Aim
The aims of the assignments in this unit are to develop your skills in:

- data gathering;
- report writing;
- modelling information systems processes;
- making verbal presentations;
- working in groups.

Assignment Tasks
The accompanying case study is a description of operations at the Loaded Brush paint supply company. The owners have called you in to review their information systems. You have been given three assignment tasks, which are described in detail below. They require you to gather information about the way the systems function, to prepare system models and a system description, and to prepare and deliver a verbal presentation about the implications of a proposed system change.

Group Assignment
All tasks are to be performed in groups of 3-4.

Value
The assignment is worth 40% of the total mark for the subject. It has three components:

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General Presentation Requirements
All written assignment work must be submitted in accordance with the School’s assignment submission requirements which are available at the following URL:


Please read and follow the instructions there carefully. Diagrams should be drawn using a software package such as Microsoft Visio. Assignments which do not meet these requirements may not be accepted and may be penalised or returned for revision and re-submission. Late submission caused by the need to revise the format or layout of the assignment may be penalised.
Submission Dates
The dates for submission are included with the description of the deliverables for each assignment task. Extensions of time will be granted only in exceptional circumstances. Applications for extensions must be made in writing BEFORE the due date, and must include suitable documentary evidence of the need for an extension. Late submissions without a medical certificate or prior permission for an extension will be penalised. Refer to the Unit Outline for extension provisions.

Further Information
The information provided to you should be sufficient for you to complete all the assignment tasks (except, of course for Assignment Task 1, where the purpose of the task is for you to gather the information which you need). However, if you believe that you need additional information which is not provided in the assignment description, please contact your tutor.
Assignment Task 1 - Data Gathering

Task Description
Your task is to ensure that you understand all aspects of the information systems and information problems at Loaded Brush. You have been provided some preliminary details about the company. Your team must interview the manager, in order to understand this business function and the information and processing problems Loaded Brush is having. Your tutor will play the part of the manager. Your team must prepare an interview plan, conduct an interview with the manager and document the interview in an interview report.

Task Deliverables and Due Dates

Interview Plan – due Week 5 (during interview)
Interview – due Week 5 (during tutorial or a time arranged with your tutor)
Interview Report – due Week 6 (during tutorial)

Presentation Guidelines
See p.233 of the prescribed text and p.245 of Hoffer et al for a sample interview plan. The interview report must include a contents page. The body of the interview report should include the following:
- Introduction
- Venue and time arranged
- Purpose of the interview
- List of questions to be asked from the original interview plan, with a summary of the responses given by the interviewee
- List of additional, unplanned questions which were asked during the interview with a summary of the responses given by the interviewee
- Analysis of the interview. Was it successful? Did your team find out what you needed? Was there any information which your team failed to get? If so, why?
Assessment Guidelines

Work will be assessed according to the following main criteria:

- Interview plan and evidence of appropriate preparation. Specific items needed include:
  - objectives for the interview;
  - plan of the interview;
  - prepared questions or topics to be covered.

- A professional attitude towards the client and the conduct of the interviewee. Specific items for consideration include things such as:
  - quality of introduction and conclusion to the interview;
  - clarity of statement of your objectives to the interviewee;
  - attitude towards the interviewee and their responses (e.g. showing appropriate respect, listening, not interrupting, not arguing, etc.)

- Appropriateness of questions and interview structure for the situation. Specific items for consideration include such things as:
  - structure of interview;
  - relevance of questions to interview objectives and plan;
  - clarity of questions;
  - usefulness of questions (e.g. avoid asking for information which is already known from the handout);
  - insightfulness of questions (e.g. do they reveal previously unknown facts?);
  - appropriate use of different types of question - open/closed/probe/mirror/etc.

- Presentation and content of report
  - objectives of the interview;
  - list of the major understandings gained from the interview including new facts, agreed interpretations and requirements for the new system;
  - quality of analysis of interview outcomes

- Contribution
  - Evidence of contribution from ALL group members in preparation of the report, interview and report.
Assignment Task 2 - System Modelling and Report Writing

Task Description
Having successfully completed your data gathering, your next task is to accurately document your individual understanding of the business and its information processing problems. You will do this by preparing a System Specification Report.

You must prepare a written report which includes:
- a written description of each business function and how each function interacts with or depends upon information used by other business functions (e.g., two functions may share common information needs, or one function may depend on the other to provide it with the information it needs);
- a written description of the information processing problems with each business function;
- a set of process models as specified below.

Note that some of the information and processing problems experienced in one part of the organisation may be due to the way things are being done elsewhere, e.g., the way or timeframe in which information is provided by another business unit or function. Similarly, changing the way in which information is recorded or stored may help one function while inconveniencing another. It is important that you highlight situations like these, so that the company is aware of the conflicts of interest involved between the needs of different parts of the business.

Note that you are NOT expected to discuss solutions to the problems. Your report aims simply to provide a clear statement of each function and its problems.

Task Deliverables and Due Dates

System Specification Report – due Week 11 (during tutorial)
Report Guidelines
You are required to provide a report, not an essay so you should use headings to structure the report appropriately for ease of reading. The following is a suggested basic report format, which it is recommended that your report follow. However, these headings are not necessarily complete or exhaustive, and you may wish to add others.

- **Title page**
- **Executive summary:** This should be a maximum of one page. It should summarise the overall content of the report and identify what parts of it need to be read thoroughly. Any significant findings or contentious issues should be mentioned.
- **Contents page**
- **Introduction**
- **System description:** A summary description of the business which shows that you understand the information system it uses and how the components interact. Identify the scope of the activities at Loaded Brush that you are addressing in your report.
- **System model:** A partial system model for the system which your report addresses. This must include the following:
  - a set of levelled data flow diagrams of the organisation’s information system.
  - data dictionary entries for all data flows and data stores in the diagrams
  - a process description (minispec) for three bottom level processes.
- **System problems:** A description of the main information processing problems associated with each business function. Each problem should be written as a separate numbered point.
- **Conclusions:** A brief summary of the most important problem areas which need to be addressed, explaining why they are critical.

Assessment Guidelines
Your report will be assessed on the following criteria:
- the level of understanding shown by your report of the nature of the information systems and their use in the business;
- the level of understanding shown by your report of the nature of the information processing problems being experienced by the business;
- the structure, organisation, clarity, quality of expression and presentation of your report;
- the quality, completeness and accuracy of your system models, with particular emphasis on:
  - completeness of the data flow diagrams with respect to business functionality;
  - conformance to standard diagramming conventions and rules;
  - completeness of data dictionary entries;
  - consistency between levelled diagrams;
  - consistency between data dictionary entries and data flow diagrams
Assignment Task 3 - Presentation

Task Description
Your team has been asked to prepare a presentation of the major aspects of the proposed solutions for all the staff at Loaded Brush.

You must prepare an outline (which may be in the form of a handout) for your tutor indicating which items of information you have included in your presentation which indicates why each of these items needs to be included. Your team will be required to prepare and carry out the presentation. Your tutor will represent Loaded Brush.

Task Deliverables and Due Dates

Outline of presentation (or handout) - due Week 12 (during tutorial)
Class Presentation – due Week 12 (during tutorial)

Presentation Guidelines

The duration of the presentation will be approximately 10 minutes.

Assessment Guidelines

Your presentation outlines will be assessed according to the following criterion:
• the appropriateness of the information to be presented to staff at Loaded Brush.

Your presentations will be assessed on the following criteria:
• adherence to the allotted time;
• presentation style and technique;
• logical structure of presentation;
• quality and appropriateness of aids (e.g. slides) used to support the presentation;
• appropriateness of content and format for intended audience;
"The Loaded Brush"  Paint and Wallpaper Stores

1. Introduction

The Loaded Brush group of three paint and wallpaper shops is run by Jack and Sandra Leeds and has been operating for over ten years. It is a thriving business into which Jack and Sandra have invested all their energies as well as their house mortgage and every other dollar they could borrow. Their shops service the "Do-It-Yourself" new home owners who are rapidly filling the green and pleasant paddocks of outer suburbia with bricks, mortar and painted timber, and the keen renovators who are refurbishing older properties in suburbs closer to the city. The Loaded Brush shops also have many customers who are tradesmen and who are supplied on account with paints, brushes, rollers, wallpaper and all items needed by the professional painter and decorator.

Their first and largest shop was established twelve years ago and is located at the busy end of the ground level concourse, near the entrance to the under cover parking at the Bayswater District Shopping Complex. As the business has expanded, Jack and Sandra’s original record keeping system has been altered several times. Over the last five years three PCs have been purchased along with some software packages. These are used to help maintain information about sales and the shops' inventory items and to help keep track of customer orders. However, the systems no longer provide adequate control and provision of information.

You are a systems analyst with Monash Software Consultants. Your firm has been contracted to analyse operations at the Loaded Brush and to produce a report outlines the features and requirements of a new information system for the business.

2. Broad Description

The first shop Jack and Sandra opened was soon too small to hold all the stock required to supply their growing customer base so they moved to a much larger shop nearby. This store at Bayswater is their current "head office" where they spend most of their time and from where they keep track of their business overall. This shop is large and is sufficiently busy to require two assistants, Lesley and Jason, to help Jack with the sales. Sandra helps on Friday evenings and at the weekends when business is at its busiest. Generally, Sandra is busy in the back office at the Bayswater store seeing to the administrative side of the business.

Five or six years after opening their first store Jack and Sandra decided to open another Loaded Brush store at Doncaster. They hired Mike Martin to manage this store. Mike has a part-time assistant, Geoff, to help out with sales during busy periods. Just two years ago Jack and Sandra opened their third Loaded Brush store at Camberwell. They hired Betty Brown to manage this store. This is a busier store so she has a full-time assistant, Sue, and a part-time assistant, Jim, to assist with sales. Overall, paint and wallpaper sales are booming, and Jack and Sandra are keen to further expand their business and open two more stores.
In partnership with an old friend, Pete Marino, The Loaded Brush runs a painting and decorating company. This company is supplied with materials exclusively by The Loaded Brush. Pete employs painters on a casual basis when necessary, and sometimes Jack helps Pete when the decorating work is particularly busy.

One of the business' PCs is located in the back office at the Bayswater store and has a software package that is used for keeping track of sales and customer orders. It also runs an old (Windows 98) version of QuickBooks for the business' accounts. Sandra is responsible for managing the financial operations of the business. Another PC is located at the Camberwell store and is used by Betty for keeping track of her store's sales, customer orders and inventory levels. She tries to create weekly and monthly summaries of these figures when she can from the daily records produced at her store in order to keep track of how the store is performing for her own and Jack and Sandra's benefit. Mike at the Doncaster store has access to an old secondhand PC which Jack was able to purchase very cheaply. When he has time he also tries to produce simple reports of monthly sales, customer orders, and stock movements for himself and for Jack and Sandra. Three years ago Jack purchased a simple inventory management package which was recommended to him by one of the customers he deals with. This runs on the PC at Bayswater and Jack uses it to keep track of overall stock levels at all three stores. The inventory control package requires Windows XP but Jack is still using Windows 98. Sandra is responsible for the regular re-ordering of stock and ordering stock for special orders or where unexpected shortfalls have occurred. This is a task which she took on when they opened their first store and Jack handled most of the sales. She has continued to handle all purchasing for all their stores.

3. Detailed Operations

Customer Sales and Orders

Sales to customers are handled in the same way at all three stores. When a sale is made the sales staff first enter into the computerised cash register the account number, then the value of the sale and the product group of each item in the sale. Retail sales all use the same account number. The cash register prints a receipted invoice for the cash sales or an invoice for the account sales. Staff also record the volume of the actual product sold in the stock journal which lies on the counter beside the cash register. If a customer requests products which are not in stock, a note is made in red in the stock journal and a customer sales order is created. The customer is notified when the products ordered are available. Where a particular store has run out of a product which a customer requires, delivery from another Loaded Brush store is arranged or the customer is referred to that store.

At the end of each day the store manager totals from the journal the stock which has been sold and forwards the totals to Jack, highlighting the out of stock products. In this instance Sandra will make a special order for the out of stock products rather than wait until her regular ordering from the stock file records. Jack tries to update the stock file records every second day but often neglects this task because he is pressed for time. As a cross check, each store manager prints from their cash register a sales value total for each product group and compares it with the journal product group totals. Mike and Betty also forward copies of this to Jack at Bayswater.

The tradesmen often order products in advance of a large job. This gives Sandra time to purchase large volumes of product from the supplier and arrange for the order for the tradesman to be assembled at the relevant store so that it can be collected when needed. By doing this she avoids running out of stock for the retail customers. An invoice is given to the tradesman at the time he places the order. On the last trading
day of each calendar month, each store manager runs a Statement program on the computerised cash register. This program produces a statement for each account customer showing all their invoiced sales, payments and credits. The statements are forwarded to Sandra.

Stock Control

Most of the stock is kept on display in each of the shops. A storeroom at the rear of each store holds extra stock of high volume lines and the flammable solvents. The store at Bayswater has a large storage area at the back where additional stock for all three shops can be stored if necessary. Using the inventory management package Jack has created a stock file of all the products which they sell at each store and he records the stock levels of all items at each store. At the end of each day Mike and Betty fax him a list of all items that need to be ordered or re-ordered for their stores based on their sales and orders for that day. Not all of the products are currently held in stock at the stores. About half of the products in the file can be found in each of the shops at any one time.

The products sold by The Loaded Brush include tins of paint from 500ml to 20 litre containers; brushes and rollers; surface preparation products (soaps, sandpaper, scrapers, putty); wallpaper and accessories (paste, strippers, trimming knives). Paints are supplied in pre-mixed colours and as base colours which can be tinted to all shades available on the major manufacturers' colour cards. A charge of $1.25 per litre is made for tinting. Tints are purchased from suppliers in bulk packs.

Some of the more exotic wallpapers are not held in stock. They are purchased from the supplier when a customer places an order for one of them. Selection of these papers is made from the extensive sample books which The Loaded Brush stores keep on prominent display. One of the wallpaper suppliers operates on a consignment basis. This means that the supplier will place their stock on the floor at The Loaded Brush stores. The stock is paid for by the shop after sale to the customer. The shop staff will negotiate the best price they can with the customer, knowing the cost price required by the consignment agent. Consignment stock accounts for only a small proportion of sales. Stock records are not kept for these products in Jack's inventory file. Instead, a register of consignment stock is maintained at each store. Sales of these products are recorded on the cash register as a unique product group. Betty and Mike forward details of customer orders and sales of these items to Jack.

The Loaded Brush does not carry a lot of stock on hand so purchasing is an on-going activity. Sandra orders products from the suppliers to re-stock the stores twice weekly. Each of Jack's stock file records has a re-order level and an order size indicated. Sandra varies the supplier for each product where possible, basing her decision on the best price available. From the sole source suppliers, Sandra tries to optimise the buying price and may agree to take higher volumes of product in order to receive a favourable price.

Representatives from the suppliers often call into The Loaded Brush stores with information about new products. They are referred to Jack who generally makes decisions about whether new products should be taken on. He will decide to stock new products only if he believes that there will be strong demand for them at a particular store. In this case he creates a stock file record for the new product and estimates re-order quantity and re-order level. After three months of selling, these levels are supposed to be adjusted.

Non-seasonal and high sales volume products which are no longer selling at least their re-order quantity over a three week period are considered for deletion from The Loaded Brush's floor stock. The stock file record is retained in Jack's stock file for at least twelve months. Records for products which have not been stocked or re-ordered for eighteen months are removed from the stock file.
Sometimes, The Loaded Brush stores will run out of stock of a particular product because the stock record indicates adequate stock is available and therefore Sandra has not re-ordered. This happens because Jack has not regularly updated the stock file. When this occurs Sandra will place an emergency order for delivery to the appropriate store that day, if the customer is prepared to return later in the day. More recently, unexpected stock shortages have become a big problem at all stores, and Sandra has had to place emergency orders quite frequently.

Customer Payments

Retail customers pay for their purchases in cash or by credit card. The tradesmen usually take an invoice with the products they buy and pay at the end of the month by cheque or credit card. They receive a discount of 15% on all purchases except wallpaper which attracts a discount of 20%. The cash registers calculate this discount on each product. Some tradesmen pay cash for their purchases, but this is not common. Details of account customer payments at Doncaster and Camberwell are forwarded to Sandra.

Customers who return faulty or damaged stock either exchange the goods or are given a refund. Damaged stock is returned to the supplier and The Loaded Brush is given a credit for the amount involved. Customers are also given refunds for any rolls of wallpaper returned unused within two weeks of the date of purchase. Mike and Betty also forward details of any returned or faulty goods at their stores by fax to Jack each day.

At any time during the month a tradesman may make a payment on account to reduce his debt to The Loaded Brush. However, by far the most common practice amongst the account customers is to make a single payment being some proportion or all of the outstanding balance on their monthly statement. Any balance outstanding at the end of the month appears as the opening item on the subsequent statement. Debts are not aged.

The managers at the other stores record details of all payments received and are responsible for daily banking of customer payments. A summary of all payments received and bank deposits made during the day is also faxed to Bayswater at the end of each day. This is checked and recorded by Sandra who later reconciles these with the business' bank statements. She investigates any discrepancies. Sandra’s work is made more difficult by the fact that her computer is very old and can only run Windows 98. She would like a more modern computer running Windows XP so that she could use more up-to-date software.

Business Financial Processing

At the end of each month, when the customer statements are produced, Sandra enters the total month's value of all the sales in all the product groups into the appropriate ledger in the General Ledger. She also enters the total of all the money received for sales that month from all stores. The income earned by The Loaded Brush from the painting and decorating business which is run in conjunction with Pete Marino is also recorded here. She also enters the totals of the expenses which The Loaded Brush incurred in running its business. These include the purchases of stock, leases on the premises, electricity, wages, superannuation payments, Workcare premiums and all other expenses. Sandra has also created an Excel spreadsheet into which she enters the monthly summary information about sales, stock movements, and orders from each store as a way of monitoring the performance of each store over time and relative to the other stores' performance. She is finding it difficult often to get the information she needs and the time to enter and evaluate it.
Every three months the General Ledger is collected by The Loaded Brush's firm of accountants who use the information in it to produce Profit and Loss and Balance Sheet documents. From these, Jack and Sandra are able to keep track of the profitability of their business.

Jack and Sandra do not know which of their account customers have an amount which has been outstanding for a considerable time. Debts which have been owed to The Loaded Brush for a long time are costing Jack and Sandra money and they want to reduce their amount of delinquent debt to improve the profitability of the business.

The Loaded Brush's firm of accountants have advised Jack and Sandra that the size of their uncollected debt is too large, but they are unable to identify the problem customers. Jack and Sandra have also realised that recently their shops have been running out of stock more frequently than in the past. Staff have often complained that writing up the stock journal for every sale is impossible on Friday nights and weekends when retail trade is heaviest.

Jack and Sandra have come to the conclusion that they need professional help in streamlining their procedures.

4. General Observations

In your discussions with the staff of the Loaded Brush Paint and Wallpaper stores you have made the following observations:

- the current computers are old and may not cope with Windows XP.
- the sales, inventory management and accounting processes are cumbersome. You are concerned that these procedures will not cope with the expansion of the business if two more stores are opened.
- it is difficult to monitor performance of particular stores and of sales and products across stores because of the lack of breakdown of information according to store.
- Jack and Sandra have a poor understanding of the size of their business and its main market because they cannot extract the relevant information from current data files. The business is still relatively small but is becoming too large for Jack’s “gut feel” about products and product demand to cope with the increasing requirements of doing business.