Team Alexandria

Deliverable 3 - Process Modeling
IS436 - Structured Systems Analysis and Design
Prepared for 9 Apr 2018

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Revised Requirement Definitions

Requirement	Category	Definition
Database Querying software	Process Oriented	User should be able to query the database to find the desired media location and availability. **Updated:** Employee should be able to change media information such as availability, location and late fees. User should be able to query the database to check if the media is available to rent and its information.
Connected Network of Libraries	Business Requirement	The Library system needs to be common for all associated libraries. Allows interlibrary loaning of media.
Kiosks and POS system	User Oriented	Kiosk will allow users to access all online hosted media. It will also act as primary point of access for users to the system. **Updated:** Kiosk will allow customers to view media information and rent it out. It will also give access to users rental summary and billing information based on their ID.

Web Hosting Space	Process Oriented	Enable all library media to be hosted online. Online access provides users with an external form of access to media.
Rental Information	Information Oriented	**Updated:** System must store and maintain all currently rented media and provide users with alerts for when it is due back and information regarding late fees.
Roles and Access control	Security	Access to system will be restricted using specific roles such as administrator and employees. **Updated**: Once the media is overdue, Payment handling department will be given an access to customers account.
Transaction Processing	Operational	The system should charge users for overdue media and notify user when it takes place.

Revised USE CASES

Use Case:	Generating Billing Reports for Late Fees		ID: V1	Importance Level: Medium
Actor:	Billing Services Office			
Description:	When a customer does not return an item on time, a late fee can be assessed for every day after the due date.			
Trigger:	Daily late fee processing.			
Type:	**Real**			
Preconditions:	A customer has a book actively checked out that is past due (where due date is in the past)			
Normal Course:	**1. Script is run (daily/on days the library is open) after hours** **2. Script looks up all existing items that are currently checked out and have a due-date of before today.** **3. If the item has a due-date prior to today, a transaction is noted in the customers account for the late fee associated with that item type (ex. Books are $0.25/day, Videos are $0.75, Reference materials $2.00, etc.)** **4. Script can notify customer via text/email/etc. that their item is past-due and that they will not be able to check out new items until their fees are paid and past-due items are returned.**	**Information for Steps:** **List of items checked out**		
Postconditions:	**Billing Services office has a record of late fees that have been issued to that customer for the day and for which items.**			

Summary

Inputs	Source	Outputs	Destination
List of items currently checked out and to whom they are checked out to	Library Database	List of amounts to fine users and for what items	Transactions reported to Billing Services

Use Case:	Checking out an item to a Customer		ID: V2	Importance Level: High
Actor:	Customer			
Description:	When a customer wishes to check out an item, the system must ensure they have a valid credential and not have an unpaid balance on their account.			
Trigger:	Customer attempts to check out item at counter/kiosk.			
Type:	Real			
Preconditions:	A customer has an item (or multiple) and their library card.			
Normal Course:	1. Clerk/Customer scans Library Card into system. 2. System does a lookup against school registration database to ensure Customer has an active registration with the library. 3. System does a lookup against Billing Services database to ensure Customer does not have an outstanding balance on their account. 3b. If they do, they are able to settle up a residual balance at the counter with a clerk. 4. System prompts user to scan each item, recording that the item is being checked out with each scan. 5. Clerk/Customer finishes transaction, System prints out receipt with each item and its due date.	Information for Steps: Connection to appropriate databases. Library Card Barcode on each item		
Postconditions:	Library database is updated with new quantities of each item and with whom each item is checked out to.			
Summary				

Inputs	Source	Outputs	Destination
Library Card Item IDs	Library Database Billing Service Database Membership Database	Valid checkouts of items	

Use Case:	Adding New Items to the Library		ID: V3	Importance Level: High
Actor:	Librarian			
Description:	When the library receives a donation or purchases a new item, it must be entered into the system.			
Trigger:	Librarian wants to add a new item			
Type:	**Real**			
Preconditions:	Librarian has a new item in hand to enter			
Normal Course:	1. Librarian scans the ISBN barcode on the item. 2. System does a lookup against the Library of Congress Copyright database to find information on the item 2b. If no information is found, the librarian is prompted to enter the information 3. System prompts Librarian to review information 4. A new record for the item is created in the database 5. System prints out a library asset item barcode to have Librarian apply to item		**Information for Steps:**	
			Connection to Library and Library of Congress Databases	
Postconditions:	New item has been entered into the system and has a barcode on it for checking out			
Summary				

Inputs	Source	Outputs	Destination
Item Barcode	Library Database LoC Database	Item has barcode applied to it and is saved in Library Database	

Updated Work Plan:

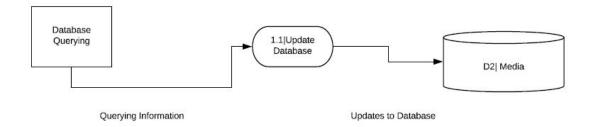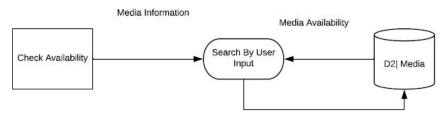| Tasks	Responsible	Start	End	Days	Status
Sprint 1					
Initiating & Planning	Alex Cha.	2/26	3/5	7	Complete
Gather Info & Analysis	Omar C.	2-Mar	12-Mar	10	Complete
Sprint 2					
Plan System Engineering	Amit, Jason	15-Mar	23-Mar	8	Complete
Acquire Hardware & Software	Jason, Mehak	15-Mar	30-Mar	15	Complete
Installation	Amit, Alex	30-Mar	9-Apr	10	In progress
Implementation	Omar, Mehak	9-Apr	19-Apr	10	In progress
Sprint 3					
Prepare and provide training	Alex Cha.	9-Apr	24-Apr	15	Not started
Provide support	Amit D.	24-Apr	1-May	7	Not started
Monitor Data	Omar C.	24-Apr	1-May	7	Not started
Testing	Omar C.	24-Apr	4-May	10	Not started
Sprint 4					
Document System	Mehak C.	24-Apr	5-May	11	Not started
Continous Resolvance of issues	All	5-May	1-Dec	210	Not started

DFD Level 0

- Employee: An Employee of the Library that is allowed to take administrative action against Customers
- Customer: A user of the library
- Library: The collection of media
- 1) Payment Handling: When a customer wishes to pay a fine, the Transaction Information from past checkouts is correlated to create a Transaction Total, which is combined with the Customer's record to then charge a Customer's credit card.
- 2) Check Availability: When a Customer wants to check the Availability of an item, they are able to query their request against the Libraries Media List to determine whether or not the item is available for check out.
- 3) Produce Rental Summary: A customer can view the items they currently have checked out by checking their customer record for which rental objects are currently assigned to them, which can then be returned to them with due dates and any accrued fines.
- 4) Rent Media: Users are able to request a rental from the Media List by showing their customer record and the item from the Media List to then process a rental from the Library.
- 5) Database Querying: Searching through and changing any media information, including but not limited to adding new items to the Media list can be done through querying the database in different ways.

DFD Level 1:
1. Employees can update the Media List database by way of searching for an item, modifying information, and updating and commiting the changes back to the database.
2. A Customer can Search the Media List for the availability of an item by searching for an attribute of an item and checking for however many copies of that item are not currently checked out/are in stock.

Database Querying

1.1|Update Database

D2| Media

Querying Information   Updates to Database

Media Information

Media Availability

Check Availability

Search By User Input

D2| Media

Search Criteria