Physical Evolution Fitness Ltd
Development of a software database solution for a personal training company

March 2011

Prepared by: David Horn
Supervisor: Aileen Keaney
This report describes the development of a software database solution for a franchised based personal health and fitness company. The current system in place was paper based and the aim of the project was to create a single, user friendly centralised database system that encompasses all information pertaining to the business. This included storing client records such as workouts, contracts and health questionnaires effectively as well as recording payments and sessions owed. A Body Mass Index calculator was integrated into the system, and the system also stores monthly and yearly business financial accounting information. The system was designed using the SSADM methodology, built using Microsoft Access and uses SQL for data manipulation.
This project was initiated on behalf of Physical Evolution Ltd, a franchised based health and fitness company. They provide a range of services including personal training, lifestyle management, physical therapies, fitness classes and sports coaching. They are currently based in Carlisle Health and Fitness Club but also provide freelance services to the South Dublin area.

The database system designed during this project captures all of the information required by the client in one easy to use electronic location. It captures the data accurately using effective data validation techniques and eliminates the awkward and bulky nature of the current paper based system.

The project has been successful in meeting the agreed terms of reference. A comprehensive consultation and systems process analysis phase, before the start of the system development, gave a clear understanding of the client’s expectations of this system. This has resulted in the development of a system which meets the needs of the client.

I would like to express my sincere gratitude to Mr. Stephen Dunne for his help and assistance throughout the project. I also wish to express particular thanks to Mr. Robert Smyth for his guidance and advice during the course of the project.

Finally, I would like to sincerely thank my project supervisor, Ms. Aideen Keaney. Her constant support, guidance and advice contributed greatly to the completion of this project.
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>NO.</th>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>INTRODUCTION AND SUMMARY</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>The Client Company</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Project Background</td>
<td>1</td>
</tr>
<tr>
<td>1.3</td>
<td>Terms of Reference</td>
<td>2</td>
</tr>
<tr>
<td>1.4</td>
<td>Summary of the remaining chapters</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>SYSTEMS OVERVIEW</td>
<td>3</td>
</tr>
<tr>
<td>2.1</td>
<td>The Current System</td>
<td>3</td>
</tr>
<tr>
<td>2.2</td>
<td>Objectives of the New System</td>
<td>4</td>
</tr>
<tr>
<td>2.3</td>
<td>Summary of the New System</td>
<td>5</td>
</tr>
<tr>
<td>2.4</td>
<td>Technical Environment</td>
<td>9</td>
</tr>
<tr>
<td>3.</td>
<td>DESCRIPTION OF WORK UNDERTAKEN</td>
<td>11</td>
</tr>
<tr>
<td>3.1</td>
<td>Methodology</td>
<td>11</td>
</tr>
<tr>
<td>3.2</td>
<td>Construction</td>
<td>15</td>
</tr>
<tr>
<td>3.3</td>
<td>Development of User Friendly Features</td>
<td>16</td>
</tr>
<tr>
<td>3.4</td>
<td>System Testing</td>
<td>18</td>
</tr>
<tr>
<td>3.5</td>
<td>Implementation</td>
<td>18</td>
</tr>
<tr>
<td>3.6</td>
<td>Project Development</td>
<td>19</td>
</tr>
<tr>
<td>4.</td>
<td>CONCLUSIONS AND RECOMMENDATIONS</td>
<td>20</td>
</tr>
<tr>
<td>4.1</td>
<td>Conclusions</td>
<td>20</td>
</tr>
<tr>
<td>4.2</td>
<td>Maintenance Recommendations</td>
<td>20</td>
</tr>
<tr>
<td>4.3</td>
<td>Potential Future Developments</td>
<td>21</td>
</tr>
</tbody>
</table>
# APPENDICES

<table>
<thead>
<tr>
<th>NO.</th>
<th>CONTENT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Original Project Outline</td>
<td>A.1</td>
</tr>
<tr>
<td>B.</td>
<td>Interim Project Report</td>
<td>B.1</td>
</tr>
<tr>
<td>C</td>
<td>Technical Commentary</td>
<td>C.1</td>
</tr>
<tr>
<td>D</td>
<td>User Manual</td>
<td>D.1</td>
</tr>
<tr>
<td>E</td>
<td>Test Documentation</td>
<td>E.1</td>
</tr>
<tr>
<td>F</td>
<td>Software Options</td>
<td>F.1</td>
</tr>
<tr>
<td>G</td>
<td>Screen Shots</td>
<td>G.1</td>
</tr>
<tr>
<td>H</td>
<td>System Design</td>
<td>H.1</td>
</tr>
</tbody>
</table>

REFERENCES
1. INTRODUCTION AND SUMMARY

1.1 The Client Company

Physical Evolution Fitness Ltd was founded in 2008 with the aim of providing a range of personal training and lifestyle management services to the public. They currently operate out of Carlisle Health and Fitness Club and provide freelance training to the South Dublin area. During the course of this project, the business was relaunched under the name of Live Fit. Both the business premises and services provided remained the same, with a reorganisation of employees being the main change following the relaunch.

1.2 Project Background

Physical Evolution Fitness Ltd employed seven trainers at its peak. It operated as a franchise based business with each employee acting as a member of the franchise. Each employee had a separate client list; effectively operating as single entities, each responsible for their own client base but used the collective power of franchising to exploit advertising and brand image advantages.

In January 2011, Physical Evolution Fitness Ltd ceased business and Live Fit was created. At the time of writing, it currently operates as a sole trader business. Currently, the business records of the company including contracts, training logs and company accounts, are stored on 28 different paper based forms, which are listed in Appendix H, page H.1. An electronic Body Mass Index (BMI) piece of software (Poliquin BioSignature) was used in conjunction with the paper based forms but its features were not exploited to full advantage. There was no link between the two systems and the BMI program was used as a standalone tool. The main aim of this project was to transfer the numerous pieces of business information recorded on paper to a single electronic source.

The business process of the original system was adopted in the new system produced. During the Systems Analysis stage of the project, necessary design changes from the original system were identified and made. These changes included the redesign of several forms and sections to eliminate data replication and achieve data normalisation.

The current system stored records under three main areas. These were Client Information, Client Payments and Business Accounts. Client Information contained records of client consultations, contracts signed, health questionnaires completed and workouts. A separate electronic BMI calculator falls under this section but was not integrated into the system. The Client Payments section dealt with payments owed by clients and sessions and services owed to clients. The final section, Business Accounts, recorded the company’s yearly financial incomes and expenditures. These forms are discussed in further detail in Section 2.1, page 3.
1.3 Terms of Reference

The following terms of reference were agreed with the client on 23/11/2010. (Appendix B, page B.1)

The client wishes to develop a system to integrate the recording of its client database and financial accounting data. The terms of reference are as follows:

- Carry out a detailed analysis of current data recording and methods;
- Choose a suitable platform for the database system;
- Create an electronic database:
  - To record all information pertaining to the clients of the business
  - To record all financial operating revenues and expenses relevant for accounting and tax purposes including product sales
  - Integrate a Body Mass Index and Body Fat calculator into the client database system
- Investigate the development a PDA application to allow the mobile and immediate input of training logs into the client database;
- Implement and fully test system;
- Create supporting documentation for the system.

1.4 Summary of the remaining chapters

Chapter 2: System Overview describes the purpose and objectives of the system created. The current system is described and details of the structure and design of the new system are presented.

Chapter 3: Description of Work Undertaken outlines the stages involved in completing the project, the tasks completed at each stage and any problems encountered. It also discusses the SSADM methodology and the techniques and software used in each stage of the project.

Chapter 4: Conclusions and Recommendations evaluates the overall project and explains the findings reached. A number of recommendations for maintenance and potential future developments of the system are also made.
2. SYSTEM OVERVIEW

This chapter gives an introductory overview of the system developed for LiveFit. The current system is described and the objectives and purpose of the new system developed by this project are laid out. The benefits provided by the new system are discussed and key features of the system are described.

2.1 The Current System

The purpose of this section is to briefly describe the current system in use by LiveFit and the reasons for developing a new electronic system. Through meetings and correspondence with the owner of LiveFit it was possible to identify the problems and limitations with the current system. The overall goals and objectives of the new system were identified, and the steps taken to avoid the problems of the current system were discussed.

The current system employed at LiveFit is mostly paper based and as such, it is difficult to retrieve information quickly and efficiently. Client data is spread out over an array of 28 paper based forms, a small number of excel spreadsheets and a BMI software tracker. As such, it is difficult to find and sort records efficiently and data is replicated in several instances through the process. The system is currently separated into three sections as described below.

**Client Information**

The Client Information section was used to record clients’ personal information and the history of services availed by them. The first process when acquiring a new client was to fill out the Client Consultation Form. This provided basic information about the person such as name, age, e-mail and contact information. The next step was to complete the PAR-Q health questionnaire which provided the trainer with information regarding any potential medical problems when a client undertook a new exercise program. Contracts and consent forms were then agreed upon and signed by the client. Depending on the services availed of, extra information may be collected by the trainer in other forms such as a detailed health questionnaire, medical release forms and diet analysis which are all contained within this section. The client Training Logs are also stored in this section to record the history of workouts performed with the trainer.

**Client Payments**

The Client Payments section records the sessions or services purchased by a client and the payment received from them. This allows the trainer to track the number of sessions owed to a customer and the payments resulting for them. Once a contract is signed in the Client Information Section, the client and trainer agree on the number of sessions to be provided and the price to be paid for the total number of sessions. This information was recorded in the Client Session Form. The Client Tracker Form was then updated to show the number of sessions owed and their value to the trainer. A form for Client Payments was used to record the payment of each session. This was kept separate from the other forms due to the flexibility required when charging clients as free sessions or discounted consultations are often given to clients.


**Business Accounts**

The business accounts section of the database records the monthly and yearly income and expense accounts. This is used to provide end of year company accounts and tax returns. It contains separate forms for monthly incomes and expenses.

There are a number of limitations present in the current system:

- There is a lack of integration of information within the system;
- Data duplication and redundancy are prevalent within the system. As information is entered manually for each field, it is a time consuming and inefficient process;
- There are no data validation procedures to ensure correct information is entered in the appropriate sections;
- The physical effort of managing a large paper based file system;
- The system does not allow for convenient access to basic reports such as a total revenue generated from sessions per month as the calculations are currently performed by hand;
- The system generates a large quantity of data which is not used to provide potential strategic insight into company performance.

### 2.2 Objectives of the New System

The overall aim of the project was to provide LiveFit with an electronic database that contains all the information required by the business in one centralised location. The new system will eliminate many of the limitations of the current system by removing the paper trail and allowing quick and easy access to search records and generate summary reports. The integrity of the data within the system can be maintained by adopting data validation rules.

Non functional requirements and objectives identified as part of the new system are:

- The system should be franchisable;
- There will be one user per system. In the case of multiple users, they have their own separate client list. Therefore it should be possible to have multiple instances of the system;
- Ability to cope without internet access. As the business offers freelance services where internet is not always available;
- The use of a mobile device to input training log information on the move;
- The system should incorporate all of the functionality of the current system.

**User Friendly Layout and Ease of Use**

As the client is from a non technical background, a requirement identified from the beginning of the project was to develop user friendly interfaces. The steps taken to fulfil this requirement are described in detail in Section 3.3, page 16.
User Types
As the database was designed to provide functionality for a single personnel trainer, there is only one type of user for this system. Therefore it was unnecessary to implement specific user level security. However, an overall systems password protection was implemented upon the opening of the database due to the sensitive nature of the personal information that will be contained within the database. Further details can be found in the User Manual.

2.3 Summary of the New System

The system was built to match the current business practices but was modified to become suitable for electronic form. The main difficulty faced in this project was converting a paper based design into an electronic form. Opening the database, the user is given two options on the switchboard; Client Management System and Financial Records System. The majority of the time, the user will select the Client Management section. This allows them access to the client services end of the database. The Financial Records section holds the company monthly and yearly account information.

![Figure 2.3.1 - System Overview](image)

Figure 2.3.1 displays a system overview diagram. This shows the main functions of the system and the point at which passwords are required. The system's functionality and features are described in the following section. Further details can be found in the User Manual.

Client Management System
Upon entering the Client Management section of the system, the user can choose from three sections.

1. Consultation and Contracts;
2. Client Payment and Tracking;
3. Training Logs, Diet and BMI Records.

Consultation and Contracts
The Consultation and Contracts section is used by the trainer to store personal client information. There are seven forms within this section. They relate to personal client information gathered by consultation forms, questionnaires and a history of contracts and agreements signed between the client and trainer.

![Consultation And Contracts Process](image)

There are three steps needed to add a new client to the system. The Client Consultation form is the first form completed in this process. This is the main form in the database and is the link to the majority of other tables. The basic information required by the trainer is stored in this form including the client’s name, address, contact information, date of birth and notes regarding the client’s fitness aims and goals.

The second form competed is the PAR-Q. This is a basic health questionnaire form used to uncover any potential risks of undertaking a new workout regime. The form is split into two sections. The first section uses a number of check and text boxes to record any previous health problems. The second section relates to a series of lifestyle questions containing questions regarding smoking, alcohol intake, sleep patterns and stress levels.

The third step of adding a client to the system, is signing the Contract. This is a standard agreement contract that stipulates terms of the services to be provided, such as length of training sessions, the form of payment and an indemnity waiver.
Once these three forms are completed, the process of adding a new client is complete. It is then at the trainer’s discretion which next step to undertake. If the PAR-Q form reveals any potential risks, the client may be required to complete further forms such as Health & Lifestyle Consultation or the Medical Release Form, but in general they will agree on the number of sessions to be taken and the price of each session. This is completed in the Client Payment and Tracking section. Depending on the type of services availed by the customer they may be required to complete the Class Registration or Informed Consent Forms.

Client Payment and Tracking
The Client Payment and Tracking section is used to record the number of services or sessions bought by a client and the number of sessions owed to them by the trainer.

![Client Payments and Tracking Process](image)

The first form completed in the process is the Client Session form. This is used to record the number of sessions agreed to be purchased by the client and the price for the total number of sessions. The Client Tracker form is then updated to show the number of sessions owed and the price to be charged for each session. Each time the client completes a training session, the session is marked off the Tracker form until there are no more sessions left.

The Client Payments form is used to record the actual payment received for each session. This is separate from the other forms due to the flexibility required when charging clients. Discounted or free sessions are often offered by the trainer and as such, the agreed amount to be paid during the completion of the Client Session form can vary to the actual payment received. Both the Client Session and Payment sections include report functions that generate summary statistics of the figures between the two dates. This allows quick and easy access to monthly revenue figures. The reports also provide an average session payment figure to compare monthly figures.
Training Logs, Diet and BMI Records

Once a client is registered on the system and have agreed terms and conditions regarding pricing, they can begin a training program with the trainer. To record a client’s training session, the trainer must enter the Training Logs, Diet and BMI Records section via the Switchboard.

![Figure 2.3.4 - Training Logs, Diet and BMI Recording Process](image)

The Training Program Log form is used to record the history of workouts performed by the client with the trainer. The same form is used to record each client in the system workout logs. To search for client specific records a query is implemented and a report generated. To retrieve this information, the user must enter the Training Program Log Finder. There is a navigation button conveniently placed on the Training Program Log form for ease of access. To access the client’s previous workout logs, the user selects the client they want from a drop down combo box and presses the button to generate a report of all the previous workouts sorted in reverse chronological order.

This section also contains the BMI record functions. The aim of this feature was to redevelop a similar system to the one in current use by the business but integrate it into the new system. The system was built from scratch in MS Access and used a similar layout with comparable fields and features. The BMI calculator records the physical measurements of 12 sites on the body. It then calculates a total number to establish a baseline figure. The trainer can then work on reducing or increasing these numbers depending on the goals of the client. There is a field to insert a photo of the client when the measurements are taken. This allows the trainer and client to make visual comparisons between entries. It also calculates the actual BMI of the person using the formula of weight (kg)/height^2. This is automatically calculated when the user enters the height and weight of the client.

The user selects the client they wish to perform the BMI test upon via a combo box. The client’s previous records then appear in the subform below. It is displayed in tabular form so easy comparisons between entries can be made. New information is then entered into the appropriate fields and stored.
The Details Log form is used to store miscellaneous information given to the client by the trainer such as diet information as well as tips and advice on training. It is designed in a similar format as the Training Program Log as it uses a query function to retrieve previous records. To quickly search for individual records, a drop down search list is implemented in the form header based on name and date of entry. To find a list of previous entries for an individual client, there is a Details Log Finder form that generates a report with this information.

The Financial System
This section contains the information pertaining to company accounts and records the monthly income and expenses of the business.

![Diagram of Financial System](image)

**Figure 2.3.5 - Financial Recording System Process**

**Monthly Expenses**
This form records the expenditure of the trainer for each month. The trainer enters a list of expenditures for each month under separate headings and the application automatically gives a total for each heading and the month itself.

**Yearly Expenses**
This form is an extension of the monthly expenses and provides a total yearly figure. This is then used in the Trainer Annual Accounts.

**Trainer Annual Accounts**
The Trainer Annual Accounts is a profit and loss statement for the end of the year for the business. The annual incomes are input into the appropriate fields and the annual expenses are automatically updated from the Yearly Expenses form. The figures are then subtracted to give an overall profit or loss for each month and the year.

**2.4 Technical Environment**

This section briefly discusses the design methodology and the software used to create this new system. The system constructed in this project was designed following the SSADM methodology and using the waterfall method. The system was fully implemented in Microsoft
Access and the database will be stored on the client’s personal machine as opposed to a central network server.

A number of options were considered for developing the required system. A number of off-the-shelf solutions were considered, however due to the specific nature of the objectives of the project, none were deemed fully suitable and it was decided to build a custom system. The reasons behind this decision are discussed further in Section 3.1, page 12

**System Requirements**
The system requires no additional investment as the client already holds a valid license of MS Access. The system will be held on the client’s business laptop. This system occupies 12MB of disk space when a small amount of test data is held within it.
3. DESCRIPTION OF WORK UNDERTAKEN

3.1 Methodology

This system was designed using the techniques outlined by the Structured Systems Analysis and Design Method (SSADM) (Hutchings, 1999) and followed the waterfall model of development. The work involved in designing the database system was divided into five stages following SSADM techniques. Figure 3.1.1 below illustrates the stages involved in the development of the software. This section describes each of the five stages in the SSADM development process.

![Figure 3.1.1 – Systems Development Process](image)

**Project Initiation**

The project initiation began with a preliminary meeting with the client in October 2010. The objective of this meeting was to determine the overall aim of the project and to gain an insight into the business processes and operations adopted by, what was then, Physical Evolution Fitness Ltd. During this meeting an overview of the current system was described by the client. The client also discussed their wishes for the new system and the functionality which it would provide.

The overall aim of the project was to provide the client with a software based system which could manage the running of their personal training business. Requirement planning began
immediately to establish the features necessary to adopt or construct such a system. The current system in use was developed by the client over a number of years and he wanted to retain the basic business processes which it used. Therefore, the current system and processes in place were used as the basic outline for the new system. This helped as there were existing processes in place, and questionnaire and contract form designs could be retained. However, extensive work had to be undertaken to make the system suitable for electronic use. See Section 3.1 Systems Analysis, page 13 and Section 3.6 Challenges Faced Designing Contracts, page 19 further details.

Feasibility Study
Once the broad scope of the project was understood, decisions regarding how the project would be undertaken were examined. The main aim of this stage was to assess whether the newly developed system could cost effectively meet the needs of the client, and whether the project was technically possible and deliverable within the time frame set in place by the MSISS final year project deadline.

There are numerous off the shelf software systems available for use in the personal training market that encompass client management, training logs, payment tracking and accounting recording. The client used Poliquin BioSignature (BMI) software in conjunction with the current system to track client body measurements. When examining different solutions, the aim was to develop a solution that combined the electronic advantages of this software with the functionality of the current system. An investigation into the different available systems on the market was conducted to evaluate the suitability of an off the shelf system versus a custom built one. These systems were compared by cost and functionality. See Appendix F, page F.1 for full details of the comparison. Many of these systems such as BioSignature and Veston Personal Trainer offer the basic functionality required by the client, however they are inflexible in their design. These solutions would be inappropriate as the client wished to implement specific business processes within the system.

Other systems that offer customer relationship management (CRM) like solutions can be costly to implement and are often aimed towards larger organisations with a larger personnel. The services offered are often perceived to be industry best practices and provide a single way to complete a task. This can lead to inflexible designs, especially considering the aim of this project was to have a single integrated system. Purchasing 3rd party software can potentially lead the user into inflexible contracts and the user can become locked to a system due to sunk costs of switching systems, be it financial or time (Litwin and Baron). One of the advantages of off the shelf software is that it is generally cheaper than completely custom built solutions. However in the case of this project, the labour cost of implementing a custom built solution is completely eliminated, therefore negating one of its prime advantages.

During the next meeting with the client, it was revealed that the business was to be re-launched in January 2011 under the name of LiveFit. The client wished to keep the cost of the new system low; especially considering the new business setup reduced potential capital
expenditure. Given the financial constraints and the desire to retain the functionality of the current system, it was decided to focus efforts on developing a custom-built solution. This involved a preliminary investigation into different platforms to determine the options to choose from. The final decision on which platform would best suit this project was decided during the Systems Analysis phase. See Section 3.1, page 13.

The client was interested in the possibility of developing a PDA like application to input data into the system from a mobile device, such as an iPhone or Blackberry. After researching how these apps are developed, it became clear that the development of such an application and the development of a new database would be extremely difficult within the allowed time frame. Therefore it was decided to investigate possibilities and options of developing this application.

It was during this stage that the terms of reference were agreed upon. The broad scope of the project was defined from an early stage to allow work on requirements analysis to progress. By defining the terms of reference early, it gave a clear indication of the work involved in the project and helped focus on the progression of the project.

The Interim Report was also prepared and presented during this stage. This culminated the definition phase of the project. The purpose of the Interim Report was to confirm the terms of reference of the project with the client, as well as identify the further tasks needed to be completed. The report was presented to two supervisors to receive an outside opinion on the project and ensure any oversights were avoided. See appendix B.1 for a copy of the Interim Report.

**Systems Analysis**
The third phase of the SSADM process involved a detailed analysis of the current system and determining the requirements in greater detail.

As the client required the new system follow the processes of the current system, it was necessary to gain a detailed understanding of the current system in use. This was achieved with face to face meetings with the client and e-mail correspondence. During these meetings, an understanding of the information and processes used by the client was obtained by observing the way in which the current system operated. Forms were completed using sample data to determine the exact type of data held within each field. The type of data in each form was then examined to determine its suitability to be converted into electronic form. This step was crucial to complete early in the systems development cycle, as awkward fields such as signatures were identified early. Ideas and solutions could be decided upon before major commitments were made, especially regarding platform adoption. See Section 3.6, page 18, Challenges Faced Designing Contracts, for further detail. This step also focused on eliminating data replication which was an important process in the project. The paper based forms had numerous examples of data being stored multiple times in different forms. This was achieved by moving fields to different forms, deleting fields and deleting unnecessary forms.
While reviewing the requirements of the system with the client, the relaunch of the business and the changing of the name to LiveFit were discussed by the client. The requirements of the system were reviewed to ensure the terms of references and requirements of the system remained unchanged with the relaunch and change of name. It was during these discussions that the design of the new business logo, as described in Section 3.6, page 19, was mentioned and subsequently developed.

Upon completion of this stage, the large scale of work required to design and implement the main features of the system became apparent. Therefore it was decided to focus on completing the main database system and to make recommendations on the development of the PDA application.

Business Systems Design
The fourth phase of the SSADM process was concerned with the different options available regarding the implementation of the database and developing the logical design in a non technical manner. This stage was made possible, as the requirements have already been broadly specified in the previous phases.

Given the financial constraints and the desire to retain the functionality of the current system, as described in Section 3.1, Feasibility Study, page 12, it was decided that a custom-built solution would best suit this project. The first technical decision to be made was what platform was to be used to develop the database. The two options considered were Microsoft Access and MySQL.

MS Access is a user friendly solution that combines an all in one, front and back end interface based on the platform JET/ACE. It is generally suited to a lower volume of data with a small number of concurrent users. As it is an all in one solution, it contains superior and easier to use inbuilt query and reporting tools compared to MySQL. MySQL is a faster database system suitable for a large database systems and a high level of concurrent users. MySQL is primarily a back end interface and requires a front end service such as PHP, .NET or ASP to enter the data in a user friendly environment.

As a user friendly interface was identified as an important attribute of the project, and the system was to be run in multiple instances with a relatively small number of data records, it was decided to use MS Access as the database management system for this project.

MS Access is part of the Microsoft Office package and is a widely used database worldwide. It is a relatively easy-to-use database program with a user friendly interface and is capable of fulfilling the requirements of the project such as multiple instances of the system and if ever required, online support using MS Sharepoint. MS Access also allowed the capability to integrate the BMI software into the database, which would save 200 euro a year in licensing costs for the BioSignature software.
During this stage the logical system design was developed in a non technical manner. Table layouts and relationships between them were created. The process also involved creating data flow diagrams in order to understand how the system will operate. These diagrams outline the logical flow of data through the system based on user interactions with the system and were extremely useful for the design of this system. The flow diagrams developed are shown in appendix C page C.2.

**Physical Design**

The final stage before the construction of the database commenced was the physical design of the database. This stage involved converting the logical design described in the previous section into a technical design. The exact specifications of file definitions and field types were decided upon and basic validation rules to be applied were also outlined. An outline of each form was then constructed in Microsoft Excel. This contained a list of the field names and corresponding data types for each form. An example of the spreadsheets created in this phase are shown in Appendix H, page H.2.

This stage also identified the primary key for each entity. The primary key is the field within each table that uniquely identifies each entity. They are used in the development of the database to create the relationships between tables.

### 3.2 Construction

The development of the system commenced in mid January 2011, after the physical design of the system had been completed. During the physical design period, time was spent acquiring improved database development skills and re-familiarisation with the Access platform. This was necessary to ensure that basic mistakes were avoided from the start of the construction phase as well as gaining a greater knowledge of database systems to provide as high a quality end product as possible (Feddema, 2001).

While SSADM details key design processes in the planning of the system, it provides no guidelines outlining how the design should be implemented and built. However, as a result of having detailed design plans and specifications for the system, many of the difficulties are recognised early and this helps in developing a solution.

MS Access uses objects as the basis for the design for a database. These include tables, forms, queries, reports, macros and modules. As a list of fields for each form was created during the physical design process, this made the construction of the initial tables within Access a quicker and easier task (as well as avoiding any mistakes regarding missing fields). Tables for the database were created using the create table wizard within Access. During this stage, data field types were set and basic validation rules applied. Once completed, the forms for the database were created using in built wizards based upon the tables. These were then customised and amended using the design interface.
Upon the completion of the majority of objects, the relationships between entities were created. These were implemented within the relationships window of Access. Referential integrity was also established during this stage with the cascading updates function enabled but the cascading deletions facility disabled. Cascading deletions were disabled, so that if a foreign key was deleted the corresponding values in other forms or reports would not be deleted.

Once relationships and form designs had been established, the development of the reports began. The report functions were implemented in user friendly forms so that the user could quickly and easily select the information they wanted to gather. Drop down lists for client names and auto wizards for dates were the main features implemented in these forms.

3.3 Development of User Friendly Features

As the client is from a non technical background, a requirement identified from the beginning of the project was to develop user friendly interfaces. Numerous steps were made during the development of the database to ensure that the interface was simple and easy to use (Jurmann, 2008).

1. Combo boxes were used when appropriate to eliminate repetitive data entry;
2. Combo boxes were used in form headers to quickly find and select previous records;
3. Forms were used when possible in place of parameter pop up boxes so that values could be easily selected from auto fill wizards;
4. Data normalisation and duplication issues were addressed such as the Date of Birth field being used to calculate the age of the client in forms such as the PAR-Q and Health and Lifestyle questionnaire.
5. The layout of each form was optimised for use on a laptop, as this was the device the database was to be implemented on. This was achieved by reducing the screen resolution of the developer's machine to 1440*900. This allows easier input of information into the system as the physical sizes of the objects are optimised for size for the screen.

Some examples of the above are shown in the figures below:

Figure 3.3.1 - Client Consultation Form
Within the Client Consultation Form each client is issued a unique Client ID number to avoid conflicts regarding clients with the same name. Validation rules and data types are employed to ensure the correct type of information is entered in each field such as dates and e-mail addresses.

To enable the user to easily look up previous consultation forms, a combo box to find a specific client based on their ID was created in the form header. The list is sorted alphabetically by surname and then forename. A similar look up field is implemented within the PAR-Q and Contract forms. The Contract form look up field also includes the date the contract was signed. This was required as clients can sign multiple contracts, as contract terms and conditions may change on an annual basis.

When appropriate, combo boxes were used throughout the design of the system to cut down on the manual entry of data required by the user. An example of this can be seen in the PAR-Q form.

In the Contract form, the client and trainer names are selected via a combo box and the date signed is selected from a text box validated to display date. The signature is recorded in an OLE object field and input via a tablet drawing device. Information regarding the implementation of the tablet drawing device is described in Section 3.5, page 16 as well as the user manual.

Both the Client Session and Payments forms use queries to retrieve session and payment information between two specified dates. These functions are implemented with user friendly forms using an auto fill-date pop up text box for easy selection of dates rather than the conventional parameter pop up boxes used in MS Access. A report is then generated and gives summary statistics of the figures between the two dates specified. This gives quick and easy access to monthly revenue figures.
Data such as client date of birth were used to automatically calculate age forms such as the PAR-Q and Health and Lifestyle questionnaire. It was also used in the BMI tracker to show a real time view of their age. When a new record is entered into the BMI tracker the age is calculated from the date of entry and not the actual real time date. Therefore, the age shown is the age the measurement was taken. This was an improvement identified when redeveloping the old BMI tracker software. All these designs are implemented to ensure a high level of data integrity within the system.

![Figure 3.3.4 – BMI Tracker Age Calculator](image)

### 3.4 System Testing

The final stage of the development process was testing. The system was tested on a continuous basis throughout the development phase, as well as a complete systems test (Myers, 2004). On the completion of each component, it was individually tested and integrated within the system and tested again. A number of dry runs of the system were completed. The functionality from the user's perspective and verification of the system's features with test data were examined as part of the testing phase. The testing phase concluded that the system is working as expected and meets the requirements specified by the client. The testing process is explained further in Appendix E, page E.1.

### 3.5 Implementation

The database will be stored on the trainer's business laptop and access will only be available to the trainer. Upon completion of the report, a full system demonstration will be conducted. A user manual will also be supplied to ensure the client gains maximum benefit from the system and understands the systems processes and functions from the beginning. The similarities between the current and new system will limit the difficulties faced by the client of adopting a new system. A printed copy of the user manual accompanies this report and is also available on the CD attached with this report.
3.6 Project Development

Challenges Faced Designing Contracts
There were numerous challenges faced when converting a paper based system into an efficient electronic database. One problem identified was the storage of client contract agreements. The system in place required the client signatures on three separate forms; Contract, Consent and Informed Consent. Initially, plans for simple check boxes to comply with agreements were considered but thought to be unsuitable for the type of agreements being signed. While this type of system is implemented in numerous web based applications, it works on the assumption that the user agrees to the terms and conditions on their own personal machine. As the system is to be implemented on the trainer’s machine, it leaves the system open to abuse. A novel solution was created and adopted in this project using a drawing tablet to insert the required signature electronically into the database. MS Access provides a field called an OLE object, which allows in the insertion of a file into the table. Using this method, it is possible to insert bitmap images into the database. There are numerous drawing tablets on the market at competitive prices. For this project, the drawing tablet required only basic functionality for signing signatures. Wacom’s product, the Bamboo Pen, was identified as meeting the requirements needed to sign contracts in electronic form (wacom.com). It is available for approximately 55 to 70 euro on several Irish and UK hardware websites and physical retailers. It was decided that this investment would not only integrate the necessary functions into the database system but also make financial sense by eliminating the cost associated with paper contracts such as paper, printing and space requirements.

New Logo
During the Systems Analysis stage of design, the re-launch of the business and changing of the name to LiveFit was discussed. During these discussions, the client expressed an interest in developing a new logo for the new business. Using previous experience with Adobe Photoshop, it was offered to create the logo as part of the project. The client had already created the design concept but did not have the technical skills to implement it. The ideas were discussed and a simple sketch of the desired logo was created on paper. The design was relatively simple and was created within CS4 within a couple of hours. The logo was then emailed to the client for approval. The logo was then adopted when the business was relaunched in January 2011.

![LiveFit Logo](image)

Figure 3.6.1 - Company Logo
4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

This project was a complex and challenging task. It involved drawing on a number of personal and technical skills to identify the client’s needs and to design an appropriate system to meet those needs. It required developing the technical skills needed to build the system in MS Access as well as the skills developed by adopting the SSADM methodology. The new system will overcome the limitations of the current system as outlined in Section 2.1 page 4. The end result is a system which meets the client’s expectations and will add value to business for time to come.

As this is a core business process, the reliability and security of the system developed was a high priority. Extensive work was put into the design and testing of the system to ensure the system that the system met these requirements. User friendly features and validation rules were employed throughout the development of the system to minimise the user’s difficulty in adopting the new system. A User Manual has also been provided to ensure the client gains the maximum possible benefit from the system.

4.2 Maintenance Recommendations

Database Backup
It is important to maintain backup copies of the database in order to retain the functionality of the database in the unlikely event of the accidental deletion or corruption of the database. It is recommended that at least one hard copy of the system is stored on an external hard disk in a secure location as well as a copy on a file storage system.

Regular data backup
As the data contained within the system is of crucial importance to the running of the business, it is extremely important to back up the data stored in the database regularly and maintain copies of the backed up data in a similar fashion to the backup copies of the database. The process of exporting data from the core tables is quick & simple and is described in the user manual. It is recommended to perform daily backups of both the database and the data it contains. Further advice regarding data backup and how to deal with multiple copies of the database are discussed in the User Manual.

Ensure users’ PCs trust the system’s file location
A security warning is displayed each time a user opens the system due to the procedures implemented in the database. In order to ensure the database is fully functional, the user must manually enable the content. This must be performed each time the user opens the database. To enable these procedures by default, the user must amend the MS Access settings to trust the databases file location. This is described in the User Manual.
4.3 Potential Future Development

Hosting the database system on the internet was investigated during the Business Systems Design phase but not implemented. This was because the core business processes did not need to be implemented on the internet and the availability of internet access is limited in the locations services are offered. By constructing the system in MS Access, the client has the option to add online capability using Microsoft Sharepoint. While possible, it would not be necessary to host the entire system online but just the training log function. This would enable clients to add their own workout logs to the system. These workout logs could then be regularly imported into the database developed in this project.

Due to the time restrictions in place to deliver the system, the mobile PDA device to input data into the system could not be developed. However the feasibility of the implementation of such a device was examined. In the future, it is possible to add this functionality to the current system with some modifications. The mobile data input system could be implemented in a mobile browser, preferably using a windows based environment due to the new system being developed in MS Access. The application can be developed any language that is capable of exporting data into MS Excel spreadsheets such as ASP.NET using System.Web.Mobile or XHTML-MP. Using these platforms, mobile friendly pages can be created to replicate the fields of the new system to input the data. The stored data can be imported into the new system and stored. As with most mobile applications and pages, much of the effort of implementation is focused on creating user friendly interfaces, as the screen space on mobile input devices by their nature are limited. Therefore extensive use of drop down lists, predicative text functions and screen optimisation would be required in the production of these pages.

The implementation of an online service to add client workouts to the system and development of a mobile input device would be suitable for further work and could be an ideal future MSISS final year project.
# APPENDICES

<table>
<thead>
<tr>
<th>NO.</th>
<th>CONTENT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Original Project Outline</td>
<td>A.1</td>
</tr>
<tr>
<td>B.</td>
<td>Interim Project Report</td>
<td>B.1</td>
</tr>
<tr>
<td>C</td>
<td>Technical Commentary</td>
<td>C.1</td>
</tr>
<tr>
<td>D</td>
<td>User Manual</td>
<td>D.1</td>
</tr>
<tr>
<td>E</td>
<td>Test Documentation</td>
<td>E.1</td>
</tr>
<tr>
<td>F</td>
<td>Software Options</td>
<td>F.1</td>
</tr>
<tr>
<td>G</td>
<td>Screen Shots</td>
<td>G.1</td>
</tr>
<tr>
<td>H</td>
<td>System Design</td>
<td>H.1</td>
</tr>
</tbody>
</table>

REFERENCES
A. Original Project Outline

Project No. 14

Client: Physical Evolution Fitness Ltd
Project: Develop software based application for data storage and organisation.
Location: Carlisle Health & Fitness Club, Dublin 6W
Client Contact: Stephen Dunne, +3538 7900 0094, stephen.dunne@yahoo.ie
www.physicalfitness.ie
School Contact: Aideen Keaney

Client Background

Physical Evolution Fitness is a franchise based health and fitness company that uses health and fitness based professionals to provide a variety of services. These services include personal training, lifestyle management, physical therapies, fitness classes and sports coaching. They are based in a variety of locations; currently including freelance to the South Dublin public and Carlisle Health and Fitness Club.

Each trainer as a franchisee works under the branding of PEF and gains much ongoing support from management and is also included in cooperated marketing and promotional campaigns. Franchisees also have a code of ethics and service outlines that they should adhere to. This is to maintain the high level of quality set by PEF. Franchisees also gain support and use of the company website www.physicalfitness.ie.

Project Background

PEF franchisees currently record and store a lot of information on clients on a frequent basis. These range from health forms, to statistics and record keeping of workouts.

Client Requirement

The client would like to design and develop a software based application that stores all clients' records and that can be updated frequently and on the move.

What is in it for the student?

This is a challenging project for a student with an interest in software design and development. The student will need to engage with the client to fully understand the information collected and maintained by franchisees. The student will then need to design and implement a software solution that is straightforward and easy to use and that is available online.
B. Interim Report

Management Science and Information Systems Studies
Project: Development of a software based solution database for a personal training company
Client: Physical Evolution Fitness Ltd
Student: David Horn
Supervisor: Aideen Keaney

Review of Background and Work to Date
Physical Evolution Fitness is a franchise based health and fitness personal training company. Services include personal training, lifestyle management, physical therapies, fitness classes and sports coaching.

The client currently stores the majority of its client and business information on paper and wishes to move records to electronic form. The aim of the project is to deliver a software based application that stores all clients’ records and financial accounts in one integrated system.

The current system comprises of a client management system and a financial accounting record system. The client management system tracks each client within the business and provides a detailed history of previous information such as contracts, training logs and BMI. A commercial piece of software is currently used to record client’s physical measurements and BMI. The project’s aim is to integrate these systems into one software solution. This will require the creation of a client database with links to previously signed contracts, medical release forms, training program logs and diet logs. The software solution will also require the design and integration of a custom built BMI software into the database.

The financial accounting system is used to track all financial records within the company. It provides records of class payment, monthly revenues and expenses and food supplement sales. These records are currently held in excel spreadsheets or in paper form. The software solution will capture all information pertaining to the finances of the business into one accessible and user friendly environment.

The focus of the project so far has been to gain a precise and detailed understanding of the client’s requirements to ensure the system built will fulfil the client’s expectations. This has been achieved through extensive consultation with the client. A feasibility study is currently being performed to ensure that the project is technically possible and financially suitable for the client.

Terms of Reference
The client wishes to develop a system to integrate the recording of its client database and financial accounting data. The terms of reference are as follows:
- Carry out a detailed analysis of current data recording and methods
- Choose a suitable platform for the database system
- Create an electronic database:
o To record all information pertaining to the clients of the business
o To record all financial operating revenues and expenses relevant for accounting and tax purposes including product sales
o Integrate a Body Mass Index and Body Fat calculator into the client database system

- To investigate the development a PDA application to allow the mobile and immediate input of training logs into the client database
- To investigate hosting the client database online with the ability to alter data by the trainer and/or client
- Implement and fully test system
- Create supporting documentation for the system

Further Work
The primary objective of this project is the design and implementation of the database system. Once the feasibility study has been completed, system design will be undertaken to examine different technical solutions and a logical design of the system will be developed. The technical design of the system will then begin and then the construction and assembly will commence in the chosen platform. The supporting documentation, user manual and writing of the final year project will be undertaken once the majority of the system is completed which is aimed for 28/2/2011.

Conclusions
The current system, in its paper based form, is inefficient and time consuming. This provides an ideal opportunity for the development of a database system which will meet the client's requirements and accurately record all relevant business data as well as store it in a more accessible and user friendly form. The system will provide greater accessibility to business information.
C. Technical Commentary

C.1 System Analysis and Development Methodology
The SSADM and waterfall model was chosen for the development of this system. The waterfall process is represented diagrammatically as follows.

C.2 Data Flow Diagrams
The following diagrams represent the logical flow of data from user to system.

They include details of the user and client involved in the process and brief descriptions of the tasks performed by both the user and the system for each function. These tools are part of the SSADM methodology for system design.
D. User Manual

A Systems User Manual is attached as a separate bound document to this report. It provides a description of the system and instructions on how to use it. The manual was also made available to the client in electronic form in addition to print form for internal use. A copy of the system is also included in CD. Section 1 of the user manual contains detailed instructions for system use and the passwords required.
E. Test Documentation

This appendix contains details of the system testing that was carried out during the development of this system. The test plan is described and followed by a description of the tests carried out, error resolution procedures and summary results.

E.1 Test Plan

Testing of this system was continuous throughout the development of the system. At each stage of system design and implementation, features were tested with test data to ensure the system behaved in the expected manner. There was also a comprehensive testing period after the completion of the system design to ensure the entire system worked collectively together.

E.2 Testing Methodology

A number of procedures were employed to test the system. The aim of the system testing was to minimise bugs in the system, ensure all system functionality was performing as expected and uncover any undiscovered errors. For this purpose, some test data was inputted to the system.

Logical Checking
This test involved manually going through the entire system, from design to functionality. It was performed to check that the logic and concepts behind the system made sense. This was a hands-on manual task and performed after the system had been implemented. The results of the test concluded that all logic in the system was sound.

Report and document testing
This stage of testing involved the entering of test BMI, session details, payment details, monthly and yearly income and expense data into the database, to allow the system to generate total figures and reports. Calculations were performed manually on the data entered into the system and verified against the results generated by the system. Incorrect and false data was entered into the system to ensure the data validation in data entry forms was sufficient. This test concluded that all reports and documents produced are working as expected and data validation is sufficient to restrict the entry of incorrect or erroneous data.

Navigation Testing
This test involved the testing of the system’s navigation functionality. Users have many options for accessing various Access forms, queries and reports and this test ensured that the navigational features of the system are working as expected. This test concluded that this is the case.
F. Software Options

An in-depth analysis of potential personal training software solutions and customer relationship management (CRM) systems was conducted before the decision to implement a custom built solution was taken.

There are numerous different types of systems in the market that cater for different functions within the personal training market. Some systems cater for a niche market but do not offer complete solutions. An example of this is Veston’s Personal Trainer PDA software. This offers PDA functionality to the trainer but is limited to the amount of client information you can hold. There is no body composition recording function and the billing system is inflexible in its design. Other software such as the Poliquin BioSignature offers body composition functionality but does not store detailed client records such as health questionnaires and contract forms which were an essential part of the old system in use.

BioExSystems is a product that meets most of functionality that a custom built solution would provide. The key weakness present in this system is that is inflexible in its design and layout. The business processes developed by LiveFit would have to be significantly altered and changed to use this system. While the price of the system is not extremely expensive, is high enough to be a considering factor in purchasing.

A more complete CRM solution was also investigated. Mind Body offer a comprehensive list of features as well as online support and scheduling. Similar to BioExSystems, it does not offer customisation and the monthly subscription fee ties the user into the system and can lead to costly usage fees. As it is a core business process, the information held within the database is of crucial importance to the trainer. The user did not want to be dependent on this type of system.

The custom built solution offered the client the option of retaining the business processes developed by the company at a small financial cost. No unnecessary or unwanted features would be present in the system and system would be as the client planned.

<table>
<thead>
<tr>
<th>Name</th>
<th>Basic Client Info</th>
<th>Detailed Client Info</th>
<th>Body Composition</th>
<th>Exercise Recorder</th>
<th>Nutrition Recorder</th>
<th>Billing</th>
<th>PDA Application</th>
<th>Price per Annum-€</th>
<th>Recurring Yearly Charge</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veston</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>50</td>
<td>NO</td>
<td><a href="http://www.veston-software.com/PersonalTrainerPDA.aspx">http://www.veston-software.com/PersonalTrainerPDA.aspx</a></td>
</tr>
<tr>
<td>Custom Built</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>50</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>
G. Screen Shots

Figure G.1.1 - Password Protection

Figure G.1.2 - System Home Page

Figure G.1.3 - Contract Form
Figure G.1.4 – PAR-Q Form

Figure G.1.5 – Training Program Log
Figure G.1.6 – Training Program Log Finder

Figure G.1.7 – Training Program Log Report

Figure G.1.9 – BMI Biosignature Form
Figure G.1.10 – Client Session Details

Figure G.1.11 – Client Session Details Finder

Figure G.1.12 – Client Session Details Report
<table>
<thead>
<tr>
<th></th>
<th>Personal Training</th>
<th>Other</th>
<th>Other</th>
<th>Income Total</th>
<th>Expense Total</th>
<th>Overall Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>15,120.00</td>
<td>8.00</td>
<td>8.00</td>
<td>510.00</td>
<td>2245.00</td>
<td>-439.06</td>
</tr>
<tr>
<td>Feb</td>
<td>12,111.00</td>
<td>12.00</td>
<td>22.00</td>
<td>1138.00</td>
<td>3937.02</td>
<td>-2801.02</td>
</tr>
<tr>
<td>Mar</td>
<td>1,112.00</td>
<td>2.00</td>
<td>2.00</td>
<td>336.00</td>
<td>1461.02</td>
<td>-1125.02</td>
</tr>
<tr>
<td>Apr</td>
<td>11,113.00</td>
<td>6.00</td>
<td>22.00</td>
<td>1158.00</td>
<td>60.05</td>
<td>1097.95</td>
</tr>
<tr>
<td>May</td>
<td>1,112.00</td>
<td>87.00</td>
<td>87.00</td>
<td>11527.00</td>
<td>1316.04</td>
<td>10210.96</td>
</tr>
<tr>
<td>Jun</td>
<td>1,187.00</td>
<td>8.00</td>
<td>22.00</td>
<td>1277.00</td>
<td>51.03</td>
<td>1225.97</td>
</tr>
<tr>
<td>Jul</td>
<td>167.00</td>
<td>8.00</td>
<td>23.00</td>
<td>1361.00</td>
<td>271.2</td>
<td>1089.8</td>
</tr>
<tr>
<td>Aug</td>
<td>1,111.00</td>
<td>4,234.00</td>
<td>3,321.00</td>
<td>198.00</td>
<td>252.01</td>
<td>7414.7</td>
</tr>
<tr>
<td>Sep</td>
<td>1,112.00</td>
<td>33.00</td>
<td>33.00</td>
<td>8686.00</td>
<td>1480.00</td>
<td>1468.00</td>
</tr>
<tr>
<td>Oct</td>
<td>1,112.00</td>
<td>33.00</td>
<td>33.00</td>
<td>1179.00</td>
<td>60.00</td>
<td>1119.00</td>
</tr>
</tbody>
</table>

Total: 21,439.26
H. System Design

H.1 Original Client Forms

Client Information
Consultation
  Client Consultation
  Health and Lifestyle Consultation
Price
  Price List
Contract
  Contract
  Class Registration
Consent
  Informed Consent
  PAR-Q
  Medical Release
Assessment
  Physical Assessment
  Fitness Assessment
Diet
  Diet Analysis
  Diet Modification Program
  Nutrition Daily Log
Log
  Training Program Log
  Training Program Log II
  Details Log
  Client History Log

Client Payments
Database
  Client Database
Payment and Sessions
  Client Payment Details
  Client Session Tracker
  Client Session Tracker Value
  Client Session Details
Payment and Class
  Class Payment Record

Business Accounts
H.2 Physical Design of Tables

<table>
<thead>
<tr>
<th>CLIENT CONSULTATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form ID - Primary</strong></td>
<td>Auto-number</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Contact Number</strong></td>
<td>Number</td>
</tr>
<tr>
<td><strong>E-Mail</strong></td>
<td>E-mail</td>
</tr>
<tr>
<td><strong>Date of Birth</strong></td>
<td>Date</td>
</tr>
<tr>
<td><strong>Next of Kin Name/Number</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Injuries/Illnesses</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Goals</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Time Commitment</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Exercise History</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Likes/Dislikes</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Trainer Notes</strong></td>
<td>Text</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTRACT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form ID - Primary</strong></td>
<td>Auto-number</td>
</tr>
<tr>
<td><strong>Client Name</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Trainer Name</strong></td>
<td>Text</td>
</tr>
<tr>
<td><strong>Date Signed</strong></td>
<td>Date</td>
</tr>
<tr>
<td><strong>Date Signed</strong></td>
<td>Date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAR-Q</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form ID - Primary</strong></td>
<td>Auto-number</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>Date</td>
</tr>
<tr>
<td><strong>Heart Condition</strong></td>
<td>Check Box</td>
</tr>
<tr>
<td><strong>Chest Pains</strong></td>
<td>Check Box</td>
</tr>
<tr>
<td><strong>Chest Pains</strong></td>
<td>Check Box</td>
</tr>
<tr>
<td><strong>Dizziness</strong></td>
<td>Check Box</td>
</tr>
<tr>
<td><strong>Health Problems</strong></td>
<td>Check Box</td>
</tr>
<tr>
<td><strong>Pregnant</strong></td>
<td>Check Box</td>
</tr>
<tr>
<td>Item</td>
<td>Action</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Surgery</td>
<td>Check Box</td>
</tr>
<tr>
<td>If yes, elaborate</td>
<td>Text</td>
</tr>
<tr>
<td>Chronic illness</td>
<td>Check Box</td>
</tr>
<tr>
<td>If yes, elaborate</td>
<td>Text</td>
</tr>
<tr>
<td>Orthopaedic problems</td>
<td>Check Box</td>
</tr>
<tr>
<td>If yes, elaborate</td>
<td>Text</td>
</tr>
<tr>
<td>Medication</td>
<td>Check Box</td>
</tr>
<tr>
<td>If yes, elaborate</td>
<td>Text</td>
</tr>
<tr>
<td>Medication effect abilities</td>
<td>Text</td>
</tr>
<tr>
<td>Smoke</td>
<td>Check Box</td>
</tr>
<tr>
<td>If yes, how many</td>
<td>Number</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Check Box</td>
</tr>
<tr>
<td>If yes, how much</td>
<td>Number</td>
</tr>
<tr>
<td>Hours of sleep</td>
<td>Number</td>
</tr>
<tr>
<td>Job type</td>
<td>Check Box - 3</td>
</tr>
<tr>
<td>Job travel</td>
<td>Check Box</td>
</tr>
<tr>
<td>Stress levels</td>
<td>Number - Scale 1-10</td>
</tr>
<tr>
<td>Stress sources</td>
<td>Text</td>
</tr>
<tr>
<td>Overweight family</td>
<td>Check Box - 4</td>
</tr>
</tbody>
</table>
References


LiveFit

Development of a software database solution for a personal training company

User Manual

March 2011

Prepared by: David Horn

Supervisor: Aideen Keaney
Abstract

This document outlines the instructions for the correct usage of the software database designed for LiveFit. The system designed records information regarding client interactions with the business such as previous consultations, contracts signed, payment records and a financial accounting information. Instructions of each of the systems functions, from the user’s perspective, are described in this manual.

A CD containing a copy of the system is provided in the back of this user manual.
<table>
<thead>
<tr>
<th>NO.</th>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Enable Database Functionality</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Consultation and Contracts</td>
<td>3</td>
</tr>
<tr>
<td>2.1</td>
<td>Add a New User to the System</td>
<td>3</td>
</tr>
<tr>
<td>2.2</td>
<td>Client Consultation</td>
<td>3</td>
</tr>
<tr>
<td>2.3</td>
<td>PAR-Q</td>
<td>3</td>
</tr>
<tr>
<td>2.4</td>
<td>Contract</td>
<td>4</td>
</tr>
<tr>
<td>2.5</td>
<td>Informed Consent Form</td>
<td>4</td>
</tr>
<tr>
<td>2.6</td>
<td>Class Registration</td>
<td>5</td>
</tr>
<tr>
<td>2.7</td>
<td>Health and Lifestyle Consultation</td>
<td>5</td>
</tr>
<tr>
<td>2.8</td>
<td>Medical Release Form</td>
<td>6</td>
</tr>
<tr>
<td>3.</td>
<td>Client Payments and Tracking</td>
<td>6</td>
</tr>
<tr>
<td>3.1</td>
<td>Client Session Details</td>
<td>6</td>
</tr>
<tr>
<td>3.2</td>
<td>Client Payment Details</td>
<td>7</td>
</tr>
<tr>
<td>3.3</td>
<td>Client Session Tracker</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Training Logs, Diet and BMI Records</td>
<td>7</td>
</tr>
<tr>
<td>4.1</td>
<td>Training Program Log</td>
<td>7</td>
</tr>
<tr>
<td>4.2</td>
<td>Details Log</td>
<td>8</td>
</tr>
<tr>
<td>4.3</td>
<td>BMI Biosignature</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Financial Record System</td>
<td>9</td>
</tr>
<tr>
<td>5.1</td>
<td>Monthly Expenses</td>
<td>9</td>
</tr>
<tr>
<td>5.2</td>
<td>Yearly Expenses</td>
<td>9</td>
</tr>
<tr>
<td>5.3</td>
<td>Trainer Annual Accounts</td>
<td>9</td>
</tr>
<tr>
<td>6.</td>
<td>Closing the System</td>
<td>10</td>
</tr>
<tr>
<td>7.</td>
<td>Data Backup</td>
<td>10</td>
</tr>
</tbody>
</table>
1. **Enable Database Functionality**

**Input Password**
In order to open that database, the appropriate password must be entered upon the opening of the system. The default provided with the CD is: live

![Figure 1.1.1 - Password Protection](image)

**Change password**
The password should be changed immediately from the default upon adoption of the system. This can be achieved by first opening the Database Exclusively. First, close the database. Then you can open the database as follows:

1. Click the Microsoft Office Button, and then click Open and enter the password
2. In the Open dialog box, find the database
3. Click the arrow next to the Open button, and then click Open Exclusive

The first step is to remove the password

1. Select the Database Tools group
2. Click Decrypt Database

To enable password

1. Select the Database Tools tab
2. In the Database Tools group, click Encrypt with Password
3. In the Set Database Password dialog box, type a password and verify it in the Verify field

In order to deploy the system, your PC must trust the database file. This can be achieved in either two ways:
Enable the content upon opening the system
Open the database system by double clicking on the system file. The Message Bar containing a Security warning will appear at the top of the screen. Enable the database content by select options, click “Enable this content” and select OK, as shown.

![Security Warning](image)

**Figure 1.1.2 - Security Warning**

Permanently Trust the file location
In order to avoid having to enable the content every time the system is opened, the following steps can be taken to permanently enable the content.

1. Open the system by double clicking on its file icon
2. Click the Microsoft Office Button (this is the button with print, save, open etc.)
3. Select Access Options in the bottom left corner of the Office Menu
4. Select the Trust Centre tab in the window which pops up
5. Click on Trust Centre setting and select the trusted locations tab on the new window which pops up
6. Click "Add new location", press browse and navigate to the system's file location in the pop up window. Select OK
7. Press OK on the two remaining open Office Menu Windows

The PC will now trust the location of the system and will enable the system's functionality each time it opens. You do not need to perform this step again unless the location of the system file changes.
2. **Consultation and Contracts**

2.1 **Add a New User to the System**

To add a new client to the system using the correct business processes, three forms should be completed in the following specific order. They are the Client Consultation, PAR-Q and Contract forms.

2.2 **Client Consultation**

From the switchboard home page, the Client Consultation form can be accessed by clicking on the Client Management System button and then the Consultation and Contracts button. Once entered, the user can begin the process of adding a new client to the system.

**Add client to the system**
1. Select Add New Client, to create a new unique client key
2. The client information should be entered in the relevant fields
3. Click Next Record button to save the record

**Find a specific client details in the database**
1. Select the client name in the in the drop down list in the header of the form

The client list is sorted alphabetically by surname.

To enter another form or function within the database the Switchboard button should be selected.

2.3 **PAR-Q**

This section is also accessed through the switchboard and the Consultation and Contracts section.

**Add a client’s questionnaire to the system**
1. Select the new record button
2. Select the client from the drop down list in the Client ID field. Note: This field is automatically updated whenever a client is added in the Client Consultation form
3. Fill in the series of check and text boxes with the appropriate information. Note: Drop down boxes are used when possible to cut down on the amount of repetitive typing entries required
4. Click the Next Record button once the form is completed, to ensure the record is saved

**Find a specific client details in the database**
1. Select the client name in the in the drop down list in the header of the form

Note: The information is sorted alphabetically by surname and then reverse chronological order of when signed.
2.4 Contract

This is the last form to be completed before the client is fully registered on the system.

Add a client contract to the system
1. Select the new record button
2. Select the client from the drop down list in the Client ID field
3. Enter the date into the Date Signed field using the auto complete wizard
4. Click the Next Record button once the form is completed, to ensure the record is saved

Change the trainer’s name in the contract section
The trainer name is automatically comes up as the default users name. If for any reason this was to change, it can be simply edited by clicking on the edit items list. A new trainer can be added to the list and then set as the default user if the unlikely case ever arises.

Insert a client signature
To enter the client signature, the drawing tablet should be fully installed and attached to the PC via USB.

1. Right click on the Client Signature field and select Insert Object
2. Select Bitmap Image and OK
3. This will open the default application associated with bitmaps which should be Microsoft Paint. The client should then input their signature via the drawing tablet
4. Select the paint menu in the top left corner and select Update Document to save the signature to the database
5. Close paint by selecting the X button in the top right corner

Edit the terms and conditions
If the terms and conditions of the contract need to be altered, this can be achieved by the following:

1. Select the Home Tab in the top left
2. Select the View tab below this and view the form in Design Mode
3. Select the text and edit
4. Click Yes, when prompted to save the changes to the design of the form

2.5 Informed Consent Form

Add a client contract to the system
1. Select the new record button
2. Select the client from the drop down list in the Client ID field
3. Enter the date into the Date Signed field using the auto complete wizard
4. Click the Next Record button once the form is completed, to ensure the record is saved
**Insert a client signature**
To enter the client signature, the drawing tablet should be fully installed and attached to the PC via USB.

1. Right click on the Client Signature field and select Insert Object
2. Select Bitmap Image and OK
3. This will open the default application associated with bitmaps which should be Microsoft Paint. The client should then input their signature via the drawing tablet
4. Select the paint menu in the top left corner and select Update Document to save the signature to the database
5. Close paint by selecting the X button in the top right corner

**Edit the terms and conditions**
If the terms and conditions of the contract need to be altered, this can be achieved by the following:

1. Select the Home Tab in the top left
2. Select the View tab below this and view the form in Design Mode
3. Select the text and edit
4. Click Yes, when prompted to save the changes to the design of the form

2.6 **Class Registration**

The Class Registration form is used to record an agreement between the client and trainer when undertaking a specific training program or “Boot Camp”. The trainer must first fill in the description of the “Boot Camp” and the terms and conditions of agreement.

**Add a client signature to the agreement**
1. Select the agreement wished to be signed by navigating through the records
2. Select the client in the Client ID field in the subform
3. Enter the date signed of the agreement
4. Right click on the Client Signature field and select Insert Object
5. Select Bitmap Image and OK
6. This will open the default application associated with bitmaps which should be Microsoft Paint. The client should then input their signature via the drawing tablet
7. Select the paint menu in the top left corner and select Update Document to save the signature to the database
8. Close paint by selecting the X button in the top right corner

2.7 **Health and Lifestyle Consultation**

**Add a client’s consultation questionnaire to the system**
1. Select the new record button
2. Select the client from the drop down list in the Client ID field
3. Fill in the series of check and text boxes with the appropriate information
4. Click the Next Record button once the form is completed, to ensure the record is saved

Find a specific client details in the database
1. Select the client name in the drop down list in the header of the form

2.8 Medical Release Form

Add a client’s medical release form via .docx
1. Select the new record button
2. Select the client from the drop down list in the Client ID field
3. Enter the date received
4. Right click on the Client Signature field and select Insert Object
5. Select Create from File
6. Select the link check box and Browse
7. Select the correct file and select Open
8. Click the Next Record button once the form is completed, to ensure the record is saved

3. Client Payments and Tracking

This section can be accessed from the switchboard home page. Select Client Management System and then Client Payment and Tracking. Once entered, the user can begin the process of adding client financial records to the system.

3.1 Client Session Details

Add a client to the session details list
1. Select a new record or click on the empty Date of Session field at the bottom of the list
2. Enter the date using the auto-complete wizard
3. Select the client using the Client ID from the drop down list
4. Enter a description of the type of session
5. Enter the value of the session
6. Press enter or next record to ensure the record is saved

Find previous records based on date
1. Select the Client Session Details Finder from the button on the Client Session Details form or alternatively via the switchboard
2. Enter the start date using the auto-complete wizard
3. Enter the end date using the auto-complete wizard
4. Select the Retrieve Session Details Between Dates button to generate a report on the data selected
3.2 Client Payment Details

Add a client to the session details list
1. Select a new record or click on the empty Date of Session field at the bottom of the list
2. Enter the date using the auto-complete wizard
3. Select the client using the Client ID from the drop down list
4. Enter the value of the session
5. Enter the number of sessions paid for
6. Press enter or next record to ensure the record is saved

Find previous records based on date
1. Select the Client Payment Details Finder from the button on the Client Payment Details form or alternatively via the switchboard
2. Enter the start date using the auto-complete wizard
3. Enter the end date using the auto-complete wizard
4. Select the Retrieve Payment Details Between Dates button to generate a report on the data selected

3.3 Client Session Tracker

Once an agreement has been made on the number of sessions to be provided, the trainer enters in the number of sessions to be given.

Each time the trainer gives a session, it is marked off under the number with the value of the session.

4. Training Logs, Diet and BMI Records

4.1 Training Program Log

Add workout performed by the client
From the home page, the Training Program Log form can be accessed by clicking Client Management System and then Training Logs, Diet and BMI records.

1. Select the new record button
2. Select the client from the drop down list in the Client ID field
3. Enter the required information into the appropriate fields
4. Click the Next Record button once the form is completed, to save the training log entry

Look up the history of workouts performed by a specific client
This is achieved in the Training Program Log Finder form. This can be access from the Training Logs, Diet and BMI records section or directly by the selecting the button on the Training Program Log form.

1. Select the Client via the drop down list
2. Click the Retrieve Client’s Workout History button

This generates a report based on a query within the database. It provides a history of the workouts performed by the client in reverse chronological order.

4.2 Details Log

Add information to the Details Log
From the home page, the Details Log form can be accessed by clicking Client Management System and then Training Logs, Diet and BMI records.

1. Select the new record button
2. Select the client from the drop down list in the Client ID field
3. Fill in the Details Description and Date filled in
4. Click the Next Record button once the form is completed, to ensure the record is saved

Look up the history of Details Log for a specific client
This is achieved in the Details Log Finder form. This can be access from the Details Log records section or directly by the selecting the button on the Details Log form.

1. Select the Client via the drop down list
2. Click the Retrieve Client’s Workout History button

This generates a report based on a query within the database. It provides a history of the workouts performed by the client in reverse chronological order.

4.3 BMI Biosignature

Add a client record to the system
1. Select the new record button on the bottom of the form
2. Select the client wish to added via the drop down box
3. In the subform, enter the measurement information. All fields must be filled in order for the auto-calculate functions to work.
4. Press enter or next record to save the record when the information is entered
5. **Financial Record System**

5.1 **Monthly Expenses**
The monthly expenses form records expenses in a given month.

**Record an expense for a new month**
1. Select the new record button on the bottom of the form
2. Select the Month from the drop down list
3. Select the Year from the drop down list
4. In the subform, enter the expenses under the relevant headings
5. Press enter or next record to save the record when the information is fully entered
6. The total figures for the month will be shown in the footer of the subform

5.2 **Yearly Expenses**

1. Select the new record button
2. Select the year from the drop down list – Take note of the automatic Year ID number
3. Enter the expenses for the year under the relevant headings
4. Press enter or next record to save the record when the information is fully entered

5.3 **Trainer Annual Accounts**

1. Select the year from the drop down list
2. Enter the corresponding Year ID number from the yearly expenses form in as the expense number
3. Enter the incomes for the year under the relevant headings
4. The totals will be calculated automatically
5. Press enter or next record to save the record
6. **Closing the System**

*Close a form*
To close a form in the database, right click on the relevant form in the ribbon bar on the top of the screen and select close.

![External Data Tab](image)

**Figure 6.1.1 - External Data Tab**

*Closing the System*
You can close the system in the usual fashion, by clicking the X button at the top right hand corner of the screen.

7. **Data Backup**

This data is of critical importance to business, due to the operational content of the information. As such, regular data backup is essential. It is recommended that the data is backed up at least once every week, but more frequent backups are always preferable. Data backup may be achieved in either of the following ways:

*Backup system file*
This is a simple and effective way of backing up the database as it copies the database structure and the data contained within. This can be performed two possible ways:

1. Copy the database file from the location the file is being run on by right clicking on the file (or alternatively using the CTRL + C command)
2. Paste the file to another hard drive, USB Key or a remote server
   
   or

1. Open the system by double clicking on its file icon
2. Click the Microsoft Office Button (this is the button with print, save, open etc.)
3. Select Save As; Access 2007 database
4. Click Yes, close any open forms
5. Save file to another hard drive, USB Key or a remote server
If the system ever becomes corrupt on the client’s hard drive, the most recent backup copy can be used in its place.

**Export data to Excel**
To export summary reports to Excel, click the external data tab as shown in Figure 7.1.1 and select Excel.

Select the desired file destination and file type in the window which opens and if desired, you may select the options in the checkboxes to customise your export.

When satisfied, click OK and your data will export to Excel.