OSU CS340 - Spring 2022

URL

http://flip2.engr.oregonstate.edu:48519/

Title

Anna Elementary School's Remedia Library Upgrade

Team Members

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Summary

Remedia is a media management service that builds databases for individuals looking to organize their personal collections. Anna Elementary School has enlisted Remedia to take on the task of transferring their library into a website and database.

Anna is a school of about 500 students, and the library consists of over 7,000 books. Students check out on average 2 books per week, making that over 1,000 check out records per week to keep track of. Over the course of this project we have worked very hard to create a database with website interactions for Anna Elementary to utilize.

Our original website design was a bit confusing and consisted of six pages all with different purposes of their own; however, upon getting feedback we decided to downsize to four pages: a dashboard page, catalog page, student page, and loans page. At first we did not have an M:M relationship, but we were able to include this in our updated version. It was important to us not only to have M:1 relationships, but also M:M for optimal functionality within our database.

We have also spent an ample amount of time perfecting our user interface. For example, after receiving feedback we decided to implement a few key features to make our users' experience on our website simple and easy to use. One of these features was prefilling the input text boxes with data when the user goes to edit something in the database.

We originally did not include separate pages for deleting things off the tables, but we decided that this posed a risk where users could accidentally delete something. Now the delete buttons redirect to a separate page where the user is asked if they are sure they want to delete. We also implemented smaller changes like adding pattern requirements to our html inputs to make sure the user is entering the correct data form.

We are very pleased with the final outcome of our website and database and hope that the students, teachers, and faculty at Anna Elementary School will be too.

Project Outline

Webpages:

- Dashboard
    - Quick-checkout
        - A form that will update the loans page. This is representing a student checking out a book from the library.
    - Description of pages
        - Dashboard: landing page, will have widgets and quick links
        - Catalog: main display page of books in the Library, as well as creation, editing, and deleting
        - Students: main display page of students, as well as creation, editing, and deleting
        - Loans: generates pre-designated reports, pulling data from databases
- Catalog
    - Add Forms
        - Add Book
            - This form adds to our book table as well as our author table. It asks the user for a title, author, publisher, year, ISBN, and how many copies the library has.
        - Add Author
            - A simple form to add a new author to the library system.
        - Add Subject
            - A simple form to add a new subject to the library system.
        - Add Genre
            - A simple form to add a new genre to the library system.
    - Book Records
        - A table that displays the books that are currently in the database.
        - Has the ability to edit the books.
            - The edit button links to a new page that auto displays the book being edited and allows the user to update the changes.
        - Has the ability to delete book from the database.
            - The delete button redirects to a separate page asking the user if they are sure they want to delete the book and then updates the database accordingly.
- Students
    - Add students
        - A simple form to add a new student to the library system.
        - The student ID will be automatically generated.
    - Student Records
        - A table showing a summary of all of the students currently in the system.
        - The librarian has the ability to edit the students information in the database.

            - The edit button links to a separate page that pre-populates the form with the students information allowing the user to make changes. Then the database is updated accordingly.
        - There is also the ability to delete students from the database.
            - The delete button redirects the user to a page asking if they are sure before going on to make changes in the database.
- Loans
    - Checked Out
        - A table showing a summary of the books currently checked out of the library
        - This is where the librarian can mark the book as returned.
    - Borrow Records
        - A table that connects books with their genres through their IDs.

Steps:

1. Proposal and outline with ERD
2. Normalized Schema + DDL with Sample Data
3. Design HTML interface + DML SQL
4. Add CRUD to one M:M entity HTML page (e.g. Invoices)
5. Implement MOST remaining entities/pages
6. Submit final completed project

Database Outline

- **Students** *stores details of the students of the school*
    - studentID: INT, auto_increment, unique, not NULL, PK
    - studentfirstName: VARCHAR(255), not NULL
    - studentlastName: VARCHAR(255), not NULL
    - studentEmail: VARCHAR(255), not NULL

  Relationship:
    - ➔ 1:M between Students and Check-Outs

- **CheckedOut** *records the books that are checked out of the library*
    - checkoutID: INT, auto_increment, unique, not NULL, PK
    - studentID: INT, not NULL,
    - bookISBN: char(13), not NULL
    - checkoutDate: DATE, DEFAULT(curdate())
    - returnDate: DATE, DEFAULT (curdate() + 7)

  Relationships:
    - ➔ 1:M between Checked-Out and Books
    - ➔ 1:M between Checked-Out and Students
    - ➔ M:M also acts as a join table

- **Books** *stores details of the books in the library*
    - bookID: INT, auto_increment, unique, not NULL, PK
    - bookISBN: CHAR(13), not NULL FK
    - bookTitle: VARCHAR(255), not NULL
    - authorName: VARCHAR(150), not NULL FK
    - bookYearPublished: CHAR(4)
    - bookPublisher: VARCHAR(255), not NULL
    - genreID: INT, auto_increment, unique, not NULL, FK
    - subjectID: int, auto_increment, unique, not NULL, FK
    - bookCopies: INT, not NULL

  Relationships:
    - ➔ M:1 between Checked-Out to Books
    - ➔ 1:M between Books to Author
    - ➔ 1:M between Books to Subject
    - ➔ 1:M between Books to Genre
    - ➔ 1:M between Books to Borrow_Records

- **Author** *stores details of the different authors in the library*
    - authorID: INT, auto_increment, unique, not NULL, PK
    - authorName: VARCHAR(150), not NULL

  Relationships:
    - ➔ M:1 between Books to Author

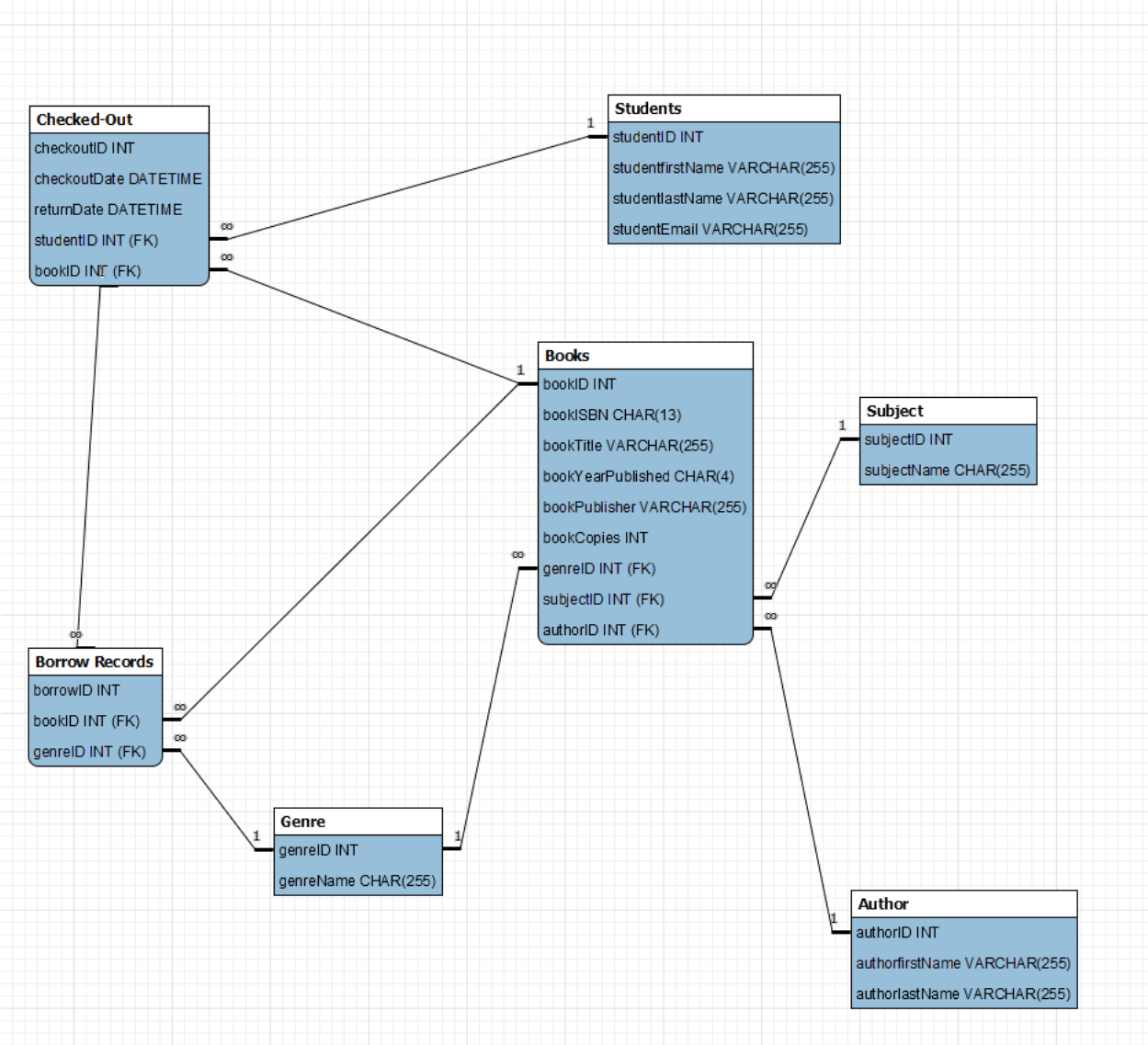
- **Subject** *stores details of the subjects represented in the library*
    - subjectID: int, auto_increment, unique, not NULL, PK
    - subjectName: CHAR(255), not NULL
    - subjectCount: INT, not NULL, zero fill, calculated sum of books in subject

  Relationships:
    - ➔ 1:M between Subject and Books

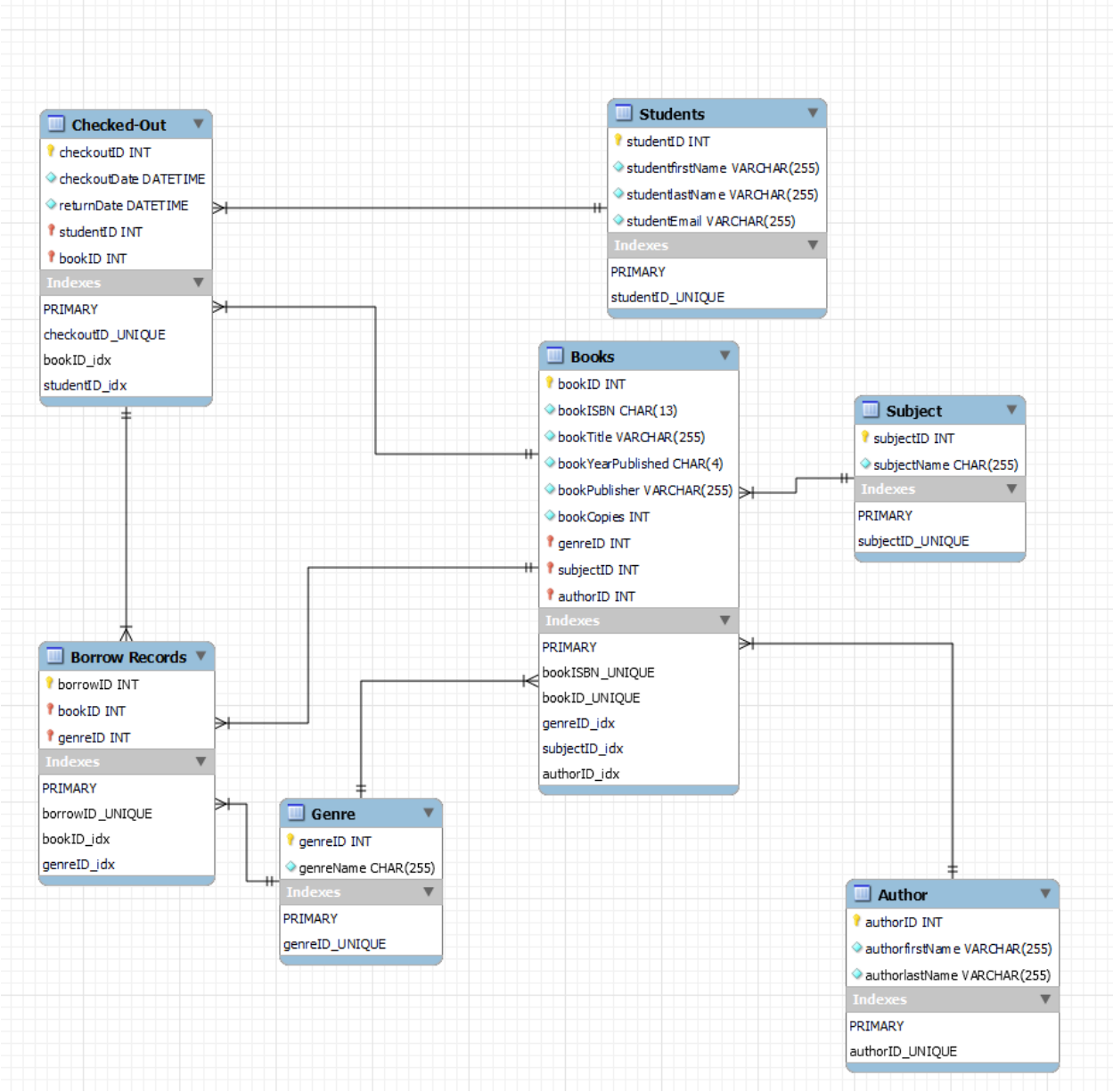
- **Genre** *stores details of the genres represented in the library*
    - genreID: INT, auto_increment, unique, not NULL, PK
    - genreName: VARCHAR(45), not NULL, unique

  Relationships:
    - ➔ 1:M between Genres and Books

Entity-Relationship Diagram



Schema


Checked-Out
checkoutID INT
checkoutDate DATETIME
returnDate DATETIME
studentID INT
bookID INT
Indexes
PRIMARY
checkoutID_UNIQUE
bookID_idx
studentID_idx
Students
studentID INT
studentfirstName VARCHAR(255)
studentlastName VARCHAR(255)
studentEmail VARCHAR(255)
Indexes
PRIMARY
studentID_UNIQUE
Books
bookID INT
bookISBN CHAR(13)
bookTitle VARCHAR(255)
bookYearPublished CHAR(4)
bookPublisher VARCHAR(255)
bookCopies INT
genreID INT
subjectID INT
authorID INT
Indexes
PRIMARY
bookISBN_UNIQUE
bookID_UNIQUE
genreID_idx
subjectID_idx
authorID_idx
Subject
subjectID INT
subjectName CHAR(255)
Indexes
PRIMARY
subjectID_UNIQUE
Borrow Records
borrowID INT
bookID INT
genreID INT
Indexes
PRIMARY
borrowID_UNIQUE
bookID_idx
genreID_idx
Genre
genreID INT
genreName CHAR(255)
Indexes
PRIMARY
genreID_UNIQUE
Author
authorID INT
authorfirstName VARCHAR(255)
authorlastName VARCHAR(255)
Indexes
PRIMARY
authorID_UNIQUE

Sample Data

Books:

book ID	bookISBN	bookTitle	bookYear Published	bookPublisher	bookCopies	genreID	subjectID	authorID
1	9780545708081	My secret guide to Paris	2015	Scholastic Press	2	3	9	22
2	9781499801927	The perfect picnic	2016	Little Bee Books	1	2	10	3
3	9780714865355	Fog Island	2013	Phaidon Press	1	2	9	28
4	9780062248978	The chosen prince	2015	HarperCollinsPublishers	1	3	20	24
5	9780375869884	Dinosaurs before dark	2012	Random House	2	3	15	13
6	9780553510812	Shadow of the shark	2015	Random House	1	3	23	13
7	9780805077247	Every Friday	2007	Henry Holt	1	3	9	29
8	9781442487673	Dork diaries.	2014	Aladdin	2	3	8	20
9	9781428773981	Amelia's 7th-grade notebook	2007	Simon & Schuster	1	3	22	12
10	9780878688944	A pocket full of kisses	2004	Child & Family Press	1	3	9	14
11	9781410945228	World's biggest dinosaurs	2012	Chicago	1	5	3	10
12	9780399556456	Time for school, little dinosaur	2017	Random House	2	3	3	7
13	9780375856389	Monster parade	2009	Random House	1	3	17	2
14	9781510737976	Dragons never die	2018	Sky Pony Press	1	4	6	25
15	9781338712766	Cat Kid Comic Club	2020	Scholastic Press	1	4	2	15
16	9780515157628	Who are the Rolling Stones?	2017	Penguin Random House	1	1	21	16
17	9780515158045	Who are Venus and Serena Williams?	2017	Penguin Random House	1	1	24	1
18	9780688154462	Circle dogs	1998	Greenwillow Books	1	3	5	6
19	9781512481228	There's a walrus in my bed!	2017	Andersen Press USA	2	3	25	3
20	9780714845302	The art book for children	2005	Phaidon Press	2	5	1	17
21	9780399559129	Dr. Seuss's horse museum	2019	Random House	1	5	13	23
22	9781503900356	The secret valentine	2018	Two Lions	1	3	7	9
23	9780152050542	What do you love?	2000	Silver Whristle	1	3	14	9

Author:

authorID	authorFirstName	authorLastName
1	James	Buckley
2	Shana	Corey
3	Ciara	Flood
4	Jose	Garibaldi
5	Barbara	Gibson
6	Kevin	Henkes
7	Gail	Herman
8	Andrew	Joyner
9	Jonathan	London
10	Rupert	Matthews
11	Walker	Melby
12	Marissa	Moss
13	Mary Pope	Osborne
14	Audrey	Penn
15	Dav	Pilkey
16	Dana Meachen	Rau
17	Amanda	Renshaw
18	Erin	Russel
19	Nikki	Russel
20	Rachel Renee	Russell
21	Karen	Schmidt
22	Lisa	Schroeder
23	Dr.	Seuss
24	Diane	Stanley
25	Cara J.	Stevens
26	Will	Terry
27	Andrew	Thomson
28	Tomi	Ungerer
29	Dan	Yaccarino

Subject:

subjectID	subjectName	subjectCount
1	art	2
2	cats	1
3	diary	2
4	dinosaurs	3
5	dogs	1
6	dragons	1
7	duck	1
8	fame	1
9	family	5
10	friends	3
11	halloween	1
12	hippo	1
13	horses	1
14	love	3
15	magic	2
16	minecraft	1
17	monsters	1
18	music	1
19	pets	1
20	prince/princess	1
21	rock	1
22	school	2
23	sharks	1
24	tennis	1
25	walrus	1
26	woman	1

Genre:

genreID	genreName
1	biography
2	children stories
3	fiction
4	graphic novel
5	non-fiction

Rating:

ratingID	starRating	bookID	studentID
1	2	3	129
2	3	4	130
3	4	3	122
4	3	1	123
5	5	17	116
6	5	22	117
7	2	15	118
8	4	19	113
9	3	11	114
10	2	4	131
11	3	23	120
12	1	12	121
13	1	7	132
14	3	5	113
15	2	20	134
16	5	9	112

Borrow Records:

borrowID	bookID	genreID
101	7	3
102	23	3
103	21	5
104	12	3
105	16	1
106	6	3
107	20	5
108	11	5
109	4	3
110	19	3
111	1	3
112	20	5
113	2	2
114	18	3
115	17	1
116	10	3
117	9	3
118	15	4
119	13	3
120	21	5
121	16	1
122	18	3
123	10	3
124	3	2
125	12	3
126	9	3
127	5	3
128	11	5
129	13	3
130	19	3

Students:

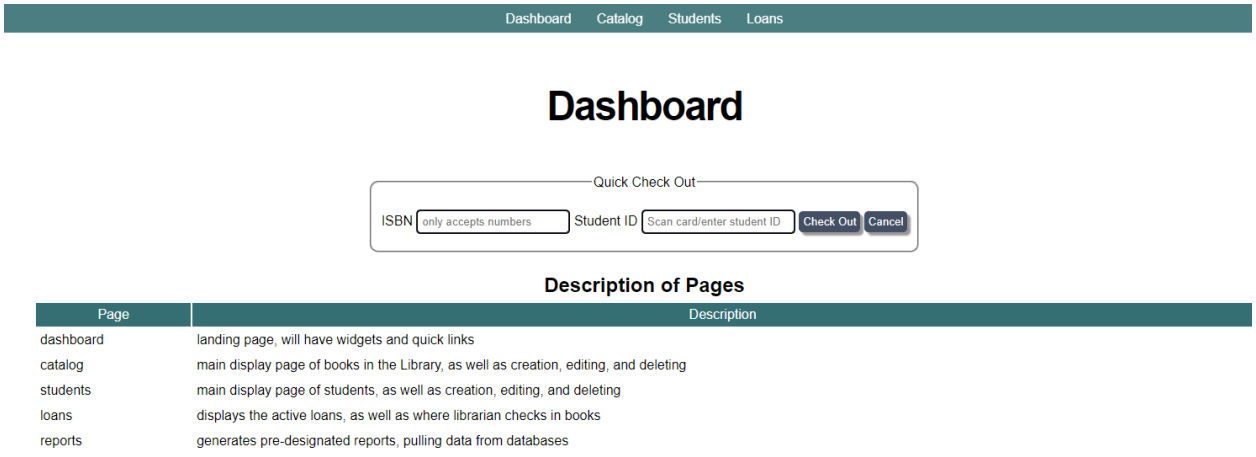
studentID	studentFirstName	studentLastName	studentEmail
111	Thomas	Carr	tcarr111@anna.edu
112	Samantha	Jen	sjen112@anna.edu
113	Ashley	Harris	aharris113@anna.edu
114	Nicole	Durham	ndurham114@anna.edu
115	Joanna	Gordon	jgordon115@anna.edu
116	Andrea	Ramos	aramos116@anna.edu
117	Erika	Wright	ewright117@anna.edu
118	Stacey	Coffey	scoffey118@anna.edu
119	Rachel	Wagner	rwagner119@anna.edu
120	Ronald	Williams	rwilliams120@anna.edu
121	Michael	Aguilar	maguilar121@anna.edu
122	Brittany	Knight	bknight122@anna.edu
123	Vincent	Palmer	vpalmer123@anna.edu
124	Sarah	Bennett	sbennett124@anna.edu
125	Stephen	Donovan	sdonovan125@anna.edu
126	Mark	Dickson	mdickson126@anna.edu
127	Chelsea	Gomez	cgomez127@anna.edu
128	Michelle	Johnson	mjohnson128@anna.edu
129	Juan	Stewart	jstewart129@anna.edu
130	Cynthia	Cole	ccole130@anna.edu
131	Jesus	Mcfar	jmcfar131@anna.edu
132	Sara	Robinson	srobinson132@anna.edu
133	Katherine	Lynch	klynch133@anna.edu
134	Douglas	Contreras	dcontreras134@anna.edu
135	Joseph	Powell	jpowell135@anna.edu

Checked-Out:

checkoutID	checkoutDate	returnDate	studentID	bookID
1	04/16/2022	04/30/2022	22	16
2	04/18/2022	05/02/2022	16	4
3	04/19/2022	05/03/2022	12	5
4	04/19/2022	05/03/2022	12	20
5	04/20/2022	05/04/2022	13	11
6	04/21/2022	05/05/2022	4	9
7	04/21/2022	05/05/2022	4	22
8	04/22/2022	05/06/2022	24	7
9	04/23/2022	05/07/2022	21	3
10	04/24/2022	05/08/2022	8	8
11	04/25/2022	05/09/2022	20	19
12	04/26/2022	05/10/2022	14	13

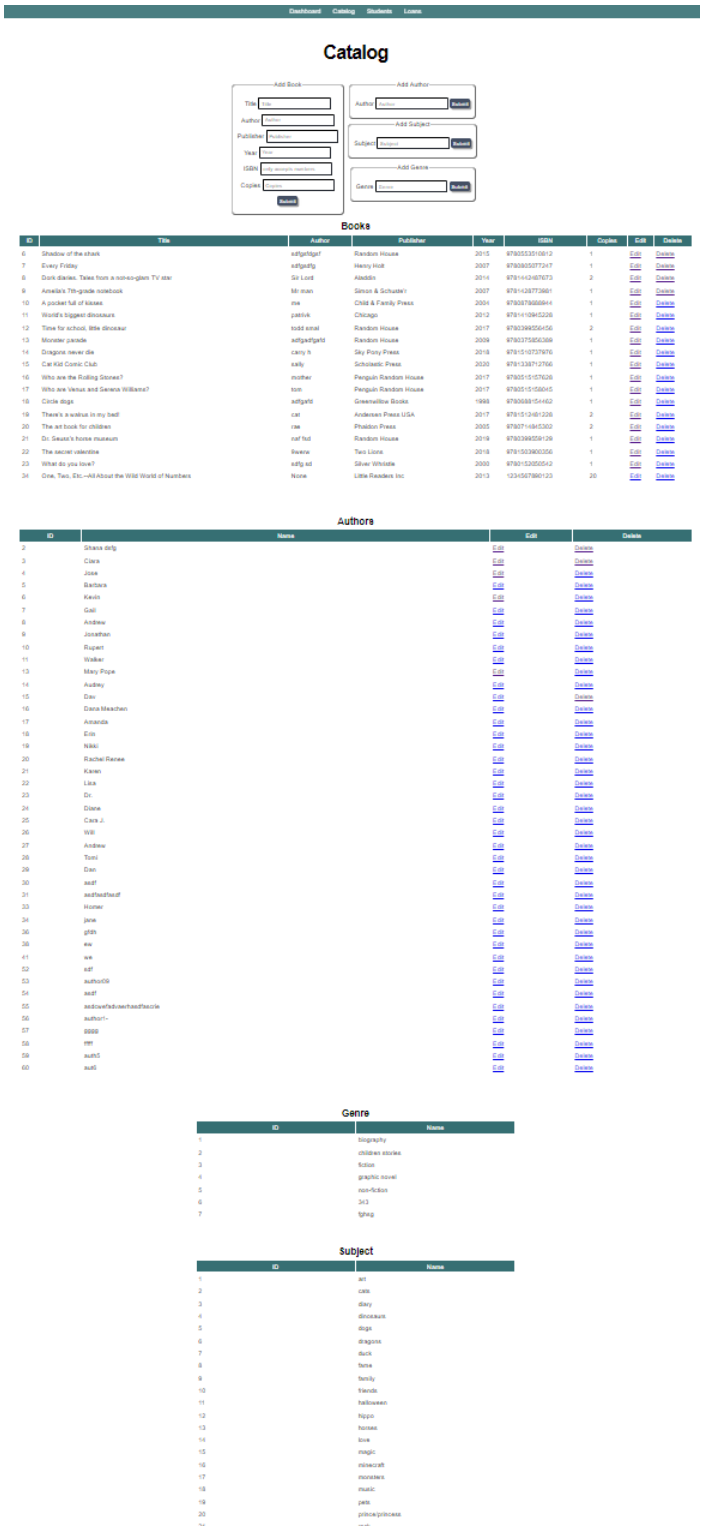
Screen Captures

Dashboard Page: CREATE(new loans)



Catalog Page: CREATE(new books,authors, genres, subjects), READ(lists books, authors, subjects, genres), UPDATE(books, authors), DELETE(books, authors)

zoomed out



zoomed in

Dashboard Catalog Students Loans

Catalog

Add Book

Title Title

Author Author

Publisher Publisher

Year Year

ISBN only accepts numbers

Copies Copies

Submit

Add Author

Author Author Submit

Add Subject

Subject Subject Submit

Add Genre

Genre Genre Submit

Books

ID	Title	Author	Publisher	Year	ISBN	Copies	Edit	Delete
6	Shadow of the shark	sdfgsfdgsf	Random House	2015	9780553510812	1	Edit	Delete
7	Every Friday	sdfgsdfg	Henry Holt	2007	9780805077247	1	Edit	Delete
8	Dork diaries. Tales from a not-so-glam TV star	Sir Lord	Aladdin	2014	9781442487673	2	Edit	Delete
9	Amelia's 7th-grade notebook	Mr man	Simon & Schuste'r	2007	9781428773981	1	Edit	Delete
10	A pocket full of kisses	me	Child & Family Press	2004	9780878688944	1	Edit	Delete
11	World's biggest dinosaurs	patrivk	Chicago	2012	9781410945228	1	Edit	Delete
12	Time for school, little dinosaur	todd smal	Random House	2017	9780399556456	2	Edit	Delete
13	Monster parade	adfgadfgafd	Random House	2009	9780375856389	1	Edit	Delete
14	Dragons never die	carry h	Sky Pony Press	2018	9781510737976	1	Edit	Delete
15	Cat Kid Comic Club	sally	Scholastic Press	2020	9781338712766	1	Edit	Delete
16	Who are the Rolling Stones?	mother	Penguin Random House	2017	9780515157628	1	Edit	Delete
17	Who are Venus and Serena Williams?	tom	Penguin Random House	2017	9780515158045	1	Edit	Delete
18	Circle dogs	adfgafd	Greenwillow Books	1998	9780688154462	1	Edit	Delete
19	There's a walrus in my bed!	cat	Andersen Press USA	2017	9781512481228	2	Edit	Delete
20	The art book for children	rae	Phaidon Press	2005	9780714845302	2	Edit	Delete
21	Dr. Seuss's horse museum	naf fsd	Random House	2019	9780399559129	1	Edit	Delete
22	The secret valentine	9werw	Two Lions	2018	9781503900356	1	Edit	Delete
23	What do you love?	sdfg sd	Silver Whristle	2000	9780152050542	1	Edit	Delete
34	One, Two, Etc.--All About the Wild World of Numbers	None	Little Readers Inc	2013	1234567890123	20	Edit	Delete

Authors

ID	Name	Edit	Delete
2	Shana dsfg	Edit	Delete
3	Ciara	Edit	Delete
4	Jose	Edit	Delete
5	Barbara	Edit	Delete
6	Kevin	Edit	Delete
7	Gail	Edit	Delete
8	Andrew	Edit	Delete

41	we	Edit	Delete
52	sdf	Edit	Delete
53	author09	Edit	Delete
54	asdf	Edit	Delete
55	asdcwefadvaerhasdfascrie	Edit	Delete
56	author1-	Edit	Delete
57	gggg	Edit	Delete
58	fffff	Edit	Delete
59	auth5	Edit	Delete
60	aut6	Edit	Delete

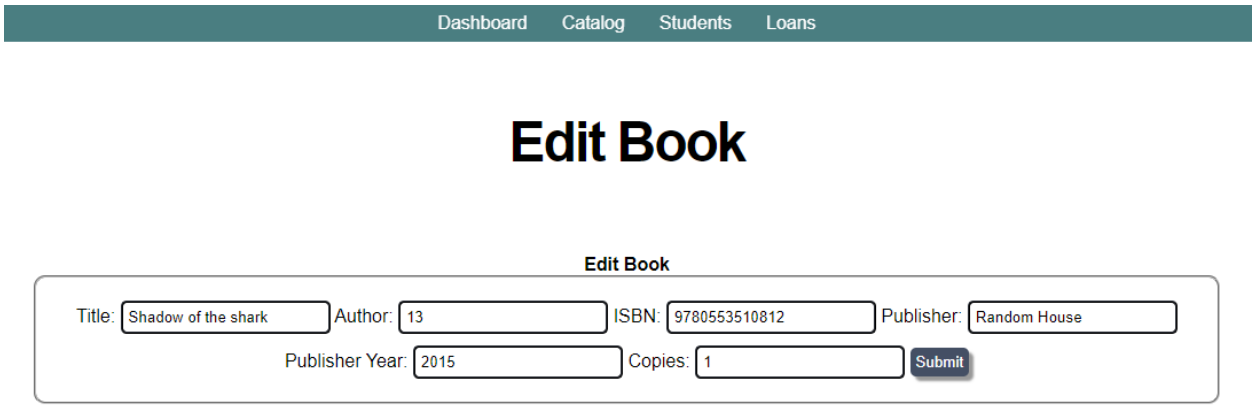
Genre

ID	Name
1	biography
2	children stories
3	fiction
4	graphic novel
5	non-fiction
6	343
7	fghsg

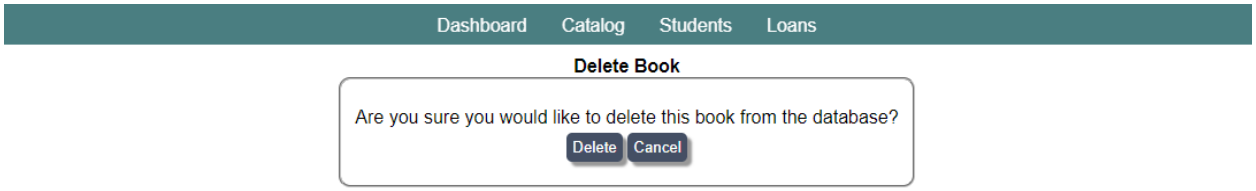
Subject

ID	Name
1	art
2	cats
3	diary
4	dinosaurs
5	dogs
6	dragons
7	duck
8	fame
9	family
10	friends
11	halloween
12	hippo
13	horses
14	love
15	magic
16	minecraft
17	monsters
18	music
19	pets
20	prince/princess
21	rock
22	school
23	sharks
24	tennnis
25	walrus
26	woman
29	Submit

Edit Book Page: UPDATE

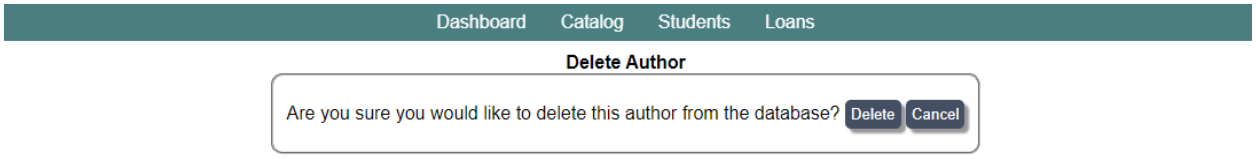


Delete Book Page: DELETE

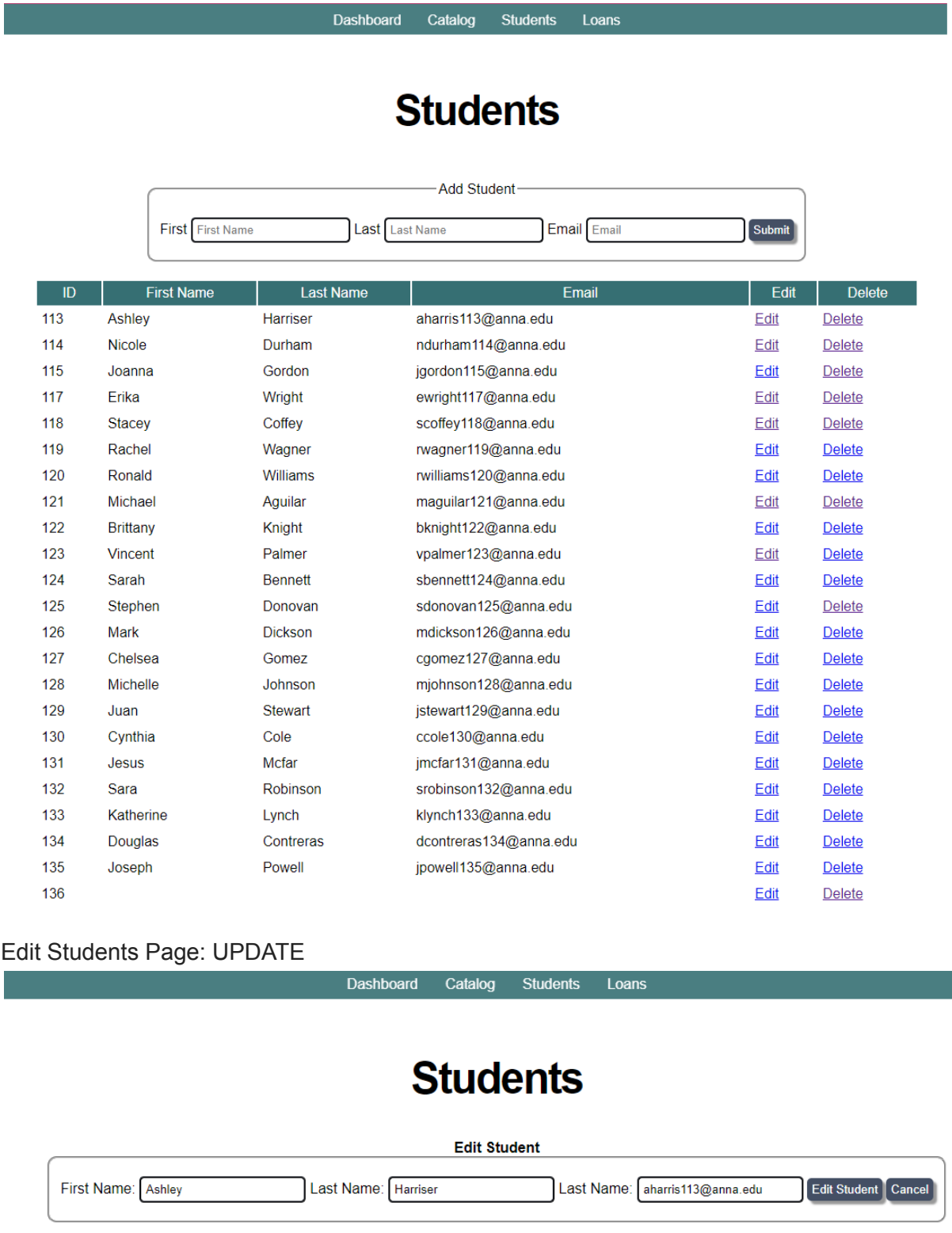


Edit Author Page: UPDATE

Delete Author Page: DELETE

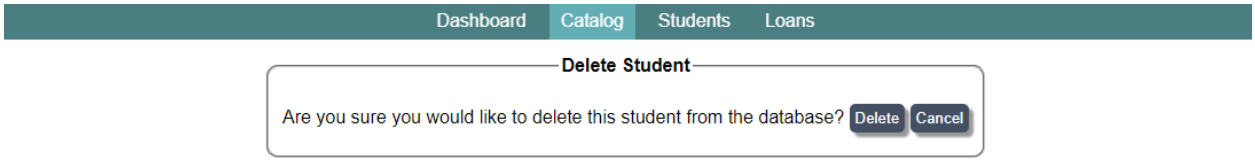


Student Page: CREATE(new student), READ, UPDATE(edit student), DELETE

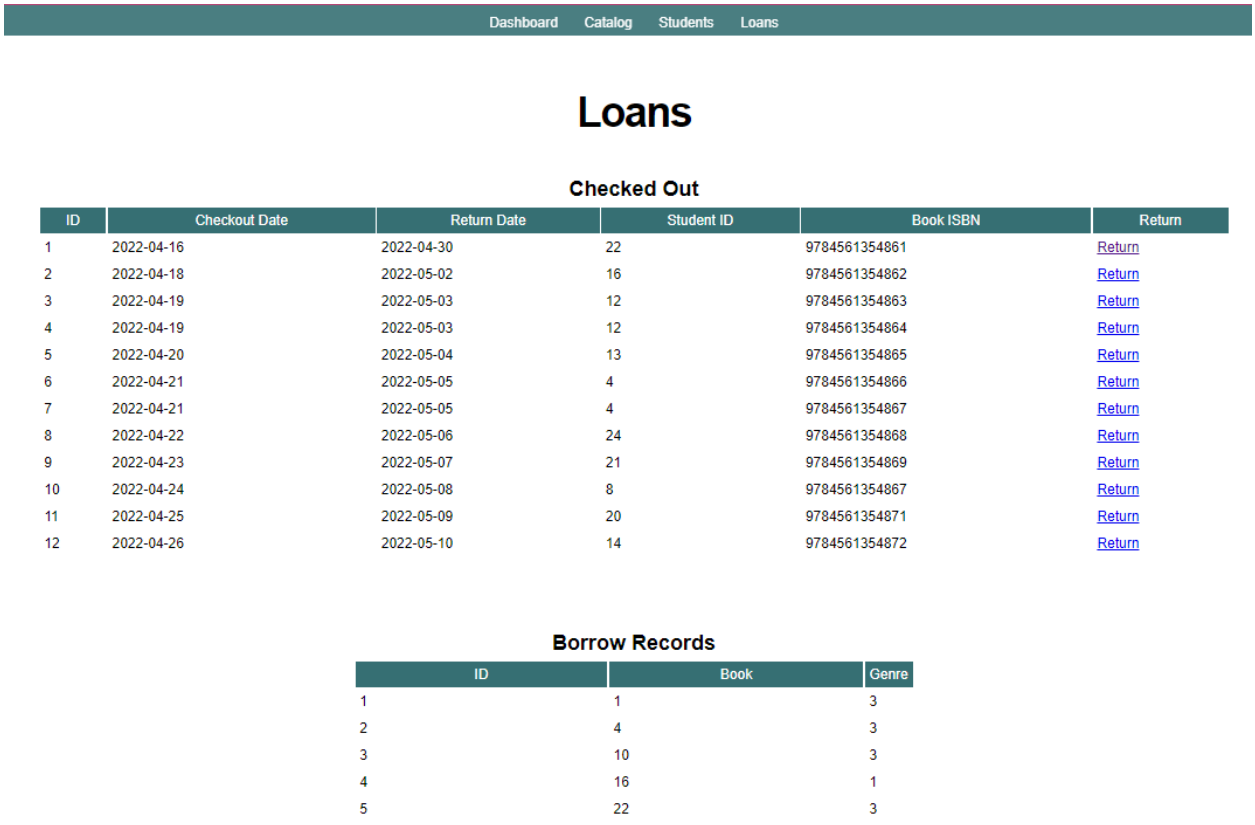
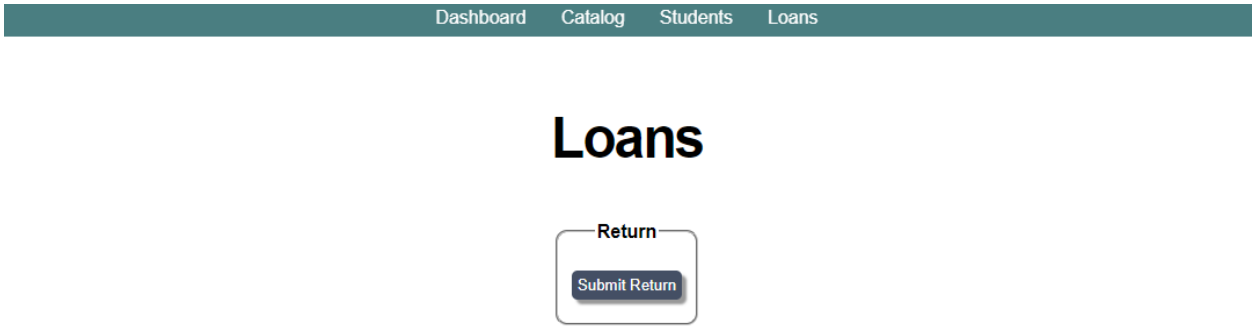


Edit Students Page: UPDATE

Delete Students Page: DELETE



Loans Page: READ, DELETE(return)



Delete Loans Page: DELETE(return)