

Exercise 1

- The following relations are given (primary keys are underlined):
 - FINE(IDFine, Date, Time, ViolationType, Numberplate)
- Assume the following cardinalities:
 - $\text{card}(\text{FINE}) \approx 10^5$ tuples
 - $\text{card}(\text{Date} \geq 1/1/2005 \text{ and Date} \leq 31/12/2005 \text{ FINE}) \approx 10^5$ tuples
 - $\text{card}(\text{ViolationType}='Type10' \text{ FINE}) \approx 10^3$ tuples
 - $\text{card}(\text{ViolationType}='Type50' \text{ FINE}) \approx 9 * 10^4$ tuples

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Query 1

```
SELECT Date, COUNT(*)  
FROM FINE  
WHERE Date ≥ 1/10/2005 and Date ≤ 1/12/2005  
GROUP BY Date;
```

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Query 2

```
SELECT Date, COUNT(*)  
FROM FINE  
WHERE Date ≥ 1/10/2005 and Date ≤ 1/12/2005  
and ViolationType = 'Type50'  
GROUP BY Date;
```

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Query 3

```
SELECT Date, COUNT(*)  
FROM FINE  
WHERE Date ≥ 1/10/2005 and Date ≤ 1/12/2005  
and ViolationType = 'Type10'  
GROUP BY Date;
```

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