

Argument for Third Normal Form (3NF)

The database model is designed to satisfy Third normal form in order to reduce redundancy and improve data integrity.

All tables have a clearly defined primary key, and each non-key attribute depends only on the primary key and not on other non-key attributes.

For example, personal information is stored in the Person table and reused through foreign keys in Student, Instructor and ProgramManager. This avoids duplicating the same personal data in multiple tables.

Many-to-Many relationships, such as between Program and Course or Instructor and Course, are resolved using associative tables (ProgramCourse and InstructorCourse). These tables contain only foreign keys that together describe the relationships and do not introduce transitive dependencies.

Sensitive personal data is separated into its own table (SensitivePersonData), which ensures that sensitive attributes depend solely on the person identifier and allows access control without violation normalization principles.

Because all non-key attributes depend on the whole key and nothing but the key, and because there are no transitive dependencies, the model fulfills the requirements of the Third Normal Form (3NF).