First Run-through

# Step 1: Categorize the problem

* Private Warehousing of General Merchandise (NAICS 493110)
* Retail of Electronics Stores (NAICS 443142)
* Lending Library? (NAICS 519120)

# Step 2: Research Similar Problems

* TALK TO RODERIGO, EMILY, AND THE WORK STUDIES
* “Small equipment Checkout System” by Iowa State University

<https://sddec20-21.sd.ece.iastate.edu/docs/Design%20Document%203.pdf>

* Cheqroom software

<https://www.cheqroom.com/>

# Step 3: Domain Description

Glossary

* *In\_house\_item: current have in stock*
* *Custom\_item: do not have in stock. It needs to be ordered*
* *Student\_order: request from student that goes to Roderigo for approval*
* *Free\_range\_use\_items: borrow items from a specific plate*
* *Free\_range\_use\_customer: let students borrow items in classes where you don’t need to keep them*
* *Tags: item descriptions that let you find related items*
* *Catalog: master list of all items stored/ordered that Rodrigo can use and students can add/subtract/request to/from*
* *Inventory\_changes: allow changes to instore items*
* Checked\_out\_item: item that has been checked out by a student but still viewable
* Supply\_cabinet: cabinet for holding all the items currently in stock

## Pass 1:

1. *Student request terminal for in/out house items*
2. *Student receives:*
   1. *If in stock: location, price, number, stock number, class used for*
   2. *Ordered, but not in stock: (same except location)*
   3. *Option for an order request*
   4. *Similar items*
3. *Roderigo should only see 2C when forms are filled out*
4. *Roderigo should sticker request as completed, urgent, end\_of\_day, etc.*
5. *Student login: email and pin*
6. *Order confirmation emails*
7. *Free range in Hamm 215, woodshop, workshop, GUI to anonymously borrow/replace items*
8. Students must specify if they are taking the item permanently or temporarily (for a short, set amount of time)

## Pass 2:

Redefine as Requirements

1. *Student will request terminal for in/out house items*
2. *Student will receive:*
   1. *If in stock: location, price, number, stock number, class used for*
   2. *Ordered, but not in stock: (same except location)*
   3. *Option for an order request*
   4. *Similar items*
3. *Roderigo will only see 2C when forms are filled out*
4. *Roderigo will sticker request as completed, urgent, end\_of\_day, etc.*
5. *Student login: email and pin*
6. *Order confirmation emails*
7. *Free range in Hamm 215, woodshop, workshop, GUI to anonymously borrow/replace items*
8. Students will specify if they are taking the item permanently or temporarily (for a short, set amount of time)

## Pass 3: Separate Domain-Specific Characteristics from Generic Ones

|  |  |
| --- | --- |
| Specific   1. Roderigo notified about orders 2. Request stickering 3. Free range anonymous “borrow” items 4. Permanently vs temporarily removed status for items | Generic   1. Student Request Terminal 2. Receive information from Catalog 3. Login to terminal/catalog 4. Order confirmation emails |

## Pass 4:

A group of circles with numbers with Ice hockey rink in the background

Description automatically generated

## Pass 5:

|  |  |
| --- | --- |
| Specific   1. Roderigo notified about orders 2. Request stickering 3. Free range anonymous “borrow” items 4. Permanently vs temporarily removed status for items | Generic   1. Student Request Terminal 2. Receive information from Catalog 3. Login to terminal/catalog 4. Order confirmation emails 5. Administrator notified about orders 6. Items available for short-term lending (like a library) |

A diagram of a number and circles

Description automatically generated with medium confidence

## Pass 6:

A diagram of a number of circles and lines

Description automatically generated

## Pass 7:

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Description automatically generated

# Step 4: Analyze Generic Facets of the Domain

**Terminal:** a GUI that displays the catalog, lets you check items in or out, and lets you place an order for an item we don’t have.

**Catalog:** a database containing all inhouse items, either checked out or on the shelf

**Ordering:** a form accessed through the terminal that allows you to request a specific part that’s not in stock  
**Lending:** Some items can be used for a brief period of time and then returned to the supply cabinets. They are anonymously checked out.

# Step 5: Do it again!

One out of two run-throughs completed

Second Run-through

# Step 1: Categorize the Problem

Warehouse Inventory Management, small components

# Step 2: Research Similar Problems

* ***TALK TO RODERIGO, EMILY, AND THE WORK STUDIES***
* ***“Small equipment Checkout System” by Iowa State University:***Iowa State has a similar problem: they need to keep track of small components for the engineering department. They used lockers to store their components, but had the same idea for checking out items, viewing a catalog, and email reminders. Similarly, the administration could manipulate the catalog, and, in something worth considering, see which students have checked out which items and adjust checking-out privileges.

[*https://sddec20-21.sd.ece.iastate.edu/docs/Design%20Document%203.pdf*](https://sddec20-21.sd.ece.iastate.edu/docs/Design%20Document%203.pdf)

* ***Cheqroom software*:** barcode-based, tracks physical equipment (website talks a lot about cameras). It uses a database and has a unique collaborative aspect that allows various groups of people to form their own miniature administrator-student huddles. It has a very nice GUI and its own app. It supports location tracking.

[*https://www.cheqroom.com/*](https://www.cheqroom.com/)

* **BarCloud, by ASAP Systems:** very similar to Cheqroom in the use of barcodes, larger physical equipment, and nice GUIs. It claims to comply with various “Inventory Management Standards” which could not be found. It has a lot of fun things going on with email and text alerts, though. It is integrated with a few things, namely the cloud, and Google Workspace. Lastly, it implements the usual administrator privileges, but allows for customizable security levels.

<https://asapsystems.com/education/inventory-system-university-college/>

# Step 3: Domain Description’

Glossary:

* *In\_house\_item: current have in stock*
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* *Tags: item descriptions that let you find related items*
* *Catalog: master list of all items stored/ordered that Rodrigo can change and students can add/subtract/request*
* *Inventory\_changes: allow changes to instore items*
* *Checked\_out\_item: item that has been checked out by a student but still viewable*
* *Supply\_cabinet: cabinet for holding all the items currently in stock*
* Administrator: can directly manipulate the catalog and order items
* Student: can indirectly manipulate the catalog only

## Pass 1:

1. A Catalog contains information (name, price, number, similar etc.) about each component available in the school. The items are sorted using a tag system
2. A student Terminal that contains read-only access to the catalog
3. Students can view all items in the catalog
4. Students can borrow or buy components using the Terminal
5. Students can request that an out of house item be ordered and get an order confirmation email. Order requests go to the administrator.
6. Administrator can sticker requests as completed, urgent, or end-of-day.
7. Administrators can change the catalog manually
8. The Terminal requires a valid university email and a pin to access
9. Administrators have their own login methods as well (possibly a password)
10. Items that need to be borrowed, or items are abundant and free of charge, will also show up in the catalog with the proper information. Borrowed items will show as being borrowed.

## Pass 2:

1. The system shall maintain a Catalog containing information (name, price, quantity, similar items, etc.) about each component available in the school. Items in the catalog shall be sorted using a tag system.
2. The system shall provide a student Terminal with read-only access to the Catalog.
3. Students shall be able to borrow or purchase components using the Terminal.
4. Students shall be able to request that an out-of-house item be ordered and receive an order confirmation email. Order requests shall be automatically routed to the administrator.
5. Administrators shall be able to mark order requests as completed, urgent, or end-of-day.
6. Administrators shall be able to manually modify the Catalog.
7. The Terminal shall require a valid university email address and a PIN for access.
8. Administrators shall have their own login credentials, potentially including a password.
9. Items available for borrowing, or items that are abundant and free of charge, shall be displayed in the Catalog with appropriate information. Borrowed items shall be clearly indicated as "borrowed" in the catalog.

## Pass 3:

|  |  |
| --- | --- |
| Domain-Specific   1. Master Catalog using tag system 2. Terminal read-only access to the entire catalog 3. Borrowing/Buying through Terminal 4. Completed, urgent, and end-of-day stickers 5. Administrators can manually modify the Catalog 6. Borrowable items | Domain-Independent   1. Fill out order form, Administrator notified, order confirmation email 2. Terminal requires valid email and pin 3. Administrator privileges with firmer security |

## Pass 4:

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Description automatically generated

## Pass 5:

|  |  |
| --- | --- |
| Domain-Specific   1. Master Catalog using tag system 2. Terminal read-only access to the entire catalog 3. Borrowing/Buying through Terminal 4. Completed, urgent, and end-of-day stickers 5. Administrators can manually modify the Catalog 6. Borrowable items | Domain-Independent   1. Fill out order form, Administrator notified, order confirmation email 2. Terminal requires valid email and pin 3. Administrator privileges with firmer security 4. Database to hold products/items 5. Administrator privileges can directly manipulate data |

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## Pass 6:

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# Step 4: Analyze Generic Facets of the Domain

**Terminal Options:**

1. Essentially just a menu GUI
2. Access to a catalog
3. Access to order forms
4. Login system
5. Can borrow/buy equipment from catalog

**Database:**

1. Stores products/items
2. Can be searched by search bar and also by tag
3. Items can be added, removed, or updated
4. Items should be objects
5. Can handle read-only or read-and-write permissions

**Administrator Access Privileges:**

1. Administrators can manually change items in a database
2. Administrators have special, more secure, login methods

# Step 5: Do it Again!

Two out of two run-throughs completed