Architectural Design

1. Write the Merits and demerits of Structured Design.

Merits

Problem is addressed in a detailed and systematic way. Therefore, unexpected problems encountered during the development phase should be avoided by careful planning.

Solution is robust and will fulfil the requirements described in the initial stage. Careful planning will result in a system that fulfils the requirements of the system, as described in the initial phases.

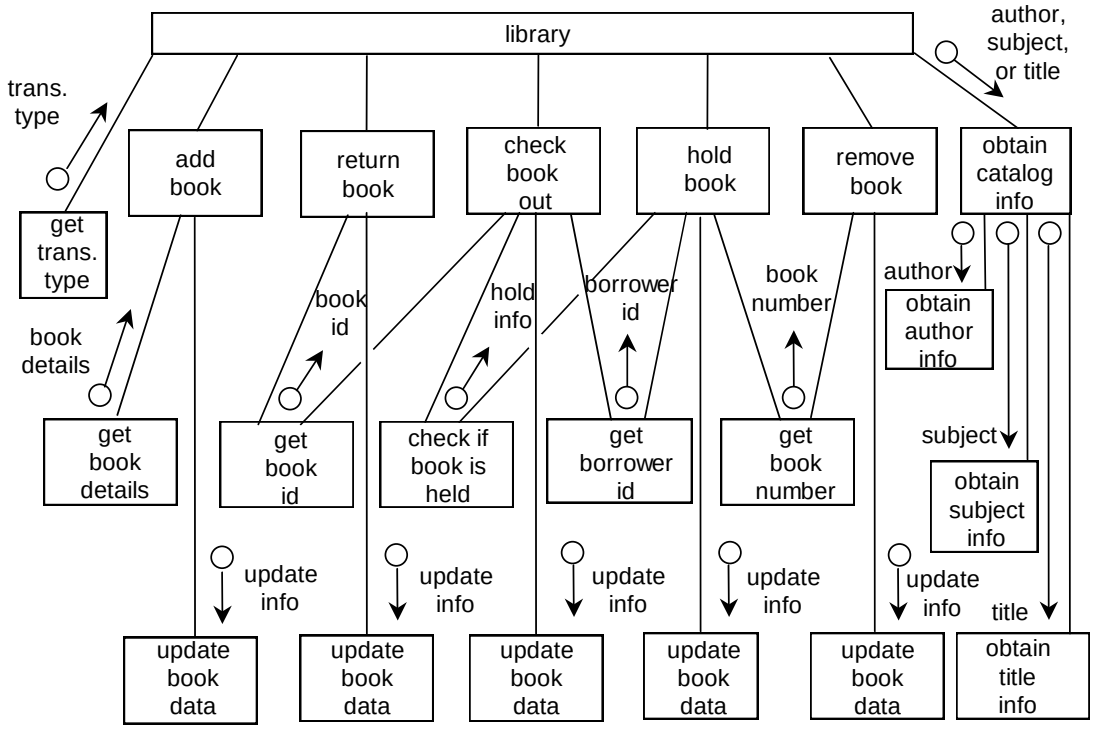
Solution is well documented and supported by a team of programmers. The solution is not "ad-hoc", but is the result of a careful, well documented work by a team of professionals. Therefore, should further development be needed in the future, those who follow should have the benefit of a clear understanding of what went before them.

Disadvantages

- The timescale for development is very long - in some cases so long that the initial requirements may have changed before the development is completed, rendering the newly developed system obsolete.
- The system may be expensive in terms of money and man-hours. It can be monolithic, unwieldy and unable to cater for fast paced changes to business requirements.

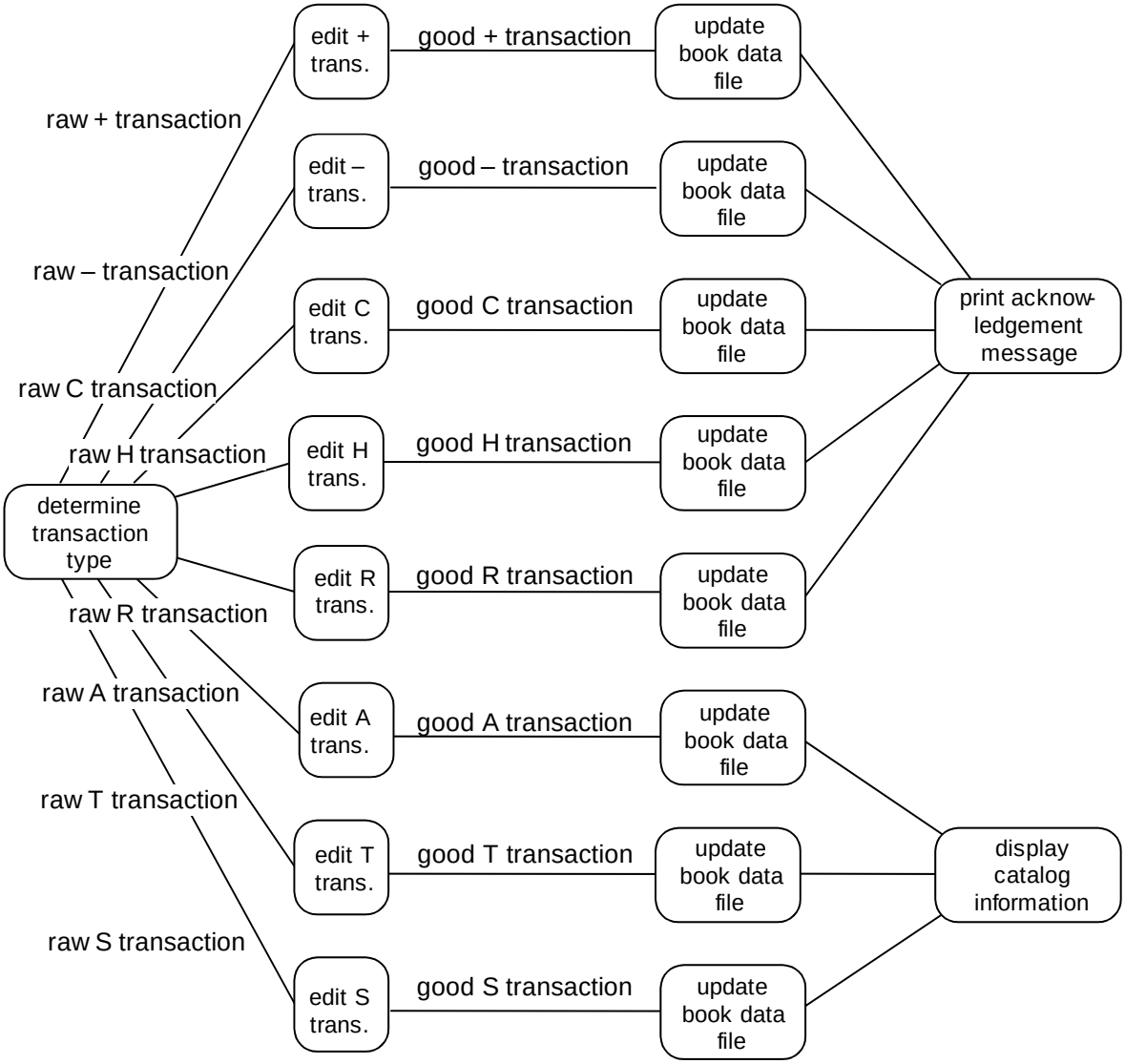
2. Present two or three examples of applications for each of the architectural styles noted in Section 9.3.1.
   Data centered architecture: airline reservation system; library catalog system; hotel booking system
   Data flow architecture: any engineering/scientific application where computation is the major function
   Call and return architecture: any I-P-O application
   Object-oriented architectures: GUI-based applications; any OO application
   Layered architecture: any application in which the application functions must be decoupled from the underlying OS or network detail. Client server software is often layered

3. Starting with your data flow diagram for the automated library circulation system design the circulation system using data flow analysis. Repeat using transaction analysis. Which of the two techniques did you find to be more appropriate?



Structure chart of library circulation system

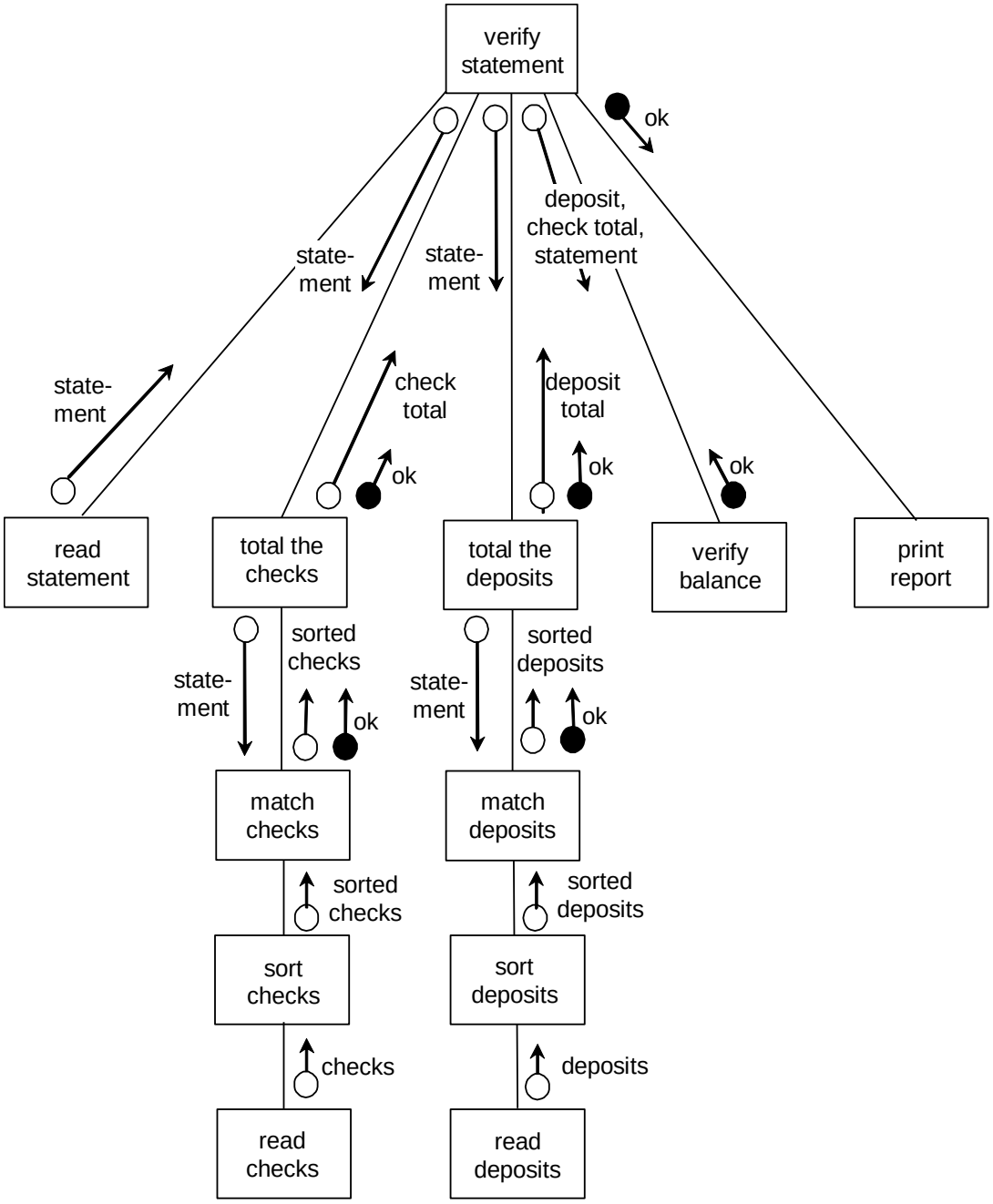
Transaction analysis is found to be more appropriate than data flow analysis because the automated library circulation system is transaction-driven.



Architectural design of library circulation system using transaction analysis.

4. You are required to build a product for determining whether a bank statement is correct. The data needed include the balance at the beginning of the month; the number, date, and amount of each check; the date and amount of each deposit; and the balance at the end of the month. Explain how you would ensure that as many code artifacts as possible from this product can be reused in future products.

   Starting with your DFD for this problem use data flow analysis to design a product for determining whether a bank statement is correct.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