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ICT Coursework

Definition, Investigation, Analysis

Background to the company

The Canterbury Karate club is a club that teaches students, of a range of ages, karate. It is run by Sandra and Joe Ellis. Sandra and Joe are the main day to day employees but there are 2 vice chairmen involved in operations. And teaches in venues including Canterbury, Ashford and Margate, There are approximately 20-30 pupils per class, and there are 7 classes a week, 4 of which are for adults, 3 are for children. The records held on pupils, venues and events are all paper based. It is hard, due to the number of students to keep accurate records of fees and pupils. It is also hard to notify pupils of any changes to venues or new competitions. Lessons do not have to be booked in advance with many pupils simply turning up to the classes; this can lead to overcrowded lessons.

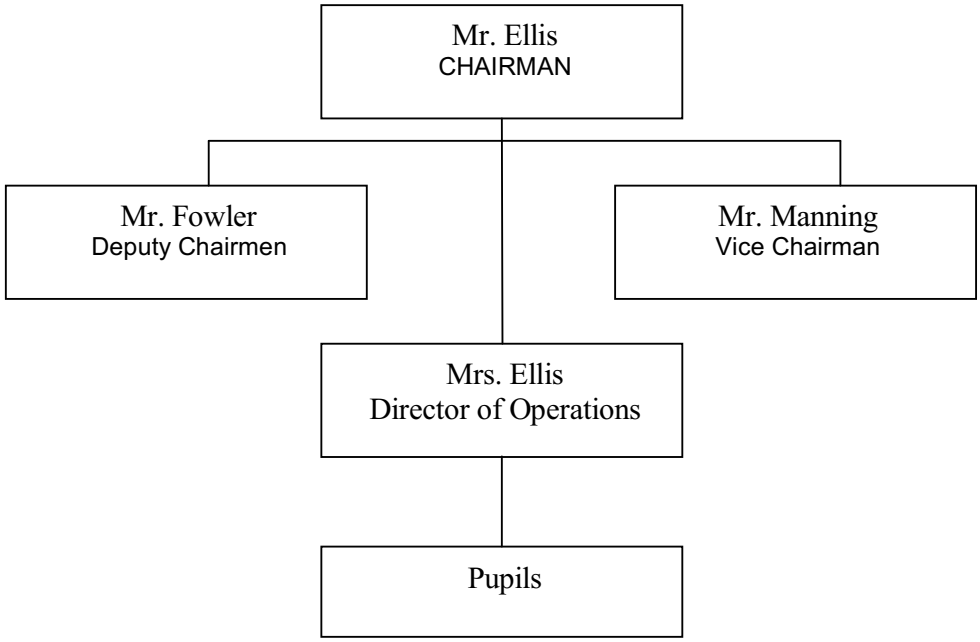
Definition of the problem

The main problem with the current system is that it is unorganized, as it is paper based records and updated very frequently it is hard to get information from the documents as items are written and rewritten. It is also difficult to carry around as pupils and staff are also kept as it is too difficult to rewrite the entire page with one pupil removed from it. There is also no way to distinguish between pupils of the same name, as there is no unique key

Also as there are multiple instructors they all need to have a copy of the pupils records, this means that each pupil that joins has to be copied onto several sets of records for each members of staff they have. It is also hard to collect money that is due from previous lessons as every 4 weeks a new page is started so if there is money owed the instructor needs to carry around another file.

Organisational chart

The following organizational chart shows the individuals involved.



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Analysis

The are several problems and advantages with the current system

- It is well organised for a paper based systems, split into several folders one for each subject of data collected (i.e. Pupils, staff, venues.
- But this means that information is spread out, and hard to find, also if one file goes missing the whole set of information for that subject is lost.
- There is no link between the files, i.e. between pupils and instructors
- There is no limit to the number of pupils that can attend a class which means that instructors can end up with classes with too many pupils to teach

Questionnaire

Name: Mr Ellis
Position: Chairman
Date: 10/09/06 12:00
Purpose: Collect information on current system

What is your role within the company?
I run the company with my wife Sandra

How many pupils are there in all the classes?
There are around 30 pupils in each class for 7 different classes, so approximately 240 pupils.

What happens when a new pupil joins?
There is an application form they must fill out that collects all the information about the person, they must also fill out an emergency contact card, and inform us of any medical conditions.

How do you notify pupils of a venue change?
As there are so many pupils it is very difficult to contact all of them, especially at short notice, so several pupils are called and relied on to pass the message onto other students

How are pupils with the same details (i.e. same name) identified from each other?
It is up to the instructor for that class to remember

How can pupils book tests?
They must call us to say they want to take a grading, and then we must write to the governing body with their details

How do you record pupil fees and what happens if a pupil is overdue?
Student fees are recorded on a mark book, they are ticked off if they have paid for that week, crossed off if they have not paid, and a small circle if they did not attend. If a student has not paid we must wait until the week after to ask them for paymen t

What other problems do you have with the current system?
There is too much paper work to carry around. And if a page is lost from this, staff must check all of the records to find out what information is missing, if it is from the payment record then it is very difficult to recollect the data. Also as staff only have

details on their own pupils, if a class needs to be covered then the teacher will have no details of the class

What happens when new staff joins?
New staff must fill out an application form including all their details, then they have a background check carried out, as they will be working with children and weapons

What do you want to do that you currently can't?
Automatically generate letters to inform pupils of any changes including venues , teachers and costs. When a staff member is asked to cover another class, a copy of that class' records automatically be sent to them. I would also like to be able to backup all of the details on staff, pupils and venues. Also as there is information stored about children, there should be strict security preventing people from reading those details.

Conclusions

- The paper based system is inefficient, there is no links between the different files, and bits of paper are prone to being lost.
- Security must be added, at the moment anyone can access details such as names and addresses
- There should be one system that can be accessed by all staff to solve the problem of covering other lessons with no details.
- There should be automated letters generated for venue changes, owing money, and when a grading is needed.

Origins of the data

Analyzing the data in the current system

Type of data	Comes from	Format	What happens to it
Name	Application form	Text	Stored in student files
Date of birth	Application form	Date	Stored in student files
Sex	Application form	M/F	Stored in student files
Address	Application form	Text	Stored in student files
Emergency contact number	Emergency contact form	Number	Stored Emergency contact cards
Payment Method	Attendance form	Text	Stored in student files
Classes attending	Attendance form	Text	Stored in student files
Previous Experience	Application form	Text	Stored in student files
Name	Staff Application form	Text	Stored in staff files

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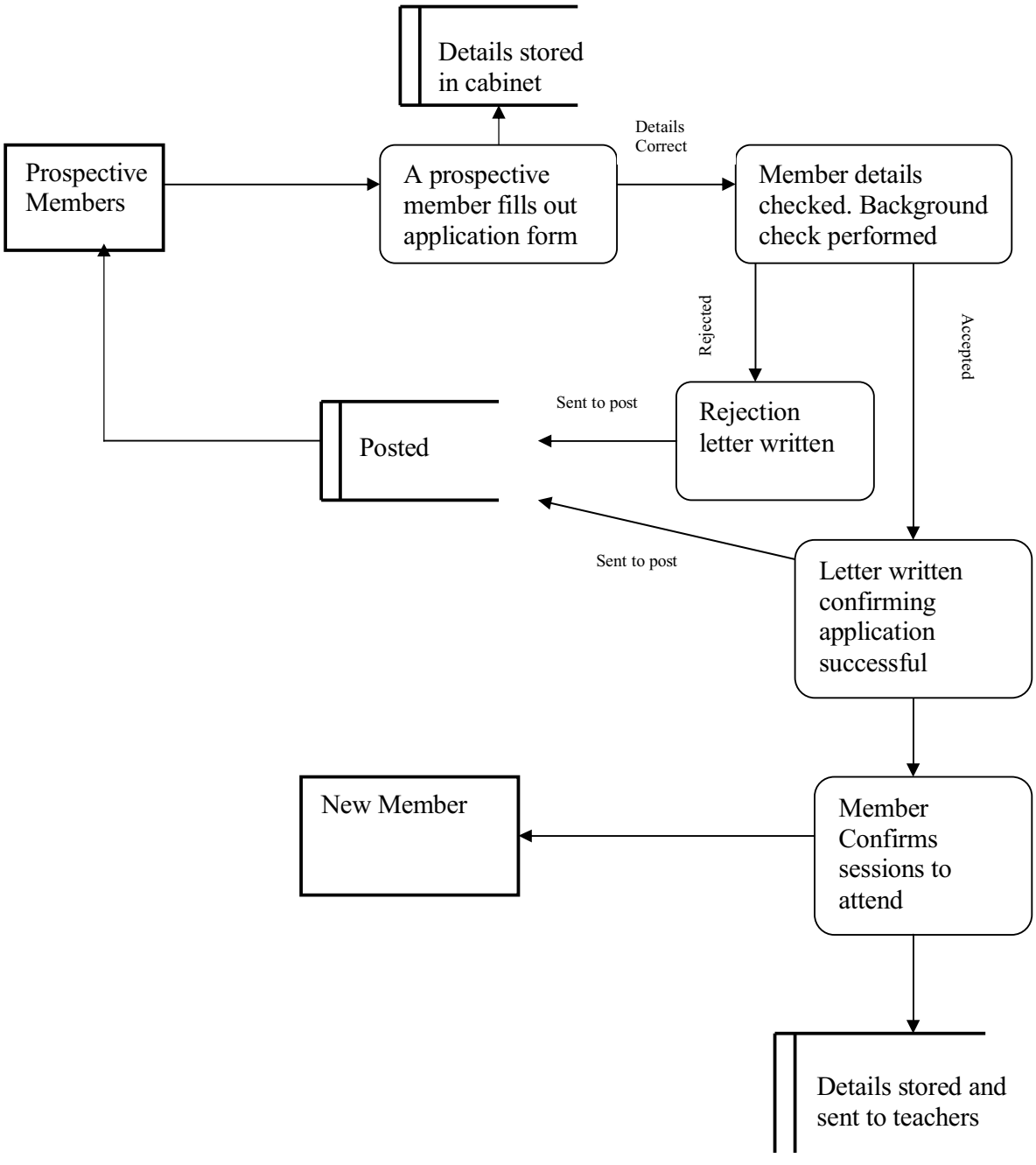
Date of birth	Staff Application form	Date	Stored in staff files
Address	Staff Application form	Text	Stored in staff files
Hall Name	Class booking form	Text	Stored in booking file
Hall address	Class booking form	Text	Stored in booking files
Payment	Class booking form	Currency	Stored in booking files
Pupil Name	Mark book	Text	Stored in mark book
Payment received	Mark book	Yes/no	Stored in mark book

Flowchart to show member application for Kent Karate schools



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Feasibility

Feasibility Study	
Technical	There is powerful enough hardware and software to run the proposed system but it has to be purchased as it is not currently owned although the minimum specification of the hardware required is relatively inexpensive
Social	The staff may be reluctant to change as they are currently not fully competent with computers
Economic	The system will not be very expensive to design although the outlay on new hardware and software and training may be expensive although the benefit
Time	The system will not take long to implement and can easily be done in the time frame.

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Restatement of the problem

I can conclude that there are the following problems with the system:

- The current system is inefficient; there is no method for easily searching through records or cross referencing the files.
- There are no alerts generated when payment is overdue, it is up to the individual teacher to receive the payments
- There is no alert when classes are overbooked, leading to complications
- There is no backup for any of the system so if a page is lost the information is lost forever.

Investigation and Analysis

Interview: Joe Ellis
Date: 10/10/06
Time 12:00

1. How user friendly does the interface need to be?

The user interface will need to be user friendly and easy to use as both my wife and I are not computer experts and will require some training to use the system.

2. What security measures will be required for the system?

It will contain information about s tudents such as their address, so security will be required to prevent unauthorised access

3. How many databases will the system need, and what information should be stored in the database

The database will need to hold data on pupils, staff and lessons. As well as the venues that the lessons occur at, and the grading that pupils attend

4. Where des the data need to be stored

It will need to be stored on the company's laptop, but I will need access to the database on my home computer and my PDA so I can access the information on the move and at home

5. What data needs to be collected by the input forms?

The input forms will need to collect data for new pupils, such as names, addresses, emergency contact numbers, experience, age etc.

6. What outputs are required during the application process?

The system will need to generate a monthly report containing the pupil's details, the lessons they have attended and any outstanding payments they have due

7. What should other users be able to do to the database?

Pupil's will be able to have access to the database using a login but will only have access to their own details

8. What happens when someone leaves the club?

The details that are stored will need to be removed from the database, but will be kept on any backups in case the pupil needs to rejoin.

9. Do you want the system available on the internet?

It should be as the database will need to be available on more than one computer at one time, so the database will be stored and edited on a central location so that data cannot be entered or changed twice.

10. Will you require a desktop pc for the database or a laptop?

Me and my wife will require either a PDA or laptop for the day to day usage, and A desktop computer for the offices

11. How many records will the database need to store?

At least 250 for pupils to start with, but the number may be larger or smaller because new pupils join and quit
The lessons will need to be stored for at least a 6 months as they contain the records of due payment, so there should be range for several thousand lessons.

12. Will there need to be any limits on the amount of money a pupil can owe?

Yes there should be a limit of 5 unpaid lessons before a pupil is refused to attend any more classes until they settle the money owed.

13. How often will you require backups of the system?

There should be two backups, an archive of all data older than 6 months, and a daily backup that stores all of the day to day information stored, this is because the data is updated daily and contains up-to-date information on payments due, if one day was lost then all the payments for that day would be lost as well.

14. What type of implementation do you want the system to use?

The system should be implemented using parallel implementation so that we can get used to the system before it is transferred over completely

15. Is there a standardised layout required for the database?

There is no standardised layout but I would like one to be created, at the moment we only have the club's name "Kent Karate Schools" and the clubs colours of blue and white.

16. What sort of error messages will be required?

Error messages when incorrect data is entered will help to prevent me entering false data.

17. Will you require detailed user documentation for the system?

Yes, as the users will not have a detailed knowledge of the system to begin with so we will need to be able to refer to the documentation to help us.

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Requirement Specification

Requirement	**Explanation**
User Friendly interface including a detailed user guide & training	As the two main users have limited computer knowledge, "My wife and I are not computer experts", the database will need to be simple and well set out, and it should also be well explained and annotated. (Question 1)
The database will need passwords on the databases as well as the computers	Question 2 says that the database will "contain private information about students" so this will need to be protected from unauthorised access
At least 3 tables in the database storing information on pupils, staff & lessons	The user has specified that the database will need to hold at least "data on pupils, staff and lessons" (Question 3)
The user should be able to access the database on a laptop or PDA	The data needs to be access on the move so a PDA or Laptop must be able to access the data As "I will need access to the database at home and on my PDA"(Question 4)
The database will need to collect personal details on pupils	"The input forms will need to collect data for new pupils, such as names, addresses" The database will need input forms to collect the data on pupils. This is because so many pupils join the classes & change their details that it would take too long to use manual entry. (Question 5).
System will need to generate monthly reports on classes attended and any outstanding payments	"The system will need to generate a monthly report" The system will need to generate outstanding payment reports, this means that the instructors will not need to search through every individuals records and check their payment records as it is automatically generated, making it much easier for the user. (Question 6)
Limited access for pupils	"Pupils will be able to access the database but will only have access to their own details" Pupils must be able to access their own details and be able to edit them so that when their details change, they can change this on the system (Question 7),
Backups of Former Pupils	"The details that are stored will need to be removed from the database, but will be kept on any backups in case the pupil needs to rejoin." The system must generate weekly backups of all current records, and create monthly archives of all pupils that have left. (Question 8)
Database stored on a central location and remotely accessed by users	"It should be as the database will need to be available on more than one computer at one time" This means that data cannot be manipulated twice by different users as it is stored in one place. It also means that

	backups are easier, and protects the database from being physically lost, i.e. if the laptop or PDA is broken or stolen (Question 9)
Database must be able to store around 250 pupils and 1000 lessons	"At least 250 pupils but the number may be larger" This gives an adequate number of records for the users to use, without taking up excess space, the database should also be expandable in case more records are needed (Question 11)
Pupils with more than 5 unpaid lessons must not be able to attend more lessons	"There should be a limit of 5 unpaid lessons" Any pupil with more than 5 unpaid lessons must be added to a report refusing them access to any more lessons until the lessons are paid, this prevents pupils not paying for their lessons (Question 12)
To use parallel implication	"The system should be implemented using parallel implication" By running both systems simultaneously it helps the user get used to the new system, then when they feel confident in using the new system transfer all the clubs documents to the new system and just run that (Question 14)
To create a standardised layout for all of the of the companies forms and documents	"There is no standardised layout" I will create a standardised layout using company colours & logos

Alternative Approaches

	Software Solution 1 Microsoft Access Database	*Software solution 2 Microsoft Excel spreadsheet*
Compatibility	The Microsoft access package should be compatible with almost all hardware & software configuration	The Microsoft excel package should be compatible with almost all hardware & software configuration
Training required	Will require training to use the database such as editing data, and adding new records	Will require training to use software
Searches & sorts	Access is able to search & sort any database or report. This allows the user to create reports for unpaid lessons, or pupils of a certain level. These reports can then be	Excel cannot search, although it is able to sort data numerically or alphabetically, this means that reports or mail merges cannot be created using

	used to create mail merges or can be held to prevent pupils attending more classes until the lessons are paid for	this program
Upgradeability	Updates to software regularly released by Microsoft	Updates to software regularly released by Microsoft
Cost	£197.99	£168.99
Functionality	Used to create database to store information for a variety of users, allows reports to be created, searches and sorts to be performed	Used to perform calculations and functions, analyse results and create charts and reports
Relationships	Can be created to link database tables	Cannot be created
Validation	Can use validation rules to check data inputted	Can use validation rules to check data inputted
Internet	Can be accessed online by setting up a data access page	Can be accessed online
Calculations	Can only be performed in reports using code, limited functionality	Full functionality, can be used anywhere
Security	Can be easily password protected	Can easily be password protected
Software Requirements	Pentium - 233 MHz RAM - 128 MB HD - 180 MB	Pentium - 233 MHz RAM - 128 MB HD - 150 MB
Resource Requirements	Will require a high percentage of resources on a low spec computer if the database holds many records	Will require a high percentage of resources on a low spec computer if the spreadsheet holds lots of data or has complicated expressions & calculations
Ease Of learning	The access database will be quite hard to learn how to use with novice users as it can be quite complex	The spreadsheet package is easier to learn how to use as it has less powerful & appropriate functions
Ease Of Use	Once the user is taught how to use the database it will be easier for the user to use the database	Once the user is taught how to use the spreadsheet it will be easy to use
Technical Support	Microsoft provides a high level of technical support, although it can be expensive	Microsoft provides a high level of technical support, although it can be expensive
Speed	The package will be quick and efficient on most computers	The package will be quick and efficient on most computers

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Hardware Specification

- Processor- AMD Sempron 64 2800+ 1.6GHz (£45)
    - This gives the system more than adequate performance whilst allowing the user to upgrade the software without having to upgrade the hardware
- Memory- 256mb Ram
    - This meets the minimum requirements for the software required
- Storage- 40gb Hard drive
    - This means that the user can store the software and the database whilst allowing them plenty of storage for other files & backups
- Inputs
    - Keyboard, mouse. These are the basic inputs required for the system, as the user will not need to use any other input devices, none are required
- Outputs
    - Screen, Printer, Speakers. These are the outputs required, the screen and speakers are basic required outputs, and the printer allows hard copy backups of the database to be produced, as well as mail merges & reports to be printed
- Graphics- On board VGA
    - This is all non graphic intensive programs require