACTIVE_W_FAILS_PERCENTAGE;
```

Result Grid	Filter Rows:	
#	INACTIVE_W_FAILS_PERCENTAGE	
1	70.9388	

Business insight: Are there more inspections during a certain week of the month?

```sql
SELECT COUNT(*) AS CNT_WEEK,
       CASE
              WHEN INSPECTION_DAY <= 7 THEN 'Week 1 - 7 days'
              WHEN INSPECTION_DAY BETWEEN 8 AND 14 THEN 'Week 2 - 7 days'
              WHEN INSPECTION_DAY BETWEEN 15 AND 21 THEN 'Week 3 - 7 days'
              WHEN INSPECTION_DAY BETWEEN 22 AND 28 THEN 'Week 4 - 7 days'
              WHEN INSPECTION_DAY > 28 THEN 'Week 5 - 3 days'
              ELSE 'NA'
       END AS INSPECTION_WEEK
FROM (SELECT DAYOFMONTH(InspectionDate) AS INSPECTION_DAY FROM
InspectionHistory) AS TMP_TABLE_FOR_CASE_ALIAS
GROUP BY INSPECTION_WEEK
ORDER BY CNT_WEEK DESC;
```

Result Grid	Filter Rows:	
#	CNT_WEEK	INSPECTION_WEEK
1	27577	Week 1 - 7 days
2	27362	Week 2 - 7 days
3	26714	Week 3 - 7 days
4	26393	Week 4 - 7 days
5	15748	Week 5 - 3 days
6	2345	NA

Business Insight: And are there more or fewer failed inspections during high volume or low volume inspection weeks of the month?

```
SELECT COUNT(*) CNT_RESULTS,
       CASE
              WHEN INSPECTION_DAY <= 7
                     AND InspectionResult LIKE 'HE_Pass' THEN 'Week 1 PASS'
       WHEN INSPECTION_DAY <= 7
                     AND (InspectionResult LIKE 'HE_FailExt'
                            OR InspectionResult LIKE 'HE_FAIL') THEN 'Week 1 FAIL'
              WHEN INSPECTION_DAY BETWEEN 8 AND 14
                     AND InspectionResult LIKE 'HE_Pass' THEN 'Week 2 PASS'
              WHEN INSPECTION_DAY BETWEEN 8 AND 14
                     AND (InspectionResult LIKE 'HE_FailExt'
                            OR InspectionResult LIKE 'HE_FAIL') THEN 'Week 2 FAIL'
              WHEN INSPECTION_DAY BETWEEN 15 AND 21
                     AND InspectionResult LIKE 'HE_Pass' THEN 'Week 3 PASS'
              WHEN INSPECTION_DAY BETWEEN 15 AND 21
                     AND (InspectionResult LIKE 'HE_FailExt'
                            OR InspectionResult LIKE 'HE_FAIL') THEN 'Week 3 FAIL'
              WHEN INSPECTION_DAY BETWEEN 22 AND 28
                     AND InspectionResult LIKE 'HE_Pass' THEN 'Week 4 PASS'
              WHEN INSPECTION_DAY BETWEEN 22 AND 28
                     AND (InspectionResult LIKE 'HE_FailExt'
                            OR InspectionResult LIKE 'HE_FAIL') THEN 'Week 4 FAIL'
              WHEN INSPECTION_DAY > 28
                     AND InspectionResult LIKE 'HE_Pass' THEN 'Week 5 PASS'
              WHEN INSPECTION_DAY > 28
                     AND (InspectionResult LIKE 'HE_FailExt'
                            OR InspectionResult LIKE 'HE_FAIL') THEN 'Week 5 FAIL'
              ELSE 'NA'
       END AS INSPECTION_WEEK
FROM (SELECT DAYOFMONTH(InspectionDate) AS INSPECTION_DAY, InspectionResult FROM
InspectionHistory) AS WEEK_RESULT_TABLES
GROUP BY INSPECTION_WEEK
ORDER BY CNT_RESULTS DESC;
```

Result Grid — Filter Rows:

#	CNT_RESULTS	INSPECTION_WEEK
5	11572	Week 4 PASS
6	10540	Week 1 FAIL
7	10117	Week 2 FAIL
8	9824	Week 4 FAIL
9	9502	Week 3 FAIL
10	4357	Week 5 PASS
11	3371	Week 5 FAIL

How many inspections occurred for each restaurant on average between 2013 and 2018?

SELECT EstablishmentName, COUNT(*)/6 as AverageInspections FROM inspectionhistory

WHERE Year(InspectionDate)>2012 AND Year(InspectionDate)<2019

GROUP BY EstablishmentName

;

EstablishmentName	AverageInspections
100 Percent Delicia Food	4.3333
100 Percent Delicias Express	0.1667
1000 Degrees Pizza	0.8333
125 Nashua St. Cafe (MGH)	0.8333
129 Lake Street Cafe	1.5000
149 Eat Street	2.8333
163 Vietnamese Sandwich	2.3333
20TH CENTRY BOWLING LANES	1.8333
21 ST. AMENDMENT	4.0000
224 BOSTON	0.3333
2Twenty2	0.5000
320 Cafe	0.8333
4 Brothers Market	0.1667
49 Social	2.0000
73 Cafe	2.0000
75 CHESTNUT	2.0000
75 On Liberty Wharf	2.3333
753 South	0.8333
89 Broad Street/Fin Point	1.5000
99 RESTAURANT AND PUB	4.1667
A & N PIZZA	3.0000
A @ Time	3.0000
A C Farm Market	5.0000
A K's Take Out & Delivery	3.6667
A.C Hotel by Marriott	0.1667
A-1 Convenience	2.5000

#########Monthly evaluation of inspections#########

Classify inspections by month: What is the inspections failure percentage for each month?

SELECT * FROM (

SELECT 1TC, 1FC, ROUND(1FC/1TC*100) as 1FP FROM (

SELECT COUNT(*) as 1TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=1) total, (

SELECT COUNT(*) as 1FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=1 AND InspectionResult != 'HE_Pass') fail) JAN, (

SELECT 2TC, 2FC, ROUND(2FC/2TC*100) as 2FP FROM (

SELECT COUNT(*) as 2TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=2) total, (

SELECT COUNT(*) as 2FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=2 AND InspectionResult != 'HE_Pass') fail) FEB, (

SELECT 3TC, 3FC, ROUND(3FC/3TC*100) as 3FP FROM (

SELECT COUNT(*) as 3TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=3) total, (

SELECT COUNT(*) as 3FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=3 AND InspectionResult != 'HE_Pass') fail) MAR, (

SELECT 4TC, 4FC, ROUND(4FC/4TC*100) as 4FP FROM (

SELECT COUNT(*) as 4TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=4) total, (

SELECT COUNT(*) as 4FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=4 AND InspectionResult != 'HE_Pass') fail) APR, (

SELECT 5TC, 5FC, ROUND(5FC/5TC*100) as 5FP FROM (

SELECT COUNT(*) as 5TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=5) total, (

SELECT COUNT(*) as 5FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=5 AND InspectionResult != 'HE_Pass') fail) MAY, (

SELECT 6TC, 6FC, ROUND(6FC/6TC*100) as 6FP FROM (

```sql
SELECT COUNT(*) as 6TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=6) total, (

SELECT COUNT(*) as 6FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=6 AND InspectionResult != 'HE_Pass') fail) JUN, (


SELECT 7TC, 7FC, ROUND(7FC/7TC*100) as 7FP FROM (

SELECT COUNT(*) as 7TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=7) total, (

SELECT COUNT(*) as 7FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=7 AND InspectionResult != 'HE_Pass') fail) JUL, (


SELECT 8TC, 8FC, ROUND(8FC/8TC*100) as 8FP FROM (

SELECT COUNT(*) as 8TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=8) total, (

SELECT COUNT(*) as 8FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=8 AND InspectionResult != 'HE_Pass') fail) AUG, (


SELECT 9TC, 9FC, ROUND(9FC/9TC*100) as 9FP FROM (

SELECT COUNT(*) as 9TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=9) total, (

SELECT COUNT(*) as 9FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=9 AND InspectionResult != 'HE_Pass') fail) SEP, (


SELECT 10TC, 10FC, ROUND(10FC/10TC*100) as 10FP FROM (

SELECT COUNT(*) as 10TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=10) total, (

SELECT COUNT(*) as 10FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=10 AND InspectionResult != 'HE_Pass') fail) OCT, (
```

SELECT 11TC, 11FC, ROUND(11FC/11TC*100) as 11FP FROM (

SELECT COUNT(*) as 11TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=11) total, (

SELECT COUNT(*) as 11FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=11 AND InspectionResult != 'HE_Pass') fail) NOV, (

SELECT 12TC, 12FC, ROUND(12FC/12TC*100) as 12FP FROM (

SELECT COUNT(*) as 12TC FROM inspectionhistory

WHERE MONTH(InspectionDate)=12) total, (

SELECT COUNT(*) as 12FC FROM inspectionhistory

WHERE MONTH(InspectionDate)=12 AND InspectionResult != 'HE_Pass') fail) DECEM

;

1TC	1FC	1FP	2TC	2FC	2FP	3TC	3FC	3FP	4TC	4FC	4FP	5TC	5FC	5FP	6TC	6FC	6FP
9668	5772	60	9206	5241	57	10835	6136	57	10799	5964	55	11085	6206	56	9543	5328	56

7TC	7FC	7FP	8TC	8FC	8FP	9TC	9FC	9FP	10TC	10FC	10FP	11TC	11FC	11FP	12TC	12FC	12FP
7652	4374	57	10162	5674	56	9201	5064	55	11063	6264	57	9717	5177	53	14863	10674	72

######### Followup #########

Follow-up: For the months with the two highest inspection failure percentages (December and January),

what were the average weather conditions for the days that inspections failed and in how many instances

was it snowing or raining or both (so not "None" weather event)?

SELECT AVG(prep1.TempHighInF), AVG(prep1.TempLowInF), AVG(prep1.HumidityHighPercentage), AVG(prep1.HumidityLowPercentage), AVG(prep1.WindHighInMpf),

AVG(prep1.WindgustHighInMpf), prep2.CNT as PositiveEventCount FROM (

SELECT DISTINCT WeatherDate, TempHighInF, TempAverageInF, TempLowInF, HumidityHighPercentage, HumidityAveragePercentage, HumidityLowPercentage,

WindHighInMpf, WindAverageInMpf, WindGustHighInMpf, SnowFallInInches, PrecipitationInInches, Events

FROM weather INNER JOIN inspectionhistory on WeatherDate=InspectionDate

WHERE InspectionResult != 'HE_Pass' AND (MONTH(InspectionDate)=1 OR MONTH(InspectionDate)=12)) prep1, (

SELECT COUNT(*) as CNT

FROM weather INNER JOIN inspectionhistory on WeatherDate=InspectionDate

WHERE InspectionResult != 'HE_Pass' AND (MONTH(InspectionDate)=1 OR MONTH(InspectionDate)=12) AND Events != 'None') prep2

;

AVG(prep1.TempHighInF)	AVG(prep1.TempLowInF)	AVG(prep1.HumidityHighPercentage)	AVG(prep1.HumidityLowPercentage)	AVG(prep1.WindHighInMpf)	AVG(prep1.WindgustHighInMpf)	PositiveEventCount
40.0066	26.4525	79.3377	48.2826	22.2318	29.4636	8128

What is the passing percentage on average for all restaurants?

SELECT passtable.PassCount/totaltable.TotalCount *100 as TotalPassPercentage FROM (

SELECT COUNT(*) as PassCount FROM InspectionHistory

WHERE InspectionResult = 'HE_Pass') passtable, (

SELECT COUNT(*) as TotalCount FROM InspectionHistory

WHERE InspectionResult != 'NULL'

) totaltable

;

TotalPassPercentage
41.2632

And which restaurants have the top 100 inspections passing percentage?

SELECT passtable.EstablishmentName, passtable.PassCount/totaltable.TotalCount *100 as PassPercentage FROM (

SELECT EstablishmentName, COUNT(*) as PassCount FROM InspectionHistory

WHERE InspectionResult = 'HE_Pass'

GROUP BY EstablishmentName) passtable JOIN (

SELECT EstablishmentName, COUNT(*) as TotalCount FROM InspectionHistory

GROUP BY EstablishmentName

HAVING COUNT(*)>5 #Because a lot of establishments have only 1 inspection and that gives them a 100% pass in some cases, we need to consider establishments that had a good amount of inspections

) totaltable on passtable.EstablishmentName=totaltable.EstablishmentName

ORDER BY PassPercentage DESC

LIMIT 100

;

EstablishmentName	PassPercentage
Newslink Boston No. 27 (TRMNL A)	100.0000
Double Chin	100.0000
Gracenote Coffee	100.0000
Well Coffee House Boston	100.0000
The Bacon Truck No. 2	100.0000
Hudson No. 1941	100.0000
Dunkin Donuts(Seton Bldg.)	100.0000
Boston College Hillside Shop	100.0000
Boston Honey Company	100.0000
Hudson No. 1933	100.0000
Hudson No. 1939	100.0000
Hudson No. 1942	100.0000
B I Deaconess Med Ctr Shop East	100.0000
EOM Newsstand	100.0000
Duty Free	100.0000
TAVITAS SOUTH STATION	100.0000
NEW ENGLAND BAPTIST GIFT SHOP	94.7368
BARNES&NOBLE COLLEGE BOOKS...	94.1176
Crawford Drug	93.7500
Yale Appliance & Lighting	93.3333
Hampton Inn Suites	93.3333
Simmons College Bookstore	93.3333
Neiman Marcus	92.8571
Hyatt Conf. Ctr. & Hotel (RF)	92.8571
CONDOM WORLD	92.8571
Sullivan's Pharmacy	92.3077
HARVARD COOP/BUSINESS SCHO...	92.3077
Local Color	92.3077
Gift Shop/Brigham & Women's	92.3077
CLUB HOTEL BAR	92.0000

For each inspection, how many violations happen on average and what is the average violation status (*,**,***)?

SELECT AVG(VPItable.VPI) as AverageViolationsPerInspection, AVL.AverageViolationLevel FROM (

SELECT EstablishmentName, InspectionHistoryFK, COUNT(*) as VPI FROM violationhistory ##VPI stands for ViolationsPerInspection

GROUP BY InspectionHistoryFK) VPItable, (

SELECT AVG(CHAR_LENGTH(ViolationLevel)) as AverageViolationLevel FROM ViolationHistory

WHERE ViolationLevel='*' OR ViolationLevel='**' OR ViolationLevel='***') AVL

AverageViolationsPerInspection	AverageViolationLevel
5.8489	1.4222