

A COS 457 final presentation.

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#### The scenario

The scenario that I chose to model was a library system.

The system designed to keep track of

- Books
- Users
- Contact
- Borrowing of books
- Returns
- Library staff

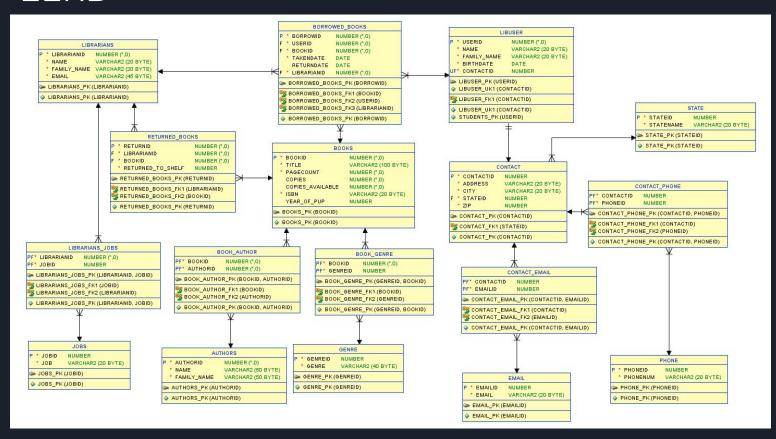
#### The Tables

These are the necessary tables to model the library system

- Books
- Genres
- Book\_Genre
- Borrowed\_Books
- Returned\_Books
- Books\_Authors
- Authors

- Libusers
- Contacts
- Email
- Phone
- State
- Librarians
- Librarian\_Jobs
- Jobs

#### **EERD**



#### Examples of Create Table

```
CREATE TABLE cos 457 final.borrowed books (
    borrowid NUMBER(*, 0) NOT NULL,
    userid NUMBER(*, 0) NOT NULL,
    librarianid NUMBER(*, 0) NOT NULL,
             NUMBER(*, 0) NOT NULL,
    bookid
    takendate DATE DEFAULT sysdate NOT NULL,
    returndate DATE
);
CREATE UNIQUE INDEX cos_457_final.borrowed_books_pk ON
    cos 457 final.borrowed books (
    borrowid
    ASC);
```

## Add Constraints and Foreign Keys

```
ALTER TABLE cos 457 final.borrowed books ADD CONSTRAINT
borrowed books pk PRIMARY KEY (borrowid);
ALTER TABLE cos 457 final.borrowed books
    ADD CONSTRAINT borrowed books fk1 FOREIGN KEY (bookid)
     REFERENCES cos 457 final.books (bookid);
ALTER TABLE cos 457 final.borrowed books
    ADD CONSTRAINT borrowed books fk2 FOREIGN KEY (userid)
     REFERENCES cos 457 final.libuser ( userid );
ALTER TABLE cos 457 final.borrowed books
    ADD CONSTRAINT borrowed books fk3 FOREIGN KEY (librarianid)
     REFERENCES cos 457 final.librarians (librarianid);
ALTER TABLE cos 457 final.borrowed books ADD CONSTRAINT
```

borrowed books chk1 CHECK (returndate > takendate);

# Description of Table Made

Name	Null?		Type	
BORROWID	NOT	NULL	NUMBER (38)	
USERID	NOT	NULL	NUMBER (38)	
LIBRARIANID	NOT	NULL	NUMBER	
BOOKID	NOT	NULL	NUMBER (38)	
TAKENDATE	NOT	NULL	DATE	
RETURNDATE			DATE	

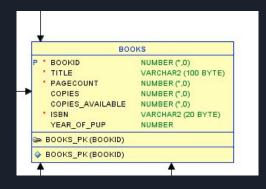
#### Example of Trigger

create or replace NONEDITIONABLE TRIGGER inc\_copy AFTER UPDATE OF RETURNED TO SHELF ON RETURNED BOOKS REFERENCING OLD AS OLD NEW AS NEW for each row **BEGIN** if:new.returned\_to\_shelf = 1 then **UPDATE BOOKS** SET books.copies available = BOOKS.COPIES AVAILABLE + 1 WHERE bookid = :NEW.bookid: end if:

END:

This script creates a trigger that can not be edited called inc\_copy

For each row that matches the update condition on returned\_books.returned\_to\_shelf and the where condition, it will increment the copies available + 1



## Trigger Example continued...

```
create or replace NONEDITIONABLE TRIGGER Create RTS Order
AFTER UPDATE OF RETURNDATE ON BORROWED BOOKS
REFERENCING OLD AS OLD NEW AS NEW
for each row
BEGIN
     if :old.returndate = null then
      INSERT INTO RETURNED BOOKS
     (LIBRARIANID, BOOKID, returned to shelf)
     values
      (dbms_random.value(2,4), :OLD.bookid, 0);
     end if:
END;
                              RETURNED BOOKS
                          RETURNED TO SHELF
                          RETURNED BOOKS FK1 (LIBRARIANID)
                          RETURNED BOOKS FK2 (BOOKID)
```

RETURNED BOOKS PK (RETURNID

Creates new object in Returned\_books

```
BORROWED BOOKS
   BORROWID
                NUMBER (*,0)
   USERID
               NUMBER (*,0)
   BOOKID
                NUMBER (*.0)
  TAKENDATE
                DATE
   RETURNDATE DATE
  LIBRARIANID
               NUMBER (*.0)
 BORROWED_BOOKS_PK (BORROWID)
  BORROWED_BOOKS_FK1 (BOOKID)
 BORROWED_BOOKS_FK2 (USERID)
  BORROWED_BOOKS_FK3 (LIBRARIANID)
BORROWED_BOOKS_PK (BORROWID)
```

## Example of Insert

insert all

into GENRE (genre) VALUES ('Unknown')

into GENRE (genre) VALUES ('Fantasy')

into GENRE (genre) VALUES ('Science Fiction')

into GENRE (genre) VALUES ('Dystopian')

into GENRE (genre) VALUES ('Action Adventure')

into GENRE (genre) VALUES ('Mystery')

into GENRE (genre) VALUES ('Horror')

into GENRE (genre) VALUES ('Thriller Suspense')

into GENRE (genre) VALUES ('Historical Fiction')

into GENRE (genre) VALUES ('Romance')

into GENRE (genre) VALUES ('Women's Fiction')

into GENRE (genre) VALUES ('Contemporary Fiction')

into GENRE (genre) VALUES ('Literary Fiction')

into GENRE (genre) VALUES ('Magical Realism')

into GENRE (genre) VALUES ('Graphic Novel')

into GENRE (genre) VALUES ('Short Story')

into GENRE (genre) VALUES ('Young Adult')

into GENRE (genre) VALUES ('New Adult')

into GENRE (genre) VALUES ('Children's')

into GENRE (genre) VALUES ('Memoir Autobiography')

into GENRE (genre) VALUES ('Biography')

into GENRE (genre) VALUES ('Food Drink')

into GENRE (genre) VALUES ('Art Photography')

into GENRE (genre) VALUES ('Self-help')

into GENRE (genre) VALUES ('History')

into GENRE (genre) VALUES ('Travel')

into GENRE (genre) VALUES ('True Crime')

into GENRE (genre) VALUES ('Humor')

into GENRE (genre) VALUES ('Essays')

into GENRE (genre) VALUES ('Guide / How-to ')

into GENRE (genre) VALUES ('Religion Spirituality')

into GENRE (genre) VALUES ('Humanities Social Sciences')

into GENRE (genre) VALUES ('Parenting Families')

into GENRE (genre) VALUES ('Science Technology')

select 1 from dual;

## Successful Insert

- 0	GLINKLID	Y) GENKE	
1	1	Unknown	
2	2	Fantasy	
3	3	Science Fiction	
4	4	Dystopian	
5	5	Action Adventure	
6	6	Mystery	
7	7	Horror	
8	8	Thriller Suspense	
9	9	Historical Fiction	
10	10	Romance	
11	11	Women's Fiction	
12	12	Contemporary Fiction	
13	13	Literary Fiction	
14	14	Magical Realism	
15	15	Graphic Novel	
16	16	Short Story	
17	17	Young Adult	
40	1.5		

# Example of Select

Search books for specific genre

#### SELECT

book\_genre.bookid,

books.title,

genre.genre

#### FROM

book\_genre

INNER JOIN genre ON book\_genre.genreid = genre.genreid

INNER JOIN books ON book\_genre.bookid = books.bookid

where genre.genreid = 5

order by bookid

	⊕ BOOKID	∯ TITLE	<b>♦</b> GENRE
1	1	The Hunger Games	Action Adventure
2	7	The Hobbit or There and Back Again	Action Adventure
3	12	Divergent	Action Adventure
4	19	The Fellowship of the Ring	Action Adventure
5	21	Harry Potter and the Order of the Phoenix	Action Adventure
6	23	Harry Potter and the Chamber of Secrets	Action Adventure
7	24	Harry Potter and the Goblet of Fire	Action Adventure
8	25	Harry Potter and the Deathly Hallows	Action Adventure
9	27	Harry Potter and the Half-Blood Prince	Action Adventure

# Thank you

Questions?