

2022Fall-T-CSE460-70519 Homework 3

Wei Hng Yeo

TOTAL POINTS

78 / 100

QUESTION 1

Q1 70 pts

1.1 a 28.5 / 36

- ✓ - **1.5 pts** Actor 4 identified is not meaningful to the problem statement
- ✓ - **2 pts** Use case 4 is not meaningful with the problem statement of the common scenarios listed in problem statement
- ✓ - **2 pts** Use case 5 is not meaningful with the problem statement of the common scenarios listed in problem statement
- ✓ - **2 pts** Use case 6 is not meaningful with the problem statement of the common scenarios listed in problem statement

1.2 b 7 / 10

- ✓ - **3 pts** Use case is not meaningful with problem statement

1.3 C 22 / 24

- ✓ - **1 pts** Incorrect relationships identified between use cases
- ✓ - **0.5 pts** Generalization relationship is not meaningful with respect to the problem statement
- ✓ - **0.5 pts** Extend relationship is not meaningful with respect to a problem statement

🗨 incorrect direction for generalization relationship

QUESTION 2

30 pts

2.1 a 15 / 20

- ✓ - **2 pts** Values for the provided property of

****category 1**** are expected

✓ - **1 pts** Property(or properties) for ****category 2**** should be individually identified

✓ - **2 pts** Values for the provided property of ****category 2**** are expected

🗨 You have not provided values for each objects. Moreover, The system can;t be a classical categorization because we don't enough about the definite boundaries. Check out one of the valid answers : Classical categorization identifies the classes and objects according to the relevant properties for the problem domain of interest.

We have a problem domain of the library system. The following properties are useful for the identified objects and classes.

One object could be a book:

1. Property: Book has a Barcode or not; values: yes and no
2. Property: A given book can be borrowed or not by a staff member; values: yes and no
3. Property: A given book can be borrowed or not by SCR machines; values: yes and no
4. Property: A book is available or not; values: yes and no

The borrowed book has further properties such as :

- Property: Date when the book was issued, how the book was issued either by SCR machines or by John Dow values: validity of the book to be borrowed based on the due date.

•Property: The penalty applied to a book borrowed after crossing a due date; values: an int or double based on the calculation of penalty per day

Another object could be a patron

1. Property: A patron can be a student; values: yes and no
2. Property: A patron can be a teacher; values: yes and no
3. Property: A patron can be a Staff; values: yes and no
4. Property: A patron has a valid ID card to borrow a book; values: string

Such categorization of problem domains based on property or values helps us to keep track of the books issued to the Students, Teachers, etc. It also helps us to calculate the penalty if a certain book has crossed its due date. It could also tell us whether a book can be checked out or not. What if the barcode of a book has been destroyed and that same book needs a certain kind of maintenance to get a new barcode done? This also helps us in providing info on whether SCR machines can identify the barcodes of a book and we get to know their working as well.

2.2 b 5.5 / 10

- ✓ - 1 pts name or choice of the category provided for Conceptual Clustering is mostly understandable
- ✓ - 1 pts Property(or properties) for category should be individually identified
- ✓ - 1.5 pts values for the provided property of category should be explicitly defined
- ✓ - 1 pts Explanation provided for the classification with respect to property and the values is mostly

understandable

- your answer is partially correct. Your choice of objects is correct but needed more explanation. One of the answers could be : Conceptual Categorization: Defines the set of objects that do not have definite boundaries. For e.g., Books with barcodes damaged. A library or a library system that combines different libraries through wireless connections can have millions of books. Now, a patron while self-checkout books using SCR machines needs to scan the barcode of a book. A library System knows at each scanning whether that book has damaged barcodes or not. These damaged barcodes on the books are not visible to human eyes as well. Therefore, books with damaged barcodes are something that doesn't have a definite boundary as to how many books with damaged barcodes exist at a particular instance in time.

Another category could be the availability of books in the entire library system. A library system can be thought of as a Distributed system where each library is connected to another via wired or wireless connections. A distributed system is a collection of independent computers that appear as a single coherent system to its users. The computer can mean both physical devices and a virtual machine. Now, a patron tries to find an item or a book in the search bar of the library portal. A book can have three states at a particular time

- A book cannot be present in any of the libraries. If we have hundreds of libraries connected to one another via interlibrary services.
- A book can be present or be available at multiple libraries at a given point in time.
- A book can be available in a whole set of different libraries.

Therefore, the availability of a book doesn't have a definite boundary at a given point in time, given that we do have hundreds of libraries connected to one another. A user doesn't know where the book would be available before he searches for it

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CSE 460
Software Analysis and Design
(Fall 2022)

Homework #3

Assigned: October 5, 11:59 pm

Due: October 15, 11:59 pm

Posting ID 9816-379

1) (a) Actors:

Library Online System: Keeps track and manages information on its patron such as the things that they have borrowed.

Patrons: The students, staff, and faculty at the university who has the rights to borrow items from the library.

Self-Checkout Register: The systems that allows user to scan their items that they want to borrow by themselves.

Library Networks: Links the library online systems to the self-checkout register and other systems such as the computers, printer, and scanner to it.

Use-Cases:

Borrow Items: User can borrow items from library using self-checkout register.

Check Due Dates: User can check their borrowed items' due dates using library online systems.

Print Documents: Users can print documents they want using the printer in the library which will then incur the charges to the user library online system account.

Browse Available Items: Users can use the computer in the library to browse for the items available for borrow as the computers are connected to the library online system.

Return Items: User can return the items to the library which are going to be due.

Pay Overdue Items: User can pay for overdue items in the library using the Library Online System.

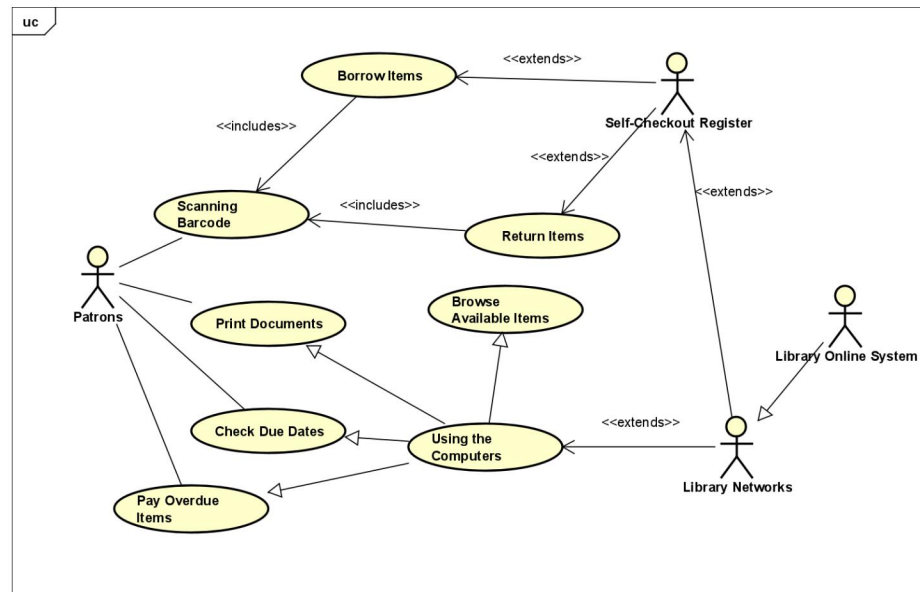
(b) Some items in the library that cannot be checked out are the printers, computers, scanners, and the Self-Checkout Registers.

Use-Cases

Scanning Barcode: The scanner can be used to scan the bar code for the items which the user wants to borrow.

Using the Computers: The users can use the computer for their own usage such as browsing internet.

(c)



2) (a) Classical Categorization:

The two categories of objects are library systems and library users (patrons).

For library users, the users are students and staffs have same problem interest since they all use library system to borrow library items such as books.

As for library systems, the systems are scanners, printer, computers, SCR machines. These have the same use case - works together to facilitate the borrowing of items in library.

(b) Conceptual Clustering:

The library systems cannot be borrowed by library users. These systems only facilitates the borrowing of library items and let users keep track of due dates as well as check for what is available in the library.