1. Users

UserID: Primary Key

Username: Unique, for login purposes

Password: Hashed, for security reasons

Role: To differentiate between students and lecturers

LibraryCardNumber (Students only): Used for attendance verification

2. Modules

ModuleCode: Primary Key

ModuleName: The name of the course or module

LecturerID: Foreign Key from Users, assuming one lecturer per module for simplicity

3. Sessions

SessionID: Primary Key

ModuleCode: Foreign Key from Modules

StartTime: Timestamp when the session starts

EndTime: Optional, could be determined by the length of the class or when the lecturer ends the session

Date: The date of the session

4. Codes

CodeID: Primary Key

SessionID: Foreign Key from Sessions

ActiveCode: The current active code displayed to students

CodeGenerationTime: Timestamp for when the code was generated (to validate the 30-second rule)

5. Attendance Records

AttendanceID: Primary Key

UserID: Foreign Key from Users

SessionID: Foreign Key from Sessions

TimeOfAttendance: Timestamp for when the student submitted their code and library card digits

Verified: Boolean, to indicate whether the student’s attendance was successfully verified or not

Relationships:

A Module is taught by a Lecturer (Users with the role of Lecturer) and contains multiple Sessions.

Each Session generates multiple Codes, but only one is active at any given time for student entry.

Students (Users with the role of Student) have Attendance Records for each Session they attempt to attend, marked with a Verified status depending on successful verification of their attendance.