Description of problem

The aim for this course work is to design a new system for an estate agent called Folly's agents. The database will be designed to hold information about the properties such as number of bedrooms, garden size, price etc. Currently the company is using a filing cabinet to keep the current data, this takes up a lot of space and it is hard for the workers to access or amend the information.

I will need to design a solution for this problem, my system has to be fast and easy to use, the information should be clear and easy to change. I will need to find out how the workers are currently using their system and I will need to see if the new one will be easier and faster.

Investigation

I arranged to meet the owner of Folly's agents, so that I could find out how they keep their files and records at this present moment. I want to see how they change, search or add any information. I want to know what they need for their system.

Feasibility study

Advantages

· Computers are very accurate.
· Computers can work continuously 24 hours a day.
· Less paperwork involved, it is all stored and easily accessible from the computer.
· Low risk of data being erased as it can be stored on various backups.
· Not a lot of energy is needed to get data, this saves time and is efficient.
· Data can easily be presented in tables, graphs etc.
· Changes and corrections can be performed at the touch of a button.
· Validation check minimises the chance of any errors.

Disadvantages

· The hardware and software can be very expensive.
· Employees will need to be trained regarding usage of the computer.
· If the computer crashes or there is a power cut, access to data in the computer is lost.

Introduction

The company currently files all the information about the houses that are for sale or rent. They are all organised by the area that they are in. If any customer inquires about buying a house but doesn't specify the are but sets other criteria then all the files have to be studied to find a house meeting the criteria set. If information about the area is given then it is a bit easier because only houses in that area have to be searched. Searching for the right houses can take hours because a lot of files have to be searched. House prices are constantly changing and it isn't possible for the company to manually change the prices for each house. When inquires for a house which has to be between a certain price range is made, many houses cannot be made available because the current price hasn't been updated and the latest price may be out of range. The company is losing a lot of business because it takes a long time to find the right properties for the buyers, the company also needs to employ many extra staff because excessive manual work is required.

Analysis

This is my interview with the owner of 'Folly's agents'

How long have you had your own business for?

Along with my brothers I have been running this business for 18 years now.

What does your business involve?

We collect information of properties that are for sale and when enquiries are made for properties, we search for the properties satisfying the criteria set.

How do you keep a record of the properties, and how do you change the information?

All the information is written on paper and is put into cabinets. The filing cabinets are sorted according to different areas, if any information needs to be changed then one of the staff will have to do it manually.

What do you do when you receive an inquiry for properties?

This depends on whether the area has been specified by the customer, if it has then we find the properties in that area with the required criteria. If the area hasn't been specified then all the areas have to be looked at to find a property matching that specification. This can take a lot of time and the company is losing out, we are losing customers because our service isn't up to standard and at the same time I have to pay the staff for all the manual work they have to carry out.

What advantages do you think the system will have?

The system will be very useful to my company because I will be able to find properties matching the set criteria very easily, the information will be up to date because it is easy to update. This means that time will be saved and the customer will hopefully be satisfied. At the moment I am paying my staff for doing a small task which takes a long time, but with this system their work will be simple and I will save money.

What disadvantages do you think the system will have?As far as I can see there are no disadvantages in using this system that isn't also a disadvantage in our current system. I am looking forward to using a computer based system.

Specification

What must the new system be able to do?

The data will need to be stored in an organised way - using tables to present the data in a clear way i.e. a database could do this.

The system would need to be user friendly - simple instructions could be provided so that everyone could use it easily and effectively.

The data should be put under suitable field names such as: -

ID number- this gives each customer an ID, which when searching for a certain customer, the owner can just search for his ID number and the customer's details will appear on the screen.

Street name- The name of the street, this is usually text

House/Flat number- The number of the property, this is numerical

Postcode - The postcode is a mixture of numbers and text, but they are set out in a particular order, so that will have to be taken account of.

Town/City- The area where the house is, this is set out in text.

Contact name - The name of the person who needs to be contacted regarding the property, this is usually the owner. This will be in text.

Telephone Number- The telephone number of the owner, this is numerical but is in a particular order.

Type of property - This will be a drop down menu and show whether the property is a semi-detached house, detached house, flat etc.

Number of bedrooms - The number of bedrooms the house contains. This is numerical. Must have a range to help avoid data entry errors.

Size of master bedroom (square m)- The size of the main bedroom, the size of other bedrooms isn't considered important. The answer should be numerical.

Size of living room (square m)- The size of the main room, this should be numerical.

Size of garden (square m)- The size of the garden (if any), this is numerical.

Type of sale- A drop down menu asking whether the property is for rent, lease or freehold sale. The owner could also be considering all options so this section doesn't always have to be filled.

Rent per week - The asking rent per week, this doesn't have to be filled if the property is for sale. This is numerical.

Price- The price of the house, this also doesn't need to be completed if the house is only for rent. This has to be numerical.

Conditions/Additional information - If there are any conditions or restrictions regarding the property then they can be put here. For example if the house is on lease then a brief outline of the conditions should be put here. The information here can be a mix of text and numbers.

Evaluation Criteria

How will the new system perform?

The system must allow the data to be organised into certain orders- e.g. the price could be put into an order of highest to lowest or vice versa.

The system must be able to save the data- there will be a lot of data stored on the system and so it will need to be stored efficiently.

The new system has to be accurate- to help input masks for the phone number and postcode will be inserted, also other validations will be put in place to help minimise the amount of mistakes made. The information has to be accurate because the data has to be passed on correctly to any inquiring customers. If it is wrong the company will loose their reputation and be ashamed.

The system must perform rapidly- to maintain the systems' speed I could decrease the characters for each field. e.g. for name, the default will usually be set to 50, but if we reduce it to 20 or 30 then the system will perform faster, noticeably if the database contains vast amounts of data.

The system has to be easy to use- the information has to be easy to amend or delete, the users will be dealing with a lot of information so it has to be easy to handle. It has to be easy to edit and add to, the owner of the company doesn't want to train his staff a lot.

The system has to be easy to search- The user will search for different criteria when looking for a house, the buyers might specify a certain price range for example.

After the system has been built it will be tested to see if all the criteria set are met. Data will be inserted onto the system and I will see if there are any mistakes or errors made, if there are then I will try and improve the system. Those who are currently using the system will be asked to try the new method. They will tell me if they find it easier or harder than the one they are using now.

If the user makes any mistakes while typing in the information and the system is aware of them, a user friendly, informative message will appear to show them the mistake that has been made. This will completely minimise the number of mistakes made. The number of errors made will be extremely rare and unnoticeable.

Design of solution

This flow chart has been designed so that all the information is first gathered and inserted onto the system, and this is all stored. Then the user is given the options of searching, adding/deleting or editing any of the information. After this has been done the data can be printed. Again at the end the user is given a choice of saving the work, then the cycle starts again from the point of asking to add or delete. With this flowchart it will be easy for the user to search, edit, add/delete any data from the system.

Resources

Software

Application

Word processor - This is used for typing text, which can be edited rearranged and also printed. The word processor can check any spelling or grammar mistakes, it also contains facilities such as a dictionary and thesaurus. This type of software is mainly used for letter writing and essays.

Spreadsheet - This consists of rows and columns of cells which can be used to contain text, numbers and most importantly formulae. These formula can be used to calculate figures, look up information from other cells and to carry out validation checks just to name a few. The rows are given numbers and columns are given letter which together give the position of the cell. In the formulas instead of inserting direct numbers, cell references are given so that if the number changes all those that are affected automatically change, this minimises any mistakes and makes it much easier for the user. The information in a spreadsheet can also be able to show a graph or a chart, which will show the progress of a company or any other data.

Desktop Publishing - This is the use of a computer and specialised software to combine text and graphics to create a document that can be printed on either a laser printer or a typesetting machine. Desktop publishing is a multiple-step process involving various types of software and equipment. The original text and illustrations are generally produced with software such as word processors and drawing and painting programs and with photograph-scanning equipment and digitisers. The finished product is then transferred to a page-makeup program, which is the software most people think of as the actual desktop-publishing software. This type of program enables the user to lay out text and graphics on the screen and see what the results will be; for refining parts of the document, these programs often include word-processing and graphics features in addition to layout capabilities. I will not use this application because I will not be using graphics like pictures etc.

Graphics - This package can be used to design illustrations, drawings and logos , and it is also used to modify pictures, photographs or animations. In this package there is a wide range of colours, shapes and lines. This type of package is used to create cartoon animations, produce computer games, design logos and creates pictures. The drawing can be printed out or a collection of these can make a movie.

Database - This is a collection of data organised for storage in a computer memory and designed for easy access by authorised users. The data may be in the form of text, numbers, or encoded graphics. Originally devoted largely to the sciences, these automated databases now embrace a comprehensive array of subject fields. The cost of these searches, whether covered by the library or the patron, is often offset by the great efficiency of the searches, especially in contrast to earlier methods of manual searching through multiple printed sources. This work also represents a partnership of the for-profit private sector with the public library community. In effect, it is another form of library networking. **Relational Databases** in computer science are types of databases or database management systems that store information in tables—rows and columns of data—and conducts searches by using data in specified columns of one table to find additional data in another table. In a relational database, the rows of a table represent records (collections of information about separate items) and the columns represent fields (particular attributes of a record). In conducting searches, a relational database matches information from a field in one table with information in a corresponding field of another table to produce a third table that combines requested data from both tables.

In my research I discovered that using a database was the ideal application for my system because it enables me to store data easily, to create forms and records, its more efficient, cost effective, saves space and is time effective. It also has the ability to keep my system well organised in tables and under suitable field names, queries can be run to search for data that satisfies certain criteria that are set by the user. Other applications are not suitable for my system because they are not suitable to sort out data and run queries like the database does. Although some spreadsheets and word processors have the ability to sort out data in alphabetical order, ascending or descending order with bullet points and with numbers these are not sufficient for my system. I need to run queries and have validation checks, which mean that only a database can be used.

Package

A software package is needed where all the data can be inserted. A very popular and user friendly package is Microsoft Access. It will enable me to search and amend my database. It is available at school and I have it at home and I know how to use it. There are many other packages available but this is the best and most widely used. To type out my instructions to give to the users I will use Microsoft Word which is also easy to use and is available everywhere.

Hardware

The computer I will need for use with the system will need to be of reasonable speed, with adequate memory and hard disk. It will also be ideal if the firm owned a printer so progress can be put on paper. This hardware should be reliable and have minimal chance of technical problems.
I own a Pentium II Processor, 400mhz computer with 8 GB and 128 MB ram, this is quite fast and suitable for me to design the system. The company also owns a computer that is a Pentium II Processor, 120mhz with 1.2 GB and 16 MB ram, which is reasonable for use of my system. This computer is where the system will initially be used, it takes twenty-six seconds to log on and enter the spreadsheet package Microsoft Excel. The response to the change of any data was immediate, the time it took to save the data is only two seconds and the time it took for the printer (a HP 690c) to respond was only two seconds. The computer took seven second to log off from getting out of Microsoft Access to switching off the computer. For the computer to save data on a floppy disk it took five seconds.

Both these computers are suitable for design of the system and for using the system because they can do basic tasks at a reasonable speed. The speed of my computer is not important because I will only be designing the system but the company will be using their computer to put the system into practice. If the firm has a computer of good speed it will mean the users time will not be wasted waiting for tasks to take place and also means that the company saves time and also money.

Data Collection

The company I am designing a system for would like to have a form, which is easy to use and contains all the information needed and also sends the information directly to the main database where it can be clearly viewed.

Optical Character Recognition - This equipment scans the page containing text and studies each character and compares them with what has been stored. Although some of these can read the text quickly there is an extremely high rate of errors being caused. This will not be used because the equipment is expensive and isn't reliable.

Optical Mark Reader - This scans marks and converts them into characters. My system consists of letters and numbers and not marks therefore there aren't going to be any marks to convert. This method is use for

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The above screen shot shows the form that I have designed for the company to use, the form is simple and easy to use and is ideal for use by the business

Data Capture and Input

Barcode- a series of vertical lines with a unique identification code, laser scanners read the bar codes and the information is transmitted to a computer for processing. Barcodes are in wide use in supermarkets, libraries and retail shops. This isn't suitable for my system because my data is in small quantities and doesn't need a barcode system. Also barcodes are used for products that are small and can be moved around, but barcodes aren't used for selling houses because comparatively less are sold and the product isn't moved around.

Key to Disk - This is typing the data onto the computer using a keyboard, although this isn't expensive and is easy to use, it does take quite a lot of time and errors are often caused by this method. But still, this method is practical and simple and can be used for our system. This method doesn't require the user to be trained a lot and is efficient for small quantities of data.

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Data Validation

To minimise any mistakes or errors in the information put onto the system to calculate profit or loss, there are many methods in which the computer can use to do this.

Range check- is performed on numbers to make sure that they lie within a specified range. An example is a validation rule for House numbers which can be defined as being less than 1000 as nearly all houses have a number which is less than 1000.

Check digits- when working with large numbers mistakes can easily be made therefore, at the end of a long number a check on the digits is made.

Hash total- This is used to check invoices. It is a meaningless total, but if it does not appear it means that not all the numbers/items on the invoice have been keyed in or a mistake has been made.

Control total- is the same as hash total but with meaning.

Character-type check- makes sure that the correct types of characters have been entered. For example, if text is inserted for house number then the computer will inform the user and not let him carry on until the mistake has been corrected.

Spell Check- This check will make sure that the words have been spelt correctly and the grammar is also right. Suggestions will be given if the words aren't right.

Length check - This will inform you if more or less characters than previously specified have been inserted onto the system.

Validation is cheap and very quick because the computer does it, but it does not guarantee to find all errors. This will minimise errors and therefore is effective. All the mistakes will not be corrected because the computer only does what it has been told to look out for, that is why a lot of validations should be used to completely minimise the number of mistakes made.

Data Verification

Data Verification is checking that what is on the form is the same as what has been entered onto the system, there are two main methods for this.

Proof reading- the user reads the information again and compares the form and what has been entered onto the system.

Re-typing- After the user has typed in the information another member of staff should come and type in the information, the data will only be processed if both entries are identical. It is unlikely that both people will make the same mistakes.

The Re-typing method is expensive and time consuming but proof reading will be effective and easy to put into practice.

Documentation of solution

How to set-up the system on a database

· At main screen double click on Ms Access
· When inside the database enter all the data onto the database through the form
· The information should go onto your tables
· Make a suitable name for your table
· You can move across the cells by using the arrow keys/by pressing enter/tab
· To make a query go to queries and select the criteria for your query
· On the top, click on Query and select run
· This will show you the queries that you have selected.
· Do the same for reports
· If you would like to make a macro then open macros and choose a list of things that you would like the computer to carry out, then you close it and open it again and it will do as you told it to do.

How to insert data onto a system

· Using the arrow keys or cursor, move the box you wish to type in and then type the information you want
· Then using the arrow keys move to another box and repeat the above procedure
· If you make a mistake in the box double click on it and adjust the mistake
· Repeat the above process until all the information has been entered into the system

How to use the system

Enter the details of the properties that are for sale, give all the required information, and update the information on a frequent basis.

The data can be analysed by viewing different queries and reports. When a customer asks for certain criteria regarding the sale of a property, then select these criteria to show the information required in a table.

Evaluation of Solution

When I first investigated this project I decided that I should evaluate the system by comparing it to the following points:

· If it works properly

· Whether it is organised or not
· It must be able to save data
· It had to be accurate
· Must be faster than the previous method
· The system has to be easy to use.
· The system has to be easy to search.

The testing shows that the system works correctly, as I tried with several different things and it always gave me the correct answers. My system took around half a minute to add a new entry and the same task took quite a few minutes to add a new entry with the old manual system, and the records in the manual system can easily be misplaced. However, my system does not find customers if their names have been typed incorrectly. Even though I expected this to happen it did not cause any confusion or problems. Therefore I find that spell checkers very efficient which find close suggestions to the one typed out.

The Estate agent is booming now, all the workers have easy tasks, the owners are saving money and the customers get what the want efficiently and quickly. The owner was delighted, as this was what his business needed, the staff do not have to go through a lot of file and record to find some information.

Due to the above explanations I think that my system is user friendly and easy to use, this is what the company required and has been provided. The people who are going to use the system are happy and have been trained to use the system and are building the system with all the data about the properties they are agents for. It has become easier for them to amend any data, this will mean that the information in the database will be up to date and the customers will have all the latest information.