The Development of a School Management Software Module

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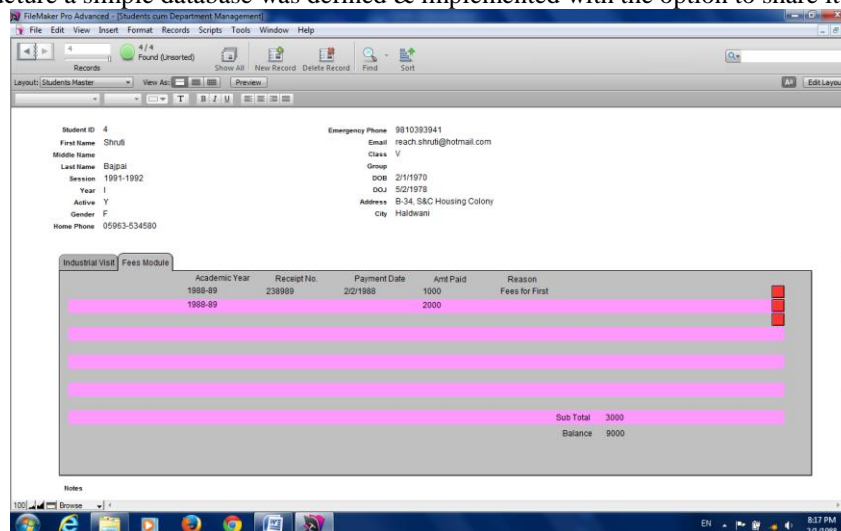*(Asstt. Lecturer) (Department of Banking & Financial Sciences) Cihan University, Erbil*
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Abstract: - In the near future, Jim Corbett School will have a larger number of students as the number of students is increasing every year as the population of the city grows. Key to Jim Corbett School success will be to have an automated system which can take care of most of tedious manual efforts put in by the personnel. There comes the need to adopt a quick and efficient system to take care of all our manual time consuming exercises. The development and implementation of an automated system will lead to better time management. On the other hand it will also bring in the efficiency in most of the covered fields. This solution will involve the development of a relational database in the FileMaker Pro software platform. To achieve this goal, significant efforts will need to be invested in the development of an all-encompassing process flow diagram. This development will lead to the development of repository tables in which data will be collected and stored. The integration of these repository tables into the process flow diagram will lead the developer to the establishment of a data relationship map; hence a relational database has been proposed as a potential solution to the management of the school with respect to development growth. Successful completion of the relational database solution will involve the development of agile scripting, a software development style in which the developer controls the user's fate through clever manipulation of the user's navigational and transactional options within the database dashboard.

1. And then there was light:

The use of database software always interested the author(s) of this project. As it is rightly said that '**necessity is the mother of invention**' the same was found true in the case of Jim Corbett School. Henceforth it was agreed upon to automate various processes of the school which was all being done manually in registers earlier. Many useful applications were defined & written to handle multiple data applications. For example, to view the current Fees structure a simple database was defined & implemented with the option to share it as well.

Figure 1: Current status of student Fees

2. About the school management application called Smart Class:

We have majorly four ways to execute/run Smart Class:
1. We install full version of Filemaker in the concerned system.
We can invoke any related application with the click of a button.
2. We create a runtime file (exe) of our application & install it in different systems. This process is called 'compilation' in the computer terminology.
3. We have the option to share it over the Local Area Network (LAN). All the users connected to the same network can access the common application with great ease.

4. Further we also have the option to share our application over the web.

In order to make the interface more user friendly for the end user we can create a shortcut to execute the application as shown below:-
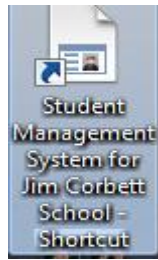

Figure 2 - Shortcut to invoke our application

We can invoke the Student Management System known as '**SMART CLASS**' by clicking on the shortcut which can be placed anywhere in our system. When we click on this shortcut our full screen application can be accessed as shown in Figure 3 below :

Figure 3: Main Screen (Smart School)

On clicking the shortcut from the desktop which we have created as per figure 2 we get the screen (Main Screen) as shown in figure 3 above.
Our main screen comprises of:-
✓ FileMaker main screen
✓ Logo and title of our application
✓ A sunset picture
✓ Two push buttons namely :-
o Main Menu (to access Main Menu)
o Exit (to quit the application)

This is a very simple screen which has been made on a basic building block called layout in FileMaker. It is like a canvass for making screens. These layouts form one of the main building blocks in the FileMaker applications. On clicking the Main Menu as shown in the Figure 3 we navigate to the following screen which we call as Charms Menu in our case:
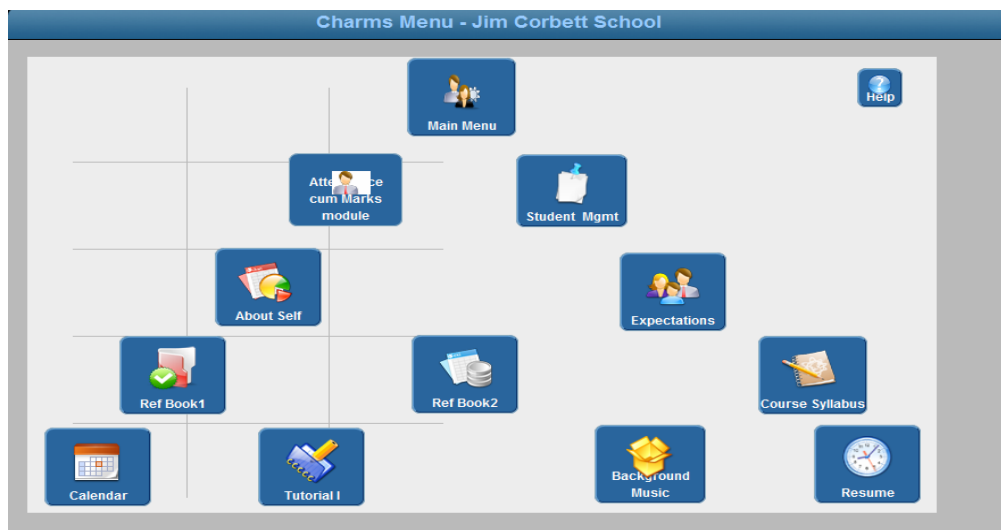
Figure 4: Charms Menu

Main Menu: This option takes us to the main menu of the application as shown in Figure 3.

Attendance cum marks module: - This is the most important module dealing with the regular attendance of each student. Here we record the daily attendance of each student based on physical presence or absence in the respective class. We can classify the daily attendance in following four options:

S.No.	Status	Description
1	P	Present
2	A	Absent
3	L	Leave
4	H	Holiday

Here we can also mark the students as 'Late' as well. We also have an option to record a special comment date wise. This can be very useful for any reference later on. Further we record the attendance of the students based on the portal which is one of the most important feature of FileMaker Pro.
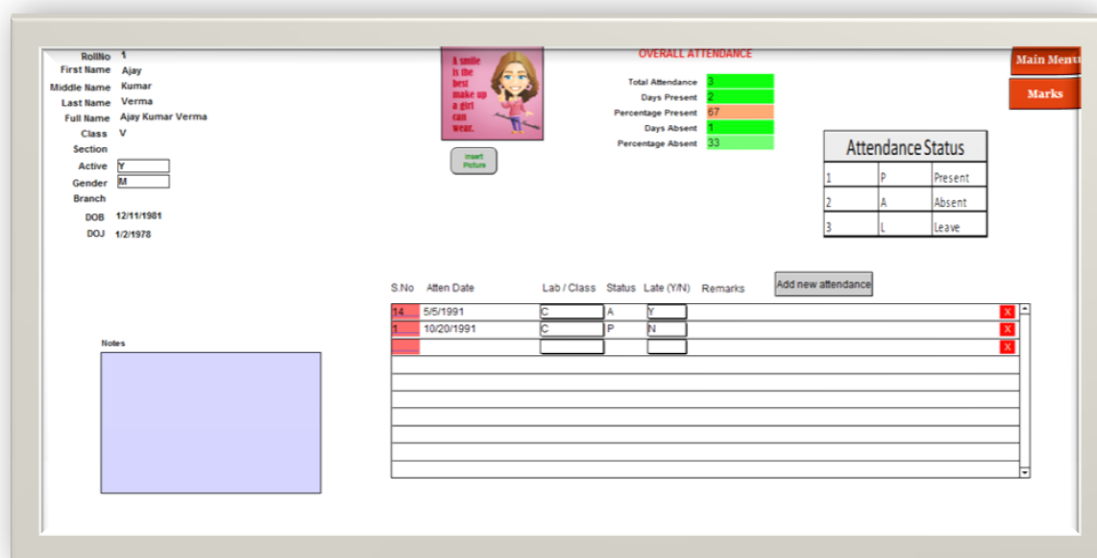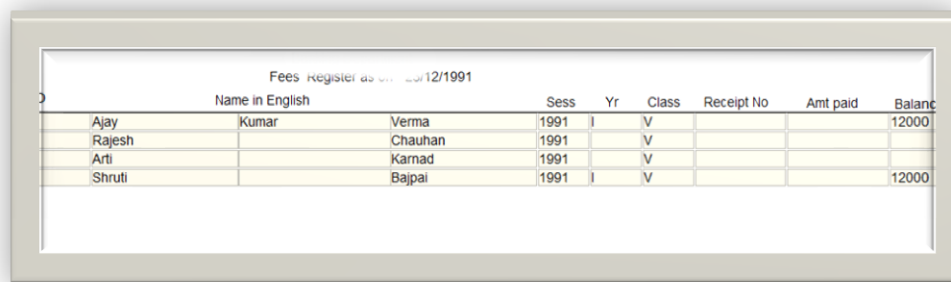

Figure 5- Filtering data for year=1991

Student Management: This module is majorly related to the commercial aspect of the school. Here we can very easily record all the inflow of the funds. This module records the breakup of fees paid by the students. This
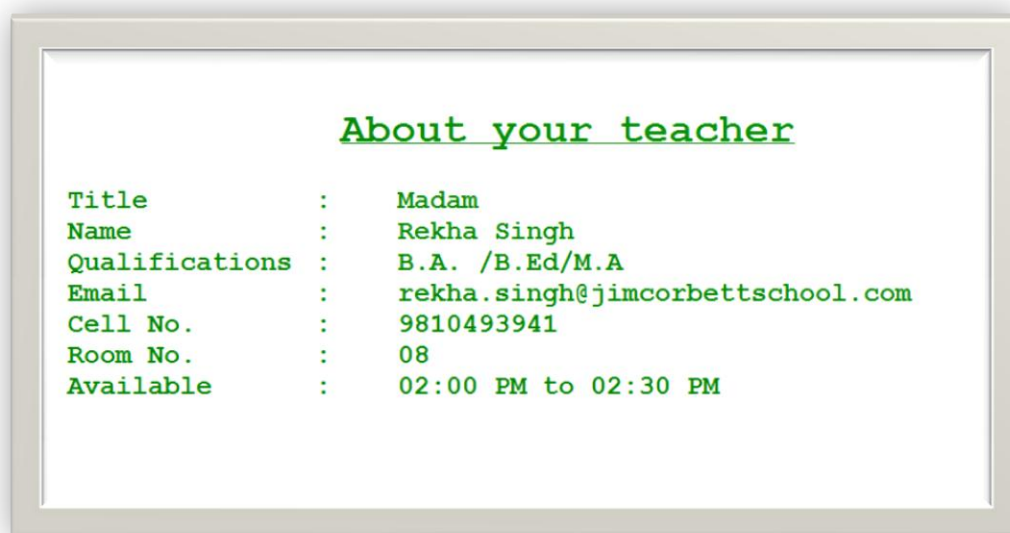
means it acts like a ledger of accounts showing the amount paid/unpaid by each student at any moment of time. It is like a master-detail relationship between the students & the fees component. For more details please refer to the section 'And then there was light' explained earlier on page number 3.

	Name in English		Sess	Yr	Class	Receipt No	Amt paid	Balanc
Ajay	Kumar	Verma	1991	I	V			12000
Rajesh		Chauhan	1991		V			
Arti		Karnad	1991		V			
Shruti		Bajpai	1991	I	V			12000

Fees Register as on ..../12/1991

Figure 6- Students Fees Register

About Self: This page is like '*breaking the ice*' between the teacher & the students. The teacher briefly discusses his/her profile with the students covering the points like the name, qualifications, experience, languages, contact details etc.


```
About your teacher

Title          :   Madam
Name           :   Rekha Singh
Qualifications :   B.A. /B.Ed/M.A
Email          :   rekha.singh@jimcorbettschool.com
Cell No.       :   9810493941
Room No.       :   08
Available      :   02:00 PM to 02:30 PM
```

Figure 7 – About teacher layout

Expectations from students: - Setting up the right expectations at a right time is the key to success. A teacher is very well able to convey the message to the students in a right manner. It helps in developing better relationship between the students and the teachers. It is like the summary of some do's & don'ts. It helps to eradicate later misunderstanding between the teacher & the students.

Figure 8 - Expectation from students layout

Reference Book I**:** This module talks about the prescribed reference book for the concerned subject as recommended by the school authorities/board. We can embed the picture of the entire book in the system.
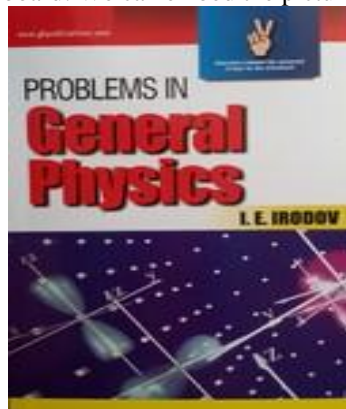

Figure 9 - Display of a reference book by the system

Reference Book II**:** Same as above for any other reference book.

Course Syllabus**:** We can integrate our course syllabus which is a like a course book comprising of the content of the course. Course syllabus can be any type of document namely word, portable document format (PDF) or any other. We can have output of the same in any form like print, email or picture.
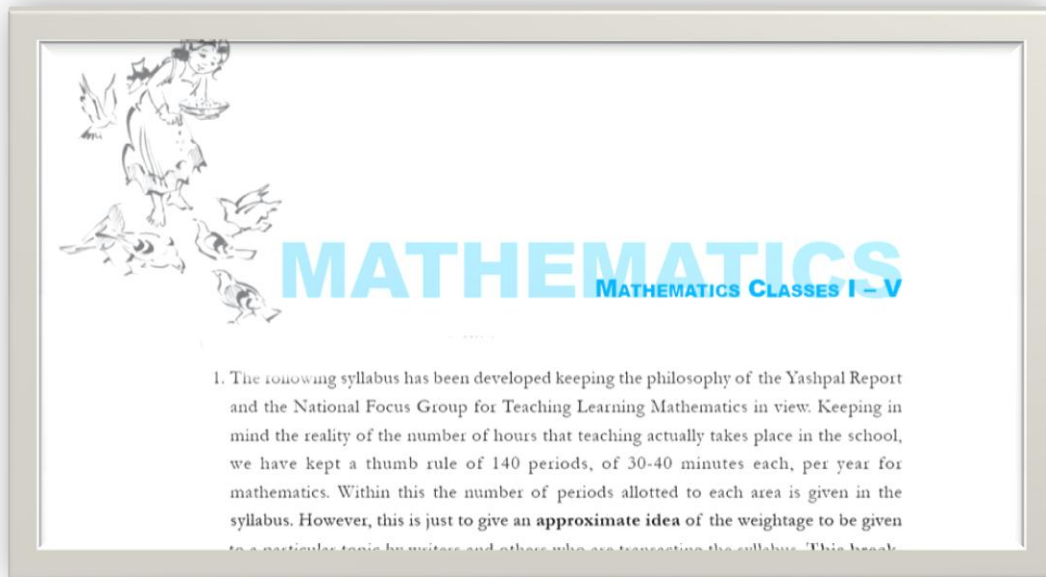
Figure 10 - Copy of Syllabus (course book)

Calendar: We can very easily keep on recording our events which can be very useful for the future reference. This acts like a school diary which is provided to each teacher to make a note of important points/events. We do have the option to print our calendar as well. We do have to change the color of the fonts as per our choice from the available list. Recording events at a right time is the key to success. This module is especially very useful to keep a track of important events since maintaining physical diary is very cumbersome. This acts like a digital diary.
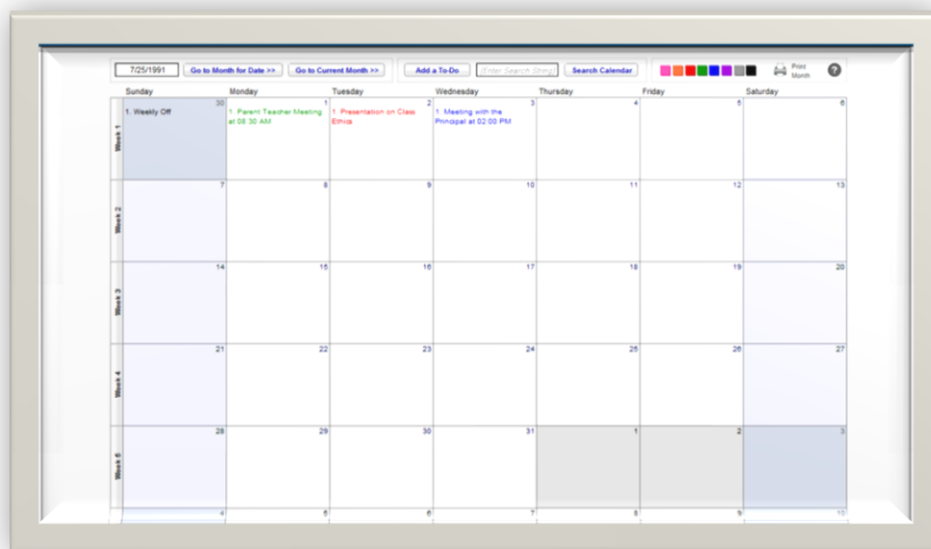

Figure 11: Calendar in our application

Tutorial: This is one of the most convenient ways of enhancing the knowledge of the students using audio/video aids. We can very conveniently embed any tutorial in the form of audio/video format (online or offline) in any FileMaker application.

Background Music: This option can be used if we wish to play music in the background for any special occasion like during a seminar/presentation or like a congratulation/birthday song at a right moment.
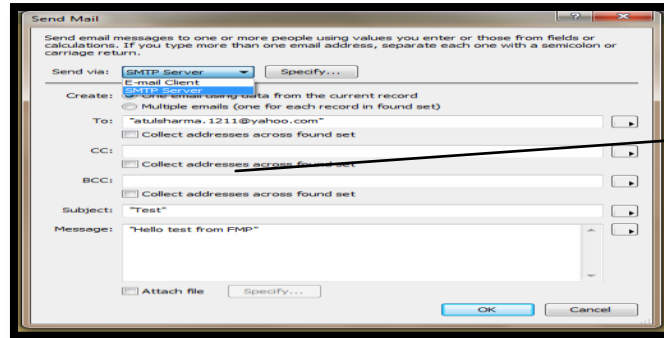
Resume/Philosophy: We can very easily incorporate the concerned teacher's resume/teaching philosophy in this module. It can be updated and an output may be generated at any time.

Communication using FileMaker

As we all know that email forms a most important mode of communication. We can very easily send our thoughts & ideas to anyone. We can conveniently send email to all or a group of selected recipients using the mail option of FileMaker Pro.

We can exchange emails through FileMaker in following two ways:-

* Through Email client like Outlook Express, Microsoft Outlook, Thunderbird etc.
* Through any 3rd party SMTP (Simple Mail Transfer Protocol) which supports exchange of emails.

Figure 12 - Interface to send emails

We also have one more option to exchange our emails/SMS. We can very easily query our database to filter the records as shown below:-

Cihan No	Title	Name	Deptt	Email Address	Cell No.1	Room No.	Status	DOJ	+
1	Mr.	Amit Shah	ACC	amit.shah@gmail.com	9810393956	A8006	Y	8/23/1991	
▶ 4	Mr.	RajaMohan	HRD	rajamohann@hotmail.com	9823578567	B2008	Y	8/16/1991	
15	Mr.	Khurram Sultan	IT	k.sultan@msn.com	9718882678	C5009	Y	8/23/1991	
+									

After filtering our database we export the email addresses in the csv (comma separated values) format. Now we can very easily incorporate these selected email addresses in our email client & exchange customized emails through email client. We can use all the features of email client in this case. In this case we have complete history of each email exchanged.
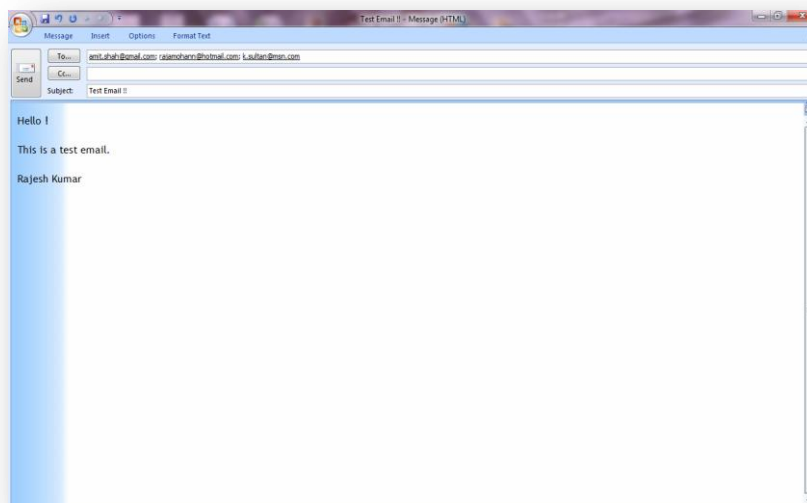

Figure 13 - Outlook interface to exchange emails

Using Short messaging service (SMS) with FileMaker:
We can use FileMaker to send out SMS (short messaging services) to an individual or a group of people as per our choice using a suitable gateway.
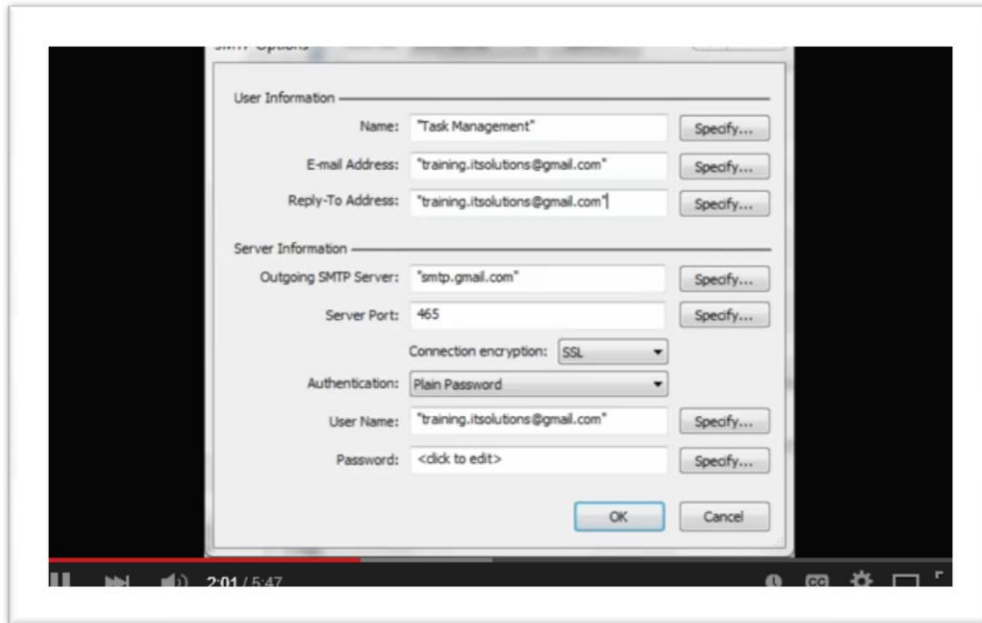
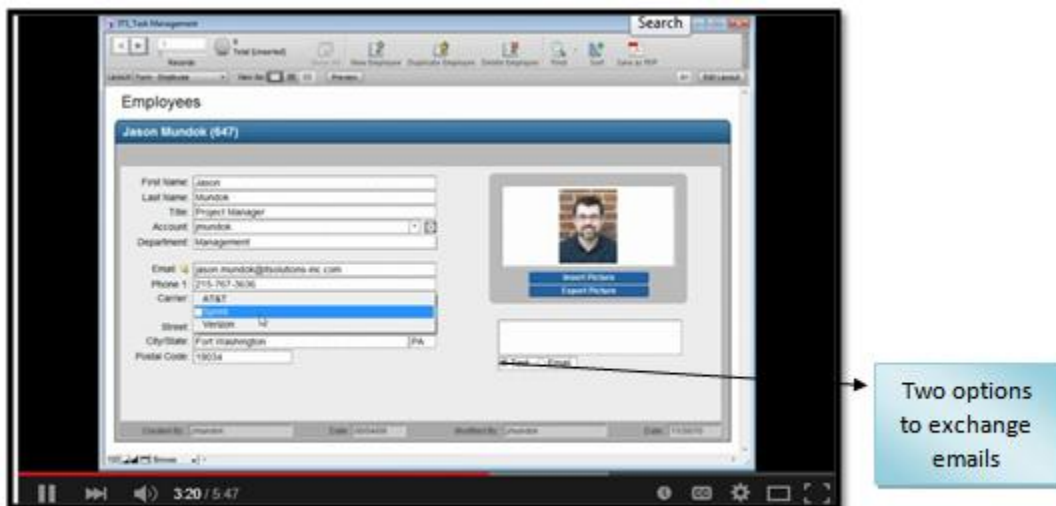**Figure 14 - Simple Mail Transfer Protocol settings**

Figure 15 - Two options to exchange emails

Database Design

The development of a database requires the management of three database structures: (1) tables, (2) fields, and (3) relationships. FileMaker Pro, a relational database software, provides a user friendly "front end" to define the said structures.

Database tables

The development of tables in FileMaker Pro is a straightforward process. The image below provides a screen capture of the database management front end used to establish database tables:
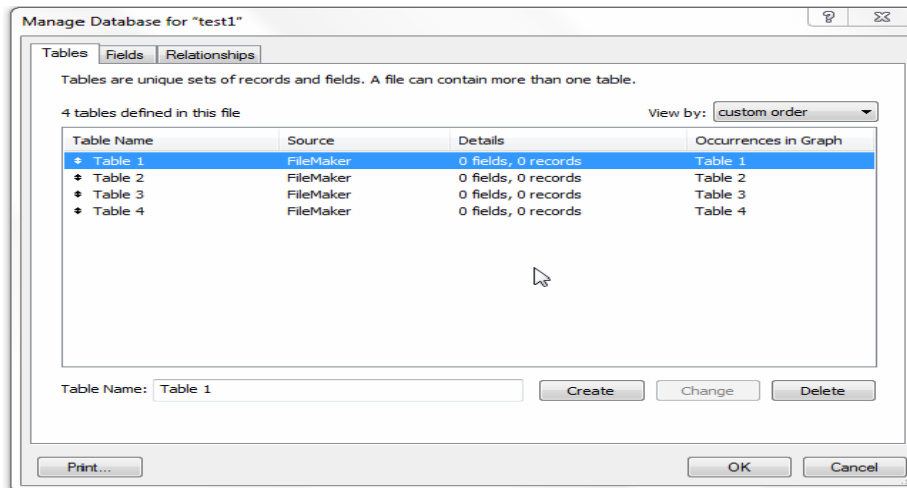
Figure 16 - Database table list

This example established four unique tables (table 1, table 2, table 3, and table 4). The process involved the establishment of a unique name. In this environment, table names can be changed, added, or deleted in a simple manner.

Database fields

For each specific table, a set of specific placeholders (i.e., fields) can be created to house specific data. The image below provides an example of FileMaker Pro's field front end. In this particular example, table 1 has 4 unique fields: field 1 (text), field 2 (text), field 3 (number), field 4 (date).
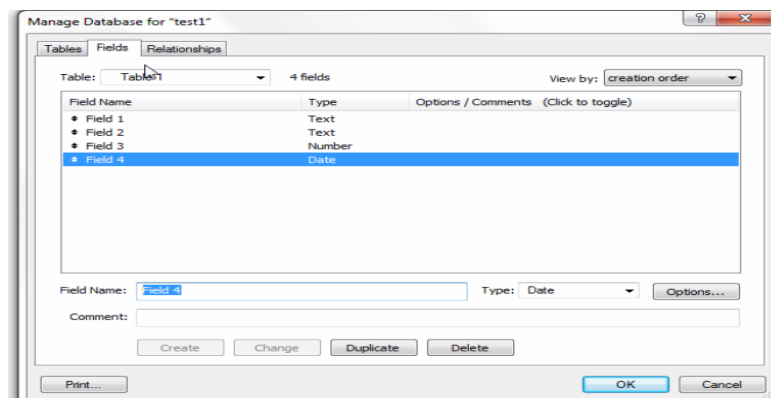

Figure 16: Database Field List

Database relationship map.

FileMaker Pro: The simple solution

FileMaker Pro provides a database development tool that is intuitive, friendly, and easy to learn. Given these benefits, the author of this project has selected FileMaker Pro as the software of choice in the development of Class Management Software to address the new product development expansion as well as the introduction of a new branding scheme.
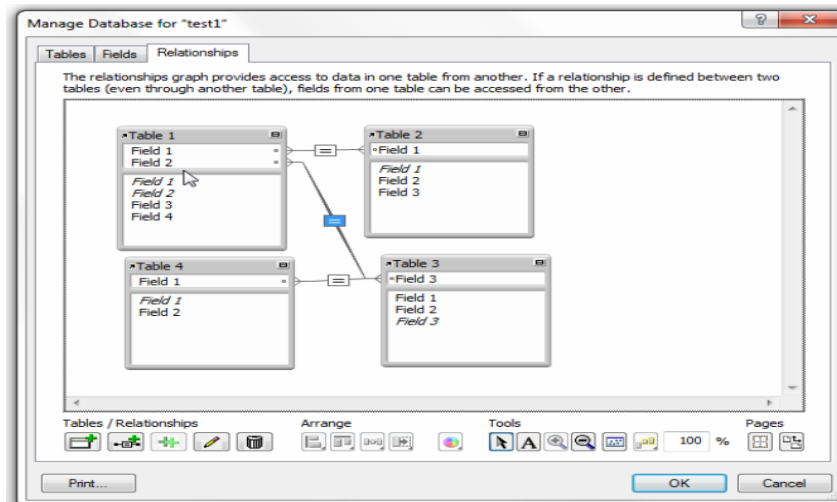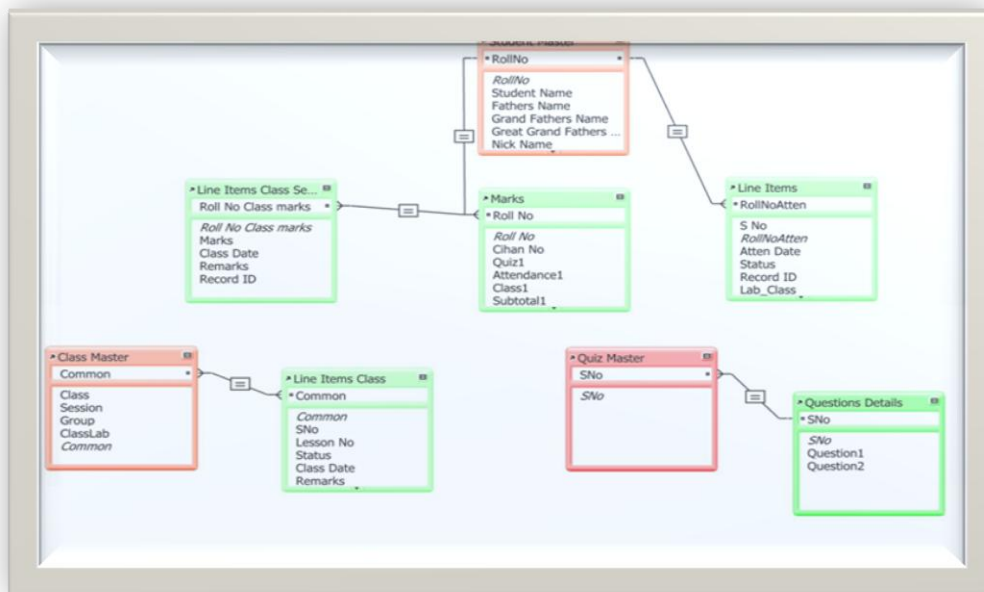
Figure 18 : Database relationship map

Figure 19 - Relationship diagram I used in application

CONCLUSION

We conclude that with the growing times we need to upgrade our skills/systems with ever-growing Technology. Those institutions/individuals who do not have value addition time to time are nowhere in the market. We have to be a part of fast moving technology. We have to polish our skills time and again.

REFERENCES

[1]. FileMaker Pro 11 Tutorial
[2]. Wikipedia
[3]. FileMaker.com