Data Management Tools for a Non-Profit Organisation: Creating and Implementing a Database for Age Concern Camden, London

An Interactive Qualifying Project Report
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Abstract

Age Concern Camden (ACC) is a non-profit organisation whose primary focus is to improve the quality of life for the elderly of London. As their organisation expanded, ACC found it necessary to establish a centralised database to maintain their contact information. Our team researched various data management systems, studied ACC's structure, interviewed staff, and created a Microsoft Access database customised to meet their needs. Comprehensive manuals and training sessions helped staff members accept and utilise the implemented database solution.

Executive Summary

Age Concern Camden (ACC) is a non-profit voluntary organisation based in the United Kingdom. Services that ACC provide to the elderly include day activities, insurance services, care for those who are housebound, various educational programs and walk-in advice and support. As the breadth of their organisation increased, ACC found itself without a centralised means of maintaining their client, volunteer and donor information. The lack of uniformity and limited accessibility between various data storage methods was causing issues involving data redundancy and inter-organisational communication. Our project team, which consisted of four WPI undergraduates, was charged with researching and developing a practical solution to address the needs of ACC. Our team's research focused on two main topics: First, the technological minutiae associated with the design and implementation of a centralised database, and second, the organisational impact of a technology based solution.

After considering many different software options, our team felt that an appropriate solution could be obtained through Microsoft Access, customised to suit the business needs of ACC. Interviews with both administrators and staff members provided insight into where the largest communication gaps existed, as well as what information needed to be stored within the database. Our approach to this implementation took into account the time we had to complete the project, financial feasibility, technical feasibility, user dependency, user acceptance, maintenance, and training. Once the database was finalised, we conducted an extensive training program within the organisation. Upon completion of this project our team left ACC with a customised database solution as well as comprehensive documentation on proper use of the system.

Page of Authorship

Each member of the team has contributed evenly to the preparation of this IQP report.

Acknowledgement and Thanks

We would like to give a special thanks to our liaisons, Mrs. Pauline Cheeseman and Mr. Philip Ruff and the entire Age Concern Camden staff. We would also like to thank our advisors Prof. Laura Menides and Prof. John Trimbur for their help and support in the successful completion of this project.

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Introduction

During the last two decades, technology has played an increasingly significant role in how a company achieves its goals. In both a profit based and non-profit environment, as an organisation expands so does the amount of data it must save, analyse and exchange. As stated by author Tim Mills-Groninger, "Non-profit constituencies have become a complex amalgam of clients, customers, funders, peer agencies and other individual and organisational stakeholders." (Groninger, 2001) In order for non-profits to work and grow in an efficient manner, it is important that they have a well maintained, centralised means of storing and accessing various types of information. Technology has the potential to increase productivity and communication within an organisation, but it is necessary for an organisation to first weigh the benefits of implementing such a system versus the potential costs. It takes a careful analysis of existing systems, financial concerns, company structure and end-goals to determine what form of IT integration is best for a specific organisation.

Age Concern Camden (ACC) is a non- profit organisation based in the London borough of Camden. The encompassing goal of ACC, as stated on their website, is to "work with and for older people" (ACC Website). The organisation's role within the community has increased exponentially since their founding in 1986. ACC now provides a variety of services ranging from in-home care to counselling and educating the elderly at various on-site locations. During an interview with Pauline Cheeseman, the Chief Officer of ACC, we learned that as the breadth of their organisation has increased, ACC has found itself dealing with issues pertaining to the communication of information among its various facets (Cheeseman Interview, see Appendix C). In order for ACC to

carry on providing their current level of support to the elderly community and also to continue acting as an innovator in the realm of elderly services, it was essential that they find a cost-effective solution to their data management issues. Our team of WPI students was given the task of developing this solution to satisfy our IQP graduation requirement (for more information on WPI's IQP program please see Appendix B).

Before proposing a specific solution for ACC, it was important that our team understood the background logistics that go into designing such a system. Database implementation and management is a vast realm of study within both the business and computer science disciplines. From a business standpoint, it is critical to answer two questions: what would be the business gain from the cost of implementing such a system, and how willing are ACC employees to use such a system. To determine the answers to these questions, our team met with ACC management. We explained that we needed to define specific goals, to perform individual interviews that determined where concerns with technology and data management lay and to ensure that the average user would find the system useful and intuitive.

On a more technical side, our team did an extensive amount of research in the field of database design and implementation. Through our research we found that ACC did not face a unique problem and there were many solutions already available that could solve their data-management issues. These options ranged from a ground-up implementation to an off the shelf software package. Our research uncovered a wide array of options to present to the administration of ACC. A solution was chosen which was not only cost effective, but also customisable enough to meet the organisations needs.

For our project to be successful, we needed to leave ACC not only with a database that organises their current data in an efficient and accessible means, but also with an understanding of how their company benefits from this solution. We developed an intensive one-on-one training program which was conducted during our time at the organisation. This training involved familiarising users with the system, identifying where various problems may occur and defining specific solutions for these problems. We also developed a training manual which we provided to the staff as a reference once we were no longer available for support.

Through careful planning, strong attention to individual and organisational issues, precise development and an in-depth training program, our team was able to provide a solution that answered ACC's needs and has been praised by staff and administration. Our database system has not only helped increase communication within the organisation, but has also increased their ability to provide care for the elderly. The remainder of this report will describe, in detail, the processes outlined above. We will also present our conclusions and recommendations for further work within this organisation.

Background

Developing a successful data-management system is a multi-staged process. Our team's approach to this project from both a technical and sociological standpoint was a key factor in our ability to provide the best solution possible. This background and literature review focuses on three main topics: 1) the organisational background of Age Concern Camden, 2) effective data management, 3) maximising user acceptance and satisfaction.

Organisational Background

Age Concern Camden (ACC) is based in the London borough of Camden, with three resource centres within the surrounding area. Their company mission is to increase the quality of life of the elderly members of the Camden community. This is accomplished through a vast array of support and care services which are primarily funded by government grants allocated for minority and elderly care. Both volunteers and paid staff are present within the organisation and both are critical to its success as a care provider. To understand where the specific data management issues arise within ACC, it was important to understand both the range of services the organisation provides and the specific reporting methods necessary to receive the funding to run these services.

During our interviews with staff we developed an in-depth understanding of how ACC functions as an elderly care provider. The programs offered by ACC can be separated into two main categories, support services and life-skills training. ACC employees provide an on-site Advice and Support service, designed to assist the elderly in everything from finding cost effective means of maintaining their homes to locating

resources within the community to maintain an active social life. Before our database system was put into place, paper records were kept for every interaction with a client, be it a one time advice session or an on-going care process. The Advice and Support team worked with the Direct Payments team to assist elderly members of the community in applying for, receiving and renewing welfare programs run by the government; however, records for both of these programs were kept in separate locations using different storage methods. Counselling is also available on-site at ACC and was previously recorded separately from the Advice and Support services and Development Services. Another aspect of the support services offered through ACC is an in-home care program, referred to as the Good Neighbour Scheme. This program provides support for house-bound elderly members of the community. Though the staff responsible for all of these programs kept records of client interaction, members of each group had no way of seeing what other programs a client was utilising, or had utilised in the past. Aside from these main services, many other small schemes are run within the organisation, including a charity shop, nail-cutting, and advocacy program, none of which shared any information before the implementation of our system.

The lack of inter-organisational communication was not the only data-management issue facing ACC. In order to receive the funding for these specific programs, statistical reports were provided on a quarterly basis to the Counsel, the governing body for non-profit organisations. As the number of clients seen on a quarterly basis increased, compiling this data became increasingly tedious. The archaic methods of data storage caused inaccuracies that could eventually lead to the inability to attain the funding necessary to continue providing the utmost level of care.

Identifying where the redundancy and communication gaps existed was an important milestone for our group in terms of focusing on the sociological impact of our project. We created a hierarchal diagram of the organisation to help us visually define how the organisation was structured (Figure 1). Once we had a good handle on where a database would help this organisation, we were able to approach the problem from a more technical standpoint.

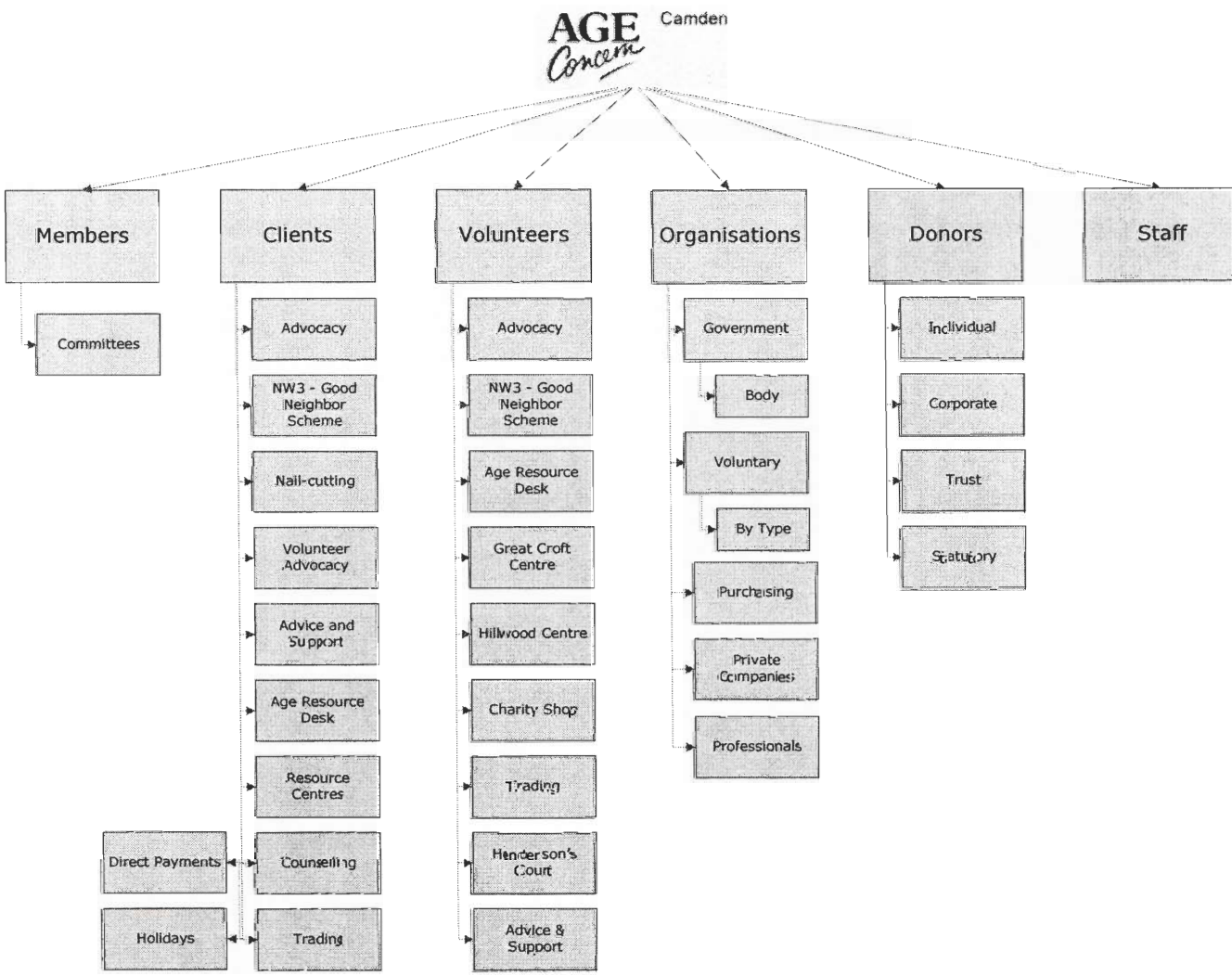

Figure 1: Age Concern Camden Organisational Structure

Effective Data Management

In order to analyse effective data management methods, it is first necessary to define a vocabulary used in previous research. The term *data* itself is defined as "factual information [as measurements or statistics] used as a basis for reasoning, discussion, or calculation" (Webster). Effective data management solutions are dependent on the nature of the data which is being managed. Because data can exist in many forms, the task of consolidating a mass of non-uniform records can be daunting. Identifying the type of information to be stored and developing structures through which to organise and interpret such information is known as *data planning*. Thomas Turk defines a six step approach to this process:

> 1. Determine the business functions and the business model which identifies manual and mechanized systems which support the functions
> 2. Identify the data items required by each business function and develop the business function's normalized data model
> 3. Determine the dependencies that exist among the normalized entities and chart the dependency flow required for creating and updating entities
> 4. Determine the logical data structures
> 5. Identify basic volume information for the normalized data
> 6. Determine the business function which is the source for each normalized entity and which system should be the source system. (Turk 4)

Turk's method exposes the concept of *data models*, an integral part of database design. A *normalised data model* is a theoretical model which outlines not only the pertinent data to be stored, but also relations between various fields. Individual fields are represented via *entities*, which serve as templates for the final records. The process of normalising a data model involves breaking down a complex amount of data into an organised two-dimensional representation. It is important to decide which data is necessary and which is irrelevant, and also to eliminate redundancies. Choosing the primary key, or the piece of data unique to every individual record, is also a part of the normalised data model. According to Turk, a successful normalised data model results in

a list of entities and a linkage diagram outlining their relationships (Turk 32). An example diagram of a normalised data model for a simple musical collection database can be seen in Figure 2. From this, a *usage model*, also known as a *transaction analysis*, can be developed, outlining and predicting specifically which data will be accessed under various contexts (Turk 6). The usage data model clearly defines which members of an organisation need to retrieve which data. It is used in identifying the parts of the normalised data model which need to be most accessible in the final product. The last step before beginning actual database development is the *structural data model*. This model acts as a bridge between the more abstract normalised model and the physical database design. Entities from the normalised model are put into fields, relations are translated into foreign entity keys and the database is prepared to be entered into a *database management system* (*DBMS*).

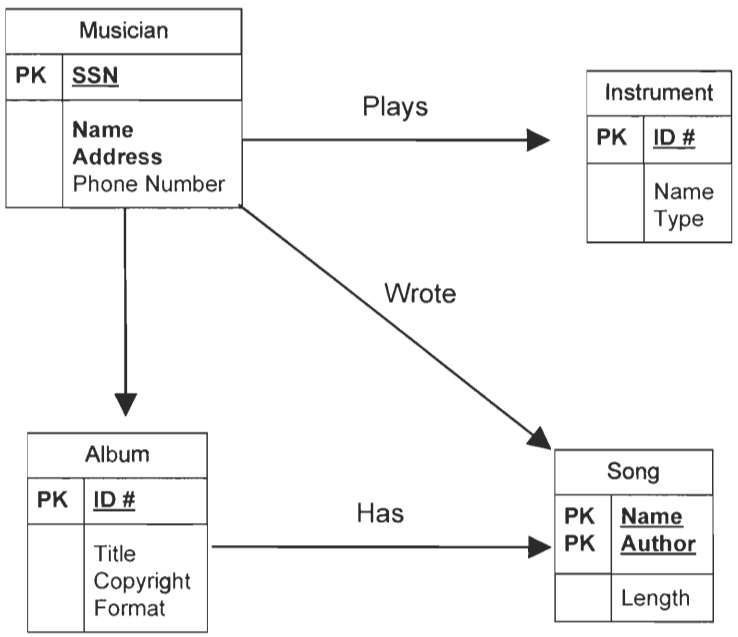

Figure 2: An Example of a Normalised Data Model

The normalised, usage and structured data models provide a strong foundation for a successful database design. After development, it is important that these models are constantly analysed and updated throughout the course of the overall solution design. Once these models are finalised, much more technical questions arise. Perhaps the most important questions are in choosing a DBMS. From a modern perspective, a DBMS ranges from a program like Microsoft Access, which visually allows users to develop, edit and arrange tables and entries, to a purely command-based approach, such as the Structured Query Language (SQL). A key point in determining which DBMS to use is based on the existing, or potential, IT staffing for an organisation. Research specifically focused on the selection of a DBMS has shown that an SQL implementation has the potential to be both versatile and robust, but it can be more difficult to administrate than other approaches (Thuraisingham 99). SQL implementations also take much longer to develop than other solutions. A solution such as Microsoft Access, though much easier to develop, has drawbacks in terms of data access control and can also be very resource demanding. During our research periods in the U.S. and U.K. our team performed case studies that aided us in reaching our decision about which database method to use at ACC.

Through case studies at Age Center Worcester and the Worcester Red Cross, conducted in Worcester, MA during our preparatory term, we found that these non-profit organisations chose a solution that fell between an off the shelf system such as Symantec ACT and an advanced system such as SQL (Summaries of interviews conducted during these case studies are provided in Appendix D). Once in the UK, we conducted additional case studies at two Age Concern locations outside of Camden. Both of these locations

used customised Microsoft Access solutions that were developed in-house. The universality of the Microsoft Office product package, price breaks available to UK non-profits for Microsoft software, and the ease of development within this system all played into the decision by these organisations to choose Microsoft Access. It is important to consider the future availability of support and troubleshooting when making a database system solution.

One of the last, and arguably most important, aspects of creating an effective organisational database is choosing an end-user interface. How effectively a system visually interprets the data for the members of an organisation is vital to its success. A truly useful interface supports advanced searching methods, provides easy data manipulation, and is visually appealing. Such an interface can take the form of a distributed application or a web-accessible solution. Choosing between these two depends both on funding and on existing technology within the organisation. For the purpose of a non-profit organisation with limited resources, a web-based interface provides a less expensive deployment over multiple sites and an increased probability of universal compatibility.

With an end goal of increased communication and data accessibility for ACC, having a well thought through technical design for our IT solution was crucial. Data in its pure form is useless; it needs to be organised and implemented so that it is effective. Author S. Atre summarises the entire process of data identification in the following questions: "What is its format? Where is it located? How is it accessed?" (Atre 16) Choosing where the data will be located relates directly to selecting an applicable DBMS. Finally, the user interface affects the accessibility of a data management system, and has

the greatest impact on how effectively a solution increases communication. User interface and acceptance are considered in the next section.

User Acceptance and Satisfaction

At Age Concern Camden, questions arose not only about the technical feasibility of the project, but also about how the new system would actually increase the ability of the organisation to achieve its goals. Author Ben Shneidermam, a recognised authority in user acceptance and usability concerns, defines the goals for a successful requirement analysis:

1. Ascertain the users' needs.
2. Ensure proper reliability
3. Promote appropriate standardization, integration, consistency and portability
4. Complete projects on schedule and within budget. (Shneidermam 13)

The most well designed and technologically advanced solution means nothing if it is not adopted and embraced by those who will be using it. Concerns of this nature arise in the form of the apprehension by users to transition from traditional organisational methods to a technology based solution. It has been shown that "effective interfaces generate positive feelings of success, competence, mastery and clarity in the user community" (Shneidermam 12). Because our goal was to simplify and streamline the business processes of ACC, it was crucial for the users of our solution to see its benefits to them as individuals as well as to the organisation as a whole.

Many organisations, such as ACC, realise the potential IT has for streamlining their business process, but lack the technical expertise to implement an encompassing solution. Moreover, the concept of implementing such a sizeable system without an existing onsite IT staff can be very intimidating. To some people, there is the fear of

feeling unintelligent that defers them from attempting to use new methods. To others, technology appears as something expensive that they feel they will break (Shneidermam 10). Both of these attitudes can be overcome if thoroughly explored prior to implementation.

The concerns outlined during the 15 interviews conducted within ACC were considered during the entire design process. Members of this organisation specifically focused on a desire to eliminate redundancy and to increase interdepartmental communication. It was also important that our system provided the ability to produce standard reports and mailing labels from the data. Our group needed to make sure that the new system solved the problem of data centralisation, added uniformity to the overall ACC business process, and simplified the everyday tasks conducted by volunteers. Successfully accomplishing these tasks would make user acceptance easier to achieve because the solution would be beneficial to those using it.

Training

If users know how a system works, what can and cannot go wrong, and how to use it properly, they are much more likely to allow it to become a significant part of their work process. Training becomes one of the most significant parts of developing a successful data management system. A successful training program involves working directly with the user base to identify and eliminate concerns early on. Though a written manual is necessary for the future development of a database system, hands-on training is key to maximising user acceptance (Shneidermam 523). Such a training process should involve individual hands-on sessions, group question-answer sessions and an available help staff to address concerns on a daily basis. By empowering users with the knowledge

of exactly how the system works, and the potential benefit it has on an individual basis, it is much more likely that the completed system will be effective.

Another aspect of user acceptance and satisfaction is the user-interface itself. Ben Shneidermam's book on user interface design identifies the key criteria to consider when designing an application or web interface. If something is difficult, monotonous or frustrating to use then the user will simply give up on it regardless of how effective it is from a technical standpoint (5). Such problems can arise if the interface is designed in a way that requires users to search for an unnecessarily long amount of time to try and find what they need (12). The interface design should take into consideration the usage model when determining which functions will be accessed the most and subsequently make those the easiest to find and use. Other design considerations to keep in mind are sounds and colours. Each can create a more stimulating user experience, although when using a program on a daily basis, repetitious sound can quickly become very annoying and bright colours can become a strain on the eyes (62). Such problems can seem insignificant if looked at in an isolated fashion. However, when considering that a user's satisfaction with the system is directly related to the effectiveness of that system, such concerns become much more important (43).

Summary of Background Section

Our background analysis provided a solid foundation for both the technical and sociological issues we faced at ACC. We were able to develop a methodology that allowed us to apply this knowledge while in London and to create a workable database solution for the organisation. The following section is an in-depth look into our methodology.

Methodology

In order to create a unified research design, our team had to evaluate our sponsor's initial request: to create and implement an organisational database for Age Concern Camden, a non-profit organisation serving the needs of the elderly in the London borough of Camden. In structuring a qualitative study, we asked questions such as: How will the quality of the database add value to ACC? How must the data be presented to the end-users in order for them to accept and embrace our solution? Can a more cost effective solution be robust enough to close the communication gaps within the organisation?

Our team also took into consideration the following quantitative questions in terms of the technical design and management of the database: How much data will the system be required to manage? What specific information needs to be stored for each facet of the organisation? What processes are available to aggregate this data? In answering these questions, our team utilised case-study and interview based data collection methods.

Our data collection and analysis process was a two-pronged approach. We analysed the existing data and chose what we deemed to be the best means to structure the database in a technical sense. We also focused on how to present the database to the employees of ACC under the most acceptable terms.

Data Collection Procedures

Technical Data

Our team's primary task in terms of the technical design was to identify and organise the various fields for the final database. As previously mentioned, this required careful minimisation and identification of key relationships between data fields. Defining these relationships involved two factors: 1) minimising redundancy between data fields and 2) providing easy physical access to the most commonly used fields.

By analysing the obsolete paper records ACC used to store client information, our team determined what type of data structure to implement for the database. Interviews with members of staff, which are described in detail in our results chapter, helped to determine which information stored within these records was the most significant. The various existing databases, administered by members of staff, were analysed and reworked to cohere with the new structure. Diagrams were developed to create a visual layout of our data model, which was updated throughout the course of development.

From the old paper records our team estimated the amount of data the system would be required to store. Our research into previous memos provided information about ACC's existing data management system. Insight into average daily data flow helped us to determine what parts of the system are critical to the largest number of users.

Case studies helped our team to determine what systems similar organisations have implemented under similar conditions. From a technical standpoint, this provided us with an array of templates for our own database structure. These case studies were the driving force of our initiative to understand what solutions companies similar to ACC, such as Age Center Worcester, American Red Cross - Worcester Branch, Age Concern Wandsworth and Hillington, currently use for data management. Interviews with the

employees of these organisations provided our team with potential options for ACC and exposed potential discrepancies with various solutions for distributed database systems. Our team also collected examples of interfaces, via software screenshots, and presented them to our sponsor in London. These screenshots enabled our sponsor to provide input into the design of this database and to select the most technically and financially feasible solution.

We presented our sponsor with two main options for Database Management Systems once we had finalised our research and case studies. After making a careful analysis of cost versus benefits to the organisation, a solution was selected which the administration, as well as our team, felt best fit the needs of ACC. Once our data model was complete, we were ready to start implementing the solution within the DBMS. This process is outlined in our results section.

User Data

Identifying the average user of the database system was an important part of our preparatory design process. Understanding the personality type, technological inclination and attitude towards computers was critical for the system's implementation. Interviews were an important tool in directly interacting with the potential end-user. By conducting interviews at ACC, our team got a broad company profile, as well as an insight into the various entities of the organisation. This organisational insight helped us to identify where some of the biggest communication gaps existed, as well as where to focus the training. Case studies performed at similar charity organisations also helped us in characterising the average user.

Once the new ACC system was implemented, we utilised hands-on training methods in order to fine-tune various customisable aspects of the database interface based on specific user preferences. The employees helped to provide our team with the final touches to a system that was catered to ACC needs. The goal of this hands-on training was not only to verify our choices for interface design, but also to make the user more comfortable with the system.

Summary of Methodology Section

The primary research methods utilised throughout the course of this project were archival research for determining pertinent data, and interviews to identify user concerns both in inter-organisational communication and in a technological implementation. Case studies provided the necessary background for identifying the most suitable direction to follow when determining a solution to fit both the resulting data model and the needs of the organisation. Through these methods we were able to tackle our two most pressing questions: How to physically design the database and how to cater to the specific needs of ACC in terms of data organisation and user satisfaction.

Results

Database Design

Our team developed a conceptual data model tailored to ACC's requirements in accordance with the best practice methods of relational data modeling. A data model is a conceptual representation of the data structures that are required by a database. These models may be represented using a form of mathematical notation known as relational algebra or the more common graphical format, an entity relationship (ER) diagram.

Peter Chen's groundbreaking ER model, which was developed in 1976 for the International Business Machines Corporation (IBM), views data as consisting of sets of relationships, entities, and attributes. (Chen 9) Chen's model stands as the most widely accepted and best practice method of data modeling. An entity or person within the database may have many attributes, a forename, surname, gender, date of birth, and so forth. This information does not change whether the individual is categorised as a donor, volunteer, or staff member within the ACC database. The information pertaining to the number of donations a said individual makes is stored independently, and is referenced to the original person record. Using normalisation, a consolidation technique in relational data modeling, we sought to eliminate any redundant data within the data model. This redundant data was generated when a client participated in multiple programs at ACC, or when a client, staff member or donor was also a member of the organisation. In our first data model, we proposed separate lists of clients, donors, and volunteers. See Figure 3.

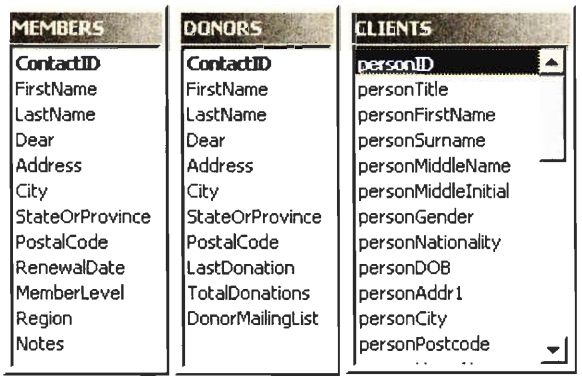

Figure 3: Original ACC Data Model

Separate lists of people would have led to overlaps if a person serves more than one of these roles.

As a result of our interviews, we found a significant amount of overlap within ACC's existing data. By consolidating and unifying similar data, our revised data model stored membership, donor, and client information independent of the contact's record. The second model establishes a person as a single entity within the database. We then used this single instance database design across the client, donor, and volunteer records, relating the additional information back to the original person record. See Figure 4.

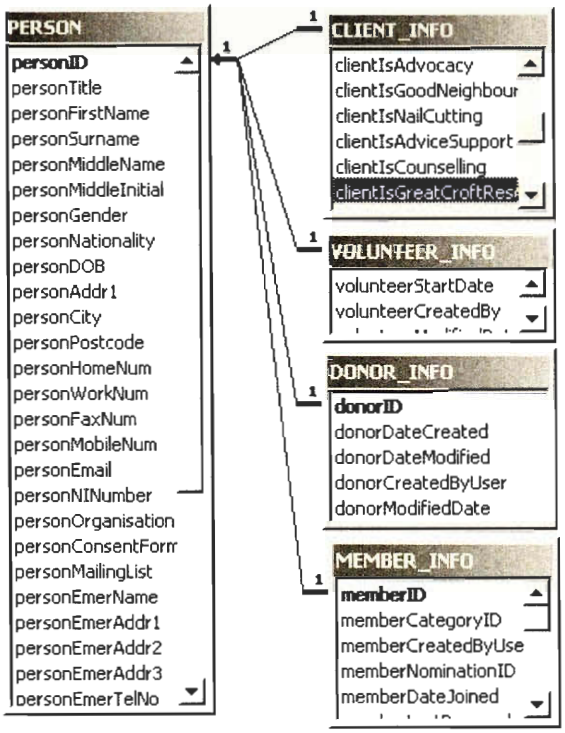

Figure 4: Example of Finalised Data Model

A single person is linked to client, volunteer, donor, and member information.

The completed ER model for Age Concern Camden contains 28 tables of database information, with 26 relationships between the various tables. See Figure 5. We found that while normalising data between tables may slow the performance of the database, the single-instance capability to store contact information accomplishes ACC's goal to have a central organisational database and a one-stop location in the data model to update a person's contact credentials. Once the relational backbone for the database was refined we faced the task of developing an interface for displaying this data to users in order to input new records, or generate reports on existing records.

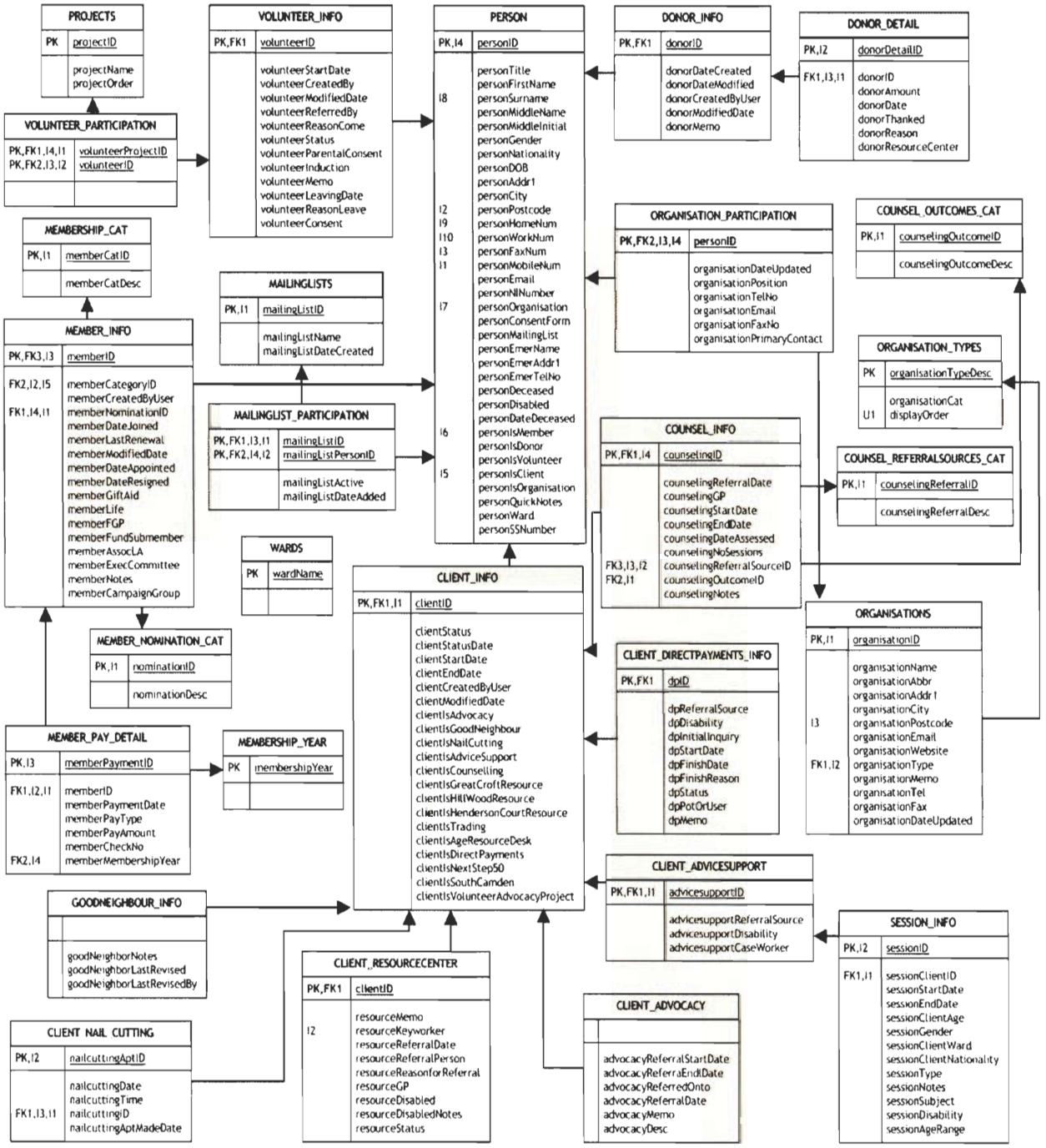

Figure 5: Final Entity Model

User Interface

As mentioned in our background and methodology sections, an important aspect of the technical design process is creating the user interface (UI). The layout of information, for both input and output, is often taken for granted by the user as well as the developer of a database system. It is important to remember that even a well designed relational scheme is useless without a means of displaying the information. The database should be intuitive to navigate, even by an inexperienced computer user. Our UI was designed based on industry standards for a personnel management database. Staff interviews and case studies exposed specific needs and concerns for the layout of information. By keeping our design as flexible as possible, we were also able to make alterations to the interface after getting feedback from users during the training process. We feel that by paying specific attention to the UI design throughout the entire development process, we have been able to provide a more usable and accepted solution for ACC.

Microsoft Corporation has developed an encompassing set of industry standards for Windows application design, which are compiled in their reference "The Windows User Experience". Because the technology in place at ACC is entirely Windows based, we felt it was appropriate to follow these guidelines when designing our system. Many of the considerations outlined by Microsoft are already integrated into Access, but specific attention needed to be paid to form layout and user support. (Microsoft)

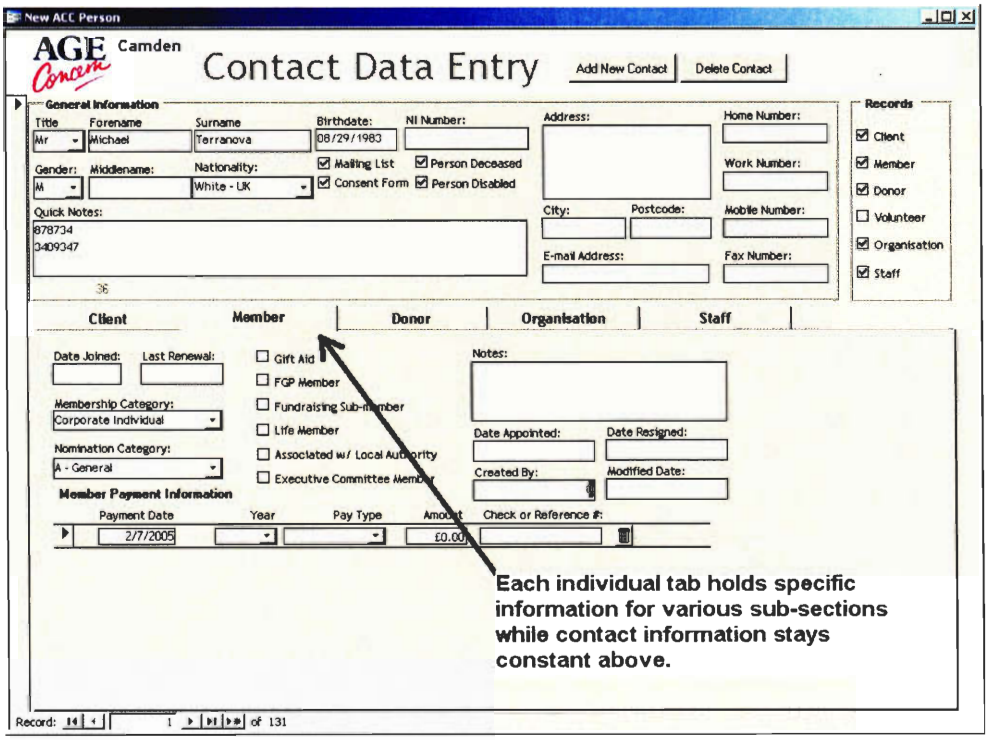

Figure 6: An Example Screenshot Outlining the Tabbed Interface

Within our solution, we have chosen a tab based approach for navigating project data for each entry in the database. See Figure 6. This approach allows users to quickly switch between sections of the database, with each section tailored for an individual project or facet of the organisation. We also made sure that information was arranged in a manner that accommodated easy data entry. By using a top-down, left to right layout we enabled the user to enter information into the form similar to how they would write it manually. By having a clean, structured look to each data page we made the information easy to read off of the screen. The ability to quickly reference multiple sets of data for a single person and a simplified data entry process helped address many of the redundancy and resource related issues we outlined in our background.

The other primary focus of our UI design was to provide support to users directly within the application. This support comes in the form of "tooltips" for individual controls and input boxes within the form. Tooltips provide additional information, in the form of a small message, when the user hovers over a part of a form. Tooltips can provide guidance as to what data should be entered in a certain field, as well as advise as to what will happen when a certain button is clicked. The presence of tooltips, when observed during testing, provided an increased level of comfort for users of the system who are not as familiar with using databases.

Another method used to support the user within the application is providing helpful and informative messages. If the users attempt to do something destructive within the application, such as delete a record or permanently remove a section of a record, they are provided with a message which warns them of what they are doing. We worked specifically within our team, and with members of the organisation, to ensure that these messages conveyed the correct information, in a helpful and informative language.

We were able to provide ACC with an interface to their database that has received an excellent reception within the staff. Geraldine McCarthy, who heads the volunteer record keeping within the organisation, has described the interface as very "friendly" in appearance. This level of user acceptance was accomplished by conforming to proven industry design standards and paying careful attention to staff input during both design and training. It now became our responsibility to analyse specifically how this system could and will benefit the organisation as a whole.

Sociological Analysis

When given the project of creating and implementing an organisational database for Age Concern Camden it was apparent that we would create a highly technical solution. It was important for us to understand that in addition to the technical side of this project there would also be a strong sociological side. The database that we implemented would change the entire business process of ACC. For this reason it was necessary for us to test and retest the database to be sure that it would be usable by all ACC employees.

In implementing the Microsoft Access database we have vastly improved the inter-organisation communication within ACC. This database stores all of the data in one central location. The employees are able to search for the records kept on clients simply by typing their name or address into the search field provided. Once a record is pulled up ACC employees will be able to see which services that client is involved in. Organising the data in this way reduces the redundancy in record keeping on any one client. Client tabs also show which volunteers they are working with, allowing employees to communicate amongst themselves on a more personal level to discuss the needs of the clients. Our team, as well as the administrators at ACC, expects that this feature will result in increased care for the elderly.

A problem that ACC was hoping to correct with the implementation of this database was overlap between the various services. One example of this overlap, which we have touched upon earlier in our report, was the inability to permanently take a deceased client off the various ACC mailing lists. It can be upsetting or traumatic for a surviving family member to receive mail addressed to a deceased person. To correct this problem we made it possible to store all the records of deceased clients in an archive, separate from the main data. Once a client is marked as deceased, they no longer are

added to mailing label reports. This feature of the new database will ensure that the families will not receive mail after asking ACC to remove the client from the mailing list, but the important client data will still exist within the system.

Another benefit of using this Microsoft Access solution is that it will allow ACC to train their new employees more efficiently. Most people who use computers are familiar with the Microsoft Office line of products, which is one of the reasons we chose to use Microsoft Access. ACC has a quick employee turnover and its staff is continuously training new employees. Before our database system was introduced the new employees would inherit the system used by the previous employees. Some were left to make up their own system of record keeping. The fact that every position had its own method of data storage was confusing and made it difficult to integrate into the ACC work environment. Our new system accommodates a quick training process, either by employees who already use the system or the user manual we provided to ACC.

The last and most significant sociological benefit of our database is the system of reporting built directly into the software. Our solution allows employees to generate reports based on a client's age or ethnic origin, on services provided to the client and on many other criteria. By enabling staff members to quickly generate accurate reports, we free up resources within the organisation and allow for more of a focus on care for elderly people, not paperwork. These reports can also be used as statistics for submission to government funding agencies on a quarterly basis and will potentially increase ACC's ability to receive funding. As these reports were a main concern voiced by employees during our interviews, we not only provided requested functionality, but also included in our Administrative Training Manual detailed instructions on how to generate new reports.

Conclusions

Designing and implementing a centralised database system is a complex process involving both technical expertise and sociological considerations. Our team believes that the solution we have provided for Age Concern Camden fits their needs technically, financially and sociologically. Our process of working closely with the staff of ACC and traveling to similar organisations gave us excellent insight into the options available, and potential drawbacks of a computer based client management system. Our background research into the technical aspects of the problem provided us with the knowledge necessary to produce a robust customised data management system.

We feel our solution provides a solid foundation for ACC to begin to eliminate their inter-organisational communication issues. We have provided means for them not only to use the database to simplify their business process now, but also to build upon it in the future. It is our hope that our work here will directly translate into an increased ability for ACC to achieve their goals as an organisation.

Final Recommendations

Our team has completed a project that provides Age Concern Camden (ACC) with a database solution that solves their organisational needs. However, as the organisation grows the database must be capable of expanding with the organisation. This chapter discusses suggestions that our team made to ACC regarding maintenance and future expansion of the database system.

System Maintenance

- **Data Accuracy**

  In order for the reports generated from the database to be as accurate as possible the input in all fields must be taken in a uniform fashion. Emphasis must be placed on accuracy during data recording. For example, employees must use one particular form of address formatting so that the database can distinguish between clients who provide an address, clients who refuse to provide an address and clients without addresses. Similar considerations must be made for ward and ethnicity input. This is extremely important especially when ACC is producing reports for Camden Council.

- **Data Backup**

  A backup of the database should be made on a daily basis. This will prevent the loss of time and maintain report accuracy if anything is to corrupt the system. Our team members suggest that daily backups be overwritten on a weekly basis, and that weekly backups are stored for archiving purposes. The

currently implemented tape backup system is satisfactory if adjusted to store the database file.

- **Data Integrity**

  The data imported into the system by our team from existing ACC databases should be checked over before anyone continues to enter new information into the system. Our team was not able to verify the records we brought into the system, and, though they are guaranteed to be consistent with the information provided in the original databases, it is possible that this information is not entirely accurate.

- **Basic System Updates**

  It is important to understand that an effective database solution evolves as the business process of an organisation changes. We have provided an administrative manual to accommodate minor changes to the data structure, appearance and basic reporting within our solution. More major updates, such as adding tabs or generating complex reports, should be provided by a developer or team familiar with the Access software.

Future Expansion

- **Server Expansion**

  The hardware scheme currently in place at ACC was taken into account when choosing Microsoft Access as a DBMS. The resources available within the server are more than adequate for hosting a reasonable sized database (1000+ records). As the size of the database increases, it may be necessary to upgrade the server hardware to accommodate the increased bandwidth and resources

necessary to run multiple instances of the database. Our team recommends that these upgrades are done through CS Malbrook, or a similar IT outsourcing company.

- **Monitor Upgrades**

  Our system was designed for a resolution of 1024x768 or greater. A majority of the monitors at ACC are capable of such resolutions, but some terminals are still using 15 inch monitors. We recommend that these monitors are upgraded to 17 inches as soon as possible to provide the greatest support for the database system.

- **Additional Functionality**

  We did not have the time to develop aspects of the database pertaining to certain programs within ACC. The following parts of the solution require further development:

  - Resource Centre Tabs
  - Staff Databasing (including HR data)
  - Trading
  - Advanced Reporting Functions (including charts/graphs)

  We recommend that ACC either: find members of the community familiar with Microsoft Access and willing to volunteer their time to upgrade the existing system, or hire an individual/project team to work on the existing system.

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Appendices

Appendix A: Background on Age Concern Camden

Age Concern Camden, founded in 1985, is a non-profit organisation located in London, England. The primary goal of ACC is to "promote the well-being of all older people in Camden and to make later life an enjoyable and fulfilling experience." (ACC website) In fulfilling their goal ACC provides assistance to over 3,500 elderly people in its main office, located in the Margaret Hepburn Centre, and an additional 500 people through their three resource centres every year. The services and opportunities provided to the elderly through ACC include, but are not limited to the following:

- Advocacy- assists the elderly in expressing, defending and exercising their legal rights.
- Counselling- provides free and confidential counselling service for any reason to Camden residents.
- Good neighbour scheme- a local community organisation which provides support and assistance to the elderly.
- Computer training- introduces people to the basics about computers, internet and e-mailing.
- Volunteer opportunities – allows the elderly to participate in various activities that give back to the community
- An intergenerational project- allows elderly people to interact with young people in a situation where their experience is valued and appreciated. This program, 'Trans Age Action', is based off of the United States 'Foster a Grandparent' program.
- Trading- offers a range of benefits specifically geared towards the elderly. These benefits include insurance, energy services, funeral planning and financial services.
- Charity shop- a store from which the proceeds benefit the services provided by ACC as well as local needs.
- Nail cutting service- provides nail-cutting for people unable to do it themselves. This program was developed in partnership with the Camden Primary Care Trust.
- Direct Payments Support- a support service to help the elderly through all the stages of obtaining and looking after a direct payment.
- Information and advice- provides resources which impart information and advice to people over sixty years of age and their care givers. This knowledge

and support is to ensure that people make the right decisions and are able to live their lives the way they would like to.

- Three Resource Centres in the Camden area- a place that acts as day centres where elderly can meet and interact with other elderly people who have similar interests. A variety of activities are planned to keep them involved and entertained.

The structure of the organisation can be seen below.

- Chief Officer- Pauline Cheeseman
- Fundraising Officer- Vacant
- Finance & Trading Manager- Ade Arogundade
- Finance Assistant- Vinoba Tharmalingam
- Insurance Officer- Vacant
- Marketing Officer- Mohammed Sharif
- Trading Officer- Bhavan Shiva Ram
- Administrative Service Manager- Philip Ruff
- Administrative Service Manager- Irene Robson
- Support Services Manager- Monica Riveros
- Administrative Officer- Juliet Gardner
- Advocacy Officer- David Brooker
- Volunteer Advocacy Co-ordinator- Matthew Bonar
- Counselling Service Co-ordinator- David Richards
- Direct Payments Co-ordinator- Walter Middleton
- Direct Payments Support Worker- Mohammed Subhan
- Volunteer Coordinator- Geraldine Mc Carthy
- Advice & Support Team Leader- Vacant
- Advice & Support Officer- Jan Connell
- Advice & Support Officer- Brian Ellis
- Advice & Support Officer- Ferron Morgan
- Advice & Support Officer- Saleh Uddin
- Advice & Support Officer- Vacant (Temporarily occupied by- Gareth Thomas)
- Project Development Manager- Sue Sommers
- Age Resource Desk- Anna Ward
- Neighbourhood Development Project- Laura Coutts
- Great Croft Centre- Corinne Moyes
- Henderson Court Centre- Eleanor Udall
- Hill-Wood Centre- Josie Hollis
- NW3 Neighbours- Justin Kyriakides
- Charity Shop- Pat Meaney

Appendix B: What is an IQP at WPI and how does this project qualify as an IQP?

According to Worcester Polytechnic Institute (WPI), "an Interactive Qualifying Project (IQP) challenges students to relate social needs or concerns to specific issues raised by technological developments" (WPI Projects Program). Our team was charged with the design and implementation of a central database system for Age Concern Camden. The design of the database incorporated new technology into an already existing business and took into account the societal impact of the action. In our research, we sought to investigate the concepts of database management systems and other miscellaneous technical issues surrounding such an implementation. Since our research is vested in these two capacities our project qualifies as an IQP; we assessed the needs of our sponsor's organisation, from a socio-technical standpoint and researched an appropriate technical solution to address those needs.

The bulk of our research consisted of case-studies and interviews. Both data collection methods provided for an improved awareness of the organisation's structure and likelihood to adopt the implemented database system.

Appendix C: Sponsor Telephone Conference Questions

The list of questions used by our team in a 08/12/04 telephone conference with our sponsor is provided below. These questions were employed in order to provide us with a more specific overview of our project prior to our arrival in London.

I. Introduction

II. Structure Questions
   a. We are aware that Age Concern Camden (ACC) functions as a non profit organisation to benefit the elderly people of London but, we were wondering if you could explain to us a little more about the hierarchy of the organisation and how exactly it is run. More specifically where do you fit into this picture and who do you report to?
   b. ACC appears to be a vast and constantly growing organisation what is the size and breadth of the organisation?
   c. Is there anyone else that we will be working for, other than you? If so how often will we be in contact with them?

III. Project Specific Questions
   a. Our understanding of the project that we will be working on is the formation of a centralized organisational database that ACC will use to keep track of its records, can you give us a more detailed description of the project including were it originated?
   b. What are the specific goals that ACC hopes to accomplish from this project?
   c. As you probably well know this project may very well require some form of budget to implement. Will we have any budget for this project?
   d. In terms of the deliverable of this project we are unsure if you expect us to come up with a template of what we would suggest for this database or if we are expected to create and implement this database. Could you please enlighten us on this?
   e. If we are indeed expected to implement this database system what are the organisation's requirements for training of staff members?

IV. Technical Questions
   a. What are the specifications of the legacy systems that ACC is currently running?
   b. If an appropriate system cannot be installed on the current system is there any money budgeted to upgrade the system?
   c. Does ACC have a current IT staff and if so will we be in contact with them during our time in London?
   d. Is the IT staff willing to be properly trained to handle and maintain the database system to be implemented?
   e. Overall what is the general technical "savyness" of staff members that will be using the database?

C.1: Sponsor Interview Summary

Pauline Cheeseman
Age Concern Camden
Sponsor Interview
Conducted on 08/12/04

On 8 December, 2004 our team conducted a telephone conference with Mrs. Pauline Cheeseman, Chief Officer of Age Concern Camden (ACC). As Chief Officer, Mrs. Cheeseman oversees the work of four administrators consisting of two operational managers, one administration manager and one finance manager. Prior to our team's arrival in London the organisation's structure changed and there are currently two administrators and one finance manager. Each administrator is responsible for their own team of approximately five or six staff members. Mrs. Cheeseman reports to an executive committee which acts as the agency's governing body.

ACC consists of approximately twenty staff members and operates out of four locations, their central location in the Margaret Hepburn Centre as well as three additional resource centres. The organisation's main location is located in King's Cross, which is a fairly dense area in Camden. The three resource centres are located in the north, south and middle of Camden. In order to raise operating funds ACC also runs a charity shop, located in Holborn. Mrs. Cheeseman informed our team of some services that ACC provides to benefit and enhance the life of the elderly. ACC offers services such as counselling and support, in-home care for its less independent clients, computer training and a variety of other services. All of ACC services are aimed to enhance the quality of life for the elderly, to help the more active elderly get involved in the community and to develop life long learning.

During the course of our telephone conference, our team was also provided with a detailed overview of what our project would entail. Mrs. Cheeseman explained that ACC's current system of maintaining employee, client and donor information led to unorganised records and did not take advantage of the potential benefits their technological infrastructure offered. ACC did not posses a centralised collection of their data in their organisation. Information was stored in Access databases, Excel spreadsheets, hard copy records, or a combination of the three which led to unnecessary duplication. ACC hoped that our team would be able to provide a suitable solution that would enable them to organise their records in a way that would benefit the business process of ACC, specifically in contacting donors and managing clientele. Due to the fact that ACC had a large amount of organisation issues that could be solved by our database, they preferred that we prioritised certain aspects of their business process so that they were able to benefit the most from the seven weeks that we were with them.

Our team also inquired about ACC's current IT system and staff. All ACC locations operate off of a central terminal server, which was installed last year. Most of the older computers in the organisation act as terminals and run software off of the server. The organisation has a maintenance contract with an outside agency, C.S. Malbrook, which comes in about every three months to troubleshoot any problems and insure that the server is working properly. ACC relies on C.S. Malbrook to function as their IT staff; however, they assigned Phil Ruff to work closely with our team to be able to maintain the database system as well as instruct others on how to use it upon our team's departure. This infrastructure would be able to support any of the potential solutions researched thus far by our team.

Lastly, our team asked Mrs. Cheeseman about staff's attitudes towards the proposed system. Through her insight our team was able to deduce that the staff members were frustrated with the lack of organisation and inconsistencies caused by the current record keeping system. Staff members seemed to be excited about being exposed to a new solution which had the potential to simplify and streamline ACC business processes.

Appendix D: Case Study Questions

Case Study Questions: The series of questions that our team asked when we conducted case study interviews are provided below. These questions were asked in order to gain a better understanding of the technology that other companies and organisations are currently using.

What kind of system do you currently use to manage your record? How long ago was it implemented?

Do you feel that any features should be added or subtracted from your current system?

Does your system allow you to branch out and share information between different locations?

Have you experienced any major problems with your system?

Did staff members, especially older staff members, readily accept your system?

D.1: Cheryl A. Miner – Age Center Worcester Area, Inc.

On Monday, November 22, 2004 members of our team met with Cheryl Miner to conduct an interview pertaining to characteristics and usage of their current database system. Cheryl Miner is the nutrition database administrator for the Worcester Branch of Meals on Wheels. The Meals on Wheels program operates under the guidance of Age Center Worcester. The program's goal is to provide and deliver food to those unable to get and prepare it on their own. To be eligible for participation in the Meals on Wheels program one must be 60 years of age or older, homebound and unable to prepare their own meals. In addition to delivering food directly to participants' residences, Meals on Wheels also delivers food to twenty-two congregate sites in the greater Worcester area. Congregate sites allow the elderly to gather and socialize with friends while dining. Like Age Concern Camden, it is necessary for Meals on Wheels to keep an updated record of their client history. In order to accomplish this, Meals on Wheels has implemented a database solution that provides them the capacity to store their client information in one easily accessible location.

Cheryl provided our team members with extremely helpful information, including copies of template pages detailing how the system is set up. The Meals on Wheels program has been using various versions of this database system since 1997. Age Center Worcester's current system also allows them to keep track of client's medical history, living arrangements, contact information and food orders, all the way back to 1997. Age Center of Worcester has found that when working with elderly clientele it is best to retain as much information as possible. Doing so assures they are always able to locate important clientele information; such as, how the client's meals or medical care have

changed over the years. This means of record keeping is useful in case there is ever a need for quick retrieval of client records in the event of an emergency. When the client is no longer a part of the organisation, their records are simply deleted from the system. Age Center Worcester's database system runs automatic daily backups and stores information onto tape drives to make sure the information is never lost.

The software solution currently in place at Age Center Worcester is a customizable off-the-shelf solution, Symantec ACT. Users within Age Center Worcester seem to be very happy with the flexibility of the program as well as the intuitiveness of the interface and documentation. Our team will provide examples of this program, via screenshots received during the interview, to our sponsor upon arrival in London.

When members of our group asked Cheryl if there was anything she felt was missing from their current database system, Cheryl replied that she would like to be able to combine the information from both the Meals on Wheels home deliveries and congregate meal sites. Cheryl stated that she feels it would be beneficial to have some sort of database backup system outside of the building. Therefore, if there were to be an incident in the building where all files were lost, the organisation would have a place to go and retrieve the files.

Talking with Cheryl was extremely advantageous and provided our team with ideas of what we should and should not do with the database system that we will be implementing during our time at ACC. Cheryl outlined how Age Center Worcester's database system has greatly increased their ability to coordinate their services and provided insight into potential solutions for ACC. Information such as clientele's addresses, emergency contacts, medical records and history, and need for care is important information when keeping records of the elderly.

D.2: Peter Wells – American Red Cross Western Mass. Regional Office

Peter Ross is the coordinator of IT efforts for the American Red Cross Western Mass. Regional Office located in Worcester, Massachusetts. The Red Cross is a well-known nationwide organisation with numerous local branches and donor centres. Mr. Ross' responsibilities include the management and overseeing of data storage, specifically client, donor and personnel records for a large staff.

Peter provided team members with information about the system presently being used at his location and throughout the entire Red Cross organisation. The system that is in use is a commercially available database package, specifically geared towards non-profit organisations, called Raizers Edge. Peter explained that the Red Cross has recently implemented an SQL based solution that interfaces with the previously established package and provides an internet based means of accessing the data. In Peter's opinion the combination of these two software pieces provide the proper level of data accessibility and manipulation.

The only concern voiced to team members by Peter about the Red Cross' current system is cost-effectiveness. The Red Cross is such a vast organisation, with the financial resources to purchase software packages which may not be available to smaller organisations such as ACC.

Peter pointed out that one of the key aspects in user-acceptance of a software package similar to Raizers Edge is a proper training program. He explained that staff members underwent a rigorous training process in order to ensure that they understood how to use the software package and avoided unneeded technical support.

Peter provided us with paperwork outlining the Raizers Edge software package as well as contact information for the company that develops the software.

Appendix E: Requirements Specification

AGE CONCERN CAMDEN

The Margaret Hepburn Centre
11 St Chad's Street, London
WC1H 8BG
Telephone: 020 7837 3777

Requirements Specification for Client Database

I. Current Position

Age Concern Camden (ACC) operates ten plus services. Records, documentation and statistics of these services are needed to send to Camden Council.

ACC has a terminal server located at its head office in the Margaret Hepburn Centre. All computers located in the building or at the three Resource Centres are connected to the terminal server.

II. General Overview

ACC would like to be able to store and produce records in electronic format. This will enable the organisation to streamline their work, perform more efficiently and eliminate duplications.

General purpose of this database is to be able to track general client information, keep clients up to date on events and produce statistics for members, volunteers, trustees, general public and funders of the work ACC does over any given time period.

ACC has approximately 35 staff members that will be accessing the database on a day to day basis. Each user should be able to access the database facilities depending on access level and enter data into the database. The system should be able to support at least this leave of usage if not more.

Administration will consist of one or two people who should be able to add, delete and amend all aspects of the database.

The completed database system must have an easy to use user interface (UI).

The database must also be capable of being backed up daily with the systems normal backup procedure.

III. Tabs and Services

- Client
    - Advocacy
    - Advice and Support
    - Counselling
    - Good Neighbour
    - Nail-cutting
    - Direct Payments
    - Trading
    - Next Step 50
    - South Camden
    - Resource Centres
- Member
- Donor
- Volunteer
- Organisation

IV. Records

The number of records stored within the database will range from zero (the initial implementation) to over three thousand a year.

General for all ACC Reports

Reports generated over any time period
Total number of clients for all ACC services
Number of clients by service
Ability to included archived people active during the time of report generation into the report

Member

Total number of members
Number of members by location
Total amount pledged by members

Donor

Total number of donors
Number of corporate donors
Number of individual donors
Total amount pledged
Amount pledged by corporate donors
Amount pledged by individual donors
Donors by location

Volunteer

Total number of volunteers
Volunteers by services

Volunteers by location

Advocacy

Total number of clients requesting service
Total number of clients referred to other organisations
Total number of clients by worker
Number of clients by location
Number of clients by age group
Number of clients by ethnicity
Numbers of ethnicity by location
Numbers of ethnicity by age group
Number of referrals by source

Advice and Support

Record of "One offs" by subject matter
Electronic quarterly production of CR2 Quarterly Return
Total amount of fundraising
Total amount of fundraising by programs
Referral by organisation
Referral by age group
Referral by reason
Referral by ethnicity

Counselling

Total number requesting service
Total number of clients by worker
Number of clients by age group
Number of clients by ethnicity
Numbers of ethnicity by age group

Good Neighbour

Total number requesting service
Total number of clients by worker
Number of clients by age group
Number of clients by ethnicity
Numbers of ethnicity by age group

Nail-Cutting

Total number requesting service
Total number of clients by worker
Number of clients by age group
Number of clients by ethnicity
Numbers of ethnicity by age group

V. Backup

Daily backup of full database
Ability to print archived client details up to five years old

VI. Search Facilities

Searching allowed based on client surname.
The ability to sort by record type (what parts of the organisation the person is involved in).

VII. Displaying Client Information

Information displayed when a client record is selected by a user: one contact at a time with tabs displaying information about that user.

VIII. Linking Client's Records

Client records (when applicable) can be linked to a volunteer.
Within Advocacy and Advice and Support, clients are linked to sessions they have been involved in.
Volunteers can be linked to specific programs.
Members can be linked to committees.

IX. System Support and Administration

List of who is given administration facilities and what they are allowed to do. Also stating the levels of protection and security required.

X. System Navigation

To access the database a user will click on the desktop icon which will then bring them to the main menu screen. The main menu will give them the option of accessing client details, ACC services and report generation.

Client details and ACC services

Form will provide the facility to enter new client data and link them to different ACC services.

Reports

Ability for users to produce all types of reports.

XII. Forms and Fields Required

Enter New Client Details
Main scene will have general client information with tabs to fill in more specific details.

XIII. Quick Entry Input

Quick entry input is provided for Advice and Support and Advocacy sessions, specifically in the case of "One-off" session records

Age Concern Camden
Centralised Database System
Administrative Manual

Table of Contents

Introduction

This Administrative Manual is designed to provide a basic overview of the administrative capabilities of the database system developed for Age Concern Camden. The manual is written in tutorial fashion, with specific focus on adding, managing and extending aspects of the system. It is assumed that any person using this manual has a basic knowledge of Microsoft Access and is familiar with the Age Concern Camden database. If you are looking for information on how to use the database, please refer to the User Training Manual.

Overview

Microsoft Access is a commercially available Database Management System (DBMS) solution. The software provides a relatively simple means for designing, updating and enhancing the user interface as well as storing and reporting information. To begin to understand the role of an administrator within an Access database system, it is important to comprehend the logistics of how Access can be used to work with various types of data. This section defines key-terminology in an effort to familiarise the reader with vocabulary that will be used throughout the remainder of the Administrative Manual.

Table –
A table within Microsoft Access is the most fundamental breakdown of data. Most users never see or manipulate the tables contained within the database. When initially setting up a table, you must define the fields that will be stored within that table. It is also possible to define relations between different tables. Once designed, records inputted into the database are stored in the table. It is possible to add and remove fields from a table, even if data has already been stored within the field being removed. Although this is not recommended it will be touched upon later in the "Table Management and Design" section of the manual.

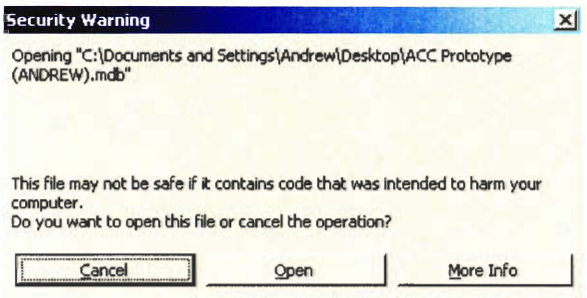
Queries –
Queries are used to breakdown the information within a table. The best way to understand queries is through an example. Say that you had a table with client information and you wanted to create mailing labels. You would want to break the table down to a format that stored relevant information for mailings. To accomplish this you would use a Query that selected only the desired information from the table. Or, say you had the same list of client records and wanted to display only the ones who's last names began with the letter 'W'. A query for this scenario would select all the records out of a table that met the condition.

Forms –
Forms display data in an organised and simplified fashion to the user of the database. Users can use forms to navigate throughout various parts of the database, input records into the database or display data to the user. Form design is one of the most important administrative responsibilities and will be addressed in great detail later in this manual.

Reports –
Generated in a printable format, reports are used to analyse records. Reports rely on queries to breakdown the information in the table. Using complex sorting mechanisms built into Microsoft Access, reports group records by various criteria. Generating reports within Microsoft Access can be fairly complicated. A strong understanding of how data is stored within tables and broken down via queries is very important. Report design is a similar process to form design.

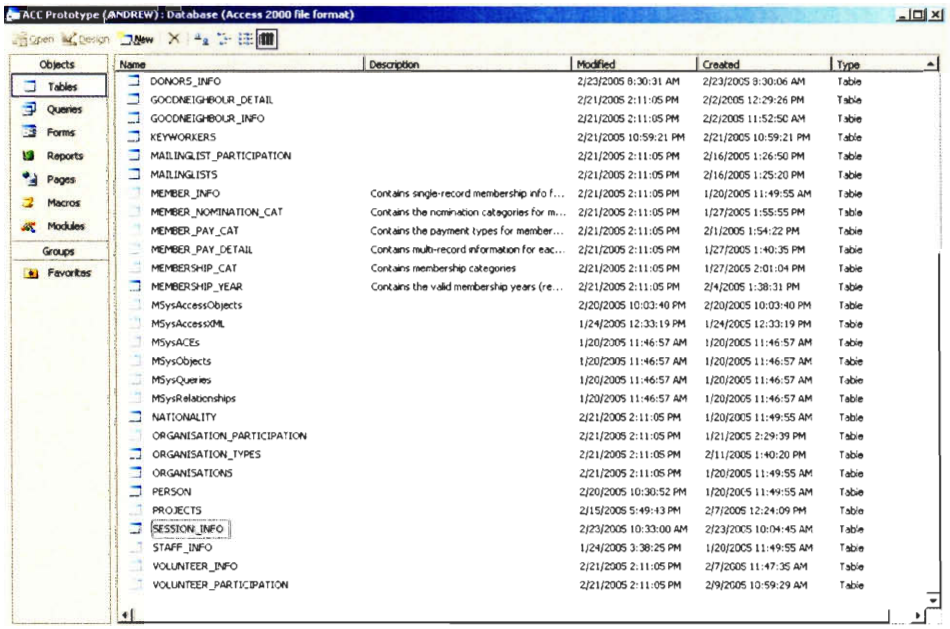
Accessing Administrative Features

When the Age Concern Database loads, a security warning comes up verifying the user wishes to open the database:



At this time, the user has the option to "Cancel" loading the database, or continue to "Open" the database. If the user selects the "Open" option, the main database screen loads up and the user can begin using the provided front-end for the database.

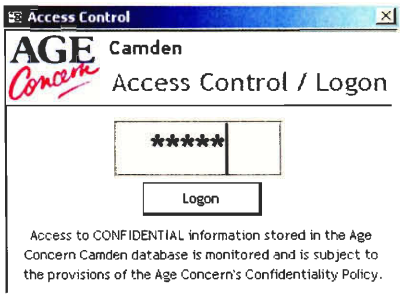
To enter the database in administrative mode, the administrator simply clicks on the "Open" option while holding down the "Shift" key on the keyboard. If this is done correctly, the following Database Console will be displayed:



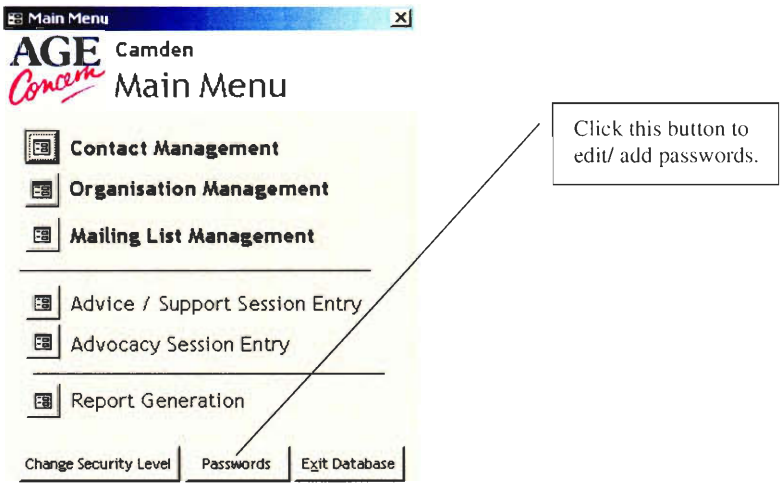
Note: All the tutorials within this Administrative Manual assume you have accessed the database in Administrator mode.

Password Management

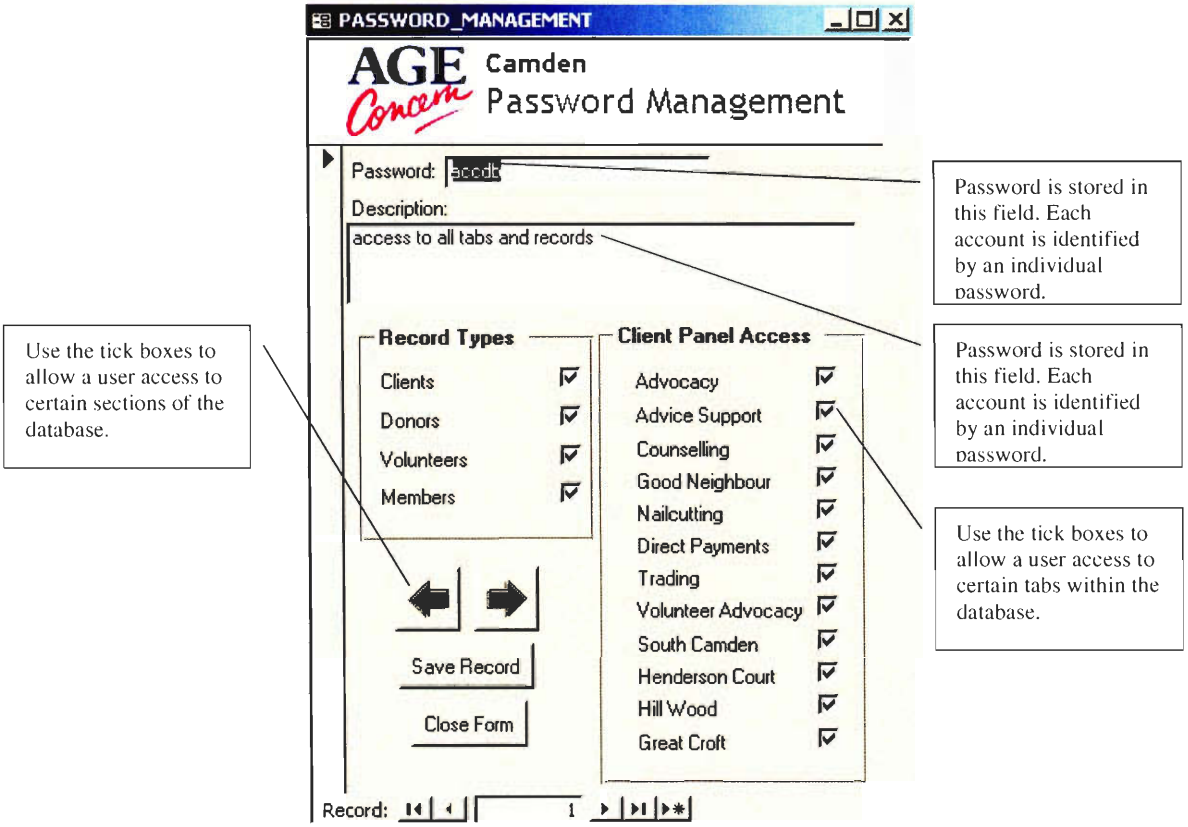
The password management, or administrative account, has been hard coded into the ACC database system in order to insure it is never deleted or altered. The password to enter into the administrative account is "accdb". The password should be entered when first accessing the database outside of Administrative Mode:



Once logged in as the administrator account, a Password button appears:



By clicking this button you are able to enter the password editing form.



How to use the form is described by the callouts above. Remember, this form can only be accessed while logged in under the "accdb" password. It is important that this password remains confidential.

Table Management and Design

The backbone of the Age Concern Camden database is a complex set of tables and relationships between these tables. In order to eliminate redundancy of entries within the database system, a lot of thought went into the background design, and chances are it will only need to be modified slightly throughout the life of the database. This tutorial will provide the skills necessary to conduct slight modifications to the fields within the ACC Database.

Adding a New Field to a Table

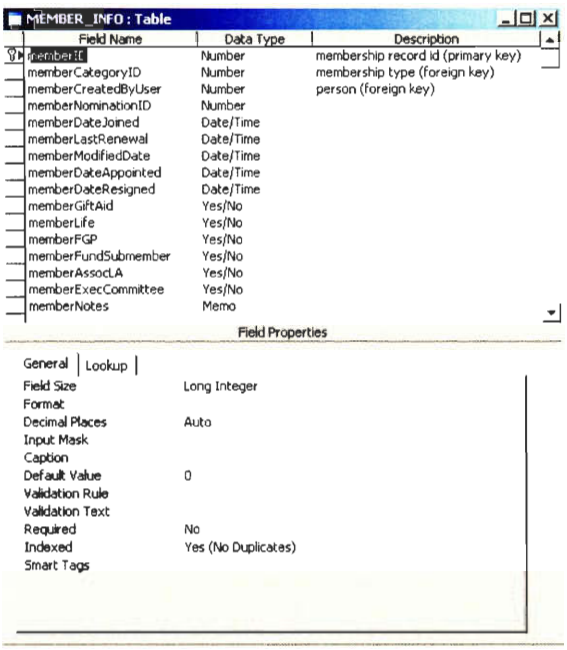
The most common modification that an administrator will make to the tables within this database is adding a field to a table. A request may stem from a user wishing to make an additional field available. Here is a step by step process to do so:

IMPORTANT NOTE: Adding a field to a table will cause NULL data to be entered for all existing entries in that table. You must go through and manually enter values for each existing record when adding a new field!

1) Navigate to the "Table" section within the Main Database Console. 

2) Find the Table relating to the section of the database you wish to modify. If you cannot locate the table, try revealing hidden tables (explained in a later section). Right click on that table, and choose Open in Design View. 

3) In design mode, you see a list of fields and their corresponding data types. The data type controls what type of information can be entered into the field. The new field name should use the standard naming convention already in place (in this example it would be the member field). Once added to the table, the new field must be set up within the form so that it can be displayed and inputted (see "Adding a Field to a Form").

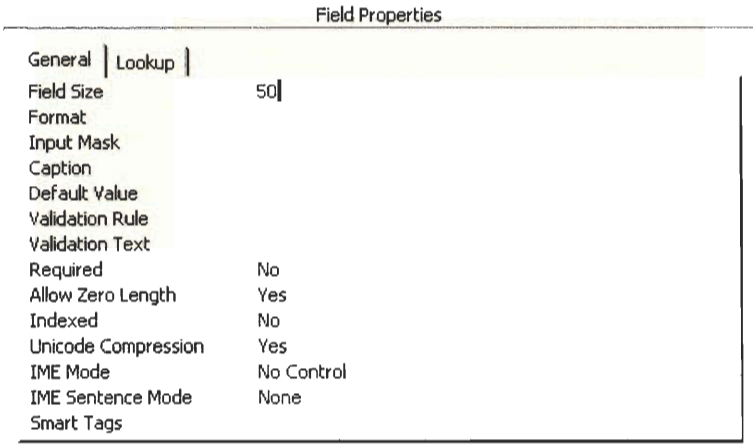


Setting Restraints on the Size of a Field

1) Navigate to the "Table" section within the Main Database Console.

2) Find the Table relating to the section of the database you wish to modify. If you cannot locate the table, try revealing hidden tables (explained in a later section). Right click on that table, and choose "Open" in Design View.

3) Select the field you wish to modify. At the bottom of the window there is a tabbed form. Click on the General tab.

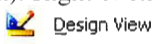


4) Select **Field Size**, and enter the number of characters you want this field to have (works only for a text field, for a number field you can define the scope of the number value, but it is suggested that you only modify field size for text/memo data types).

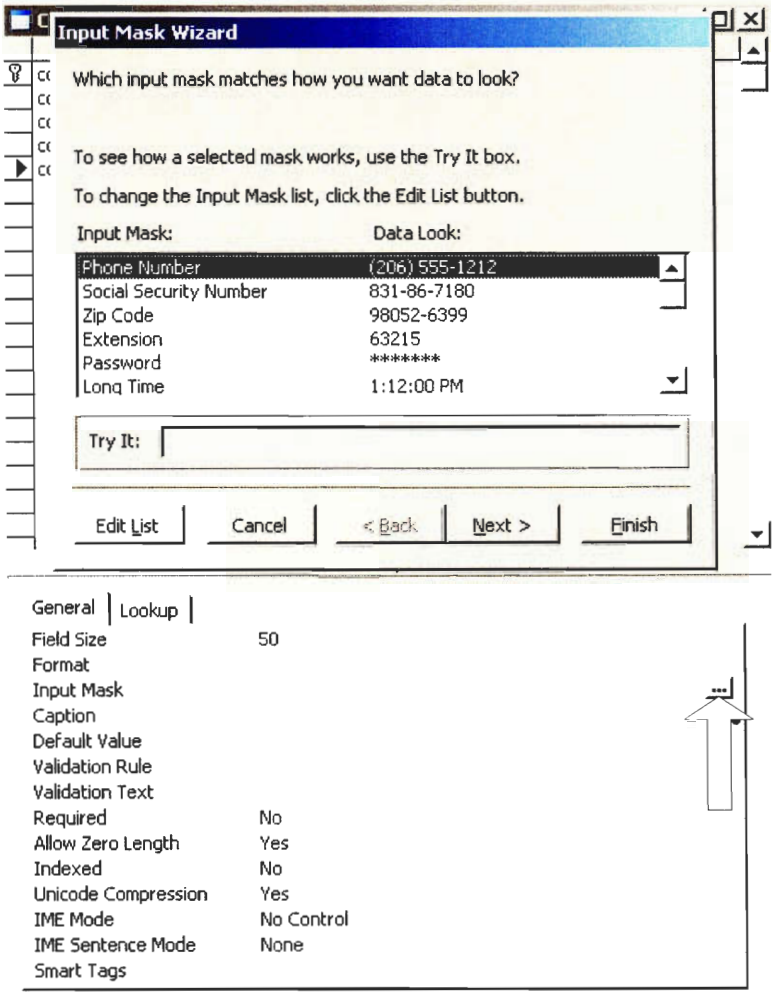
Setting a Field to Take a Specific Format

1) Navigate to the "Table" section within the Main Database Console

2) Find the Table relating to the section of the database you wish to modify. If you cannot locate the table, try revealing hidden tables (explained in a later section). Right click on that table, and choose "Open" in Design View.



3) Select the field you wish to modify. At the bottom of the window there is a tabbed form. Click on the General tab.



4) Select **Input Mask Box** and click on the "**...**" button at the right.

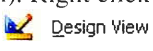
5) From here, you can use predefined formats (although many of them are tailored for the United States) or define your own. The language of input masks is not very complicated.
   a. A nine or a zero in an input mask must be entered as a number.
   b. ( ) - . , all will remain as they are and are used for spacing
   c. Characters such as * can be set to mask what you are inputting.
   d. Text in quotes will remain the same during input.

6) Click "Next >" twice and then "Finish" to commit your Input Mask.

Adjusting the Values Stored in a Combo Box

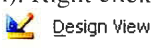
1) Navigate to the "Table" section within the Main Database Console

2) Find the Table relating to the section of the database you wish to modify. If you cannot locate the table, try revealing hidden tables (explained in a later section). Right click on that table, and choose "Open" in Design View.

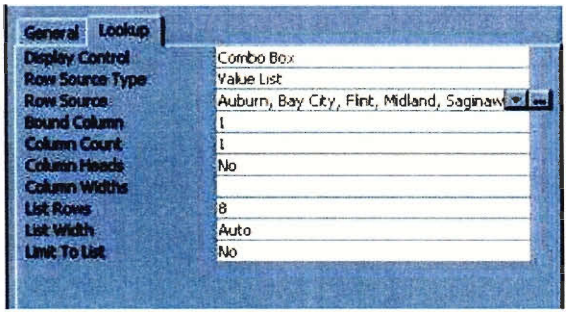


3) Select the field you wish to modify. At the bottom of the window there is a tabbed form. Click on the Lookup tab.

4) Find the Table relating to the section of the database you wish to modify. If you cannot locate the table, try revealing hidden tables (explained in a later section). Right click on that table, and choose "Open" in Design View.



5) Under "Display Control", if not already selected, choose the "Combo Box" option.



6) Under **row source type** you have two options within the Age Concern Implementation.
   a. More simple tables can use the "Value List" option, where you will type the various options you want to put in the combo box in the "Row Source" field.
   b. For more advanced tables, you can use the "Table/Query" option. This will link the combo box to a table. To edit values/fields in a table see the previous section of this tutorial.

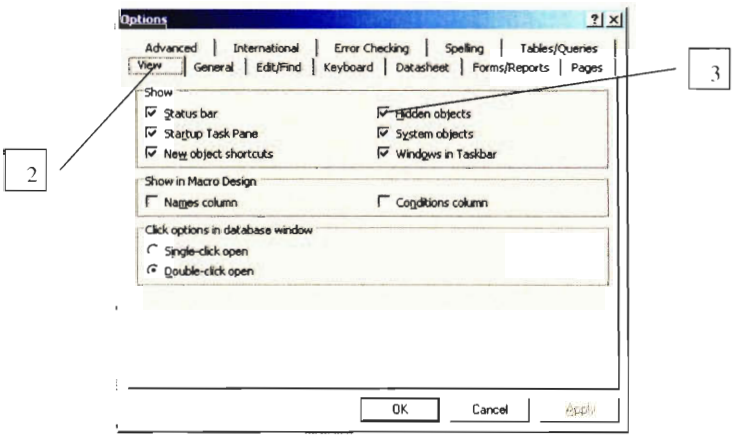
NOTE: Access does not automatically alphabetise/order entries from row source.

Revealing Hidden Tables

The Age Concern Camden database was designed using some hidden tables to avoid users making design changes to forms, tables, and queries. In the administrative mode within the database these tables should automatically be visible. This section provides the means to un-hide these tables in the case that they do not appear.

1) From the "Tools" menu, in the main menu, select "Options"

2) Within the options window, select the "View" tab.



3) If it is not ticked, tick the box next to "Hidden objects". Click OK.

Query Management and Setup

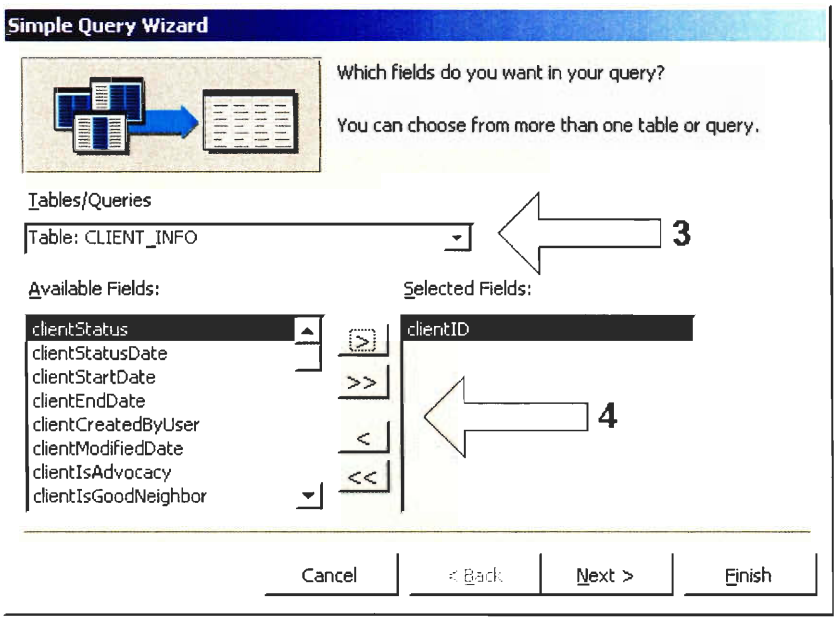
Queries are used to combine information from multiple tables, as well as select specific information out of a single table based on supplied criteria. When generating reports, queries are important to ensure that the data sent to the report is comprised of the necessary records. This short tutorial will show how to setup a query using the Access Query Wizard. For more advanced query information, please see the additional literature, "Using Microsoft Access 2003", supplied by our team.

1) Navigate to the "Queries" section within the Main Database Console.


Queries

2) Double Click on "Create Query by Using Wizard".

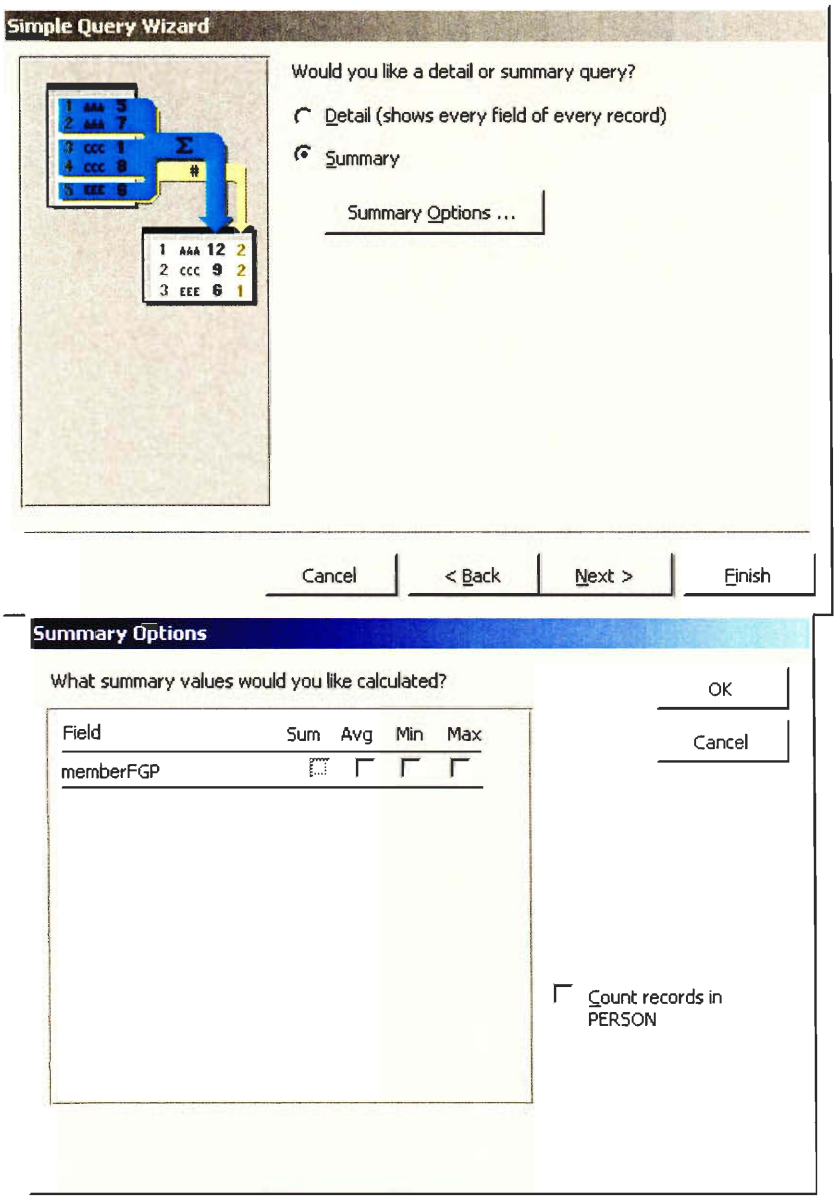
3) Select the table which you want to pull data from using the pull-down menu.



4) Select the fields you wish to appear in the report. This can be done either by double clicking on the desired field, or by clicking the ">" button in the centre of the form. Clicking the ">>" icon will add all fields to the query.

5) Repeat steps 4 & 5 to add information from different tables to the query. Click "Next" once all the desired fields are selected.

6) On the next screen, choose either a detail or summary reporting style for numerical fields.


Simple Query Wizard
Would you like a detail or summary query?
Detail (shows every field of every record)
Summary
Summary Options ...
Cancel
< Back
Next >
Finish
Summary Options
What summary values would you like calculated?
Field
Sum
Avg
Min
Max
memberFGP
OK
Cancel
Count records in PERSON

Form Design and Updating

Microsoft Access forms provide an interface between the data records and the end-user. It is important that these forms are easy to read and correspond with the data in the individual tables. Whenever a new data field is added to a table, it must also be added to the corresponding form. Data can be inputted through the following methods:

- **Text Boxes**
  Free-form data, such as names or addresses, can be inputted through text boxes. Text boxes do not verify the data entered, so uniform fields such as ethnicity, ward or any sort of date should use another method of form entry. It is important to note that when a text box is placed in a form and linked to a Date/Time field, the text box will verify the date/time data.
- **Tick Boxes**
  Tick boxes can be used to represent a Yes/No, or Boolean variable, in a form. A tick box allows users to quickly toggle between two options, as this is an inclusive and exclusive control.
- **Combo Boxes**
  Combo boxes provide a finite set of responses for a single field. They are used throughout the Age Concern Camden database to provide a single set of values for attributes such as ethnicity, referral source, etc. In instances where it is necessary to generate reports on a specific (non-numeric) field, it is common practice to use a combo box to set values for that field. This way you can eliminate the potential for typos which would skew reporting.

NOTE: Before adding a control to a form, the corresponding field should first be added to the table linked to that form. A very simple naming scheme has been used within the Age Concern Camden database. The table VOLUNTEER_INFO, for example, will be linked to the VOLUNTEER_PANEL form. See the **Table Management and Design** section for how to add a field to a table.

Modifying the Existing Layout of a Form

1) Navigate to the "Forms" section within the Main Database Console
    Forms

2) Find the Form you wish to modify. Right click on that form, and choose "Open" in Design View.  Design View

3) Within design mode, controls can be moved by clicking on them and dragging them around the form. If two controls are linked (such as a label and an input box), they can be moved separately by using the large black square in the upper-left corner of the control, which appears when that control is selected. To delete a control, simply click the "Delete" button on the keyboard.

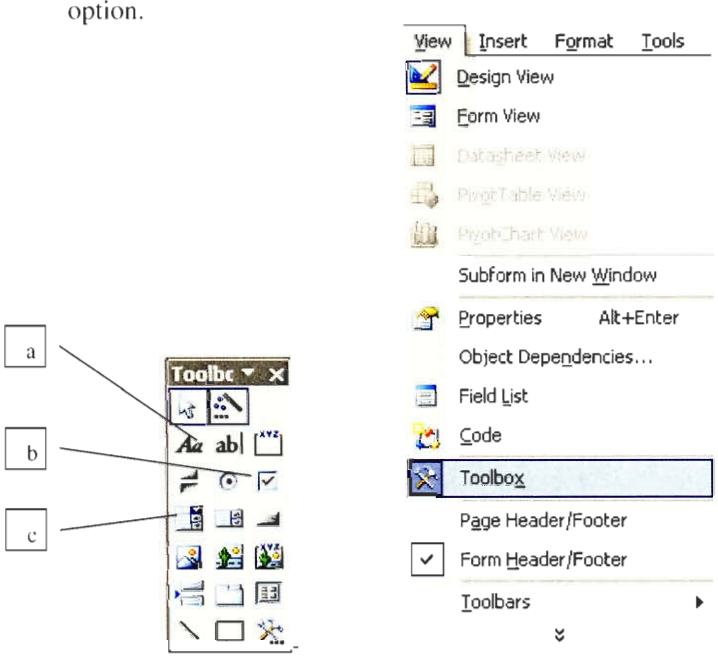
NOTE: If a control is moved, or deleted unintentionally, you can always press "Ctrl+Z", or choose "Undo" from the Edit menu, to undo your action.

Adding a Control to a Form

1) Navigate to the "Forms" section within the Main Database Console.
 Forms

2) Find the Form you wish to modify. Right click on that form, and choose "Open" in Design View.  Design View

3) When in design mode, the "Toolbox" should always be visible. If you do not see it on the screen, go to the "View" menu and click on the "Toolbox" option.

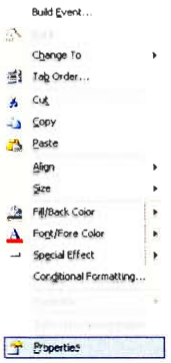


4) The important controls to note on the toolbox are (a) the text box (b) the tick box and (c) the combo box.

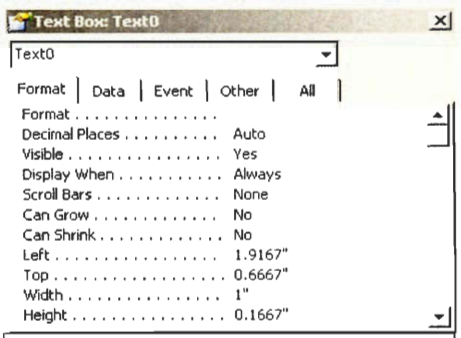
5) To add a control to a form, simply click on it in the toolbox, and click to the place on the form where you wish to place it. Refer to the section on "Modifying the Existing Layout of a Form" to learn how to move the control on the form and how to set advanced options for a control (including how to link a control to a field). Also see the following sections: Advanced Text Box Options, Advanced Tick Box Options, and Advanced Combo Box Options.

Advanced Control Options

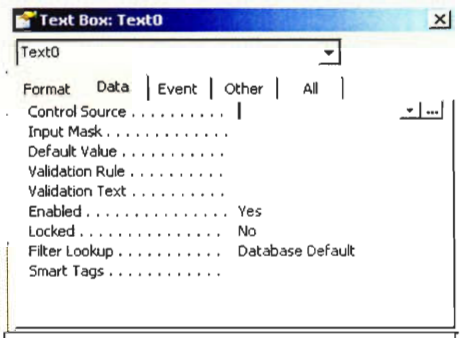
1) Once within a form, right click on a control, and click on "Properties" to bring up advanced options for that control.



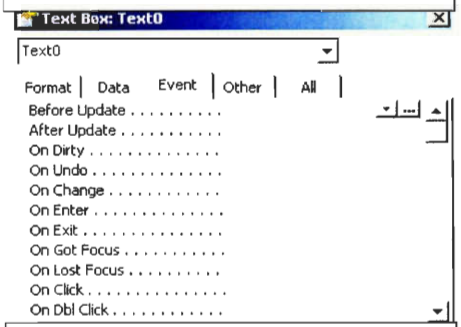
2) There are four tabs within the options menu, some of the key functionality provided within these tabs is explained here. For additional information on these options, refer to Microsoft Access Help or the provided literature.



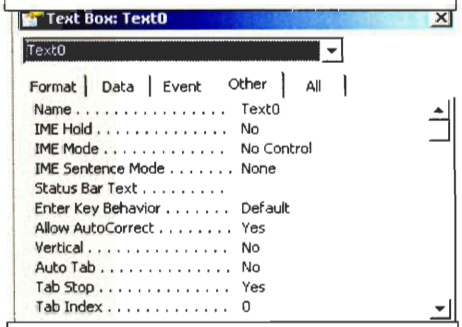
Use the Format options to adjust how data can be entered into a control. Predefined formats can be set using the "Format" option.



The Data options provide for linking the control to the dataset. Use the Control Source option to link to a specific field within a record.



Event options are used to define control reactions to specific events during data entry. i.e. A date can be set to auto-set upon a double click.



The other options provide administrative options such as naming a control and setting Tooltip and status bar options.

Generating Reports

The Age Concern Camden database system is designed to be able to quickly develop simple reports based on various queries that have been provided by the original development team. These queries breakdown the various types of data to link Client, Volunteer and Member information with specific subcategories. They also automatically calculate Age and store that information in the "Age" field. This tutorial will go over how to generate reports based on these previously provided queries. To design and generate more complex reports you will need to develop more advanced queries. For instructions on designing advanced queries and reports please refer to the provided literature (Microsoft Access 2003).

Browsing the Available Queries

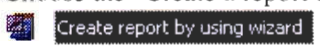
A standard naming convention was used to identify the basic queries set up by the original design team. These queries can be quickly identified by the keyword "PRIMARY" before their more specific description. (For example: PRIMARY_MEMBER gives a breakdown of member data linked with person data, PRIMARY_MEMBER_FGP gives a breakdown of all Members who are ticked as FGP, and also provides person data.)

Setting up a Simple Report

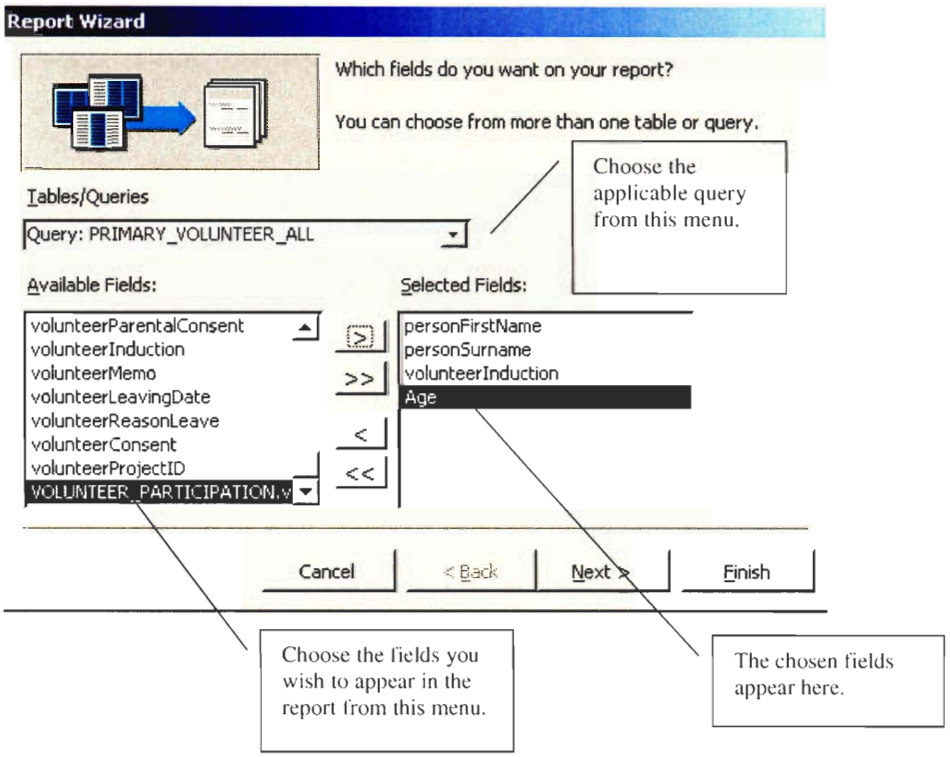
Once a query is found or developed that contains the necessary breakdown of data, report generation is a fairly straightforward process. To generate a simple report, with various breakdown options, follow these steps:

1) Navigate to the "Reports" section within the Main Database Console.

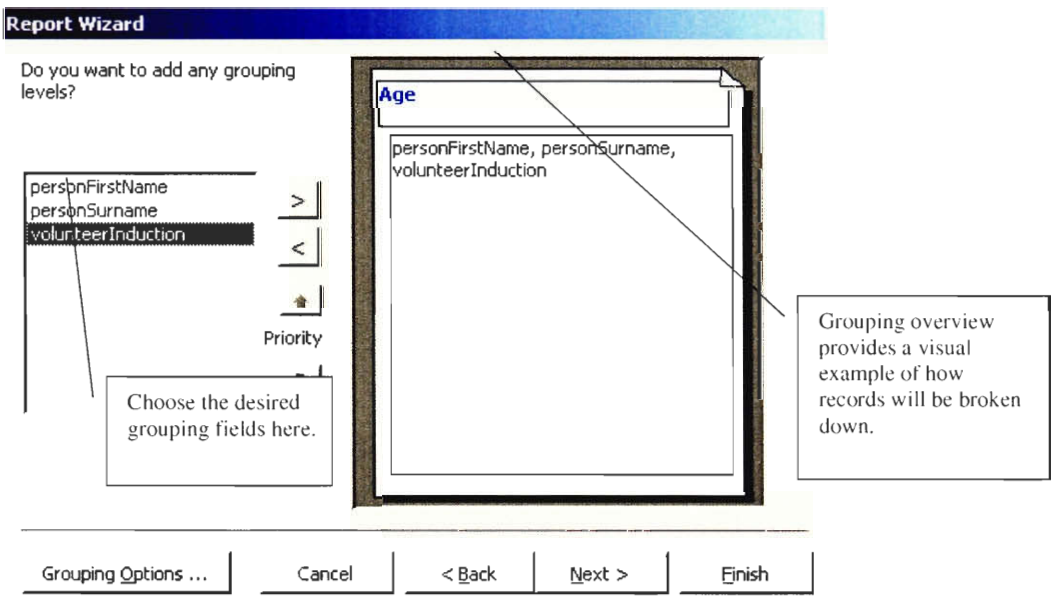
2) Choose the "Create a report using wizard" option.



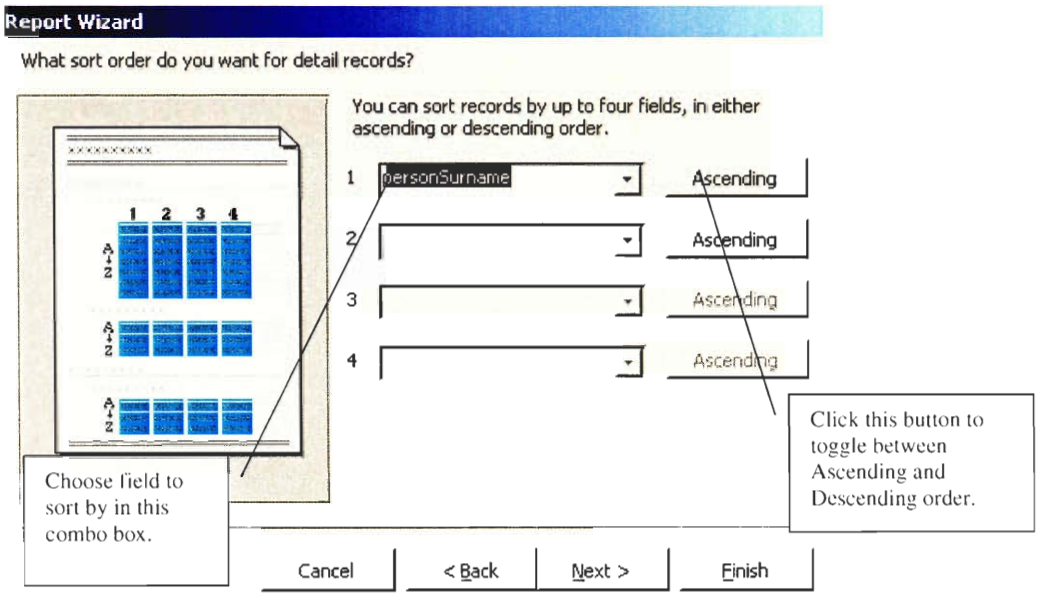
3) In the first screen of the wizard, you must choose the fields that will appear within your report. Use the provided queries to first breakdown the data you wish to report (choose the PRIMARY_<section>_<subsection> format explained above). Click "Next" when finished.



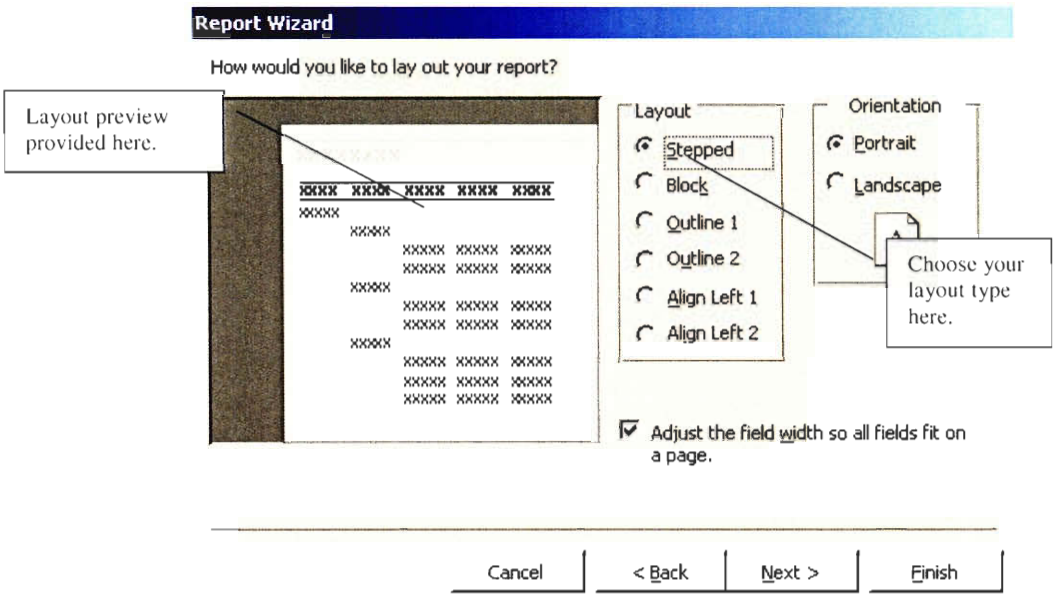
4) In the next screen you can choose how to group the records in your report. It is important to choose a uniform field (such as a number, date, or field selected from a combo box). In the provide example, contacts will be grouped by age. Click "Next" when finished.



5) In the next window, you can choose how to order records within the individual groups. In the displayed example, records will be organised alphabetically by Surname. Numeric as well as text values can be ordered in Ascending or Descending order by toggling the button to the right of the field. Click "Next" to continue.



6) In the next window, use the combo buttons to decide a format for the layout of the report. Each combo button provides a visual example of that layout.



7) The next window is used to choose a style for the form. This is self-explanatory and purely the preference of the user.

8) In the final window, choose a name for the report. The report will then be generated and will be available for printing.

Conclusion and Further Information

This concludes the Administrative Manual provided for the Age Concern Camden centralised database. The document summarises the information necessary for basic maintenance and upgrading of the system.

The additional reference literature provided by the original team was "Using Microsoft Access 2003," by Roger Jennings. This book includes tutorials on advanced reporting, form design, updating, as well as many other advanced Microsoft Access development techniques. A comprehensive overview of the entire Microsoft Access can be found in this book. Still, more in-depth information can be found on Microsoft's website at http://support.microsoft.com.

If neither of these references provide the necessary expertise, it is the recommendation of the original design team that a professional volunteer, consultant or student team be used to upgrade the database.

Age Concern Camden
Centralised Database System
User Manual

Introduction

This User Manual is designed to provide a basic overview of the use of the database system developed for Age Concern Camden during the months of January and February 2005. The manual is written in tutorial fashion, with focus on adding records, editing records, searching records and generating reports. This manual will serve as a quick reference for those who wish to work with the Age Concern Camden database.

Overview

This database, created by the Worcester Polytechnic Institute project team, was set up to provide Age Concern Camden with a centralised organisational storage solution. When used properly, it has the ability to simplify and streamline the daily business processes of Age Concern Camden. The completed database was created using Microsoft Access 2000, however it is able to run on newer versions of Microsoft Access software as well.

Following this overview you will find a manual to be used as a guide for users of the Age Concern Camden Microsoft Access Database. The manual offers instructions, along with screen shots, on how to effectively utilise the database.

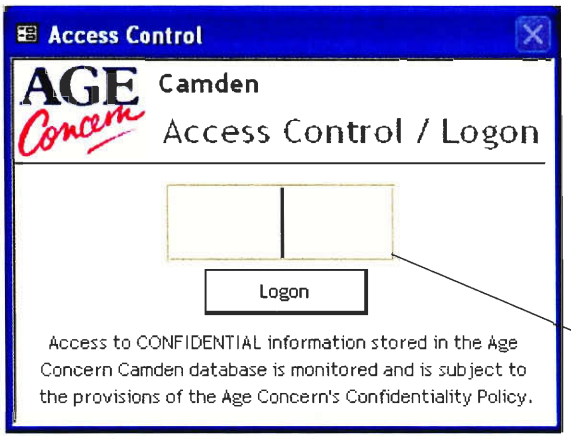
More information regarding Worcester Polytechnic Institute and the project program can be found at the Worcester Polytechnic Institute Interdisciplinary and Global Studies Division website (http://www.wpi.edu/Academics/Depts/IGSD/).

Please read on to acquaint yourself with the functions of this database.

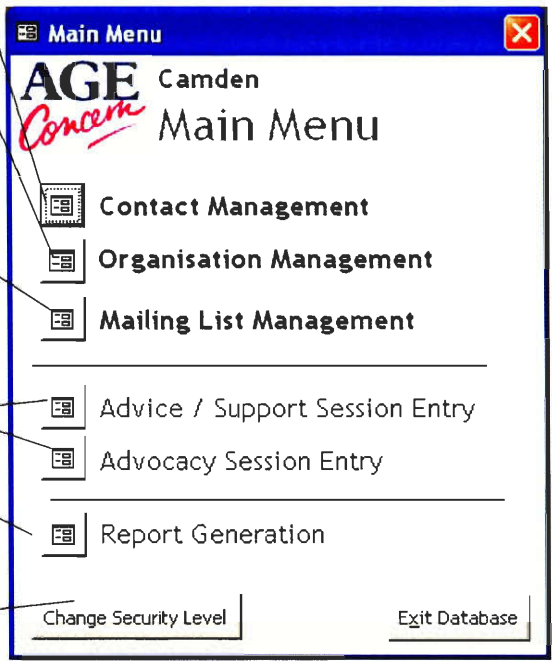
Table of Contents

Accessing the Database

To enter the database, simply select the icon from your desktop. You will prompted to enter a password.



Enter password to login to the database



To enter or view records

To enter or view organisations associated with Age Concern Camden

To view mailing lists and print labels

To log a "One Off" Session

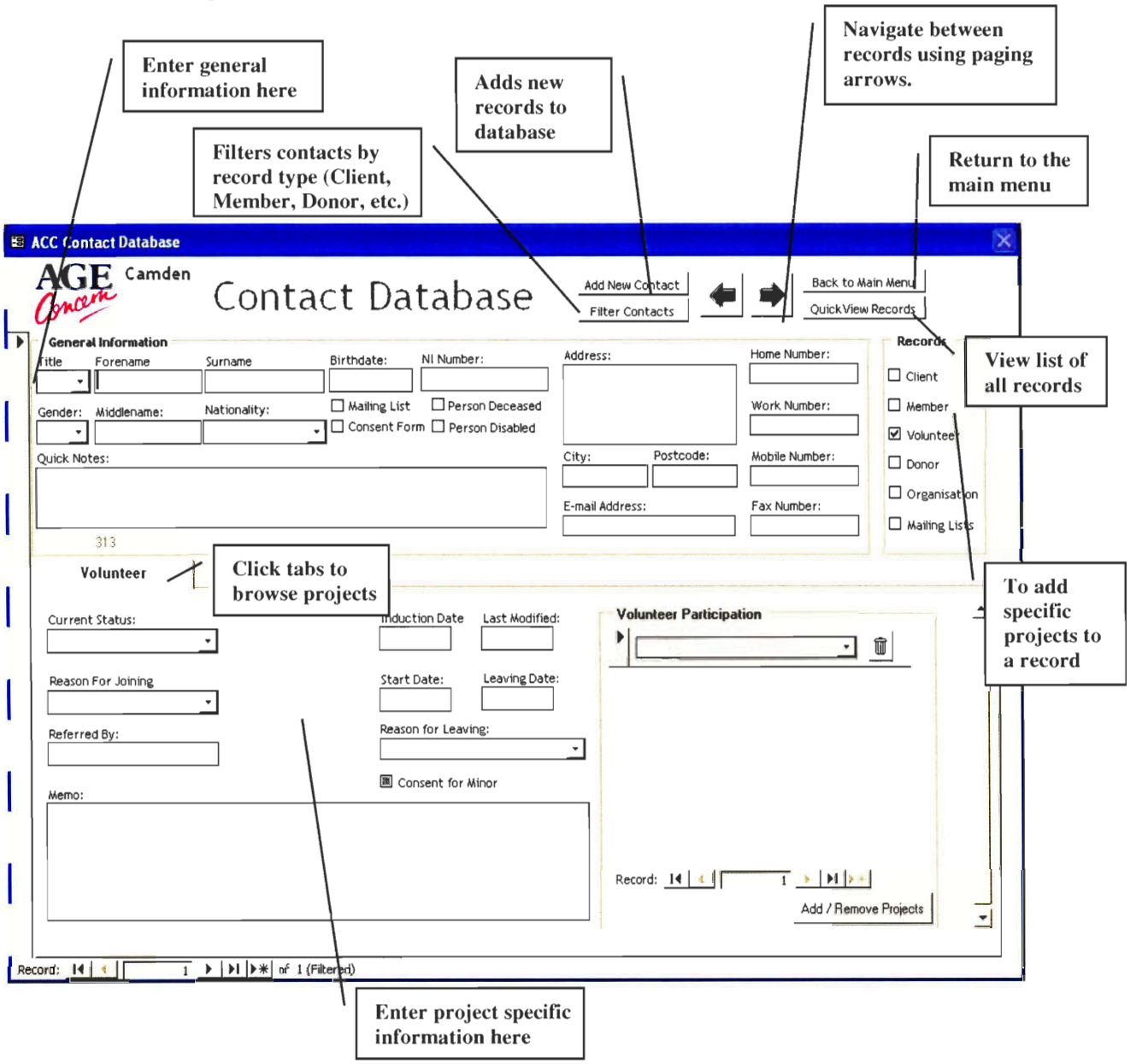
To generate reports

To change current security level settings (you will be prompted to enter a password)

To exit the database and return to Windows

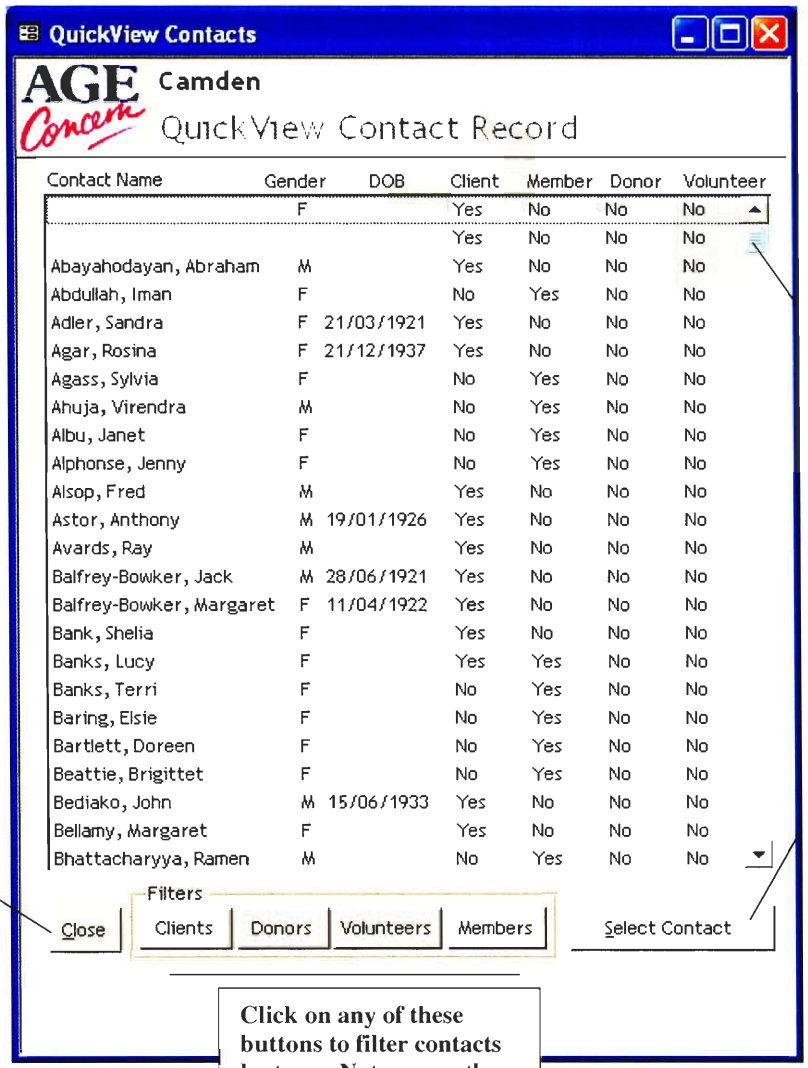
Features of the Database

From this screen you will be able to create new records as well as search through and edit existing records.



QuickView Contacts

To search for a person in QuickView, type the first letter of the person's surname. This will bring you to that letter in the list. You can then scroll down until you find the name you are looking for.



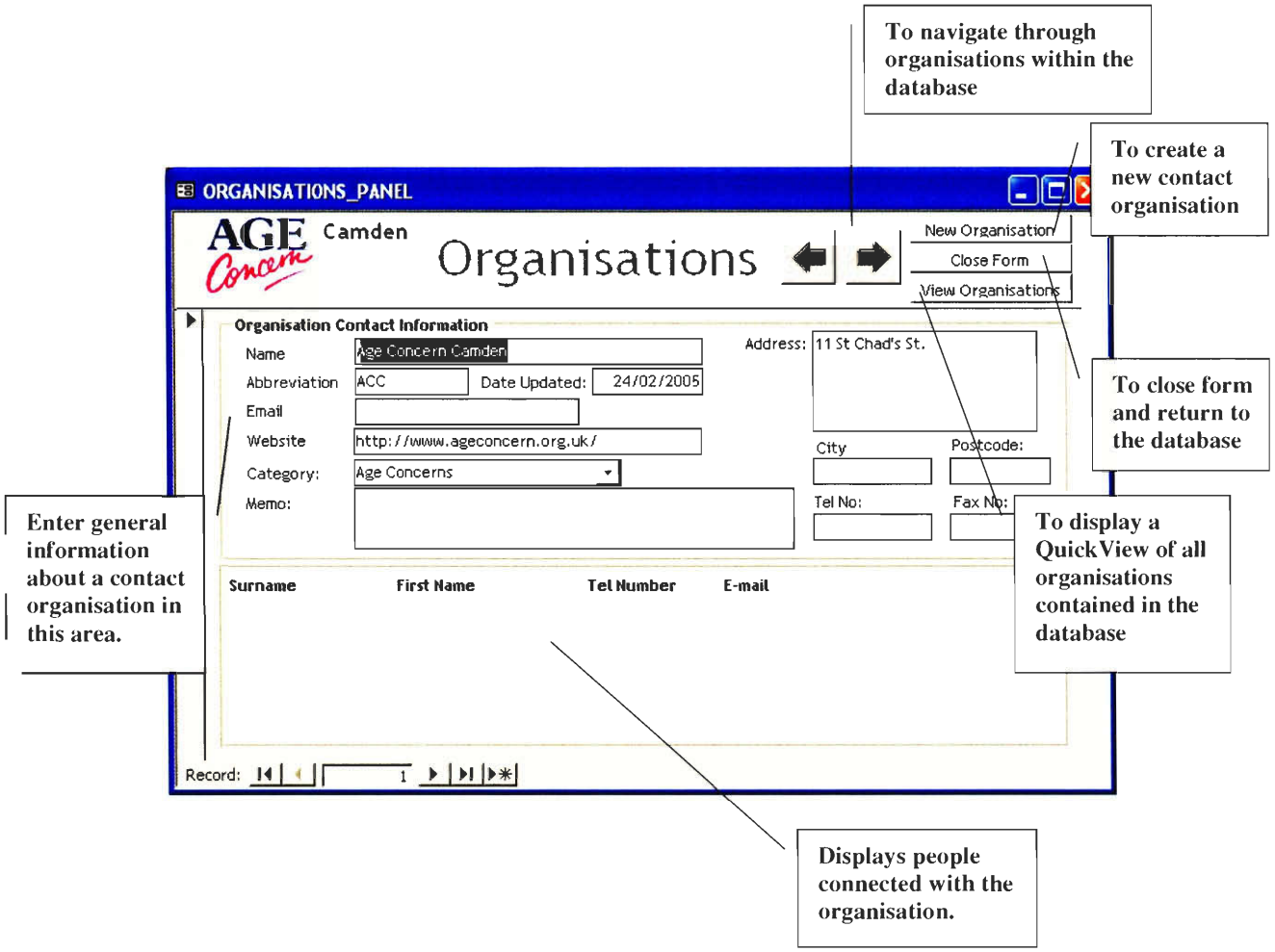
Enter the letter that you would like to go to on the keyboard or scroll down the side until you reach the correct letter.

To close QuickView and return to the database

To select a contact once it is highlighted

Click on any of these buttons to filter contacts by type. Note: more than one button can be clicked at the same time

Organisation Panel



Generating Reports

To access reporting functions, choose "Report Generation" from the Main Menu.