

Examples of Normalisation

by Derek Peacock



Ted Codd

- Every attribute must provide a fact about the key, the whole key, and nothing but the key, so help me Codd.

Normalisation

1. Remove all repeating groups
2. Ensure that all non-identifying attributes are functionally dependant on the whole of the table identifier
3. Ensure that all non-identifying attributes are mutually independent

1st Normal Form

1. Each attribute can only contain a single value.
2. There should be no repeating groups
3. Each Attribute has a unique name
4. Each table has a primary key

Course	Content
Programming	Java, C#
Web Development	HTML, PHP, ASP

1 NF Continued

Course	Content1	Content2	Content3
Programming	Java	C#	
Web Develop	HTML	PHP	ASP

Course	Content
Programming	Java
Programming	C#
Web Develop	HTML
Web Develop	PHP
Web Develop	ASP

1 NF Continued

Courses

Course ID	Title	Starting	Tutor
1	Programming	2017	Peacock
2	Web Develop	2017	Peacock

Course Content

Content ID	Course ID	Content
1	1	Java
2	1	C#
3	2	HTML
4	2	PHP
6	2	ASP

2nd Normal Form

- Ensure that all non-identifying attributes are functionally dependant on the whole of the table identifier

Student_Grades

Student ID	Course ID	Final Grade	Tutor
Anne	S100	A	Veena
Anne	S200	B	Gita
Bob	S100	A	Veena
Bob	S300	C	Sushma
Carol	S100	C	Veena

Library Books

Book ID	Copy No	Title	Author
1	1	Yoga	Smith
1	2	Yoga	Smith
2	1	Mediation	Jones
2	2	Meditation	Jones
3	1	Yoga	Harris

3rd Normal Form

- Ensure that all non-identifying attributes are mutually independent

Enrolments

<u>Enrol ID</u>	Student ID	Course ID	Course	Surname
E2001	S1001	B100	Biology	Peacock
E2002	S1001	C100	Chemistry	Peacock
E2003	S1002	B100	Biology	Smith
E2004	S1002	C100	Chemistry	Smith
E2005	S1003	M100	Maths	Jones

Classes

Course ID	Title	Tutor	Depart	Phone
B100	Biology	George	Botany	Ext 345
B101	Biochem	George	Botany	Ext 345
C100	Chemistry	Gina	Chemistry	Ext 456
M100	Maths	Garry	Maths	Ext 567
B102	Phytochem	Greg	Botany	Ext 346

De-Normalization

Address ID	House No	Street	Town	County	Post Code
1	23	High Street	Hatfield	Herts	HA1 6TY
2	45	Lower Road	Hatfield	Herts	HA1 8FR