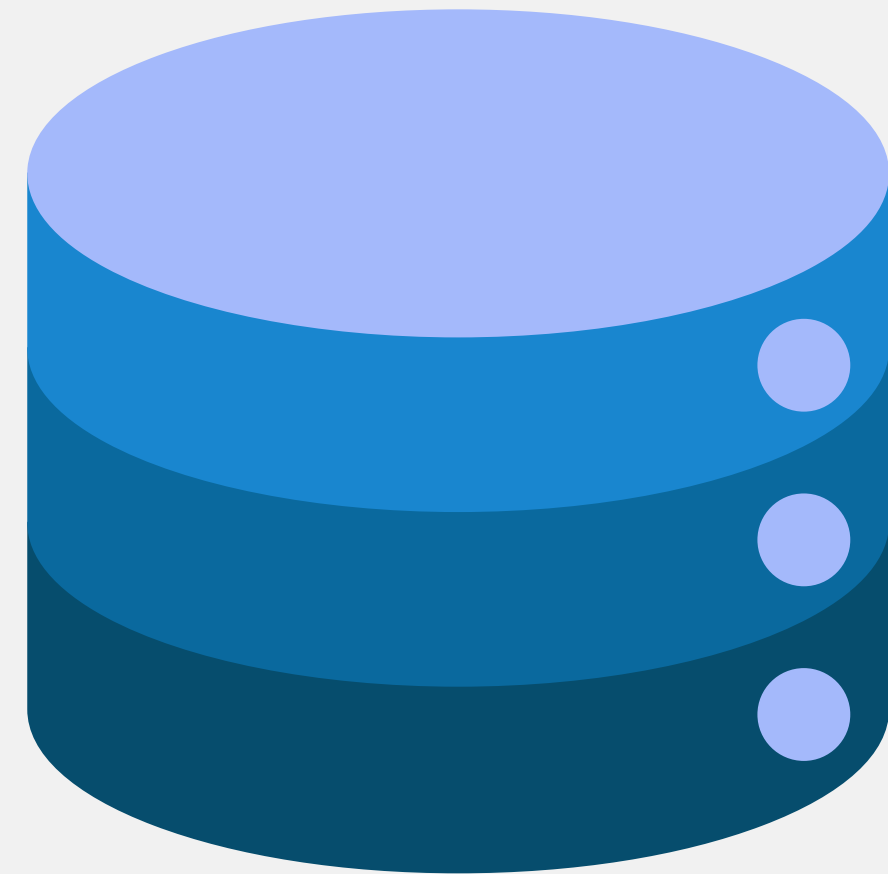




Database Normalization

Why use Normalization ?

- We use normalization on existing databases
- In some cases it's easier to rebuild the whole database again rather than normalize it
- database should be at least in the 2nd NF to be used





Normalization Stages

**01. First Normal
Form**

**02. Second Normal
Form**

**03. Third Normal
Form**





Practical Example

StudentID	Student Name	Student Phone	CourseID	Course Name	Instructor Name	Instructor Phone	Grade
101	Alice	1012345678	CS101	Databases	Prof. Smith	1234567890	A
101	Alice	1012345678	CS102	AI	Dr. Johnson	1123456789	B
102	Bob	1087654321	CS101	Databases	Prof. Smith	1234567890	A+

1st NF

Example is already in the first normal form.

2nd NF

Students

StudentID	Student Name	Student Phone
101	Alice	1012345678
102	Bob	1087654321

Courses

CourseID	Course Name	Instructor Name	Instructor Phone
CS101	Databases	Prof. Smith	1234567890
CS102	AI	Dr. Johnson	1123456789

Enrollments

StudentID	CourseID	Grade
101	CS101	A
101	CS102	B
102	CS101	A+

3rd NF

Courses

CourseID	Course Name	Instructor Name
CS101	Databases	Prof. Smith
CS102	AI	Dr. Johnson

Instructors

Instructor Name	Instructor Phone
Prof. Smith	1234567890
Dr. Johnson	1123456789

The background is a light gray color, decorated with various hand-drawn blue doodles. These include several overlapping circles and loops at the top, a series of small 'v' marks at the bottom, and other abstract scribbles along the edges.

**Thank you
very much!**