# Appendix C

# JAD Exercises

## C.1 JAD EXERCISE EXAMPLE - THE LIBRARY - CASE STUDY 1

The library has decided that the system that they are using is too problematic and wants to create an entirely new library system. You have been instructed to create a system for them and have done some initial work and determined the following - for today we will simplify the process and only look at a part of the library - namely the books. We will also assume that we are only dealing with ONE library instead of the three that actually exist.

The library contains many copies of books that are identified by an accession number. The accession number is unique for each copy. You may, however, have more than one copy of the same book. Each book is identified by an ISBN number that is unique for a book. The library might need the following information about a book:

> Accession number of the copy of the book is : 99999
> ISBN number of the book is : 1234-123-456
> Title of the book is: XXXXXXXXXXXXXXXXXXXXXX
> Author/Authors of the book are: YYYYYYY and ZZZZZZZZZZ
> Publisher of the book is : PPPPPPPPPPPPPP
> Place published is : SSSSSSSSSSSSSSS
> Year published is : 19XX

(Note that there could be two copies of the XXXXXXXXXXXXXXXXXXXX book in the library and both will have the same ISBN number but different accession numbers.)

They also keep details of what subject the book is about, for example the book might be about DATABASES and OBJECT-ORIENTATION or any number of subjects.

The library keeps a list of distributers. Each publisher will only have ONE distributer in South Africa and when a book needs to be ordered then they order it from the appropriate distributer. A book can have a status of ON ORDER, ON SHELF or OUT.

The library has three types of members, staff members, student members and outside members. All are identified by a membership number. Staff members may take out 10 books for 3 months at a time, student members can take out 4 books for 2 weeks at a time and outside members can take out 2 books for 2 weeks at a time. We only keep record of the books that the members have out - NOT any history of who has taken out a book as we do not want to waste space.

We must have a record of when the book is due back and we send out notices to people whose books are overdue. If a book is overdue for more than 2 months and 2 notices have been sent out then we update the members account with the technikon so that they pay for the book - note that accounts are handled by another system and we only need a list of the problem cases and the price and name of the book which will then be handled by finances. No record of this need be kept in the library.

## C.2   JAD EXERCISE EXAMPLE - THE LIBRARY

### General

The Port Elizabeth Technikon library has three branches. These are the Main library, the College Campus library and the Saasveld library. Each branch of the library has many books, journals and media. (For the purposes of this exercise, we will ignore journals and media and only focus on the books.)

A book is identified by its ISBN number. Details of the book that are kept are the title of the book, the publisher of the book, the year of publication, the price and the author/s who wrote the book. Each copy of a book is identified by an accession number. The library can have more than one copy of a particular book. Each copy is assigned to a particular branch, ie. We might have 4 copies of the book 'Database Systems' in the library, one might be in Saasveld and the other 3 in the Main library. Each copy of the book has a status of IN or OUT depending on if someone has taken out the book or not. We also keep link the book to various subject areas that are used in the book, for example, the Database Systems book might be linked to the subject Databases and the subject Information Systems.

Library members may be staff members or students. Staff members may take out their books for 3 months and may take out a maximum of 20 books. Students may only take out a maximum of 6 books for 2 weeks at a time.

### Front desk

At the beginning of the year, students and staff must register at the library. Their smart card is swiped and the details of their address, contact telephone numbers etc are entered. When a library member comes to take out a book, the computer should check that they do not have any overdue books and also that they will not exceed their limit. The record of their taking out the book should then be recorded on the database, together with the date when the book should be returned.

When the book is returned, the computer should check that the member does not have any fines or that the book is not late. The record of the member taking out the book should then be deleted from the database as we do not have the space to keep the records of all books taken out.

**Finances**

We should be able to get a printout of any library members whose books are overdue by more than a certain period of time. (We would like to enter the number of days. For example, we might want to sometimes get a list for everyone whose books are 7 days overdue, but may at other times want a list of everyone whose books are 28 days overdue.) Every week, we should be able to automatically generate letters to those whose books are overdue by more than two weeks. There should be three versions of the letter - which will be sent out at two weekly intervals for 8 weeks. The last version should warn the student that if the book is not returned within two weeks, that they will be charged for the book. (Ask the IT staff if it would be possible to keep the library members e-mail addresses if they have them and to generate e-mail letters instead of normal letters.)

If the book is more than 12 weeks overdue and the library member has been sent the three letters, then the finance department at the Technikon must get a notification of the amount of the book so that they can take the amount off the student's account or the staff member's salary and the member should be sent a last letter to this affect.

**Ordering**

When a staff member finds a book that they would like to have in the library, they fill in an order card. The order card has on it the details of the book like its title, publisher, year of publication, and authors. This information is entered into the computer, an accession number is allocated and the copy is given a status of ON ORDER. Each publisher has only one distributer in South Africa. An order for the book is placed with the distributer. Each order will be for one distributer but may contain order lines for many books.

When the book arrives, the I put all the accession information onto the book and add any information that might be needed into the database. This would also include the information on the subject areas of the books. The copy status is then changed to IN and the book is placed on the shelf.

## C.3   JAD EXERCISE EXAMPLE - THE GROCERY STORE

**General**

The Pay-as-you-go Grocery Store is a medium size grocery store that would like to computerise its operations. It has computers for tills at the moment but this is not linked to its stock levels and they have a difficult time determining when they are going to run out of any item.

They also do not keep record of their credit card transactions at the moment and this

is causing them difficulties and they think it might be costing them money.

They would like to link the transactions at the tills, their stock taking and their ordering and buying of supplies within one computer system. They would also like to use the bar codes on the items. Instead of having to mark each item with a price and type in the price, they would like to scan in the bar code and use that for identification and to get the price.

## The till

The customer comes to the till with their groceries and loads them out of the cart. We would like to be able to scan the items using a bar code reader. We should have the option of entering how many of a particular item a customer is buying without having to scan each one, however. There may also be items without bar codes, like bread, and these we would need to enter the code rather than scan.

The computer at the till add up the items and work out the amount that the person owes. It is often true that customers will see the result and then want to add items after the total has been displayed. This should also be catered for in the program.

The customer then decides to pay by credit card or cash. We do not accept cheques. If it is cash then the computer should work out the change. This should be given back to the customer. If they pay by credit card, then we should be able to swipe the card and have a direct link to the bank to check the credit details of the customer. The slip should be printed and signed by the customer. It would be a good idea if the computer can give the cashier some guidance as to what to do next, for example, say swipe card, get signature etc.

## Stock

When we buy new stock we should be able to enter the details into the computer. The stock is normally put straight onto the shelves but sometimes must be stored in the warehouse. There should be three amounts, one that tells us what is on the shelves, one that says how much is in the warehouse and a third that tells us how much is on order. Each stock item will be identified by its bar code. (Those that do not have a bar code should have another code that can be stored in the same place.)

We must be able to transfer stock from the warehouse to the shelves. Each shelf should have an identifier, for example, aisle 3 - number 4 would be the 4th shelf in aisle 3. There can be more than one item on a particular shelf but we only keep a particular stock item in one place in the store.

When a customer buys something, the amount should be automatically subtracted from the amount of stock on the shelf. This will allow us to determine when the shelf needs

repacking.  A list should be printed at the end of each day that gives us what items are low on the shelf and what items are low in total so that we can determine what needs to be reordered.

We only buy a particular stock item from one supplier but will often place an order for more than one stock item from that supplier at one time.   We need to store the cost price of the stock item as well as the selling price of the item.