Database Normalization

REVIEW 1

The following table, STUDENTS, exists in a database.

StudentName	StudentEmail	CourseIDs	CourseNames	Instructor	PhoneNumber1	PhoneNumber2
Alice Chen	alice@school.com	PR101, CA102	Programming, Calculus	Dr. Lee	090-1234-1111	090-5555-2222
Ben Carter	ben@school.com	CS101	Programming	Dr. Lee	080-3333-4444	
Alice Chen	alice@school.com	EN201	Literature	Dr. Smith	090-1234-1111	
David Kim	david@school.com	MA102, PH201	Calculus, Physics	Dr. Tanaka	070-7777-8888	070-9999-0000
Emma Lopez	emma@school.com	CS101	Programming	Dr. Lee		

Answer the questions on the following page.

Question 1

Is the table in **First Normal Form (1NF)**? Explain your answer.

Question 2

Identify **two columns that contain non-atomic values**.

Question 3

Which columns represent **repeating groups**?

Question 4

Why are `PhoneNumber1` and `PhoneNumber2` considered poor database design?

Question 5

Suggest a **possible primary key** that might be used in a properly designed version of this table.

Question 6

Redesign the table on the following page so that it follows 1NF.

Include a few rows of sample data, including all data relating to **Alice Chen**.

STUDENTS IN 1NF (underline the Primary Key field)

Write any thoughts or questions that you currently have about database design here.

0NF
1NF
Atomic values
Repeated Fields
Primary Key
Data Types
Data consistency
Insert anomoly