



NORMALIZATION

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EMPLOYEE TABLE

Attribute	Description
EID	Employee ID (Primary Key)
NAME	Employee Name
AGE	Employee Age
SALARY	Total Salary
BASIC	Basic Salary
HRA	House Rent Allowance
TA	Travel Allowance
DA	Dearness Allowance
PF	Provident Fund
DESIGNATION	Job Title
DEPARTMENT	Department Name
HOD	Head of Department

FIRST NORMAL FORM (1NF)

Rule:

- Ensure atomicity (no repeating groups or multivalued attributes).

EID	NAME	AGE	DEPARTME NT	HOD	DESIGNATION	BASIC	HRA	TA	DA	PF	SALARY
101	John	30	IT	Ajay	Software Engineer	50000	10000	5000	8000	6000	79000
102	Mary	28	HR	Shrama	HR Manager	40000	8000	4000	7000	5000	64000
103	Alex	35	Finance	Riya	Finance Analyst	45000	9000	4500	7500	5500	71500

Table remains unchanged since all values are atomic.

SECOND NORMAL FORM (2NF)

Rule:

- No Partial Dependencies (All non-key attributes must depend on the full primary key).

Identified Partial Dependencies:

- HOD depends only on DEPARTMENT, not EID.
- DESIGNATION depends only on DEPARTMENT, not EID.
- SALARY Components (BASIC, HRA, TA, DA, PF, SALARY) are independent of EID.

SECOND NORMAL FORM (2NF)

EID	NAME	AGE	SALARY	DEPART MENT
101	John	30	79000	IT
102	Mary	28	64000	HR
103	Alex	35	71500	Finance

DEPARTMENT	HOD	DESIGNATION
IT	Ajay	Software Engineer
HR	Shrama	HR Manager
Finance	Riya	Finance Analyst

SALARY	BASIC	HRA	TA	DA	PF
79000	50000	10000	5000	8000	6000
64000	40000	8000	4000	7000	5000
71500	45000	9000	4500	7500	5500

THIRD NORMAL FORM (3NF)

Rule:

- No Transitive Dependencies (A non-key attribute should not depend on another non-key attribute).

Identified Transitive Dependencies:

- DEPARTMENT \rightarrow HOD (HOD depends on the department, not on EID).
- DEPARTMENT \rightarrow DESIGNATION (Each department has certain designations).
- DEPARTMENT \rightarrow SALARY (Some departments have common salary structures).

THIRD NORMAL FORM (3NF)

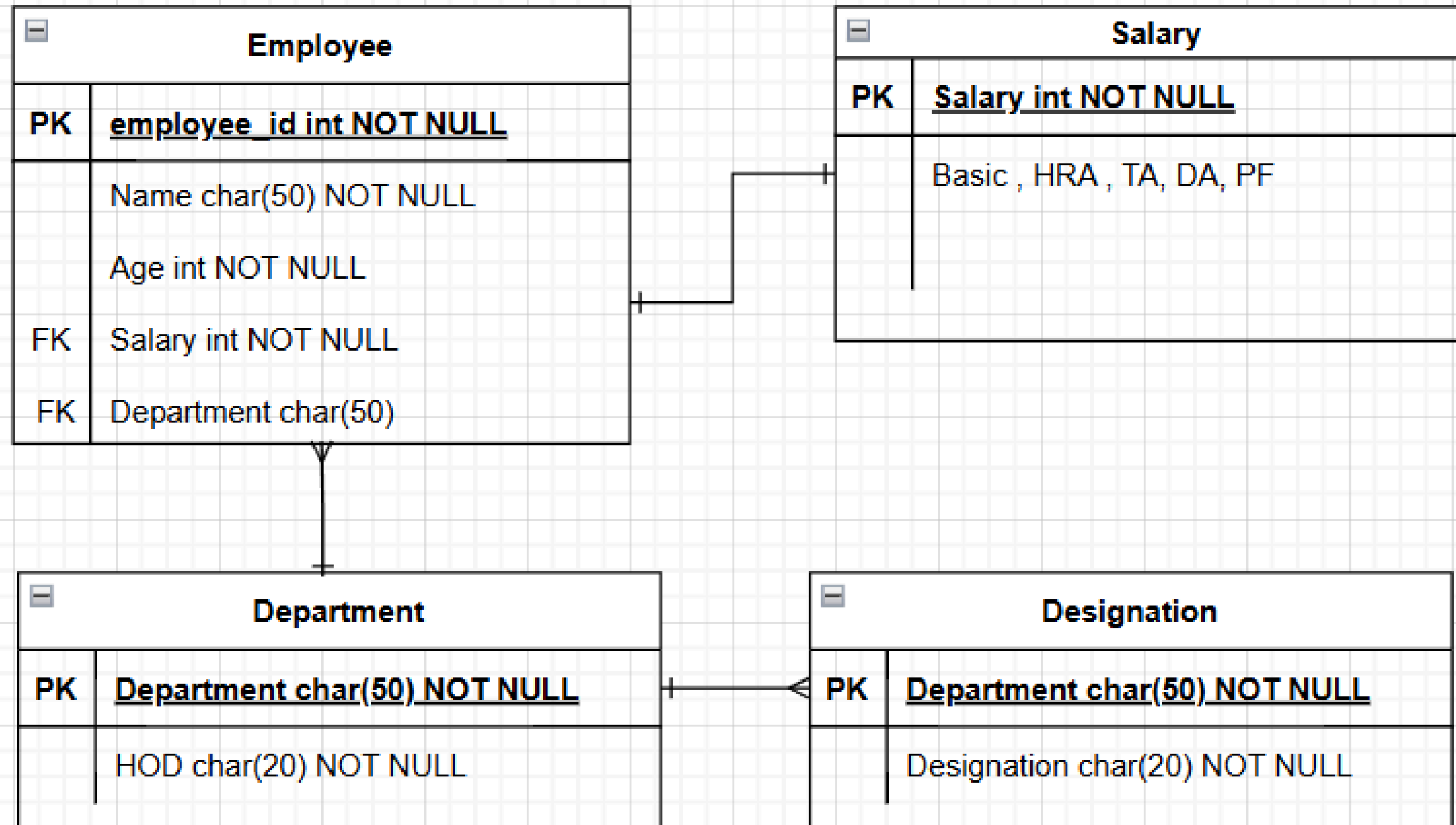
EID	NAME	AGE	SALARY	DEPARTMEN T
101	John	30	79000	IT
102	Mary	28	64000	HR
103	Alex	35	71500	Finance

SALARY	BASIC	HRA	TA	DA	PF
79000	50000	10000	5000	8000	6000
64000	40000	8000	4000	7000	5000
71500	45000	9000	4500	7500	5500

DEPARTME NT	HOD
IT	Ajay
HR	Shrama
Finance	Riya

DEPART MENT	DESIGNATIO N
IT	Software Engineer
HR	HR Manager
Finance	Finance Analyst

ER DIAGRAM





THANK YOU