SAMPLE DATA MODEL & ANALYSIS
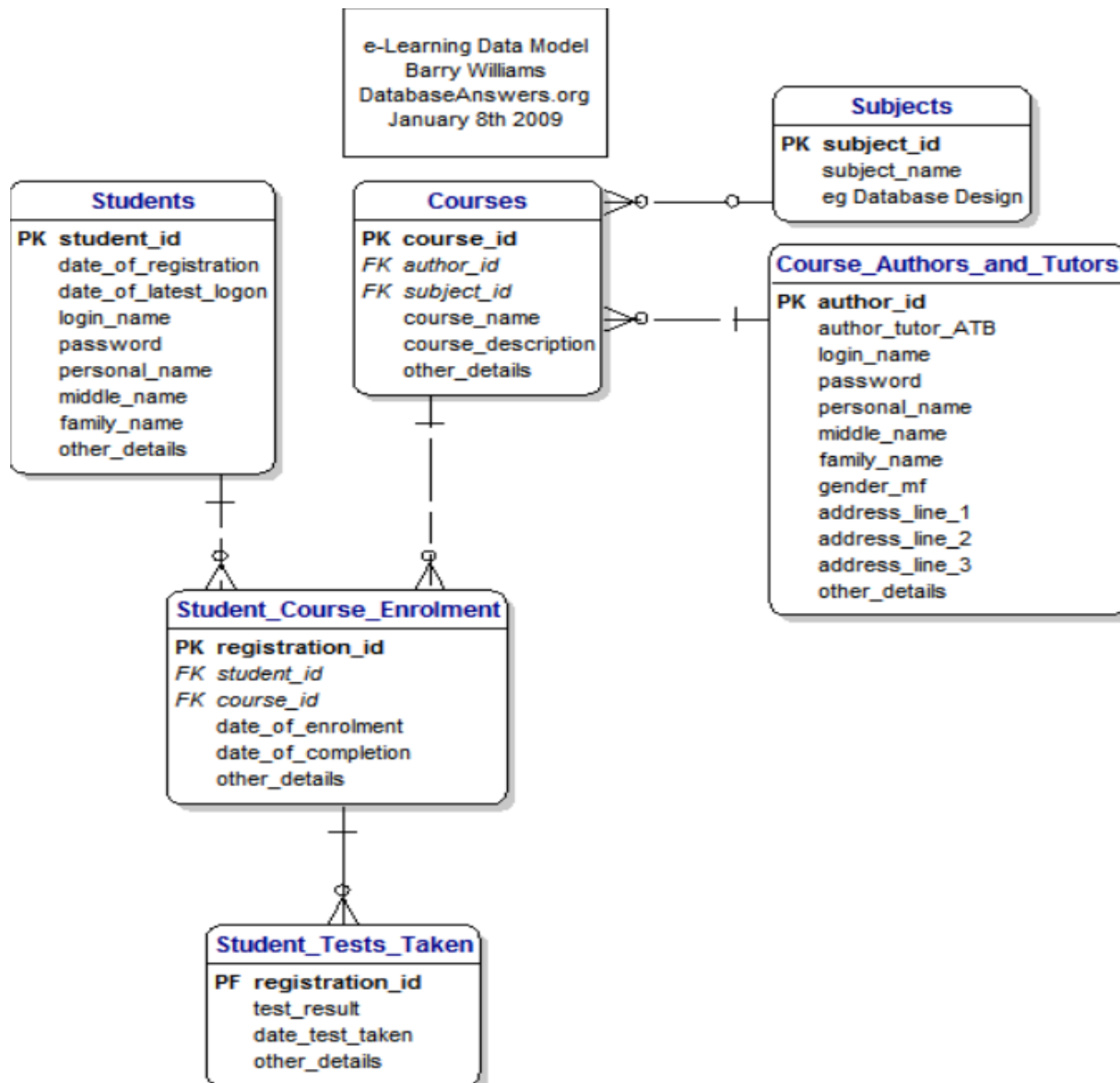
Data Model:

https://fordnox.github.io/databaseanswers/data_models/e_learning/index.htm

e-Learning Data Model
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January 8th 2009

Subjects

PK subject_id
   subject_name
   eg Database Design

Students

PK student_id
   date_of_registration
   date_of_latest_logon
   login_name
   password
   personal_name
   middle_name
   family_name
   other_details

Courses

PK course_id
FK author_id
FK subject_id
   course_name
   course_description
   other_details

Course_Authors_and_Tutors

PK author_id
   author_tutor_ATB
   login_name
   password
   personal_name
   middle_name
   family_name
   gender_mf
   address_line_1
   address_line_2
   address_line_3
   other_details

Student_Course_Enrolment

PK registration_id
FK student_id
FK course_id
   date_of_enrolment
   date_of_completion
   other_details

Student_Tests_Taken

PF registration_id
   test_result
   date_test_taken
   other_details

The E-Learning Data Model is designed to manage the operations of an online learning platform effectively. The system facilitates the management of students, courses, tutors, subjects, and assessments. The conceptual data model provides a structured representation of the entities and their relationships, ensuring efficient tracking of course enrollments, student progress, and test results.

Original Scope & Key Components

1. **User Management**

- Support for student and instructor registration and authentication.
- Management of user profiles, including personal, academic, and login information.

2. **Course Management**

- Creation and maintenance of courses, including categorization by subject and author/tutor assignment.
- Support for adding course content, descriptions, and other details.

3. **Enrollment and Progress Tracking**

- Management of student enrollments in courses.
- Tracking of course progress, including start and completion dates.

4. **Assessment and Test Results**

- Administration of tests and quizzes.
- Recording and tracking of test results and related performance metrics.

5. **Reporting and Analytics**

- Generation of reports on student performance, course completion rates, and enrollment statistics.

6. **Scalability**

- Designed to support a growing number of students, courses, and instructors.

Original System:

- **6 Tables:** Comprehensive database structure with interconnected entities such as Students, Courses, Instructors, Subjects, Enrollments, Test Results, and more.
- **Complex Reference System:** Advanced foreign key relationships linking students, instructors, courses, and subjects to ensure data integrity.
- **Detailed Profiling:** In-depth student and instructor records, including personal details, academic history, and login credentials.
- **Management System:** Enables administrative users to oversee platform operations, manage courses, and monitor student progress.
- **Multiple Contact Methods:** Stores multiple communication options for students and instructors, such as email, phone, and address details.
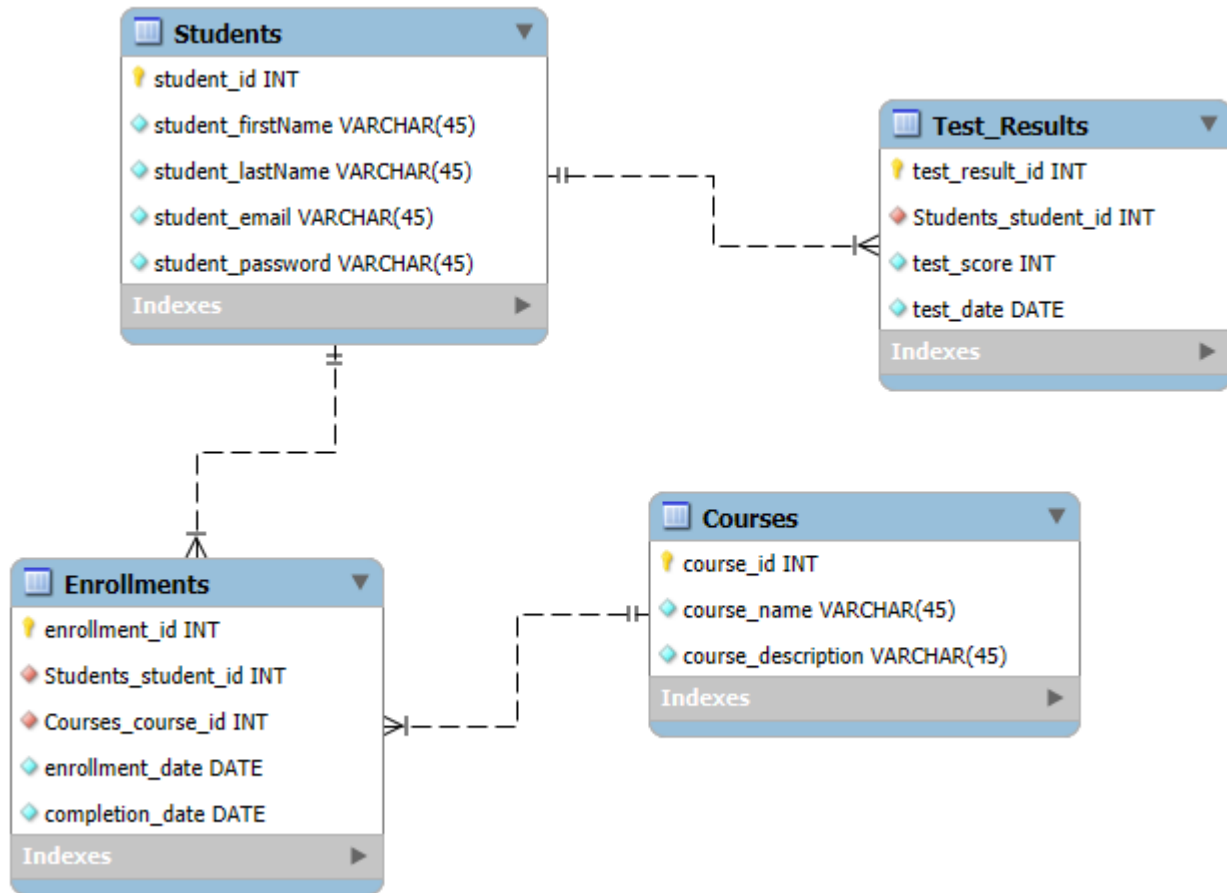
Simplified E-Learning System

1. **Students** (Simplified)

- student_id
- student_firstName
- student_lastName
- student_email
- student_password

2. **Courses** (Simplified)

- course_id
- course_name
- course_description

3. Enrollments (Simplified)

- enrollment_id
- student_id (FK)
- course_id (FK)
- enrollment_date
- completion_date

4. Test Results (Simplified)

- test_result_id
- student_id (FK)
- test_score
- test_date

Simplified System:

- **4 Core Tables:** Students, Courses, Enrollments, and Test Results.
- **Direct Relationships:** Students are linked to Courses through Enrollments and Students' performance is tracked through Test Results.
- **Basic Student Info:** Only essential student information (name, email, password).
- **Basic Course Management:** Course name, description, and subject.
- **Simple Enrollment Tracking:** Tracks which students are enrolled in which courses and when they complete them.
- **Basic Test Tracking:** Records student performance on tests or assessments.

Example User Stories (Simplified)

1. As a Student

- I want to enroll in a course.
- I want to see my test results.

2. As a Course Admin

- I want to see which students are enrolled in a course.
- I want to track the completion of courses by students.

3. As a System Admin

- I want to manage student accounts and courses.
- I want to track student progress and performance.