GMS Library System

An attempt to make something small, simple, cheap and useful

(or the things that hopeful dreams are made of)

End Result (Hardware)

End Result (Hardware & Cost)

- Raspberry Pi 3 ~$40.00
- Handheld QR Code Reader ~$40.00
  - https://www.amazon.com/Handheld-Barcode-Scanner-Computer-Scanning/dp/B07D8ZQNHK/ref=sr_1_1_sspa?s=electronics&ie=UTF8&qid=1550157173&sr=1-1-spons&keywords=qr+code+scanner&psc=1
- Raspberry Pi 3 Case with Power Cable ~$10.00
- Small Monitor for the Raspberry PI ~$140.00
  - https://www.amazon.com/Eleclink-Portable-Resolution-Monitor-Raspberry/dp/B071P32VHQ/ref=sr_1_1_sspa?s=electronics&ie=UTF8&qid=1550157814&sr=1-1-spons&keywords=raspberry+pi+monitor&psc=1
- People cost (Volunteer hours in scanning current books, etc.)

Hardware is nothing without software

Developed code has to be non-expert friendly

- Python, Javascript, CSS, HTML
- Highly documented
- Unit Tests/Integration Tests (Makes it easier for others to add functionality)
- Data entry utilizes general office paradigms, like comma delimited structures
- Code easily accessible for review and changes
- Software is deployed and built in a portable format, non OS specific
- Modularized & Abstracted to deal with hardware & software changes

Developed code has risks (See Later)

What does the software need to do?

Lets Identify the needed processes, that will eventually become the requirements that will need to be satisfied with software.

The following processes are not complete, and are just starter conversation points.

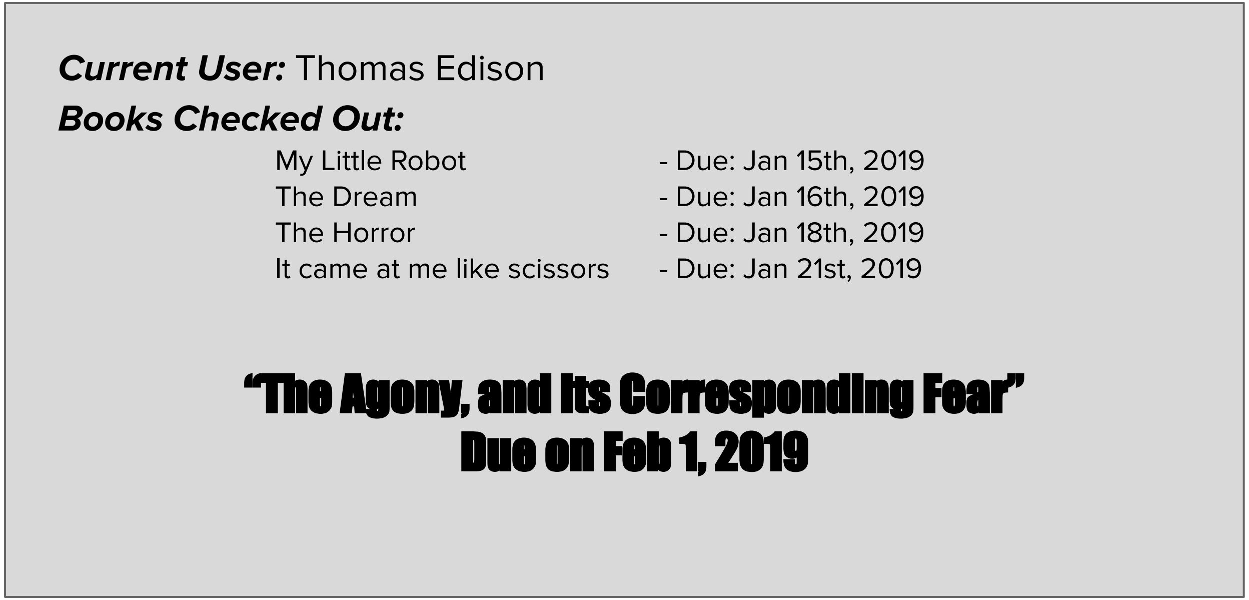
For example, should each child be uniquely identified in the system, or should it be the parent(or parents), and the child(children) is associated to the parent(but which parent?) Is there already a system in place in how all of the users are organized, and we would have to implement it in application?

Process: Check out Book (pt.1)

1. Use Handheld QR scanner and scan User Library Card QR Code
2. Screen shows that you are current user
3. Screen shows user’s current books checked out
4. Scan the QR code of the book
5. Scan the next QR code of the book (n…n+1)
6. End Transaction
   a. Scan Original User Library QR Code again
   b. Scan Next User Library QR Code
   c. Time out after 3 minutes
7. System records the book(s) and time of transaction for each user

Process: Check out Book (pt.2)

1. This may just be the first UI view, and possibly the only end user UI view for a very simple system:



Current User: Thomas Edison

Books Checked Out:

My Little Robot	- Due: Jan 15th, 2019
The Dream	- Due: Jan 16th, 2019
The Horror	- Due: Jan 18th, 2019
It came at me like scissors	- Due: Jan 21st, 2019

"The Agony, and Its Corresponding Fear"
Due on Feb 1, 2019

Process: Check in Book

1. Use Handheld QR scanner and scan Admin Library Card QR Code
2. Screen shows that you are current user
3. Scan the QR code of the book
4. Scan the next QR code of the book (n...n+1)
5. End Transaction
    a. Scan Original Admin Library QR Code again
    b. Scan Next User Library QR Code
    c. Time out after 3 minutes
6. System records the book(s) and time of check in transaction for each book

Process: Add books in bulk

1. Use Phone App to scan Book Barcodes to get ISBN Number
2. Phone App creates a CSV file
3. Upload CSV file into GMS Library Application
4. GMS Library Application generates QR Codes into a sticker sheet format
5. Print QR codes stickers
6. Apply QR code stickers to books

Process: Collect Book Data

1. GMS Library Application queries an ISBN service for each book
    a. There maybe a cost here
2. Retrieved book data is ingested into the database
3. Is there additional metrics that we need? (Book condition, # of copies, etc.)

Process: Add Bulk User(s) to System

1. Create a csv file with the following keys:
    a. Parent First Name
    b. Parent Last Name
    c. Parent Email Address
    d. Child First Name
    e. Child Last Name
    f. Child Grade <This will automatically update at the end of each calendar school year>
2. Upload the csv file with the users to the GMS Library Application
3. This can also be used for initial single user entries
    a. Until single user entry UI is completed
4. Every data point we add to the users, becomes a metric that can be used to better identify trends, library needs, etc.

Process: Add Single User to System

1. Web UI form requires same fields as bulk add:
    a. Parent First Name
    b. Parent Last Name
    c. Parent Email Address
    d. Child First Name
    e. Child Last Name
    f. Child Grade <This will automatically update at the end of each calendar school year>
2. Web UI form requires same fields as bulk add:

Process: Overdue Book Reporting

1. GMS Library application iterates through all the checked out books by users every couple of minutes
2. Live report via web page with current list of books overdue by user, by grade, by parent, by how long its overdue.
3. Automatic email to parents of overdue books (configurable)
    a. Is this done through the schools internal SMTP server?
    b. How is it done currently?

Process: Overdue Book Reporting Config

1. Options on how often to send email updates on overdue books
2. Options on aggregating emails
   a. Ie. Send one email to parents per child, or one email with all overdue books checked out by children, etc.

Risks: Custom Solutions, Custom Problems

1. Things are more complicated than they seem, the codebase will get big and complex
2. What happens when the QR scanner breaks, a new one needs to be purchased but the old one isn't available, requires software update? An update could take time, taking down the library system
3. We are the technical support system
4. Security of user information needs to be considered
5. Security of the system needs to be considered
6. Are there alternatives? Evergreen ILS, LibLime Koha, Folio.org