

# BOB36DBS: Database Systems | Class 4: SQL: Data Definition

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## 01: Library

```
CREATE TABLE library (  
  name VARCHAR(50) PRIMARY KEY,  
  street VARCHAR(100) NOT NULL,  
  city VARCHAR(50) NOT NULL,  
  postalCode INTEGER NOT NULL  
);
```

```
... name VARCHAR(50) CONSTRAINT library_pk PRIMARY KEY ...
```

```
... postalCode CHAR(5) NOT NULL ...
```

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## 02: Client

```
CREATE TABLE client (  
  card CHAR(16),  
  firstName VARCHAR(50) NOT NULL,  
  lastName VARCHAR(50) NOT NULL,  
  email VARCHAR(100) NOT NULL,  
  dateOfBirth DATE,  
  PRIMARY KEY (card),  
  CONSTRAINT client_ch_email CHECK (email LIKE '_%@_%.__%')  
);
```

## 03: Phone

```
CREATE TABLE phone (  
  client CHAR(16) NOT NULL CONSTRAINT phone_fk_client REFERENCES client (card),  
  number CHAR(9) NOT NULL,  
  PRIMARY KEY (client, number)  
);
```

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## 04: Title, Author, Authorship

```
CREATE TABLE title (  
  idTitle INTEGER PRIMARY KEY,  
  isbn VARCHAR(17) NOT NULL UNIQUE,  
  title VARCHAR(200) NOT NULL  
);
```

```
CREATE TABLE author (  
  idAuthor INTEGER PRIMARY KEY,  
  name VARCHAR(100) NOT NULL,  
  yearOfBirth SMALLINT,  
  yearOfDeath SMALLINT,  
  CONSTRAINT author_ch_years CHECK  
    ((yearOfBirth IS NULL) OR (yearOfDeath IS NULL) OR (yearOfBirth <= yearOfDeath))  
);
```

```
CREATE TABLE authorship (  
  title INTEGER NOT NULL,  
  author INTEGER NOT NULL,  
  PRIMARY KEY (title, author),  
  CONSTRAINT authorship_fk_title FOREIGN KEY (title) REFERENCES title (idTitle),  
  CONSTRAINT authorship_fk_author FOREIGN KEY (author) REFERENCES author (idAuthor)  
);
```

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## 05: Library

```
ALTER TABLE library  
  DROP CONSTRAINT library_pk,  
  ADD COLUMN idLibrary SMALLINT CONSTRAINT library_pk PRIMARY KEY,  
  ALTER COLUMN name SET NOT NULL,  
  ADD CONSTRAINT library_uq_name UNIQUE (name);
```

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## 06: Book

```
CREATE TABLE book (  
  library SMALLINT NOT NULL,  
  signature VARCHAR(50) NOT NULL,  
  title INTEGER NOT NULL,  
  dateOfAddition DATE NOT NULL,  
  PRIMARY KEY (library, signature),  
  CONSTRAINT book_fk_library  
    FOREIGN KEY (library) REFERENCES library (idLibrary),  
  CONSTRAINT book_fk_title  
    FOREIGN KEY (title) REFERENCES title (idTitle)  
);
```

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## 07: Loan

```
CREATE TABLE loan (  
  idLoan BIGINT NOT NULL,  
  client CHAR(16),  
  library SMALLINT,  
  signature VARCHAR(50),  
  timeLoaned TIMESTAMP NOT NULL,  
  dateReturned DATE,  
  PRIMARY KEY (idLoan),  
  CONSTRAINT loan_uq_loan  
    UNIQUE (client, library, signature, timeLoaned),  
  CONSTRAINT loan_fk_client  
    FOREIGN KEY (client)  
    REFERENCES client (card)  
    ON UPDATE CASCADE  
    ON DELETE SET NULL,  
  CONSTRAINT loan_fk_book  
    FOREIGN KEY (library, signature)  
    REFERENCES book (library, signature)  
    ON UPDATE CASCADE  
    ON DELETE SET NULL  
);
```