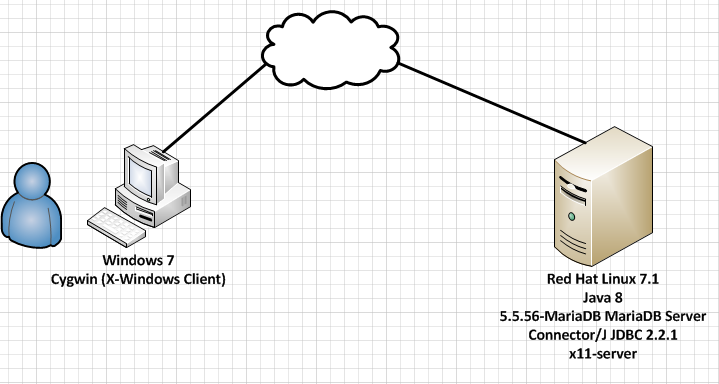
**Library System Administration Guide**

last update – 4/2/2018

Doug Skayer

Bhavani Putrevu



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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  | **Table Name** | **Book** | |  |
|  | Column | DataType | Null |  |
|  | Id | String | Not Null |  |
|  | Title | String | Not Null |  |
|  | Author | String | Not Null |  |
|  | Library\_id | String | Not Null |  |
|  | Borrowd\_User\_Id | String | Null |  |
|  | Due\_date | Date | Null |  |
|  |  |  |  |  |
|  | **Table Name** | **User** | |  |
|  | Column | DataType | Null |  |
|  | Id | String | Not Null |  |
|  | Name | String | Not Null |  |
|  | Address | String | Not Null |  |
|  | Phone | String | Null |  |
|  |  |  |  |  |
|  | **Table Name** | **Hold** | |  |
|  | Column | DataType | Null |  |
|  | Book\_Id | String | Not Null |  |
|  | User\_Id | String | Not Null |  |
|  | Date | Date | Not Null |  |
|  |  |  |  |  |
|  | **Table Name** | **Library** | |  |
|  | Column | DataType | Null |  |
|  | Id | String | Not Null |  |
|  | Name | String | Not Null |  |
|  | Address | String | Not Null |  |
|  | Phone | String | Null |  |
|  |  |  |  |  |

1. **Use Cases: (Incomplete)**

|  |  |
| --- | --- |
| Use Case Name | **Checkout book** |
| Scope | Library System |
| Level | User Goal |
| Primary Actors | User |
| Stakeholders and Interests | Use case applies to checkout station or website. |
| Preconditions | User or librarian is at book checkout station, the checkout station is fully operational and displays the authentication screen and user has one or more books to checkout. |
| Success Guarantee | Books are successfully removed from inventory and their check-out status is updated. |
| Main Success Scenario | 1. User authenticates (scan library card or enters library card number). 2. System returns overdue book and charge information (if true). 3. System allows checkout if dues are less than $25, otherwise instructs user to see library personnel. 4. User scans or enters book ISBN number. 5. System updates book checkout status record. 6. System indicates successful checkout. 7. Repeat 4-6 until all books are checked out. 8. System prints list of checked out books and their due dates. 9. System returns to authentication screen. |
| Special Requirements | None |
| Technology and Data Variations List | Checkout station has a barcode scanner, touch-screen and printer. |
| Frequency of Occurrence | Medium frequency. |
| Miscellaneous | None |
| Last update | Doug Skayer - 1/18/2018 |

|  |  |
| --- | --- |
| Use Case Name | **Access Account Information** |
| Scope | Library System |
| Level | User Goal |
| Primary Actors | User |
| Stakeholders and Interests | Use case applies to web access. |
| Preconditions | User or librarian is accessing system over the internet using a browser. |
| Success Guarantee | Book information is successfully displayed. |
| Main Success Scenario | 1. User authenticates with system. 2. System returns list of charges (if any). 3. System returns list of books reserved (if any). 4. System gives option to modify account information (password). 5. System gives option to cancel book reserve. |
| Special Requirements | None |
| Technology and Data Variations List | None. |
| Frequency of Occurrence | Low frequency |
| Miscellaneous | None |
| Last update | Doug Skayer - 1/20/2018 |

1. **Class Diagrams (Incomplete)**

|  |
| --- |
| **Book** |
| * id: String * title: String * author: String * dueDate: Date * borrowdBy: User * holds : List |
| + book ( id: String, title: String, author: String) : Book  + issue ( user: User) : Boolean  + returnBook ( ) : User  + renewBook ( user: User) : boolean  + placeHold ( hold: Hold) : void  + removeHold ( userId: String) : Boolean  + hasHold ( ) : Boolean  + getBorrower ( ) : User  + getId ( ) : String  + getTitle ( ) : String  + getAuthor ( ) : String  + getDueDate ( ) : Calendar |

|  |
| --- |
| **BookList** |
| - books : List |
| + search (bookId: String) : Book  + getBooks ( ) : Iterator  + insertBook ( book: Book) : boolean  + removeBook ( bookId: String) : boolean |

|  |
| --- |
| **Library** |
| - users: UserList  - books: BookList |
| + getBooks ( userId: String) : Iterator  + addBook (title: String, author: String, id: String) : Book  + searchUser ( userId: String) : User  + addUser (name: String, address: String, phone: String) : User  + issueBook (bookId: String, userId: String) : Book  + renewBook (bookId: String, userId: String) : Book  + returnBook (bookId: String) : int  + removeBook ( bookId: String) : int  + placeHold (bookId: String, userId: String, duration: int) : int  + removeHold ( bookId: String, userId: String) : int  + processHold ( bookId: String) : User  + getTransaction ( userId: String, date: Calendar) : Iterator |

|  |
| --- |
| **User** |
| - name: String  - address : String  - phone: String  - booksOnHold: List |
| + user ( name: String, address: String, phone: String) : User  + getName ( ) : String  + setName ( name: String) : void  + getId ( ) : String  + setId ( id: String) : void  + getAddress ( ) : String  + setAddress (address: String) : void  + getPhone ( ) : String  + setPhone ( phone: String) : void  + issue ( book: Book) : boolean  + returnBook (book: Book) : Boolean  + renew ( book: Book) : Boolean  + placeHold ( hold: Hold) : void  + removeHold ( bookId: String) : Boolean |

|  |
| --- |
| **UserList** |
| - members : Live |
| + search ( userId: String) : User  + getUsers ( ) : Iterator  + insertUser ( user: User) : boolean |

1. **MariaDB installation and Configuration**

**Installation:**

**MariaDB** (MySQL) - Server version: 5.5.56-MariaDB MariaDB Server

Documentation: <https://mariadb.com/kb/en/library/documentation/>

**Procedure to install**

yum install mariadb-server mariadb

systemctl enable mariadb

systemctl start mariadb

**Configuration:**

**Login to server as root user.**

**Login to MariaDB**

**mysql**

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MariaDB connection id is 69

Server version: 5.5.56-MariaDB MariaDB Server

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

**At this point you should see the MariaDB prompt** “MariaDB [(none)]>”. **You will be entering database configuration and status commands at this prompt. Enter the commands “**status**” or “**help**” information about your database server or MariaDB commands.**

**Create your production database.**

MariaDB [(none)]> **create database prod;**

Query OK, 1 row affected (0.00 sec)

**Start using your production database.**

MariaDB [(none)]> **use prod;**

Database changed

**Create user01 (database login account) for database application operations.**

MariaDB [prod]> **CREATE USER 'user01'@'localhost' IDENTIFIED BY 'password';**

**Assign appropriate database access privileges for user account.**

MariaDB [prod]> **grant select, insert, delete, update on prod.\* to 'user01' identified by 'password';**

**Apply changes for immediate use.**

MariaDB [prod]> **FLUSH PRIVILEGES;**

**Create your 6 production database tables. You should see the following database response to a successfully created table “**Query OK, 0 rows affected (0.01 sec)**“.**

**Create BOOK table. This table contains a complete record for each book in your library system.**

MariaDB [prod]>

**create table BOOK**

**(ISBN\_ID varchar(25) NOT NULL,**

**TITLE varchar(100) NOT NULL,**

**AUTHOR varchar(50) NOT NULL,**

**LIBRARY\_ID varchar(15) NOT NULL,**

**BORROWED\_USER\_ID varchar(25) NULL,**

**DUE\_DATE DATE NULL);**

**Create USER table. This table tracks library system user account information.**

**create table USER**

**(USER\_ID varchar(25) NOT NULL,**

**CARD\_ID varchar(25) NOT NULL,**

**LAST\_NAME varchar(50) NOT NULL,**

**FIRST\_NAME varchar(50) NOT NULL,**

**ADDRESS varchar(50) NULL,**

**PHONE varchar(15) NOT NULL);**

**Create HOLD table. This table tracks if a user has a hold on a book.**

**create table HOLD**

**(BOOK\_ID varchar(25) NOT NULL,**

**USER\_ID varchar(25) NOT NULL,**

**DATE DATE NOT NULL);**

**Create LIBRARY table. This table contains a record for each libraries location.**

**create table LIBRARY**

**(ID varchar(25) NOT NULL,**

**LIBRARY\_ID varchar(15) NOT NULL,**

**LIBRARY\_NAME varchar(50) NOT NULL,**

**LIBRARY\_ADDRESS varchar(100) NOT NULL,**

**LIBRARY\_PHONE varchar(25) NULL);**

**Create HOURS table. This table stores the standard hours for each of the Libraries.**

**create table HOURS**

**(LIBRARY\_ID varchar(15) NOT NULL,**

**DAY varchar(10) NOT NULL,**

**OPEN\_HOUR varchar(20) NOT NULL,**

**CLOSED\_HOUR varchar(20) NULL);**

**Create HOLIDAY table. This table stores the status of hours that are outside of normal hours, such as holidays or other non-standard circumstances.**

**create table HOLIDAY**

**(HOLIDAY\_ID varchar(15) NOT NULL,**

**LIBRARY\_ID varchar(15) NOT NULL,**

**HOLIDAY\_NAME varchar(50) NOT NULL,**

**DATE DATE NOT NULL,**

**STATUS varchar(200) NOT NULL);**

**Run the following command to list the tables configured in your prod database.**

**You should see the 6 tables you have just created.**

MariaDB [prod]> **show tables;**

+----------------+

| Tables\_in\_prod |

+----------------+

| BOOK |

| HOLD |

| HOLIDAY |

| HOURS |

| LIBRARY |

| USER |

+----------------+

6 rows in set (0.00 sec)

**To display a tables configuration use the following command.**

MariaDB [prod]> **DESCRIBE HOLIDAY;**

+--------------+--------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+--------------+--------------+------+-----+---------+-------+

| HOLIDAY\_ID | varchar(15) | NO | | NULL | |

| LIBRARY\_ID | varchar(15) | NO | | NULL | |

| HOLIDAY\_NAME | varchar(50) | NO | | NULL | |

| DATE | date | NO | | NULL | |

| STATUS | varchar(200) | NO | | NULL | |

+--------------+--------------+------+-----+---------+-------+

5 rows in set (0.00 sec)

**If a mistake is made creating the table, it may be easier to remove the table and start again. To remove the HOLIDAY table run the following.**

MariaDB [prod]> **drop table HOLIDAY;**

**Populate your production database tables with data. While the library system will at some point allow you to add or remove data from the backend database service, it is much easier to add the data directly into the database when there are many records you are working with.**

**Example to add 4 individual records to your HOLIDAY Table.**

**insert into HOLIDAY(HOLIDAY\_ID, LIBRARY\_ID, HOLIDAY\_NAME, DATE, STATUS) values ('1', '100', ' New Years Day ', '2018-1-1', ' Closed');**

**insert into HOLIDAY(HOLIDAY\_ID, LIBRARY\_ID, HOLIDAY\_NAME, DATE, STATUS) values ('2', '100', ' Martin Luther King, Jr. ', '2018-1-15', ' Closed');**

**insert into HOLIDAY(HOLIDAY\_ID, LIBRARY\_ID, HOLIDAY\_NAME, DATE, STATUS) values ('3', '100', ' Easter ', '2018-5-1', ' Closed');**

**insert into HOLIDAY(HOLIDAY\_ID, LIBRARY\_ID, HOLIDAY\_NAME, DATE, STATUS) values ('4', '100', ' Memorial Day ', '2018-6-28', ' Closed');**

**To display your tables contents.**

MariaDB [prod]> **select \* from HOLIDAY;**

+------------+------------+---------------------------+------------+---------+

| HOLIDAY\_ID | LIBRARY\_ID | HOLIDAY\_NAME | DATE | STATUS |

+------------+------------+---------------------------+------------+---------+

| 1 | 100 | New Years Day | 2018-01-01 | Closed |

| 2 | 100 | Martin Luther King, Jr. | 2018-01-15 | Closed |

| 3 | 100 | Easter | 2018-05-01 | Closed |

| 4 | 100 | Memorial Day | 2018-06-28 | Closed |

+------------+------------+---------------------------+------------+---------+

4 rows in set (0.00 sec)

**Alternatively, you may read a list of records from a tab-delimited file, using the following example.**

MariaDB [prod]> **LOAD DATA LOCAL INFILE '/home/dskayer1/PROJECT/TEST/java/PROD/HOURS.data' INTO TABLE HOURS;**

Query OK, 7 rows affected (0.00 sec)

Records: 7 Deleted: 0 Skipped: 0 Warnings: 0

MariaDB [prod]> **select \* from HOURS;**

+------------+-----------+-----------+-------------+

| LIBRARY\_ID | DAY | OPEN\_HOUR | CLOSED\_HOUR |

+------------+-----------+-----------+-------------+

| 100 | Sunday | 1:00 PM | 5:00 PM |

| 100 | Monday | 8:00 AM | 5:00 PM |

| 100 | Tuesday | 8:00 AM | 5:00 PM |

| 100 | Wednesday | 8:00 AM | 5:00 PM |

| 100 | Thursday | 8:00 AM | 5:00 PM |

| 100 | Friday | 8:00 AM | 5:00 PM |

| 100 | Saturday | 10:00 AM | 5:00 PM |

+------------+-----------+-----------+-------------+

7 rows in set (0.00 sec)

MariaDB [prod]> **LOAD DATA LOCAL INFILE '/home/dskayer1/PROJECT/TEST/java/PROD/USERS.data' INTO TABLE USER;**

Query OK, 5 rows affected, 1 warning (0.00 sec)

Records: 5 Deleted: 0 Skipped: 0 Warnings: 1

MariaDB [prod]> **select \* from USER;**

+---------+-----------+-----------------+------------+--------------+--------------+

| USER\_ID | CARD\_ID | LAST\_NAME | FIRST\_NAME | ADDRESS | PHONE |

+---------+-----------+-----------------+------------+--------------+--------------+

| 1000 | 152386111 | Skayer | Doug | Minnesota | 612-234-4321 |

| 1001 | 152386112 | Putrevu | Bhavani | Minnesota | 612-664-8301 |

| 1002 | 152386113 | Hawking Stephen | Minnesota | 651-234-4321 | |

| 1003 | 152386114 | Einstein | Albert | Minnesota | 612-234-4321 |

| 1004 | 152386115 | Cooper | Sheldon | California | 666-234-4321 |

+---------+-----------+-----------------+------------+--------------+--------------+

5 rows in set (0.00 sec)

MariaDB [prod]> **LOAD DATA LOCAL INFILE '/home/dskayer1/PROJECT/TEST/java/PROD/LIBRARIES.data' INTO TABLE LIBRARY;**

Query OK, 5 rows affected (0.01 sec)

Records: 5 Deleted: 0 Skipped: 0 Warnings: 0

MariaDB [prod]> select \* from LIBRARY;

+----+------------+-----------------------+-----------------------------------------------------+---------------+

| ID | LIBRARY\_ID | LIBRARY\_NAME | LIBRARY\_ADDRESS | LIBRARY\_PHONE |

+----+------------+-----------------------+-----------------------------------------------------+---------------+

| 1 | 100 | Roseville LIBRARY | 2180 North Hamline Ave, Roseville, MN 55113 | 651-724-6001 |

| 2 | 200 | Shoreview LIBRARY | 4560 North Victoria Street, Shoreview, MN 55126 | 651-486-2200 |

| 3 | 300 | Maplewood LIBRARY | 3025 Southlawn Drive, Maplewood, MN 55109 | 651-724-6003 |

| 4 | 400 | North St.Paul LIBRARY | 2300 North St. Paul Drive, North St. Paul, MN 55109 | 651-724-6005 |

| 5 | 500 | Moundsview LIBRARY | 2576 Mounds View Boulevard, Mounds View, MN 55112 | 651-724-6004 |

+----+------------+-----------------------+-----------------------------------------------------+---------------+

5 rows in set (0.00 sec)

MariaDB [prod]> **LOAD DATA LOCAL INFILE '/home/dskayer1/PROJECT/TEST/java/PROD/BOOK.data' INTO TABLE BOOK;**

MariaDB [prod]> **select \* from BOOK;**

+---------------------------+-----------------------------------------------------------------------------------------+--------------------------------------------------+------------+------------------+------------+

| ISBN\_ID | TITLE | AUTHOR | LIBRARY\_ID | BORROWED\_USER\_ID | DUE\_DATE |

+---------------------------+-----------------------------------------------------------------------------------------+--------------------------------------------------+------------+------------------+------------+

| ISBN-10 | TITLE | AUTHOR | library\_ID | borrowed user | 0000-00-00 |

| 1590780930 | My Librarian Is a Camel: How Books Are Brought to Children around the World | Margriet Ruurs | 100 | | 0000-00-00 |

| 0547243073 | Rain School | James Rumford | 100 | | 0000-00-00 |

| 0152054456 | The Librarian of Basra | Jeanette Winter | 100 | | 0000-00-00 |

| 0399237321 | "Thank You, Mr. Falker" | Patricia Polacco | 100 | | 0000-00-00 |

| 0399247491 | The Incredible Book Eating Boy | Oliver Jeffers | 100 | | 0000-00-00 |

| 0375836012 | The Boy Who Loved Words | Roni Schotter | 100 | | 0000-00-00 |

| 1582463530 | Waiting for the Biblioburro | Monica Brown | 100 | | 0000-00-00 |

| 1416994378 | Nasreenâ€™s Secret School | Jeanette Winter | 100 | | 0000-00-00 |

| 1416908129 | That Book Woman | Heather Henson | 100 | | 0000-00-00 |

| 159845420X | Poison Dart Frogs Up Close | Carmen Bredeson | 100 | | 0000-00-00 |

| | | | 100 | | 0000-00-00 |

| 1433957442 | Deadly Poison Dart Frogs | Lincoln James | 100 | | 0000-00-00 |

| 0756682320 | Everything You Need to Know about Frogs and Other Slippery Creatures | DK Publishing | 100 | | 0000-00-00 |

| 1607270692 | Bullfrog at Magnolia Circle | "Deborah Dennard, illustrated by Kristin Kest" | 100 | | 0000-00-00 |

| | All the Small Poems and Fourteen More | Valerie Worth | 200 | | 0000-00-00 |

| 1402754213 | Classic Starts Peter Pan | "J. M. Barrie, adapted by Tania Zamorski" | 200 | | 0000-00-00 |

| 1553379543 | One Well: The Story of Water on Earth | Rochelle Strauss | 200 | | 0000-00-00 |

| 0375837280 | Magic Tree House #37: Dragon of the Red Dawn | Mary Pope Osborne | 200 | | 0000-00-00 |

| 0375830340 | Magic Tree House #33: Carnival at Candlelight | Mary Pope Osborne | 200 | | 0000-00-00 |

| 0375830324 | Magic Tree House #34: Season of the Sandstorms | Mary Pope Osborne | 200 | | 0000-00-00 |

| 0375867953 | Magic Tree House #45: A Crazy Day with Cobras | Mary Pope Osborne | 200 | | 0000-00-00 |

| 1600146740 | Exploring Countries: Japan | Colleen Sexton | 200 | | 0000-00-00 |

| 1600146732 | Exploring Countries: Italy | Rachel Grack | 200 | | 0000-00-00 |

| 1600145558 | Exploring Countries: India | Jim Bartell | 200 | | 0000-00-00 |

| 1600145922 | Exploring Countries: Iraq | Lisa Owings | 200 | | 0000-00-00 |

| | Lon Po Po | Ed Young | 200 | | 0000-00-00 |

| 1587170000 | Aesopâ€™s Fables | Jerry Pinkney | 200 | | 0000-00-00 |

| 1426306989 | Face to Face with Wolves | Jim and Judy Brandenburg | 200 | | 0000-00-00 |

| 736848177 | The Iroquois: The Six Nations Confederacy | Mary Englar | 200 | | 0000-00-00 |

| 141301694 | Eagle Song | Joseph Bruchac | 200 | | 0000-00-00 |

| 153052120 | The Keeping Quilt | Patricia Polacco | 200 | | 0000-00-00 |

| | A River of Words: The Story of William Carlos Williams | Jen Bryant | 300 | | 0000-00-00 |

| 006029289X | Love That Dog | Sharon Creech | 300 | | 0000-00-00 |

| 1429672137 | "The Scoop on Clothes, Homes, and Daily Life in Colonial America" | Elizabeth Raum | 300 | | 0000-00-00 |

| 059045160X | If You Lived in Colonial Times | "Ann McGovern, illustrated by June Otani" | 300 | | 0000-00-00 |

| 143292317X | Simple Machines: Forces in Action (Do It Yourself) | Buffy Silverman | 300 | | 0000-00-00 |

| 1596470836 | Take a Quick Bow! | Pamela Marx | 300 | | 0000-00-00 |

| 0375840966 | The Hope Chest | Karen Schwabach | 300 | | 0000-00-00 |

| 160413089X | Animal Behavior: Animal Defenses | Christina Wilsdon | 300 | | 0000-00-00 |

| 1581960433 | Venom | Marylin Singer | 300 | | 0000-00-00 |

| 1429679964 | Can You Survive in the Wilderness? An Interactive Survival Adventure | Matt Doeden | 300 | | 0000-00-00 |

| 0792258673 | Divided Loyalties: The Barton Family during the American Revolution | Gare Thompson and Barbara Kiwak | 300 | | 0000-00-00 |

| 043912042X | Esperanza Rising | Pam Munoz Ryan | 300 | | 0000-00-00 |

| 0778799247 | Rainforest Research Journal | Paul Mason | 300 | | 0000-00-00 |

| 0152008977 | The Most Beautiful Roof in the World | Kathryn Lasky | 300 | | 0000-00-00 |

| 0439678757 | Promises To Keep: How Jackie Robinson Changed America | Sharon Robinson | 300 | | 0000-00-00 |

| 054527849X | Eight Days: A Story of Haiti | Edwidge Danticat | 400 | | 0000-00-00 |

| 1429617608 | "Investigating the Scientific Method with Max Axiom, Super Scientist" | Donald B. Lemke | 400 | | 0000-00-00 |

| 0375845615 | The Boy Who Invented TV: The Story of Philo Farnsworth | Kathleen Krull | 400 | | 0000-00-00 |

| 1554510872 | The Inuit Thought of It: Amazing Arctic Innovations (We Thought of It) | Alootook Ipellie and David MacDonald | 400 | | 0000-00-00 |

| 0786838655 | The Lightning Thief | Rick Riordan | 400 | | 0000-00-00 |

| 0440406943 | Dâ€™Aulaires Book of Greek Myths | Ingri and Edgar Parin Dâ€™Aulaire | 400 | | 0000-00-00 |

| 043940200X | "Bud, Not Buddy" | Christopher Paul Curtis | 400 | | 0000-00-00 |

| 0064400859 | Dragonwings | Laurence Yep | 400 | | 0000-00-00 |

| 0141312351 | Frightful's Mountain | Jean Craighead George | 400 | | 0000-00-00 |

| 0763643327 | Good Masters! Sweet Ladies! Voices from a Medieval Village | Laura Amy Schlitz | 400 | | 0000-00-00 |

| 0618851321 | Blue Lipstick: Concrete Poems | John Grandits | 400 | | 0000-00-00 |

| 0618503617 | "Technically, Itâ€™s Not My Fault: Concrete Poems" | John Grandits | 400 | | 0000-00-00 |

| 0761156070 | World Without Fish | Mark Kurlansky | 400 | | 0000-00-00 |

| 0375861254 | Flush | Carl Hiassen | 400 | | 0000-00-00 |

| 0547577311 | A Long Walk to Water | Linda Sue Park | 400 | | 0000-00-00 |

| 0140349812 | Lyddie | Katherine Patterson | 400 | | 0000-00-00 |

| | Narrative of the Life of Frederick Douglass | Frederick Douglass | 500 | | 0000-00-00 |

| 0375824057 | The People Could Fly: The Picture Book | Virginia Hamilton | 500 | | 0000-00-00 |

| 1880000423 | Frederick Douglass: The Last Day of Slavery | William Miller | 500 | | 0000-00-00 |

| | | | 500 | | 0000-00-00 |

| 1439102082 | The Big Thirst: The Secret Life and Turbulent Future of Water | Charles Fishman | 500 | | 0000-00-00 |

| 1580493998 | Pygmalion | George Bernard Shaw | 500 | | 0000-00-00 |

| 1590787846 | Nadiaâ€™s Hands | "Karen English, illustrated by Jonathan Weiner" | 500 | | 0000-00-00 |

| 0061962791 | Inside Out & Back Again | Thanhha Lai | 500 | | 0000-00-00 |

| 0446314862 | To Kill a Mockingbird | Harper Lee | 500 | | 0000-00-00 |

| | "To Kill a Mockingbird | | | NULL | NULL |

| (film)" | Directed by Robert Mulligan (1962) | 500 | | | 0000-00-00 |

| 1400064163 | "Unbroken: A World War II Story of Survival, Resilience and Redemption\*\*\*" | Laura Hillenbrand | 500 | | 0000-00-00 |

| 0803735006 | "The Omnivoreâ€™s Dilemma: The Secrets Behind What You Eat, Young Readers Edition" | Michael Pollan | 500 | | 0000-00-00 |

| 0743477545 | A Midsummer Nightâ€™s Dream | William Shakespeare (Folger Shakespeare Library) | 500 | | 0000-00-00 |

| 0743288505 | "Teaching Romeo & Juliet, Macbeth and Midsummer Night: Shakespeare Set Free" | Peggy Oâ€™Brien | 500 | | 0000-00-00 |

| 0345511018 | A Mighty Long Way: My Journey to Justice at Little Rock Central High School | Carlotta Walls LaNier and Lisa Frazier Page | 500 | | 0000-00-00 |

| 0756545129 | "Little Rock Girl 1957: | | | NULL | NULL |

| How a Photograph Changed | Shelley Tougas | 500 | | | 0000-00-00 |

| | | | | NULL | NULL |

+---------------------------+-----------------------------------------------------------------------------------------+--------------------------------------------------+------------+------------------+------------+

82 rows in set (0.00 sec)

1. **X11 server-side installation**

yum install x11-server

yum install x11-server-common

yum install xauth

yum install xorg-x11-xauth

yum update xorg-x11-xauth

yum update xauth

1. **Java installation components (Incomplete)**

yum install java-1.8.0-openjdk-devel

1. **Java Connector/J (jdbc driver) for MariaDB installation (Incomplete)**

**Java connection to database :** MariaDB Connector/J is used to connect applications developed in Java to MariaDB and MySQL databases using the standard JDBC API. The client library is LGPL licensed. See: <https://mariadb.com/kb/en/library/about-mariadb-connector-j/>

* Download mariadb-java-client-2.2.1.jar into /home/dskayer1/PROJECT/TEST/java/ on mrtsdoug-vm. Note: 2.2 for java 8 and java 9 (JDBC 1.4.2 compliant).
* Copy to /usr/lib/jvm/java-1.8.0-openjdk-1.8.0.161-0.b14.el7\_4.x86\_64/jre/lib/ext/

cp mariadb-java-client-2.2.1.jar /usr/lib/jvm/java-1.8.0-openjdk-1.8.0.161-0.b14.el7\_4.x86\_64/jre/lib/ext/

Note: jar tvf mariadb-java-client-2.2.1.jar lists jar file contents. I needed to change code to point from com.mysql.jdbc.Driver to org.mariadb.jdbc.Driver and recompile. Then the jdbc code started working.

1. **Application startup - client side**
2. Insert sysadmin USB drive with Cygwin terminal
3. Open My Computer icon on desktop
4. Sign into VPN
5. Select CYGWYN folder
6. Right-click **Cygwin** batch program and “Run as administrator”. Wait for C:\ CMD window to open.
7. Run: **startxwin &** #If problems run ps to verify xinit & xwin are running
8. Run: **export DISPLAY=:0.0** #Set this computer to open X Windows display
9. Run: **xterm** wait for X terminal session to open.
10. **ssh -Yv mrtsdoug-vm** # Use ssh to connect to server running Java & MariaDB.

# Y is for debug output; v is for X11 forwarding

1. **xhost +** # Allows X11 protocol access.
2. export CLASSPATH=/home/dskayer1/PROJECT/TEST/java/
3. **cd /home/dskayer1/PROJECT/TEST/java** # Application location
4. systemctl start mariadb (if not running) # Start MariaDB database
5. **java FahrenheitToCelcius** # Test JavaSwing/X Windows functionality
6. **Application startup/shutdown - server side**

systemctl start mariadb

systemctl stop mariadb