



빅데이터 모델링과 플랫폼 = 빅모플

# Big Data Modeling and Platforms

AIX30011 Spring 2025

**한동대학교**  
HANDONG GLOBAL UNIVERSITY

School of Applied Artificial Intelligence | 전재영



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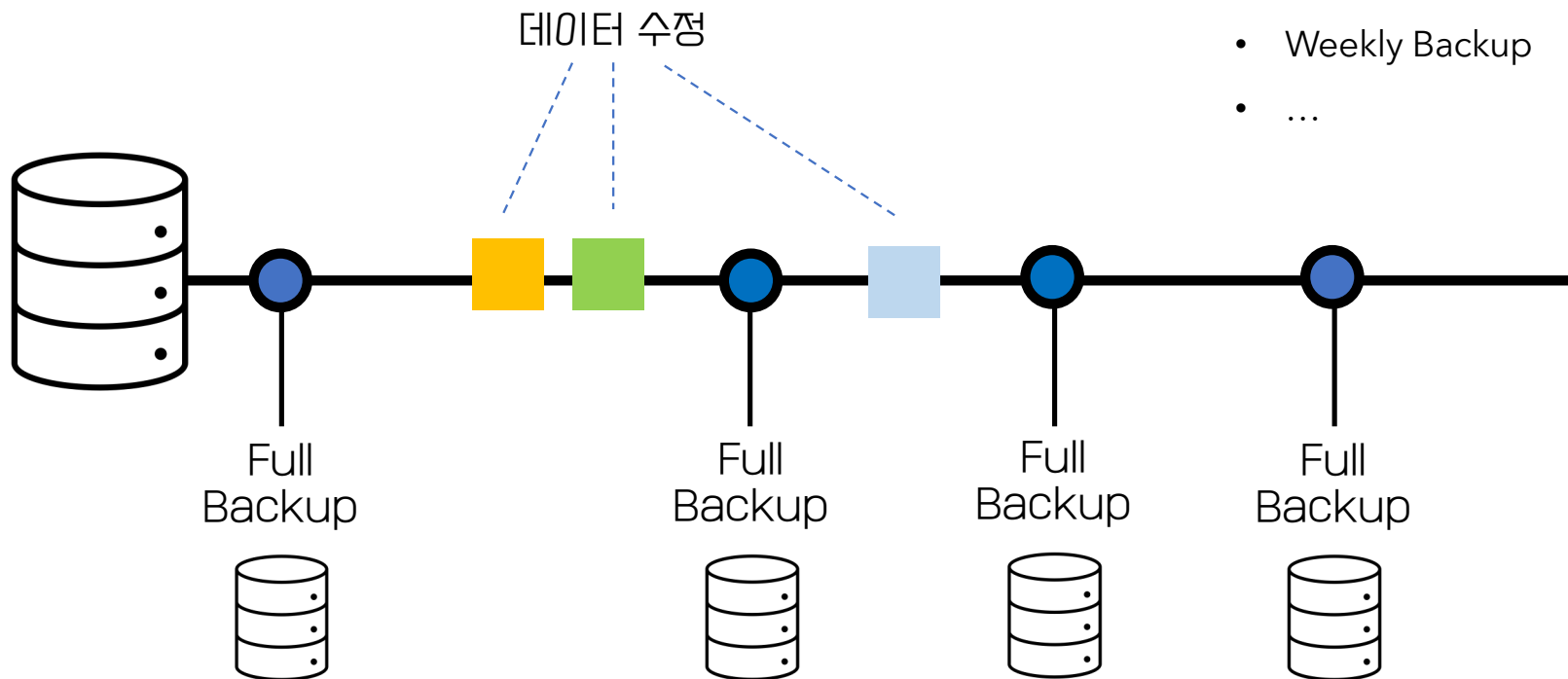
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The slide features three decorative curved lines in the corners. One is in the top right, curving from the top edge towards the right. Another is in the bottom left, curving from the left edge towards the bottom. The third is in the bottom right, curving from the bottom edge towards the right. All three lines have a multi-colored gradient, transitioning from light blue on the outside to light green on the inside.

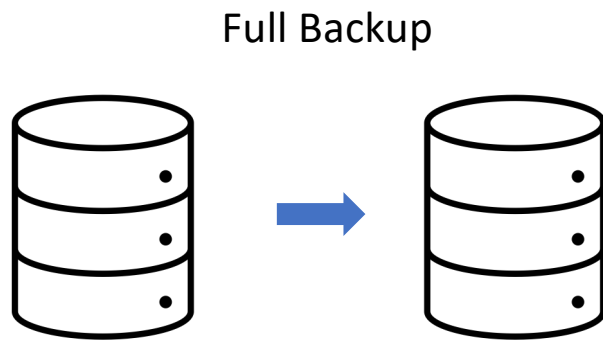
# Backup and Restore

# Backup Strategy : Full Backup

- Daily Backup
- Nightly Backup
- Hourly Backup
- Weekly Backup
- ...



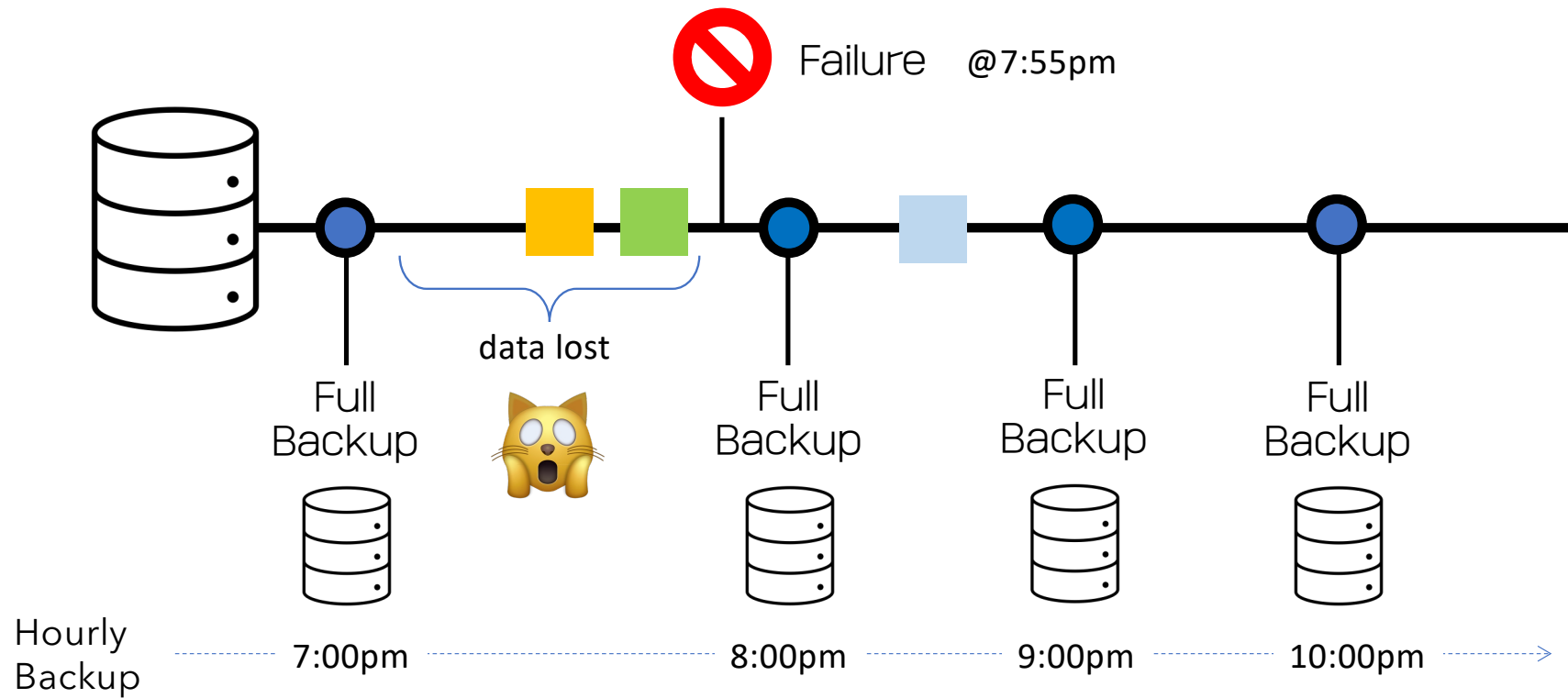
# Problem with Full Backup



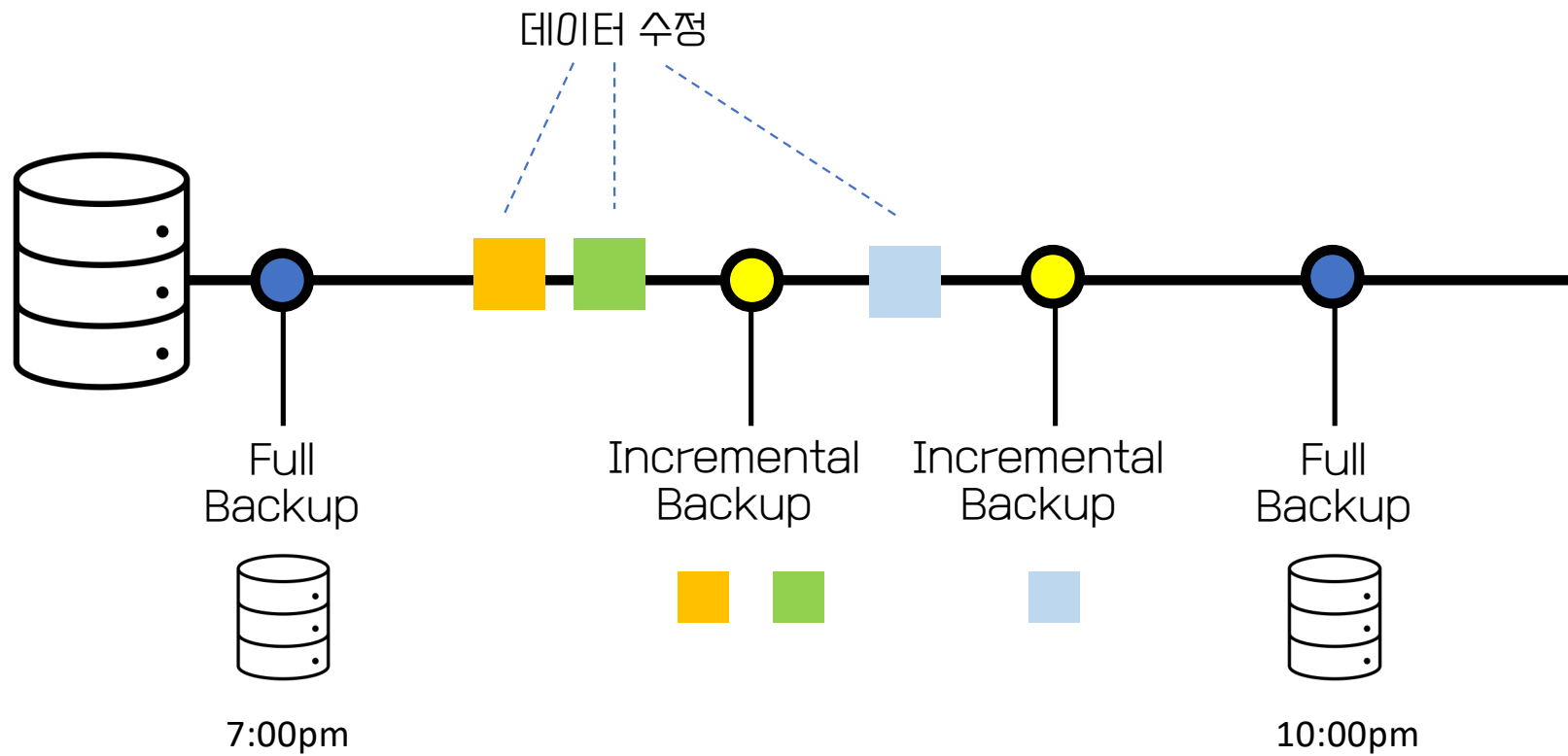
데이터베이스 전체를 복사하는데  
10시간 걸린다면?

Business Requirements  
1시간마다 백업, 10분마다 백업, ...

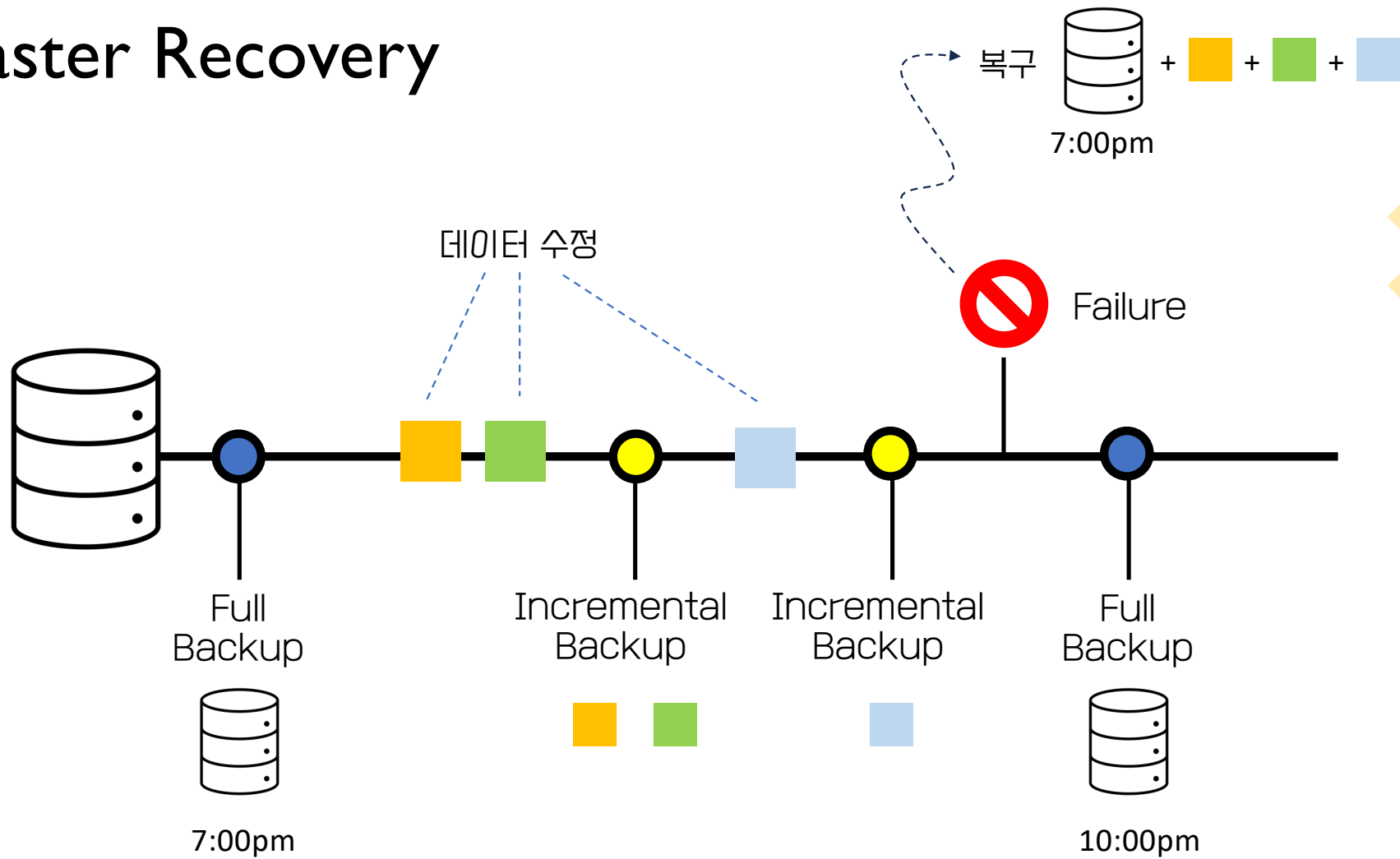
# Problem with Full Backup



# Backup Strategy : Incremental Backup

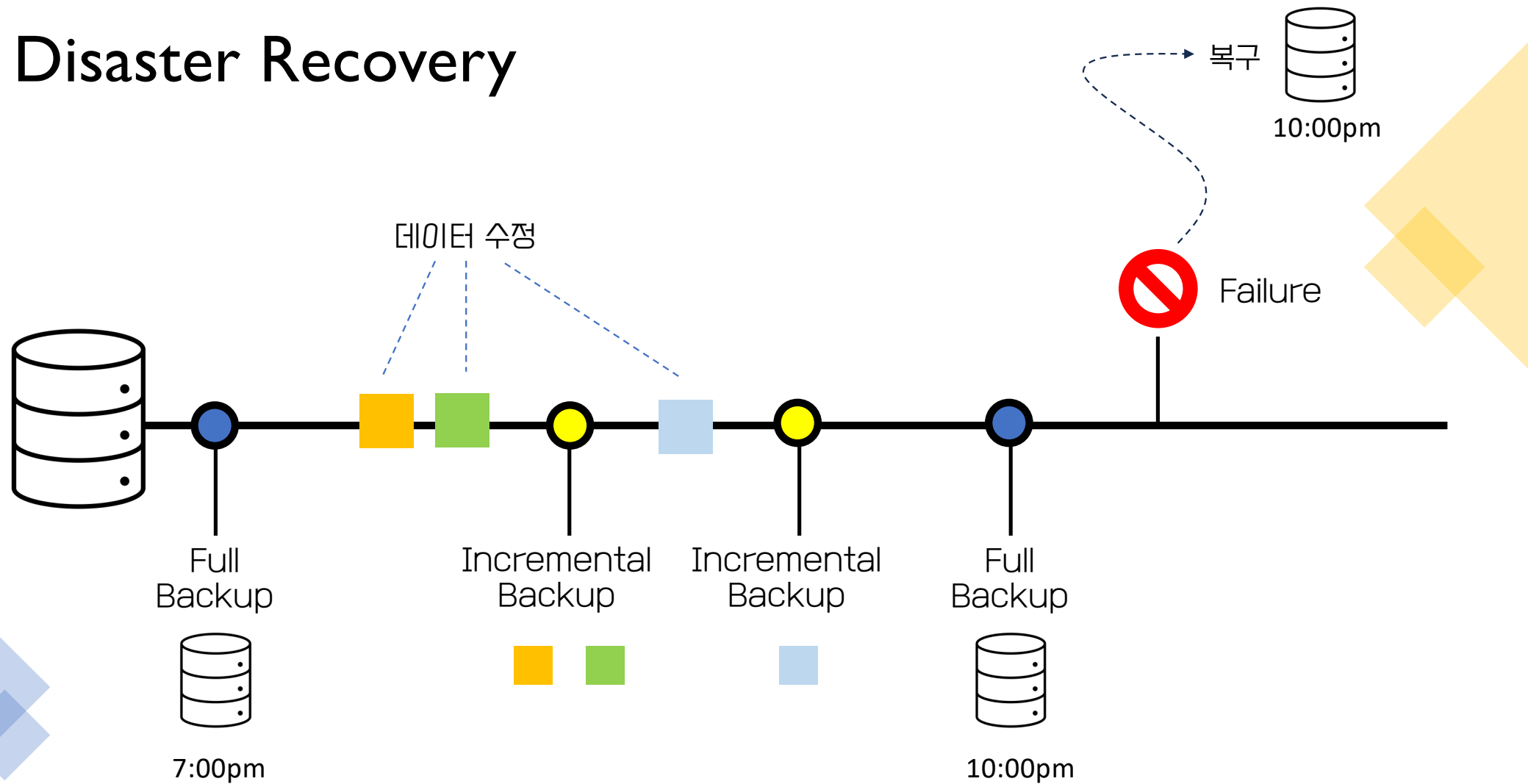


# Disaster Recovery

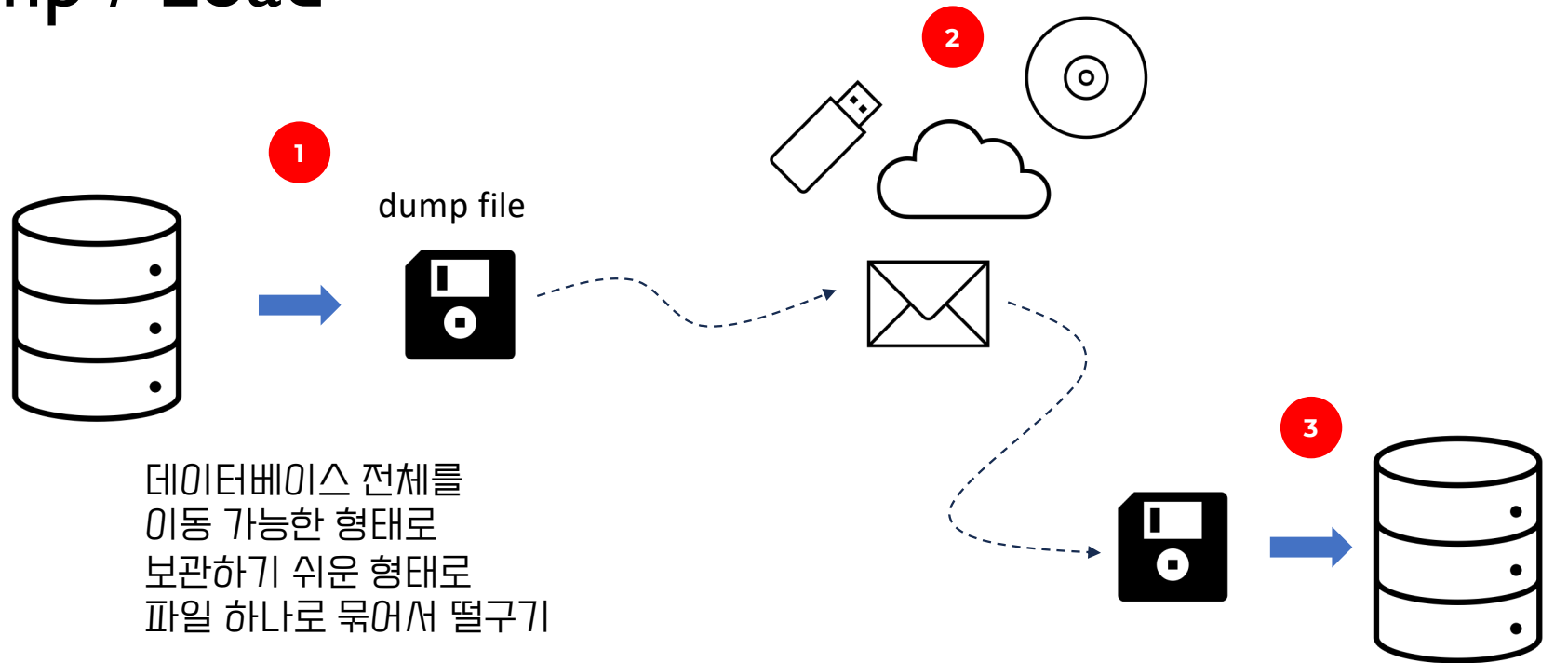




# Disaster Recovery



# Dump / Load



데이터베이스 전체를  
이동 가능한 형태로  
보관하기 쉬운 형태로  
파일 하나로 묶어서 떨구기



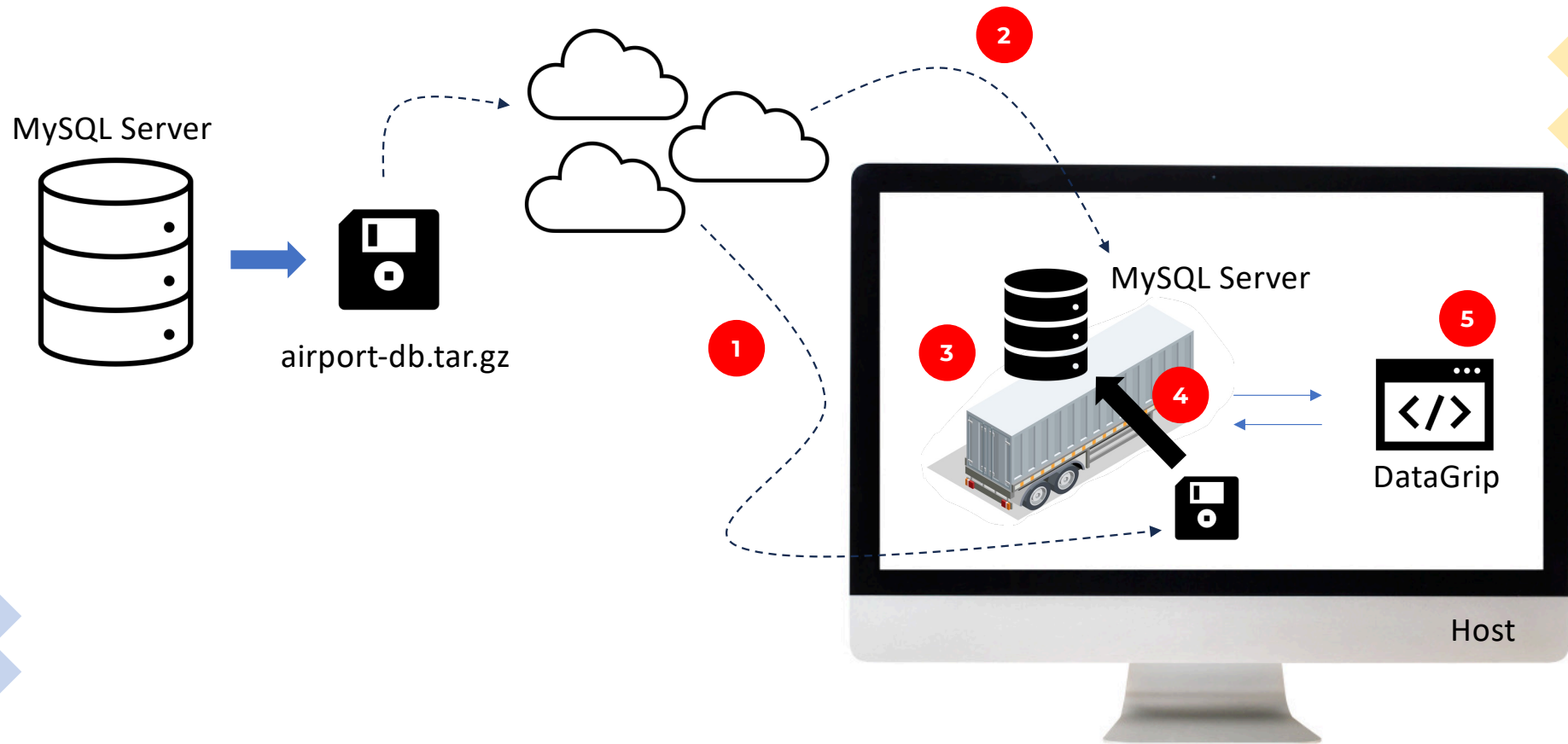
Dump

데이터베이스로 restore/load

# Assignment 01



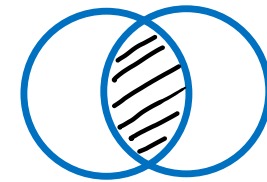
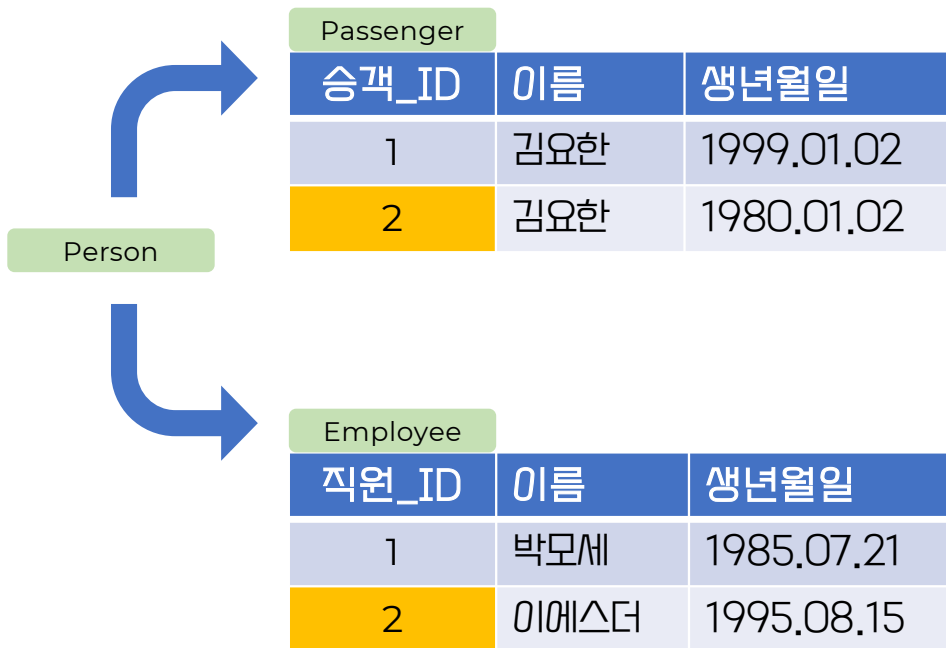
# Overview : Assignment 01



# UNION ALL & UNION

중복제거

Live



사람 = 탑승자 + 직원

1. 탑승자 + 직원 총 몇 명?
2. 탑승자 + 직원 중, 성이 Thomas?



# SUBQUERY

쿼리 안에 또 다른 쿼리

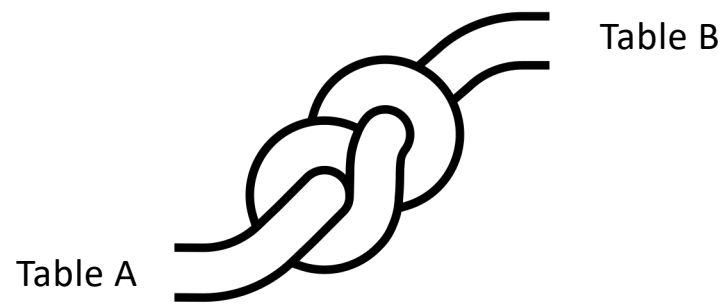
Live



1. 탑승자 + 직원 총 몇 명?
2. 탑승자 + 직원 중, 성이 Thomas?

SELECT ... FROM ... WHERE ... ;

(SELECT ... FROM ... WHERE ... )



# SQL JOIN

# Normalization / 정규화

↔ De-normalization

공항_ID	공항이름
1	John F. Kenney International Airport
2	Newark Liberty International Airport
3	인천국제공항
4	포항공항
10	제주국제공항

Airport

승객_ID	날짜	출발지	도착지	가격	항공사	비행편
1	2022-03-14	제주	포항	12	진에어	JN316
2	2022-03-15	제주	포항	13	진에어	JN316
...	...	...	...	...	...	...
2	2022-07-14	제주	포항경주	13	진에어	JN316
2	2023-01-06	제주	포항경주	13	진에어	JN316

Booking

승객_ID	날짜	출발지_ID	도착지_ID	가격	항공사	비행편
1	2022-03-14	10	4	12	진에어	JN316
2	2022-03-15	10	4	13	진에어	JN316
...	...	...	...	...	...	...
2	2022-07-14	10	4	13	진에어	JN316
2	2023-01-06	10	4	13	진에어	JN316



# Foreign Key / 외래키 / 참조키

booking

booking_id	flight_id	seat	passenger_id	price
7	3863	23E	31818	170.03
8	3863	22F	1878	221.48
9	3863	22C	16535	264.82
10	3863	21A	32301	131.94
11	3863	21G	12242	411.34
12	3863	21F	21047	6.23
5647341	224	13B	21205	51.97
5647342	224	13F	15571	458.22
5647343	224	13E	14545	37.06
5647344	224	12C	9377	335.73
5647345	224	12A	30037	229.09
...	...	...	...	...

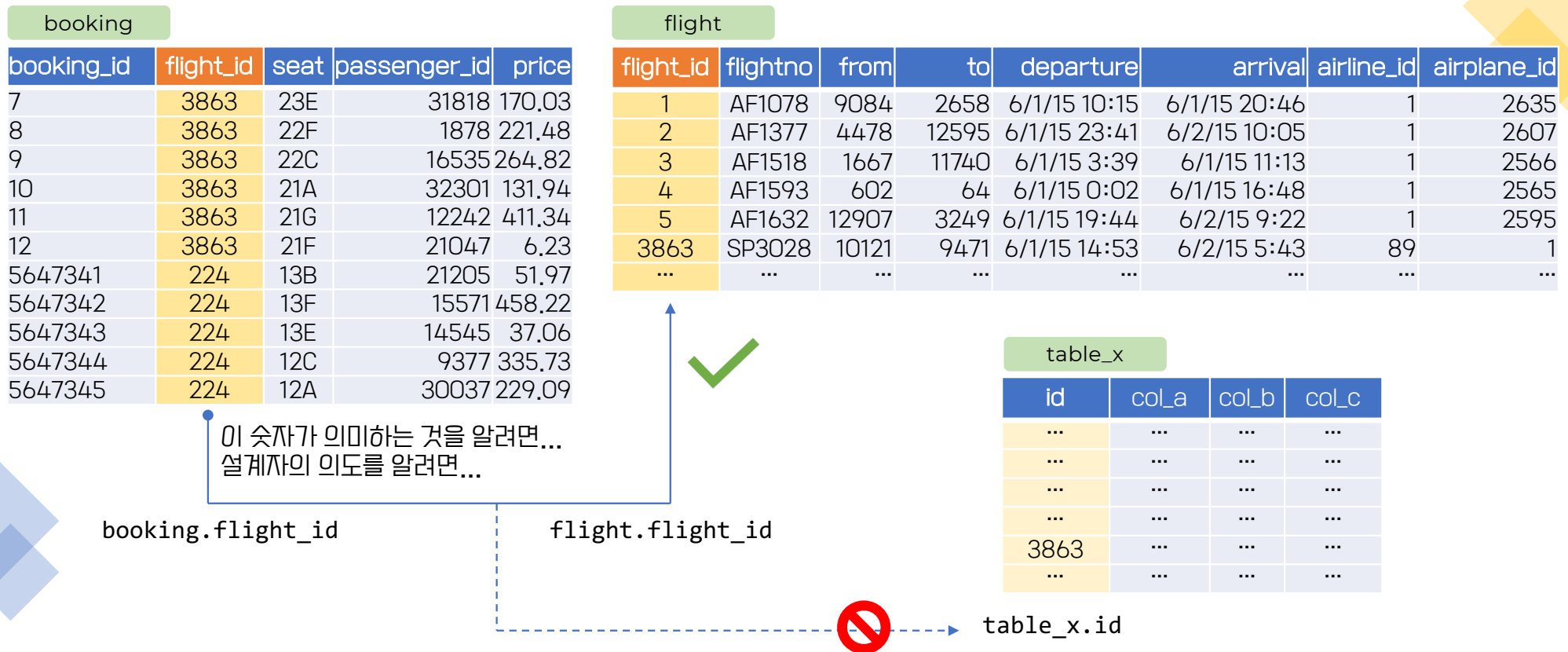
flight

flight_id	flightno	from	to	departure	arrival	airline_id	airplane_id
1	AF1078	9084	2658	6/1/15 10:15	6/1/15 20:46	1	2635
2	AF1377	4478	12595	6/1/15 23:41	6/2/15 10:05	1	2607
3	AF1518	1667	11740	6/1/15 3:39	6/1/15 11:13	1	2566
4	AF1593	602	64	6/1/15 0:02	6/1/15 16:48	1	2565
5	AF1632	12907	3249	6/1/15 19:44	6/2/15 9:22	1	2595
3863	SP3028	10121	9471	6/1/15 14:53	6/2/15 5:43	89	1
...	...	...	...	...	...	...	...

airport

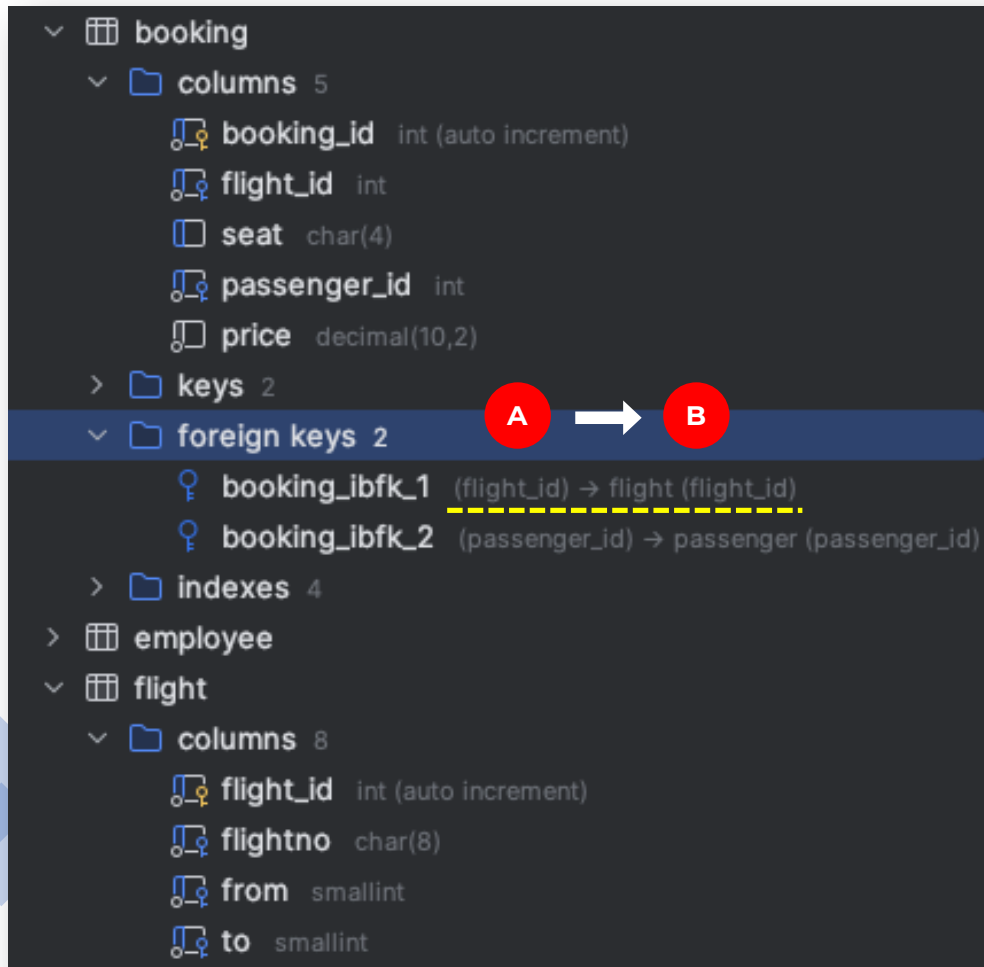
airport_id	name	...
9084	...	...
2658	...	...
4478	...	...
12595	...	...
10121	...	...
9471	...	...
...	...	...

# Foreign Key / 외래키 / 참조키



# Foreign Key / 외래키 / 참조키

Live



(00) → 00 (00)

(flight\_id) → flight (flight\_id)



A 가 B 를 참조

# Foreign Key / 외래키 / 참조키

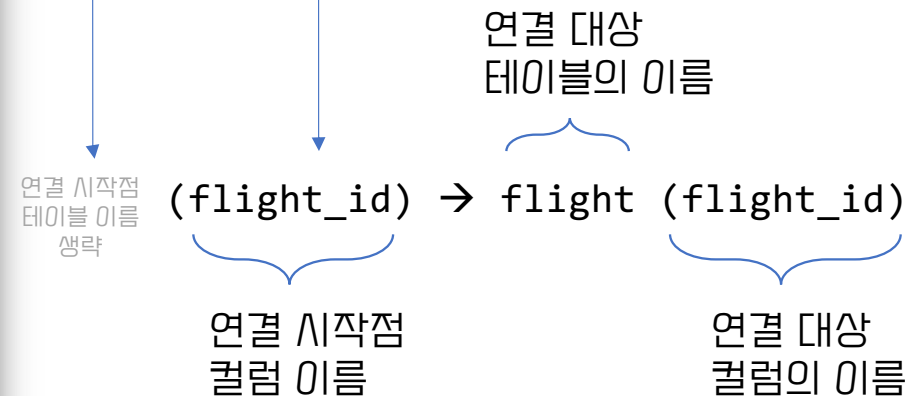
Live



```

  booking
  |
  | columns 5
  | | booking_id int (auto increment)
  | | flight_id int
  | | seat char(4)
  | | passenger_id int
  | | price decimal(10,2)
  |
  | > keys 2
  | |
  | | < foreign keys 2
  | | | booking_ibfk_1 (flight_id) → flight (flight_id)
  | | | booking_ibfk_2 (passenger_id) → passenger (passenger_id)
  | |
  | | > indexes 4
  |
  | > employee
  |
  | < flight
  | |
  | | columns 8
  | | | flight_id int (auto increment)
  | | | flightno char(8)
  | | | from smallint
  | | | to smallint




```

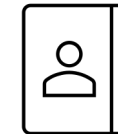


# 예제 1

Live



1. SQL을 모르는 사람 
2. SQL을 대충 배운 사람 
3. SQL을 제대로 배운 사람 



booking\_id=8 예약자의 여권번호, 이름, 전화번호는?

booking_id	passport	first name	phone
8	?	?	?



## 예제 2

Live



1. SQL을 모르는 사람
2. SQL을 대충 배운 사람
3. SQL을 제대로 배운 사람



flight\_id=3863 은 어디 출발, 어디 도착?

flight_id	departure		arrival	
	city	country	city	country
3863	?	?	?	?

