Information Technology Coursework

Improving the Systems behind Arrowhead Printers Ltd.

Introduction

I am going to base my project around a company called Arrowhead printers. Arrowhead, based in Alton's industrial estate is a printing company, printing general commercial lithos. Their jobs can range from printing posters for WWF to printing brochures for Berkeley Homes. The company has two B2 presses, one having a four colour press and the other having two. For delivery the company has two vans and two drivers.

The problem that I am basing my project around is the quoting system. At the moment the system is still manual and therefore vulnerable to mistakes. I am therefore going to revolve my project around the quoting side of the company. Clare normally controls this area of the company. The quoting side of the company has to take into consideration several variables, like:

The Paper - I will take into account the size, weight, finish and quality of the paper. This is because the company can print on different sorts of paper each having their own different variables. For instance the paper could be, 90GSM, B2 Gloss and low quality. This kind of paper would be used to create cheap manuals for schools etcetera.

The size of the paper can vary from a number of sizes, being B2 (520 X 720mm), B3 (360 X 520mm), SRA2 (450 X 640mm and SRA3 (320 X450). The different sizes of paper usually coincide with the type of job. The thicker the paper usually means the more expensive the paper is to buy in thus meaning that the paper is of higher quality. Thicker, better quality paper is usually used for deluxe jobs and the cheaper, thinner paper is usually used for mass jobs. I will be providing examples in my project of different weights of papers and also providing example of jobs that use the different thicknesses of paper.

There are also different finishes of paper. For instance: glossed, matt and silk. The different types of paper all attribute to different costs. For example, glossed will be more expensive than matt. The matt finish is usually used when large amounts are being printed for example, leaflets.

The quality of paper is therefore usually determined by these factors, but poor quality gloss can also be bought in. The higher quality the paper is then the more expensive the paper is to buy in. That means that a note of the quality of paper that the customer wants needs to be taken down.

The number of plates and the quantity and number of inks used for the job is also a variable factor. At Arrowhead there are two different printers - one being a two-colour printer the other a four-colour printer. The majority of major jobs completed at Arrowhead are four colour, so they are usually completed on the four colour press. If the job is two colour, the price of the job is obviously going to be cheaper. This is because there is less amounts of inks used.

Different jobs require different amounts of print outs. A big job could need as many as 45,000 copies of the work. Alternatively the smaller jobs may only use one 1,000 prints. So a record of how many prints are needed needs to be accounted for. Also on top of this charge the company issues a minimum charge cost - for machine get ready time. This sum would be a bout £200 per 7,000 sheets.

Background of the Company

Arrowhead printers was founded in the year of 1974. The company was basically set up as a printing and publishing company. They then ceased to trade in the year 1985. The company was then registered solely as a printers after the publishing side of the company was closed down.

The company was based in Kingsely near Bordon until 1997 when the factory was completely gutted by a fire. This devastated the company and cost them thousands of pounds as the company at the time was underinsured.

This did not stop Arrowhead from ceasing to print as they found a new location. in August of 1997, in the industrial estate in Alton.

The company is currently doing very well as recent competitors have gone bankrupt. Though a printers called Colourgraphics still challenge Arrowhead for printing deals. The advantage with Colourgraphics is that they have their own fully-fledged finishing department, which Arrowhead sometimes uses.

Currently the company employs 19 members of staff all doing different jobs in the company in different departments. The departments at Arrowhead are: -

Finishing Department - this department is capable of basic folding, trimming and stitching. They have 4 members in the finishing department. These members are Mark, Brian, Anne and Sue

Repro Department - this department produces the film for plate making. There is one person in this part of the company, called Alan.

Machine room - This is where the main printing is conducted there are two B2 presses, one four colour and the other a two colour press. There are 4 printers, Barry, Tony, Sam and George.

Delivery Department - The company also courier the work to their contacts, there are two vans and two drivers. The drivers are Trevor and Paul.

The production, accounts, reception and sales department is located on the first floor of the company. There are eight people conducting this side of the business, including secretaries, reps, accountants and quoters.

Arrowhead basically print general commercial litho and do not specify in any particular type of printing.

Statement of the Problem

The system of recording the data is very antiquated and is in dire need of being updated. Data is transferred from three different books, leaving room for human error. The handwriting can often become illegible and pages can be damages and lost, leaving empty or ruined records.

The system is prone to many mistakes and whole records can be lost if there if, for example, a fire occured. If the system was automated onto computer then constant saving on to multiple disks can Posting the quote form is also a problem, and I feel this can be rectified if the use of E-mail is adopted, after all, the company has a suitable E-mail address.

The calculations for the quote have frailties, things like the cost of inks, plates and prices for quantity of paper have to be calculated. This can be strenuous and calculations can be miscalculated. Maybe costing the company money or making the company look unprofessional.

The problem with automating the current system is that none of the staff really have any training on the use of Excel. This means**(?)**

Recent objections to modifications to the old system.

The reason for this somewhat belated automation of a very antiquated system is because of many different reasons. The company have recently looked into early modifications of their system, but have seen the

price of this automation to be very expensive. They have indeed had quotes prior to my proposition to install an electronic quote system. The expense of the system quoted though has made the company uninterested.

Also the company operators are creatures of habit making it easier to turn down a proposition. The workers are quite content using the old system which they say "seems to work reasonably well, though may need some updating soon".

Many of the workers at Arrowhead are not completely computer literate. This means if a new computer package is to be brought in then training of the staff will need to be done.

Questionnaire

These are the questions that I will be asking the Arrowhead employees. I will be interviewing them on the 14th of January 02. I will be putting these questions to Jodie, the receptionist that could be the one to use my system.

What is your current system, for the quoting system? _

What are the reasons why updating of the system has not taken place? _

What will you need the system to achieve? _

Do you have any training in using Microsoft Excel, what sort of training? _

What version of Microsoft Excel are you using, 97 or 2000? _

How long does your manual quoting system take to finish for each customer? _

How much will this system speed up your company's quoting system? _

How do you keep in touch with potential customers? _

What are the disadvantages of the current system? _

What are your hardware specifications? _
_ _
_ _

What are your software specifications? _
_ _
_ _

How many people will be using this new system? _
_ _
_ _

How confident are you with Excel? Beginner, intermediate or advanced? _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _
_ _

What do you normally use Excel for? _
_ _
_ _

Would you use the system to its full potential? _
_ _
_ _

Will back up copies be made of the work? _
_ _
_ _

Will back up copies be stored in a safe place? _
_ _
_ _

With this new system will you start using e mail, or use e mail more to contact customers? _ _ _ _ _ _ _ _
_ _
_ _

Does the company have a network connecting all the computers in the business? _ _ _ _ _ _ _ _ _ _ _ _ _
_ _
_ _

Would you like the system to be passed over the network? _
_ _
_ _

How long will the records need to be kept on the system? _
_ _
_ _

Do you have an Intranet? _
_ _
_ _

Will there need to be any security to protect the system being visited/hacked into from people who shouldn't enter? _

If so, in what way? _

How would you like the data to be presented, would you like it in chart form etc? _

Can I have some existing documents so I can keep to the original style? Yes/no?

Data Flow Diagram

See separate page

Summary of the current system

The current system adopted by arrowhead when taking down orders is slow, unreliable and accident prone. The company in order to make the system increasingly reliable they need to make the current manual system automated. This would be a huge leap forward for the company and it would be truly beneficial. But Simon, joint boss of the company, says:
"We have not automated our way of taking orders simply because we are stuck in our own ways and see the price for getting a program to calculate the costs as too expensive. But if this system works then maybe more operations conducted by the company may become computerised. At the company though our staff aren't really that experienced with computer programs so tutoring will have to be issued"
The current system is simply laborious and time consuming and has the opportunity to be riddled with mistakes.
The current system is conducted as follows:
A Company, for this case a fictitious company called Life® phone up Arrowhead for a quote. Clare then answers the call and records the quote. Information like the date of the quote, the name of the company who takes the call and the type of job are taken down. From this and other information in the Paper book, a rough quote is drawn up and a code is written down in the book relating that company to the quote. This is kept for future reference.

The paper book contains the companies hopeful paper specifications. This includes:
- The name of the company that produces the paper,
- The type of paper, be it Matt, gloss or Silk,
- The size of the paper,
- the weight of the paper,
- How many sheets that are wanted,
- The company for which the paper is needed,
- The allotted job code
- How much a standard 1,000 copies will cost,
- The total cost for the total run
- And the date of completion

If the company, Life ®, phones back and asks for Arrowhead to print the job then the new information is then written down in the job book.

The Job Book contains a new code for the company, the date at which time the job is being recorded, the name of the company and the job description is also noted along with the date of the hopeful completion. The calculating is then finished off and the total quote for the job is sent of to the company. This is the point where my system should come in to its own, calculating the fixed costs of plates, inks and machine time can be easily worked out. Arrowhead then waits for a conformation of the job and then a job docket is created containing information like:

- The job number,
- The Date at which the order was taken,
- The customers name,
- The title of the project
- The quantity, material and number of plates required etcetera

This docket is then stored and the paper needed is ordered. When the paper arrives the job is ticked off in the paper book and the job docket is then given to the printer to start printing.

By introducing my new program, I hope to reduce the paperwork, the wasted time and the confusion.

Problems with the current system

The manual system at Arrowhead poses many problems to the user. These problems could be fixed by introducing an automated system.

Problem - Calculating quote price
Calculating the cost of the quote manually is difficult and can be inaccurate. The procedure sees the quote taker recording all the different variables, then they work out how much that variable will then cost. She then has to add all these costs together to calculate the end price of the job. The main problems occur when the Quote taker, Clare calculates the price of the quote wrongly. The implications of this are immense. Either the customer may not use them again to quote a job or Arrowhead maybe fined.

Possible solution - automated calculation of the quote by the computer.
The calculating of the quote price could be automated; this would mean that all the variables would be added together by computer. This should improve accuracy and save time, meaning that Clare will have more time to accomplish other tasks.

Problem - The presentation of the quote is poor
When calculating the quote the variables are added together on a piece of paper. This means that the quote is therefore ill presented. The poor handwriting also means that sometimes the information is illegible. The overall presentation of the quote form is therefore very poor. The company would like a better presented quote form, to make the firm look more proffessional. Also company versions of the quote are often poor as they are just photocopies of the ones given to the company.

Possible solution:
The quote form can be typed up on the computer; this then means that the presentation of the quote will then be satisfactory. It will also save them time typing up the information, as the quote taker is computer and keyboard literate. Writing it up on computer can also mean that two prints can be taken out of the form. There will be on the spreadsheet two different forms, one containing information needed by the company, the other containing information for the customer. That means printing out of the copies will be

easy, the presentation will be god and the personalisation of the spreadsheet for customer and company can be changed according to the type of job.

Problem - Writing out the different variables consumes a lot of time
In the quote there are a lot of variables that need to be taken into account. For instance the size, weight and finish of the paper. Constant writing out of these variables can consume a lot of precious time. They need a system where all the variables are already listed, so they choose the one they require.

Possible solution - Combo boxes
Combo boxes can mean that all the variables can already be listed on the spreadsheet. This then means that all the user needs to do is then select the appropriate variable. This means that multiple writing of the same thing can be avoided. Maybe avoiding RSI (repetitive Strain Injury) and saves a lot of time. Combo boxes are also a way of validating the data so incorrect data cannot be entered. For instance Glosss cannot be added, as the only choices are Gloss, Silk and Matt.

Problem - Incorrect data is being entered into the forms
Sometimes Clare makes mistakes and incorrect spellings and explanations can be entered. This can mean that confusion can be apparent on behalf of the customer. To avoid this happening a kind of validation check would need to be run over the writing.

Possible solution - Data validation
Data validation will mean that only the spellings and meanings that are entered by the creator of the spreadsheet can be used. This means that if the option is between gold and silver, the user can't add yellow. This can mean the end to unnecessary confusion and the end to errors of entering of wrong information.

Problem - Grammatical problems are being experienced
Capital letters are being put in the wrong place in some forms, also some forms like that for, WWF; the name is being entered as wWF etc. This can look scruffy and the presentation of the whole quote form poor. On check this can be easily missed.

Possible solution -
An advanced function on the quote sheet called PROPER can be added. This will wean that capital letters will be put in the correct place, for example at the start of names. This can usually erase any poor grammar and smarten up the spreadsheet.

Problem - A lot of storage is needed
There are several quote forms that need storing in the filling cabinet, that means that a lot of data can be lost if there is a fire or example. Just one job for a customer can create over 5 quote forms; this means a lot of paper work and therefore a lot of filing. And a lot of confusion with files if they get muddled up.

Possible solution - Storing of all the quotes and jobs done on a spreadsheet
All the customers that Arrowhead deals with could be stored on an individual worksheet in the same workbook. This means that all the past customers can be stored in the same place. This could save time on trying to locate files and then saves time on printing out and storing several copies.

Problem - The files are not necessarily safe
By this I mean that the records that are stored in the files at arrowhead are the only real reference to a past job. There needs to be a safer more secure system of storing this information, otherwise if a disaster does occur a lot of lost data can happen.

Possible Solution - Storing files on computer
If the files are stored on the computer and continuous back up copies are made, then a secure logging system can be achieved. The tape to which they save all their work to can be stored in a safe place (a lock in the secutaries office). Also if multiple copies are needed to be made then information can be stored on a second tape, which can be taken home by Clare. By adapting to this procedure then a lot of time and be covered against disasters.

Justification of an IT solution

I feel that Arrowhead are seriously need of an automated system to help half the workload of the member of staff associated with that area of the business. Other reasons why I feel advancements should be made are:

The system will considerably speed up the quoting system, leaving more time for Clare, the quote taker to deal with other matters. The quote system at the moment takes to long to finish, it can sometimes take up to 20 minutes. Though the time taken to complete a quote does depend on the technicality of the job. It takes this long basically because all the information. Combo boxes will mean that repetitive writing on forms will be abolished. This can be used as well as data validation to make sure that only validated information can be accessed onto the system. That means Clare will not have to check everything she types, like she would have to if she wrote it out.
The computer will be able to calculate the sums much quicker than Clare could. The spreadsheet would also have the added advantage of the answers being very accurate, whereas Clare's estimates may not be accurate enough.
After the main basis of the quote form had been set-up nothing else would need to be modified. This in comparison to a manual system that would see Clare writing out the forms time after time, again saving money.
The presentation of the computer quote will surpass any manual writing system. The spreadsheet print out will also be legible and easy to navigate through. The problem with some quotes is that the legibility of the writing is so poor that the customers cannot read the writing, leading to complaints. Also as Clare is computer literate she will be able to type the information in faster than she can write it. An experienced computer user, like the boss, Simon, can easily modify the system if modifications are needed.

General Objectives

> The main aim of the system is to be 'easy to use'; this is because the people who are going to be using the system are not particulary computer literate. I will do this by trying to avoid computer jargon and keeping the whole set out of the system as simple as possible. I will use macros that will be used either to link ages together or to print documents.
> The main problem with the current system is that is not very efficient, with my new system this will not be a problem. This can be achieved by making clear and simple buttons that you can click to print out documents or to input quote data.
> Backup copies of the system will have to be easy to create. By this I mean that secure and easy backup copies will be able to be made, so work is not lost and time is not wasted trying to save the worksheet etc.
> The presentation will need to be neat, legible and professional so that a good impression of the company is given out. One problem with the old system is that the quote formed looked untidy and un-professional. The Logo of the company will also need to be displayed on every customer copy sheet printed out.

All processing and entering of details, needs to be achieved on screen. It needs to be done simultaneously when the quote taker is talking to the customer. This means that the system must be quick, reliable and secure.

Moving between sheets should be easy to do. This can easily be achieved by using macros that switch from page to page.

Selecting different variables must be easy to select, you can do this by combo boxes. These can be used when there are permanent variables that don't change with different companies.

Editing and the manipulation of data must be able to be done quickly. Their version of Excel 97 will enable this to happen using the easy editing tools.

Deleting and saving of data must be able to be done easily and quickly. Assigning macros to exit, print and save again can do this.

E.g.

Quitting an application can be done easily by entering in 'Application.quit'

Specific Objectives - Qualitative

➢ The new system will be an upgrade from a manual system to an automated system, as the input, processing and output operations will be able to be performed on the computer, and will not require the user to perform tasks through the use of paper and pen.

➢ The automated system will prevent prone human errors from being made and will minimise human errors, such as entering the wrong data into the database, as other users will be able to thoroughly check for any errors made by a certain user. Also when an error has been made, it can be quickly located, as the database will enable the user to view different sheets in a short space of time. Unlike the manual system, where the hand written sheets would have to be searched for, through the filing cabinets, which would consume a lot of time and may become very frustrating.

➢ Correct calculations of quote can be easily done in the spreadsheet using hidden formulas instead of working it out manually. This will obliterate the chances of a less educated worker from making noticeable and effortless mistakes when calculating any type of totals regarding charity money. Conversely, many workers made mistakes in calculating charity money totals, as the contributed money figures had to be entered into the calculator by hand and consequently the chances of human errors being made were high.

➢ An automated system will mean that calculators will not have to be used to calculate the quote price for the specific company, so therefore, again minimising human errors and also saving time. The formulae and advanced functions will be programmed and concealed, so therefore the user will not calculate the totals manually. In this case the calculations will be performed automatically so they will be accurate and theoretically tamper proof.

➢ Selecting various variables on quoting forms, for example the name of the company how big a run is needed etc, will be simple, easy and quick on the database. Data validation and drop down combo boxes will enable quick selection of data, values, figures and information. Unlike the manual system, where a new form would have to be written out again by hand if a mistake in writing details about the customer were wrong. This consumed a lot of time, and was de-motivating as paper forms had to be re-written out again.

➢ Receipts containing details concerning the exact cost of the quote accounting for how much paper used, ink, plates etc will be done automatically and will be printed out. A customer copy and a company copy. The reason being because combo boxes will enable easy selection of variables such as the name of the company and the job number. So therefore these variables will not have to be written out by hand, as previously they had to be done when the manual system was in place. Previously both the company copy and the customer copy were written out using a basic outline that was printed around as a guideline. The combo boxes and scroll bars, will allow the

process of selecting the names of the companies will need to be user friendly, as they will not require much effort in clicking on the required name or receipt number.

➢ A copy of the order forms and receipts can be stored and saved on the database very quickly through a few clicks of the mouse. The fields will be left there for a minimum time of three years by law.

➢ (Each spreadsheet must be ready for member information to be entered. This can be done by selecting cells and formatting them so that they are surrounded by a grid and border.)

Specific objectives- quantitative

The time it takes to input customer details, into the company database is exceedingly lengthy. The system is manual, so it can take between 5-10 minutes to input data. This basically depends on the type of quote that is being taken down, if it is a complicated quote it may take longer. However, the new system will enable this lengthy 5-10 minutes to be cut down to a maximum time of 2-3 minutes, depending on the speed of work of the worker and how complicated the quote is.

Updating customer and member information and details is time consuming due to it being manually system. The paper documents containing member details have to be searched for through filing cabinets, which can be time consuming, and can take up to 10 minutes. The new system will allow updating of information within 1 minute, as the updating will be performed directly on the computer. This means that forms do not have to be rewritten out again, hence saving up to 9 minutes.

The new system will enable processing of members information and details to be performed in a matter of a few seconds, compared to approximately 2 minutes in the manual system. This is due to the fact that the member details will be entered into the database directly. Unlike the manual system, where the processing meant that the customer details had to be filled in, and then had to be placed in the correct filing cabinet, consequently consuming up to 1 minute.

Calculations that need to be performed for the monthly charity funds raised will become very simple and quick, as hidden formulae and calculations will enable automatic calculations to be made. It will only be a matter of a few seconds (1-3 seconds) before the calculations are completed. As figures are entered, calculation totals will automatically appear within 1-3 seconds. This therefore means that human error will be minimized, as the monthly totals will not be calculated by hand, through the use of a calculator, where the calculation time could reach up to 2 minutes.

The system should be able to store a minimum of 3 worksheets for each quote for each individual company.

➢ The system must be able to store at least 150 customers on a spreadsheet. The reason for this is so they can have a record of past customers.

➢ The system will have to store information on specific types of paper and the price. For instance how much gloss paper costs and the quantity required.

> ➢ e.g.
> > ➢ The different paper and costs

Gloss paper£60 per 100 sheetsMatt Paper£65 per 100 sheetsSilk Paper£70 per 100 sheets

Processing Requirements

The following data is processed like so:

Constraints and limitations

Users IT skills and knowledge

The end user of the systems: My system will only concern the workers in the business that deals with quoting systems. This will be Clare, Jodie, Derek and Glynn. They are all quite advanced at using computers, but not that good at using excel. With a slight bit of training in the use of Excel then I feel they will be able to use the system ok. The manager on the other hand has a great deal of knowledge of using Excel and will be able navigate through the system without any trouble.

The current I.T skill level of the end user: The end user has a mixed understanding of Excel but when it comes to using computers they have a clear understanding and are computer literate. I feel that the users that are not all that familiar with the system can pick up the basics with sufficient reading of a user handbook. Complete novices will be able to use the system with some training.

The possible effect the end user's skill level could have on the design: Knowing that the end user were not going to be completely literate, so planned to make the system easy to use. I plan to do this by not overcomplicating the system and by giving them a help option. Also to help the user I will also abolish the use of unneeded computer language and jargon. If I can do this I feel that using the system will be very simple.

The further training needs of the end user: The end user will need some training in using Excel. They have asked me whether I can go into work to help them use it to start with. In these 'training sessions' I will teach them the basics like how o input the correct data for example and what to click to proceed.

End User hardware

The end user, Arrowhead has recently had a new computer installed into the company. Therefore the specs of the computer that I am going to load my database onto are quite high. The reason they have such a high calibre of computer is to execute high spec programs, for instance the have huge packages installed on the computer, like office 2000, windows 2000 etcetera.

The computer that I will be installing the new system onto has a 60GB hard drive, capable of storing vast amounts of information. This kind of hard drive is capable of storing huge systems of data holding.

They also have a 800Mhz Processor which is fast enough for the system I will be installing and for most other programs as well.

They have a standard graphics card able to show 32 bit true colour graphics, which is standard.

They also have 40X CD drive, 3 ½ inch floppy drives used to transfer data from different computers.

They also have a tape facility that stores all data that has been saved on the system all day. The tape slots into the drive and records all that has been saved on the computer. This disk is then stored in the accountant's office in a safe.

The company also has a printer monitor a sizeable motherboard and keyboard and mouse etcetera.

Basically the computer was bought to deal with high optic packages that the company indeed do have. There is no trouble I can see with the computer not being able to run my package, as they have at least 12GB of hard disk space left.

Monitor
- 17" screen
- SVGA Samsung monitor

- With separate speakers

Internet facilities
- ADSL supplied by BT
- Fast connection (though can be slow if lots of users are using it), can be accessed anytime
- Pay Monthly instalments for the rental

Saving facility
- They have a recordable tape that is inserted to computer to save information
- They also have a 3-½ inch floppy disk drives.

Mouse

- Normal trackball, Compaq mouse.

Tower

- 60MB Hard drive with 12 GB of space free
- 8000MHZ Intel Pentium processor
- 40X CD drive
- 32 bit true colour graphics

Development Hardware

The PC at Arrowhead I feel is good enough to handle all the jobs at the company. However the computer is not that great if you compare it to modern computers. The 60GB hard drive is now considered to be quite small compared to most modern computers. But the company has only used 48GB of this memory so this supports the fact that the memory is big enough for the job. The computer holds no big files or programs, but if it did the computer would have to be upgraded.

The processor again is pretty fast for a company computer, fast enough to run all the applications that is needed. The Processor is a Pentium 800mhz, this is ample speed for all the applications that are likely to run on the computer. The printer is also quite advanced for the company being a laser jet it also gives out good quality print outs.

To conclude, I basically feel that no advancements need to be made to the computer hardware at Arrowhead.

Software

The computer contains Microsoft office, which contains Microsoft Excel 2000. This program is essential to my system without this my system would not be able to be used. Excel lets you do the following tasks.

SUMS
Formula (like AND, VLOOKUP, IF, NESTED IF etc.)
Macros, connecting multiple copies and executing processes)
Multiple sheets of data (customer copy, company copy and information sheets etc)
Comment adding to cells, used for explaining.
Copy and Paste etc.

Output forms and other Output

The quote sheets will be printed out after each job and the customer will get notification of the end quote via a telephone call, E-mail or fax. The sheet that will be printed from Excel meaning its just a case of clicking a macro assigned print button. This will be quick and easy and the end work will look presentable.

Macro/Module design

Print option - A print button will be assigned with a macro so it will make it easier to print. This is one of the ways of making the system easier to use.
User Interface: There will be a macro attached to every worksheet in my workbook. This will make it easier to browse from page to page.
Store: there will be a macro that will mean all the information on the page will then be stored on a separate sheet.
Search/sort: This button will help the user search through a list of old customers, this will make it easier than manually searching for them.

Consideration of other possible solutions

The company, Arrowhead could create a website and have customers be able to pay for the job via credit cards. The problem with this is credit card fraud or if the website goes down then payment to the company will stop. Therefore there will have to be a backup plan established if these problems did occur.

They could use a system that turns Clare's handwriting into type so hand-written copies could be stored in filing cabinets while word processed documents can be sent to the customers