CS 364 Spring 2016

SQL 6
CREATE TABLE Author(aid int primary key, first TEXT, last TEXT);
CREATE TABLE Book(booknum int primary key, title TEXT, pages int);
CREATE TABLE Writes(aid int references Author(aid), booknum int references Book(booknum), percent int, primary key(aid, booknum), check (percent >= 1 and percent <= 100));
CREATE TABLE Library(libnum int primary key, libname text, capacity int, check (capacity >= 1));
CREATE TABLE Copy(copynum int primary key, booknum int not null, price decimal(8,2), libnum int references Library(libnum), foreign key (booknum) references Book(booknum));
create table Staff(sid integer primary key, first text, last text, libnum integer not null, mid integer references Staff(sid), foreign key (libnum) references Library(libnum));
CREATE TABLE Customer(cid int primary key, first TEXT, last TEXT);
CREATE TABLE Loan(loanum int, copynum int not null, cid int not null, out text, due text, ret text,foreign key (copynum) references Copy(copynum), foreign key (cid) references Customer(cid));
Creating Tables from an ER Diagram

- Create a table for each entity
- The attributes of the entity become the fields in the table
- The primary identifier of the entity becomes the primary key of the table
- For each one-to-many relationship the primary key field of the subject entity is added to the table representing the target entity as a foreign key
- For each many-to-many relationship create a new table. The table should contain the primary keys of the two participating entities (together these form the primary key of the new table) and attributes (if any) associated with the relationship.
Practice Problems

• Find the names of staff who work in a library with a capacity greater than 1000
• Find the names of staff who work in a library that houses a copy of *The Power and the Glory* (a book title)
• Find the libnum and libname of libraries that have a copy of every book with more than 200 pages
• Find the libnum and libname of libraries that house a copy of at least one book for every author.
• Find the libnum and libname of libraries that house a copy of every book written by Evelyn Waugh
• Find the libnum and libname for each library such that there are 100 or more authors whose books (copies of books) are housed in the library
SQL in Programs

• Host Language
• Statement Level Interface
• Call Level Interface
• Cursors or ResultSets
• Stored Procedures
• Limitations of SQL
JDBC Example 1

```java
Connection con;
try {
    Class.forName("org.sqlite.JDBC");
    con = DriverManager.getConnection("jdbc:sqlite:/Users/gendreau/
    classes/spring15/cs364/JDBC/sqlite/Student.db");
    Statement s = con.createStatement();
    ResultSet r = s.executeQuery("select first, last from Student");
    while (r.next()) {
        System.out.println(r.getString(1) + " " + r.getString(2));
    }
} catch (Exception e) {
    System.out.println("Connection failed" + e.getMessage());
}
```
Connection con;
try {
    Class.forName("org.gjt.mm.mysql.Driver");
    con = DriverManager.getConnection("jdbc:mysql://nimbus.cs.uwlax.edu:3306/cs364A", USER, PASSWORD);
    Statement s = con.createStatement();
    ResultSet r = s.executeQuery("select first, last from Student");
    while (r.next()) {
        System.out.println(r.getString(1) + "+r.getString(2));
    }
} 

catch (Exception e) {
    System.out.println("Connection failed"+e.getMessage());
}