Software Engineering-Assignment 1

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Title of the problem:

LIBRARY BOOK MANAGEMENT APP

Brief narration of the problem (as viewed by you):

Library book management app
- Has a database of all books present in the college library. Students can log-in and books can be searched by title name or author name.
- Shows the books already issued by the student and upcoming date for renewal of books. Delay-in-renewal fine will also be displayed.
- Books which are out of stock can be bookmarked by student. Student will get a notification when the book is back in stock.

Brief work envisaged (in the SW Engg. Lab) for the proposed problem:

-Read and learnt about Context diagrams, Dataflow diagrams and Entity Relationship diagrams.
-Discussed about the requirements and functionalities of our project in detail, and made the Context diagram using Lucidchart. Made ER diagram using ERDplus.
-Read about App-making and went through tutorials on Android Studio.

PART 1- Software Crisis

Case 1: lmagine that your software has failed at the customer's site. List out the possible reasons for failure and write possible solutions.

Reasons of failure of our project at customer site:
1.Badly defined system requirements:
The app was made to handle simultaneous requests of 100 students but suddenly 1000 requests come from students on the reopening of college due to distribution of course plan by various professors. This leads to the failure of the app as it is unable to handle such a large no of requests. The app could be fixed only after a day causing inconvenience to students.

2.Poor communication among customers, developers, and users:
In case there is no communication or very poor communication amongst the customers, developers and users then it would be very difficult to control the software from crashing.

Case 2: lmagine that your software is not delivered to the customer on the given time andcustomer is willing to cancel the project. List out the possible reasons for delay in development and write some possible eflorts that you would make to convince the customer in order to retain the project.

REASONS FOR DELAY:
1.Expansion of functionality : new functionalities continue to be conceived and requested as the project proceeds. The software can never be completed in this way.

2.Gold plating : programmers and designers try to make many details of the software or design too elaborate. The details often add little to the desired result.

3.Neglecting quality control : Time pressure can sometimes cause programmers or project teams to be tempted to skip testing. The time that elapses before an error is discovered in the software is associated with an exponential increase in the time that is needed to repair it.

4.Working on too many projects at the same time : Dividing work across many different projects (or other tasks) causes waiting times that lead to many delays in projects.

5.Poor design : The absence (or poor realisation) of designs leads to delays, as it requires many revisions at later stages.

6.Mediocre personnel : Insufficiently qualified personnel can cause project delays. Technically substantive knowledge of the subject of the project plays a role, as do knowledge and skills.

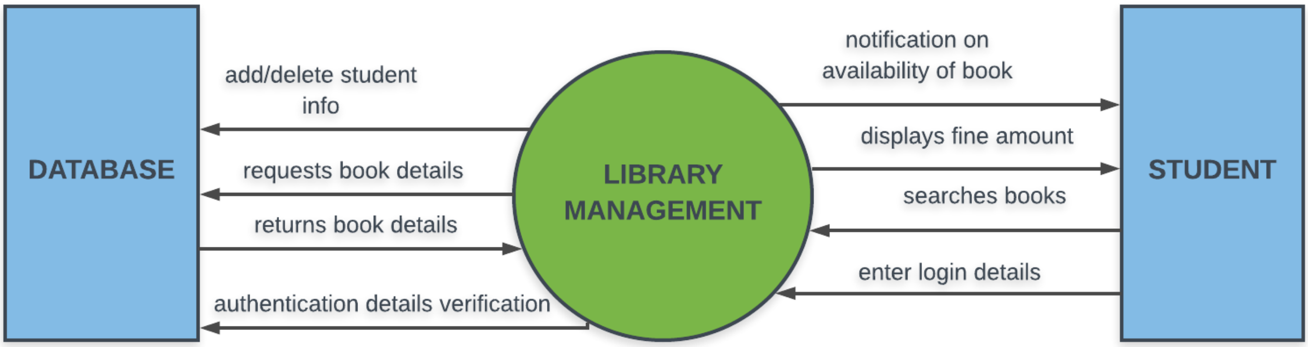
MY EFFORTS :
1.Give extra benefits: adding a value to the product or service he ordered as incentive.

2.Proper record of delay: Document what you do and explain why.

3.Communicate: Communicate with the customer. Talk with them, try to explain what is the reason of delay, ask them politely to wait. Be open to the customer and always be there to answer to all their questions. Being warm and welcoming to your customers and talking to them with respect and appreciation helps foster a relationship with them, and they're likely to want to share that positive experience with others.

PART 2- Context Diagram, Data Flow Diagram and ER-Diagram

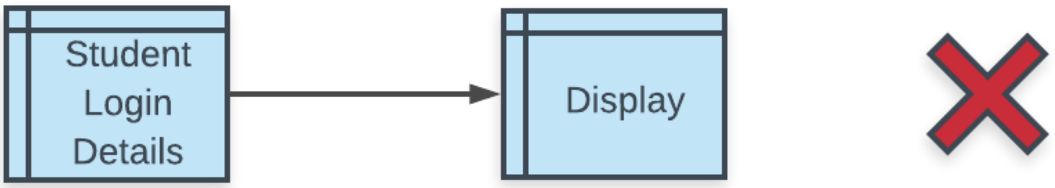
1. Draw a context diagram for your problem statement.

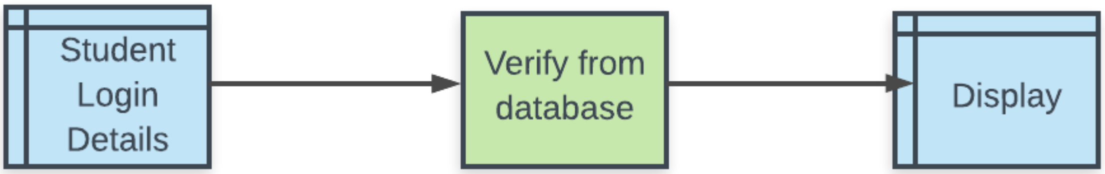


2. Imagine that you have recruited a fresh graduate to draw Data flow diagram for your problem statement. List out minimum five possible errors he / she may make while drawing the data flow diagram and explain it with a clear pictorial representations.

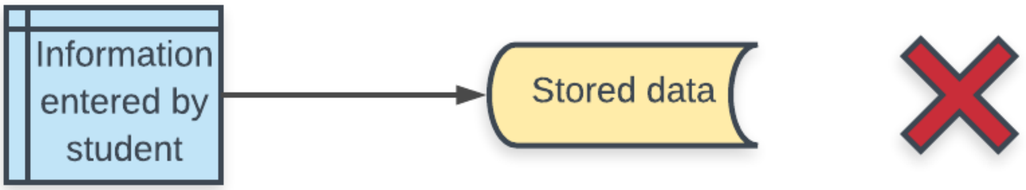
ERRORS:

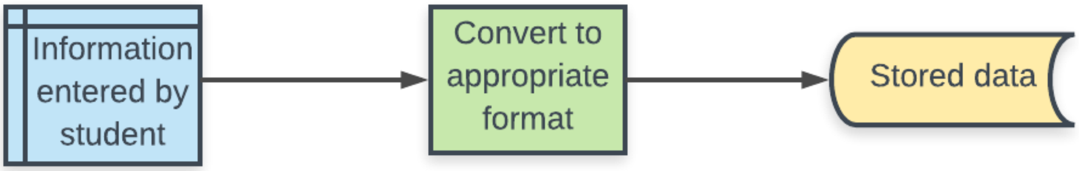
1. A source or a sink cannot provide data to another source or sink without some processing occurring.



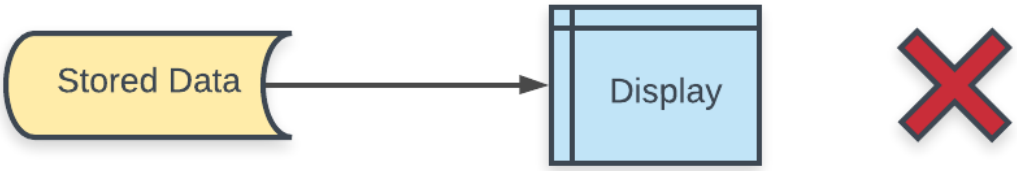


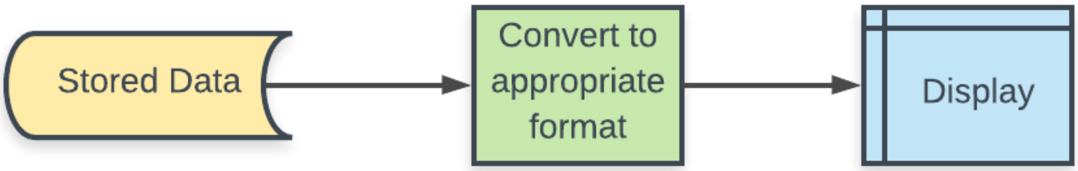
2. Data cannot move directly from a source to a data store without being processed.





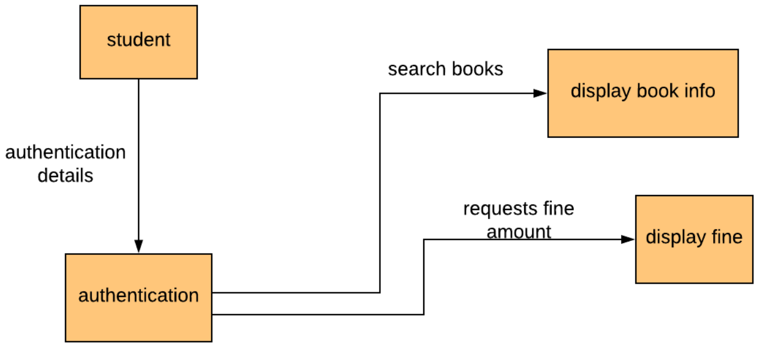
3. Data cannot move directly from a data store to a sink without being processed.



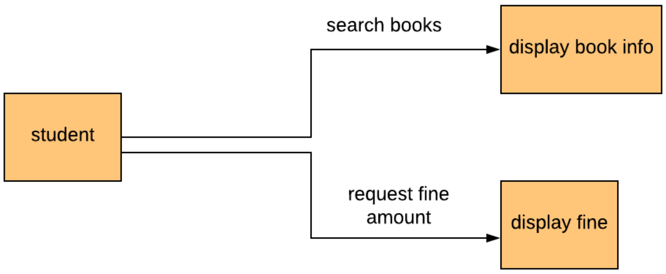


4. DFDs are not flowcharts. Flow charts often show both processing steps and data "transfer" steps (e.g., steps that do not "process" data); DFDs only show "essential" processing steps.

WRONG

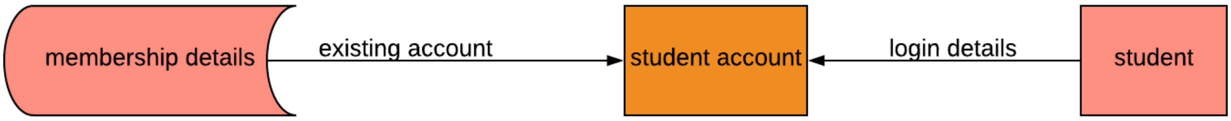


RIGHT

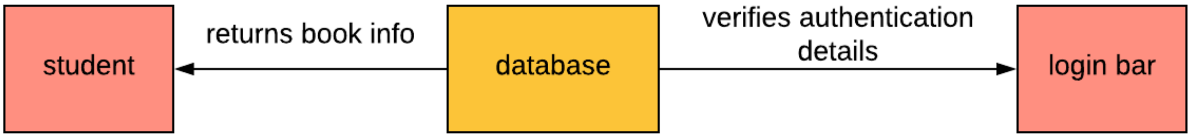


5. Diagramming mistakes:.

- A processing step may have input flows but no output flows. This situation is sometimes called a *black hole.*

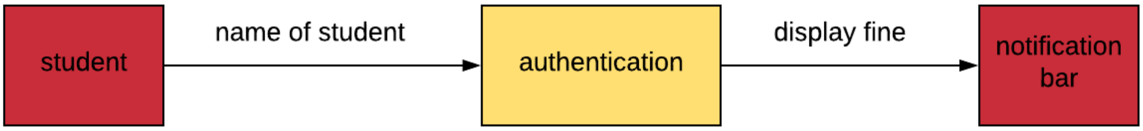


- A processing step may have output flows but now input flows. This situation is sometimes called a *miracle*.



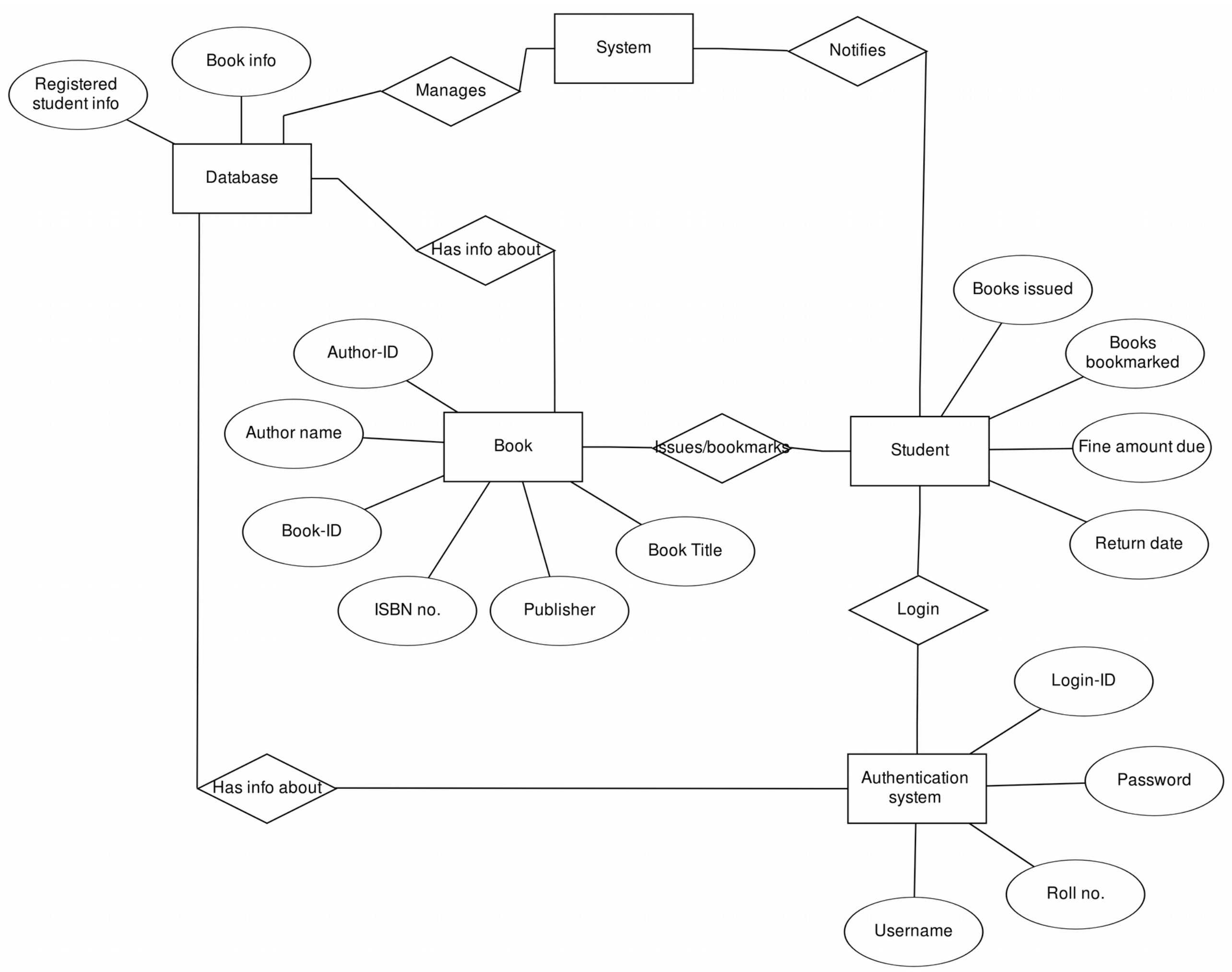
- A processing step may have outputs that are greater than the sum of its inputs - e.g., its inputs could not produce the output shown. This situation is sometimes referred to as a *grey hole*.

Input not sufficient to produce output



3. Construct an ER-diagram for your problem statement. lmagine that customer is changing his / her requirements after two or three days which may result in adding new entities or updating the existing entities. At this situation, you are instructed to draw a new ER-diagram. List out the possible change in requirements and corresponding changes to be made in the ER diagram (entities and relationships).

ER Diagram:



Possible changes in requirements:

- The customer wants to add the functionality of paying the fine directly through the app. For this, we need to add a “Payment info” entity connected to the student. This entity should have the attributes: “Card number”, “Amount”, “CVV”, Password protection”. The Library system should also have a bank account which is connect to this “Payment info” entity.

- The customer wants to add the functionality of displaying all the needed textbooks according to the course plan of the each student.
  For this we need to have the attributes “Degree”, “year” and “Department” for student entity. The Database should contain the course-specified list of textbooks for all the courses the institute provides.

- The customer wants the app to work as an interface for the library staff, instead of as a student interface.
  For this, we should have additional “Member” and “Staff” entities. The attributes should be “Staff ID”.

- The customer wants to issue not only books, but also newspapers, magazines and newsletters through the app.
  For this, the Database should contain information about all available newspapers and magazines in the library. Additionally, the system should generate an entity “Notification” which connects to “Student” and notifies when the subscription is going to end.