# NEWHAM SIXTH FORM COLLEGE

# A LEVEL COMPUTING PROJECT

## STUDENT DATABASE SOLUTION

SUBMITTED BY:
OVEE ASIF HASAN

# Analysis

## Introduction

Mr. Asif Altaf is a form tutor in NewVic College, which is located in Plaistow. He is also a Business studies teacher. Both her lesson students and the students in her tutor group are first year students. He uses a manual system to store the information about the students. He writes everything down in pen and paper. This system has many limits and constraints.

Mr. Altaf now wants to upgrade to manual system to a computerised system. He is doing this so that he can store all the information in a computer database and it is easier for him to access and modify the information.

He wants the computerised system for other reasons as well. A computerised system has many advantages. He can send electronic mails to parents and subject teachers, take the register, and decrease inaccuracy and time consuming to the minimum.

## History

My user is Asif Altaf, tutor in NewVic College. He has been a teacher for a long time, and used manual database systems (pen and paper) to store details of his students and his subjects. He has now decided to keep up with the times, and upgrade to a system which is more flexible, easier to use and upgradeable. He wants a computerised database system.

## Location

The end user is situated in NewVic College. The college is not in my neighbourhood, but I can easily interact with the user everyday and use the facilities as I study in the college and I go there every weekdays.

# User Skills

My user is a tutor of a college. He does not have a very advanced computer skills level. He is a proper typist, and knows the basics of how to operate a computer. That includes, switching on and off computers, opening and terminating programmes, typing documents, and editing and formatting them and saving and printing files. He has moderate practice of basic computer applications such as Office 2000's Word and excel. He does not know what to do when there is a problem with the computer, but there are technicians in his workplace, which can fix his computer's hardware and software and assist him when she is having difficulties. I will be providing a manual with my created system, which will teach him how to perform database tasks, and also back up the work.

Hardware and Software

Existing software and hardware and new soft wares to be installed, e.g. Windows XP. Include the cost, necessary upgrades.

Existing hardware that my user has access to:

- 1.1 GHz processor.
- 16 MB Ram
- 6 GB Hard Disk
- 3.5" Floppy Disk
- 17" Monitor
- CD ROM
- Keyboard
- Scroll optical mouse
- Inkjet colour printer
- 56 K modem for internet connection

Existing software that my user has access to:

- Windows 98
- Office 97 that includes software such as Ms Access, Ms Excel, Ms PowerPoint, and Ms Word.
- Drivers for all my existing hardware
- Internet Explorer
- Internet service provider software

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Required updates:
Hardware:

- 112k broadband Internet from 56k modem Internet for faster net connection. Cost – Extra £5 per month, for 6 months.
- Get 2.6 processor from 2.1 for faster internal speed. Cost - £150.
- Upgrade to 256 MB RAM, for multi-task Cost - £20
- Get a laser printer, for faster printing speed and better printing quality. Cost - £99.

Software:

- Upgrade to Office XP and Windows XP, which has better features, and easier to do the project more quicker or more efficiently. Cost- £112
- Upgrade my drivers of all the necessary hardware. Download from the Internet. Cost – free.
- Voice Recognition programme- Cost- £49

Total upgrade cost: £460

# Feasibility Report

I have the task of creating a computerised information storage system for a college form tutor, who requires improving his manual data storage system. She has to store information about the details of his form class students, and also the students in his subject. He gave me a limited budget of £300 and limited access to the college computers to create it. She also gave a limitation of time. I have to create the system by 01-04-2003. With all these limitations, is it going to be feasible to perform the task?

Technology- There is enough technology in the college to create a powerful but simple problem solving system for my end user. There are many computers, with powerful speed and lots of memory and good applications. I also have an access to a powerful computer at home. Both locations have computers with the necessary software, which are MS Excel, MS Word and MS Access.

Economic- There is enough finance available to cover the cost of creating the problem solving system, and also enough for necessary upgrades, which will amount to a maximum of £100.

Legal- The solution will not be breaking any legal rules, because the computer will be password protected, so if the students details are stored in it, it will not go to the wrong hands, therefore will not be breaking the data protection act. The information will be confidential and will not be revealed to anyone in the Internet or by any other methods.

Operational- The environment for the end user has the capability to support the solution that I am going to create in the system. My end user has the access to computers and is computer literate to understand and use the solution. The college has computer technicians who can fix his hardware and software for her if it gets damaged. The system I will be creating will be backed up, along with the information stored using it. This will ensure that in a case of data loss, all the information can be easily recovered. To prevent data loss or crashes, the computer has latest anti-virus software and firewalls.

Schedule- I have enough time to create a problem solving solution for the user. I have more than 1 year to complete the task. I will be working on it more than eight hours a week, both at college and home. I have broken my task into several parts to organise my time better.

# Aims And Objectives

Aim:

To Create a Problem solving system for a computer user using problem solving applications.

Objectives:

To master computer applications, mainly MS Access, MS Word, MS Excel etc.

To create a computerised database system, for a user who wants to convert from a Manual database system to an electronic one.

Add helpful objects like manual, backup and training.

Include helpful features like Queries, Reports and Forms.

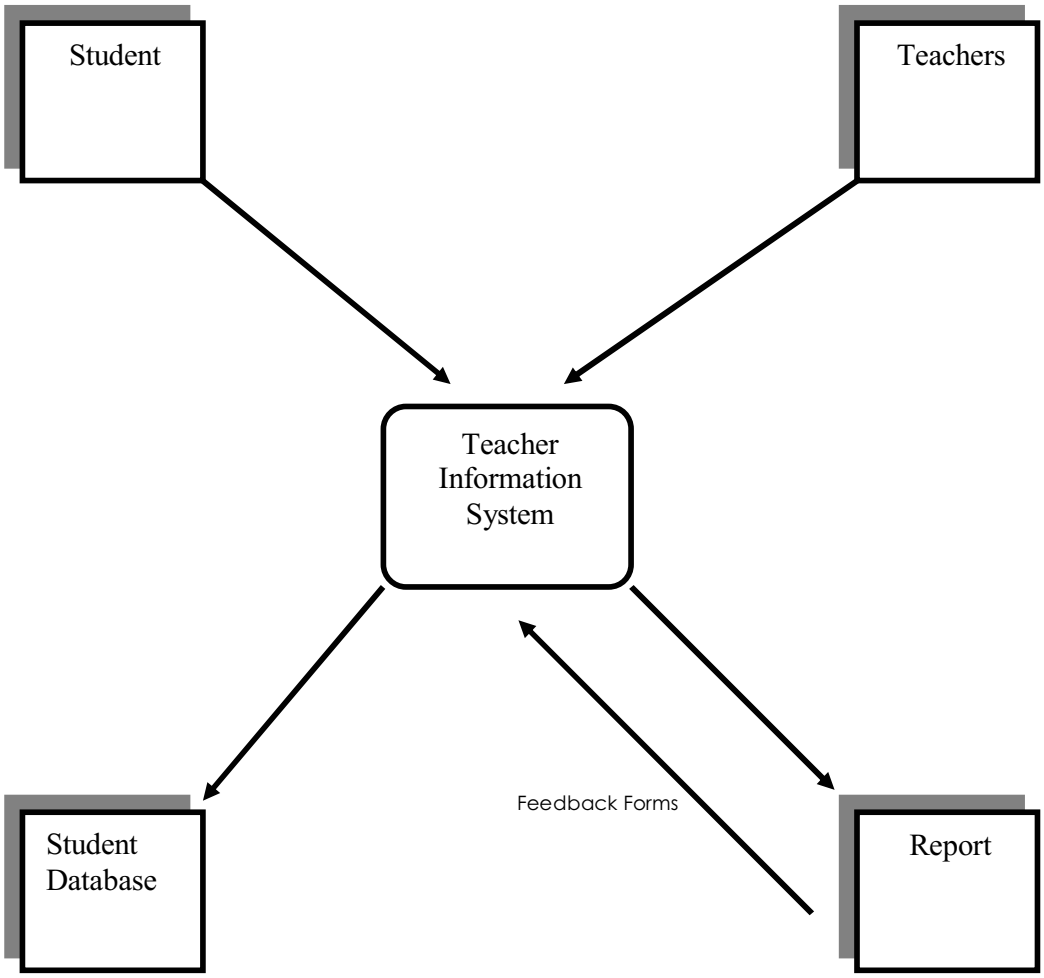
## Constraints and Limitations

System Limitations: The computer is Old; therefore it has a slow processor, and low RAM. Unless this is upgraded, it will be very difficult and slow to operate soft wares, which take up lot of space.

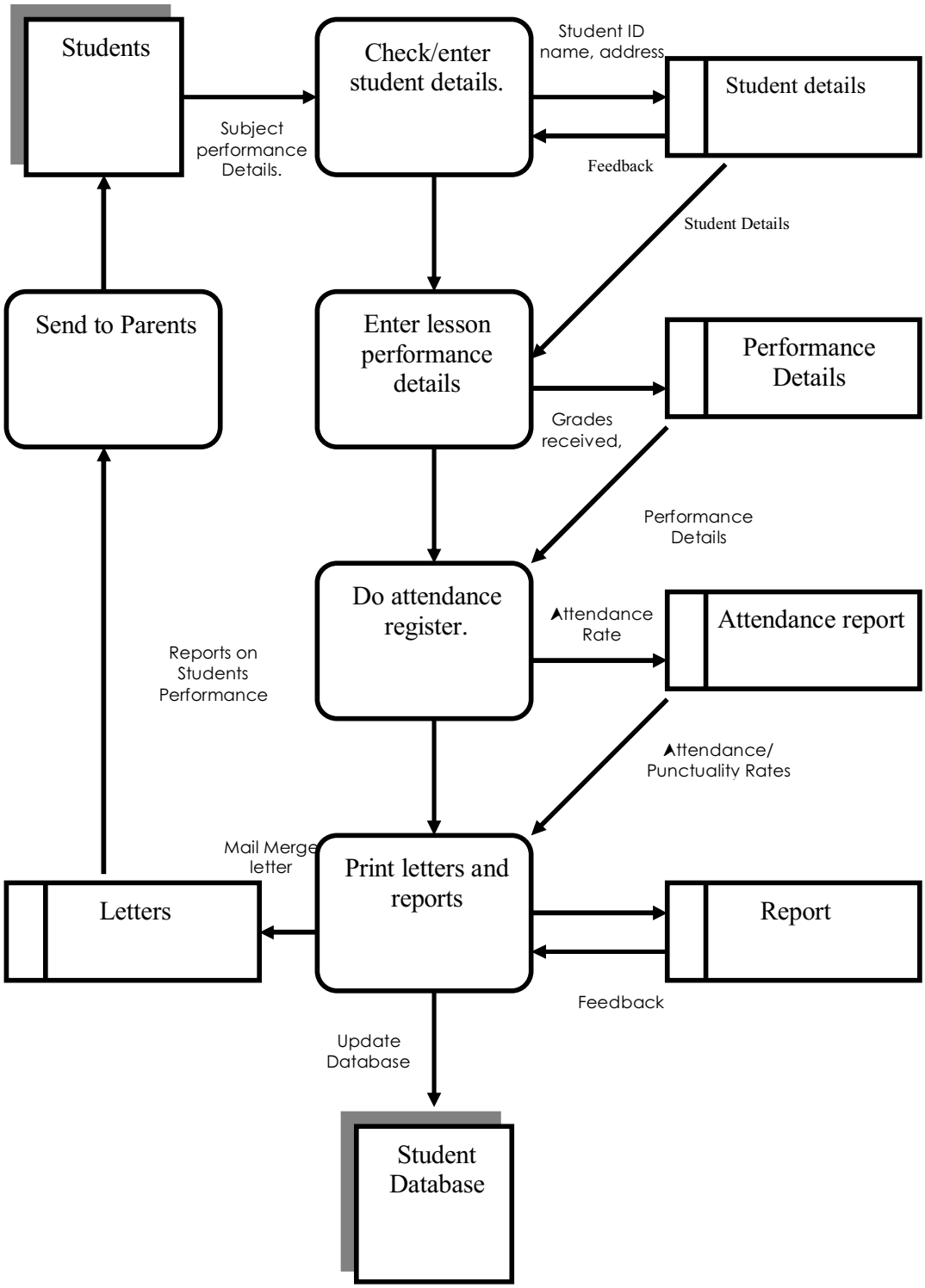
Software limitations: The soft wares are also not the latest versions, so they have limited features. They need to be upgraded as well, because a system with full capacity will be effective for a fast and efficient solution.

User limitations: The user does not have a high level of computer skills. It will be harder for him to operate a high level system. Therefore a system needs to be created to match his skills level.

Data Flow Diagrams
Level 0



Data Flow Diagrams
Level 01



# Design

## Consideration of possible solutions:

Simplified manual system – Although it will be easy for the user with his level of computer skills, it is not ideal because this will be very complicated to sort out, and also very time consuming.

Text document system – This way, it will be simple for Mr Altaf to store the information without any complications, but it cannot display any reports, queries etc.

## Final Choice of solution:

For implementing the system a database package will be ideal for Asif Altaf. It will be done in Access XP, as it has the most features.
I already have some experience of using Microsoft access XP and it is possible for college and me to develop on my skills, as it is both at home.

By using this package it will be possible to:

Set up tables and relationships

Produce customised input screens.

Designing Reports

Implement a customised menu system

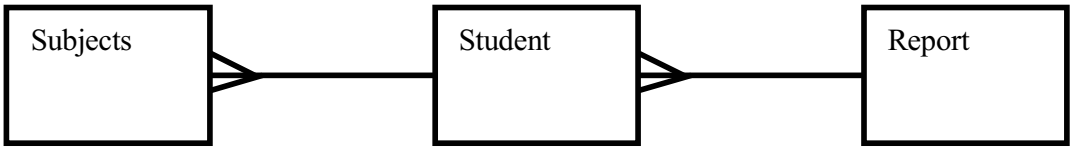
Link with MS word to perform mail merges to parents.

Make and save queries to selected certain customers for mail merge

Use visual basic to modules to enable fast searches for a particular customer.

Database Design

My database will contain the following entities and attributes:



Definition of data requirements

The tables will contain the following data:

Student Details

| Attribute | Type |
|---|---|
| StudentID | AutoNumber |
| StudentNumber | Text |
| FirstName | Text |
| MiddleName | Text |
| LastName | Text |
| ParentsNames | Text |
| Address | Text |
| City | Text |
| PostalCode | Text |
| Home Phone No | Number |
| Emergency Contact No | Number |
| Mobile No | Number |
| EmailName | Text |
| Course | Text |
| Subject 1 | Text |
| Subject 2 | Text |
| Subject 3 | Text |
| Subject 4 | Text |
| Subject 5 | Text |
| Re-Sit | Text |

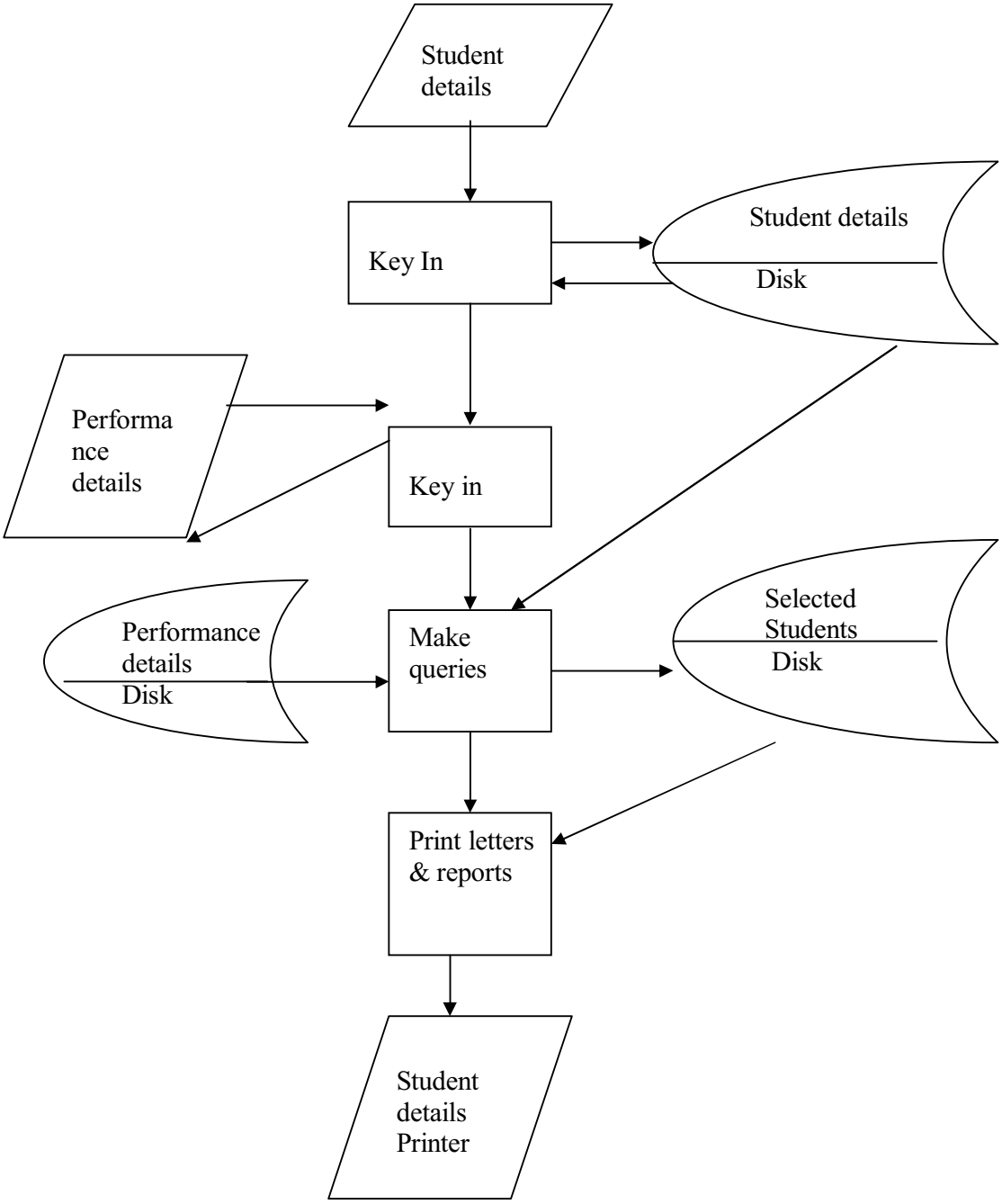
Subject Details

| Attribute Name | Type |
|---|---|
| Student Subject ID | AutoNumber |
| Subject Name | Number |
| StudentNumber | Text |
| Teacher | Text |
| Class | Text |
| Grade (Target Minimum) | Text |
| Grade (Trial) | Text |
| Attendance | Text |
| Punctuality | Text |
| Notes | Memo |
| StudentID | Number |
| | |

Report

| Attribute Name | Type |
|---|---|
| Report ID | AutoNumber |
| StudentNumber | Text |
| ParentsNames | Text |
| Address | Text |
| City | Text |
| PostalCode | Text |
| Date | Date/Time |
| | |

Systems Flowchart

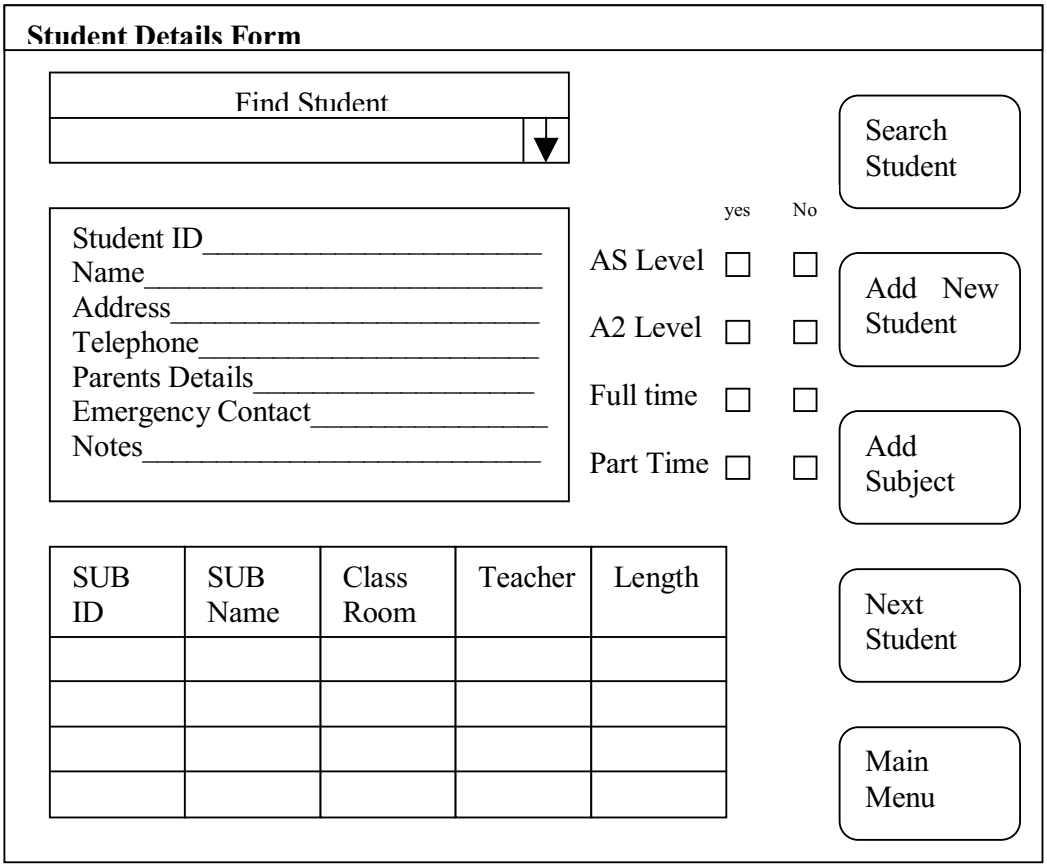


Design of Input Forms

This input forms will be necessary, because it will help add new student information, and also add subjects for the student. It can be used to look through all the existing details of the students, and modify to upgrade it.

If a student is already in the database, mistakes while modifying the database will be noticed by the validation checks, and corrected. To make it easier for the user, the Student ID data type will be an auto number integer, so that there is continuity at work.

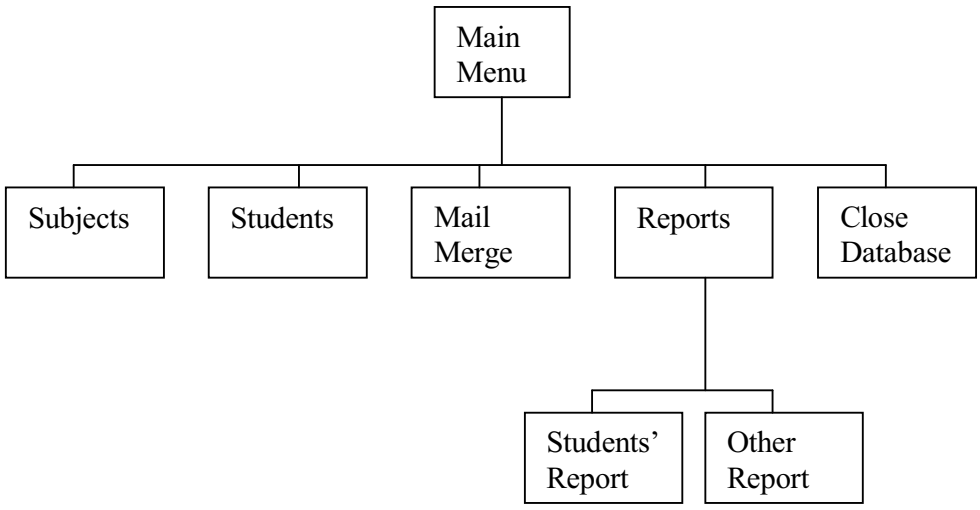
In the form, when the subject button is clicked, it will bring up a list of Subjects that the college provides, with relevant information linked to the subject, like teacher.




There are keys on the right side, which will take the user to lists of student, subject, open new form or go to main menu. Check box for some Attributes, to save the user time from typing it all up. There is a dropdown List for the user to find the student, and there is also a search student key, which will enable the user to find a student by using his/ her ID, Name etc. The sub form will be the added subject details, after the Add Subject Button is clicked.

Menu Design

My menu is going to be in the following format, to keep it simple and for the ease of the user:



Report Design

This is the format of the student report:

| Students Report | | | | NewVic |
|---|---|---|---|---|
| ID | Name | Address | Phone | E-mail |
| GAH098 | George Alfred | 23 Embank Way, Fur bye, FE6 9WR | 02085753564 | Geor999@hotmail.com |
| FOA124 | Alice Moor | 16 Fur hill, Plums ten, PO5 3FG | 02076547382 | Alice12@yahoo.co.uk |
| | | | | |

# Queries

I will create, modify and save some queries for my user, so that she can access specific information about the students, subjects and reports by specifying an attribute.

Subject Query- This will enable my user to find out how many students in his tutor group have taken a particular subject.

Enhancement Query – Selects all the students who are attending Extra Curriculum enhancement programmes.

Course type Query – Selects all the students who are either part time, or full time students. It can also be modified to choose all the students who are first year students, or second year students.

Location Query – Selects all the students living in a particular area, for example East Ham.

Medical History Query – Selects all the students with medical problems.

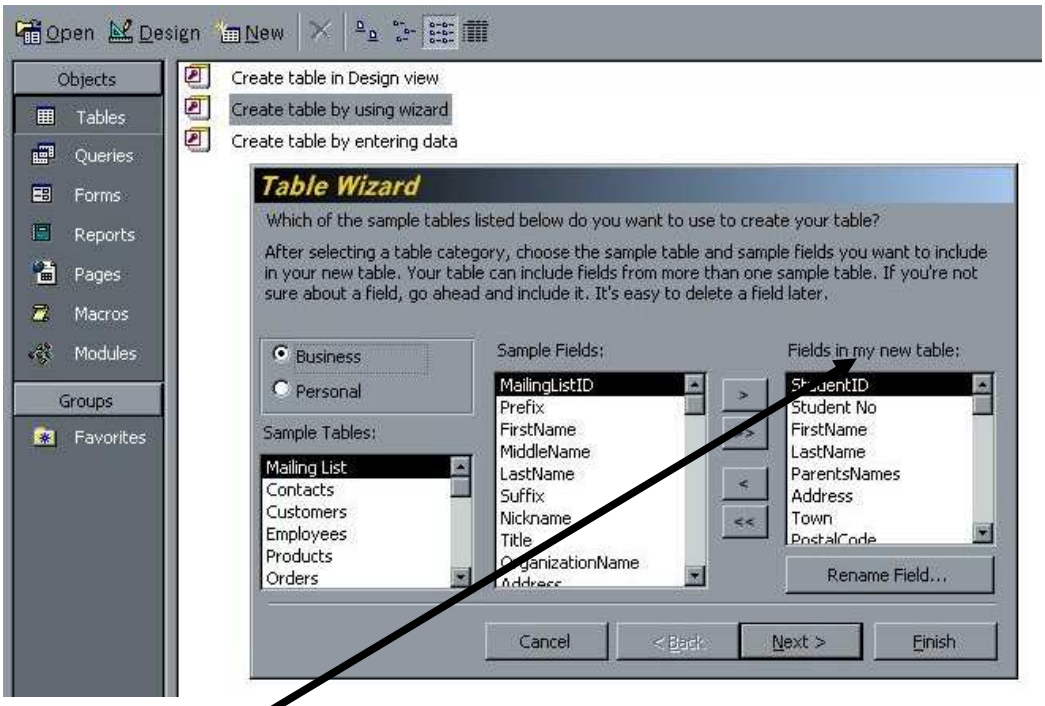
Finance Query – Selects all the students who are eligible to receive a government grant.

# Mail Merge

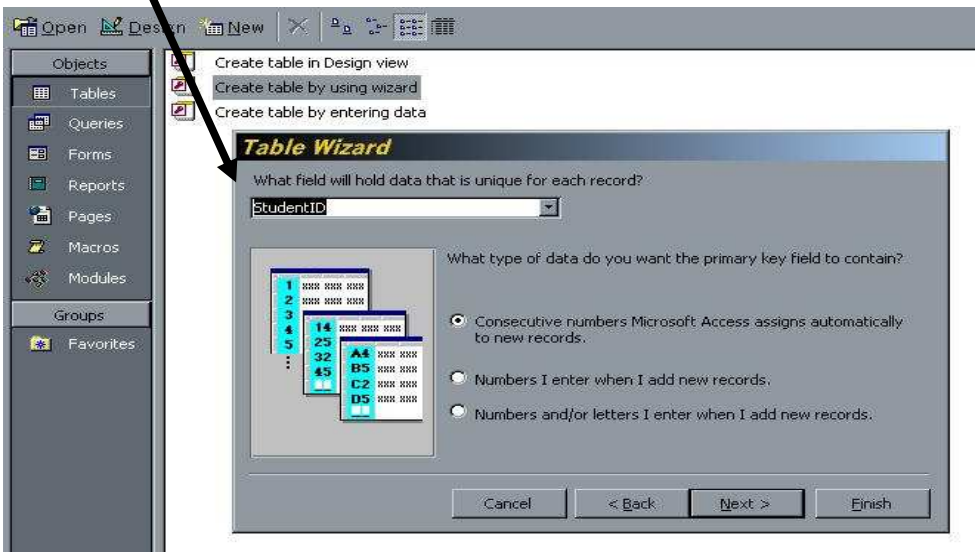
When the user selects the option of mail merge from the main menu, he will have the option to load word from access, and select the source of data to be use for the letters. There will be options available to send mails to either the students or the parents. Sent mails, addresses and date and time will be stored, for future reference or use. As the user increases his user level, or reads my user manual, he does not have to rely anymore on the automated mail merge system. He can use its flexibility to create and send mails on his own style.

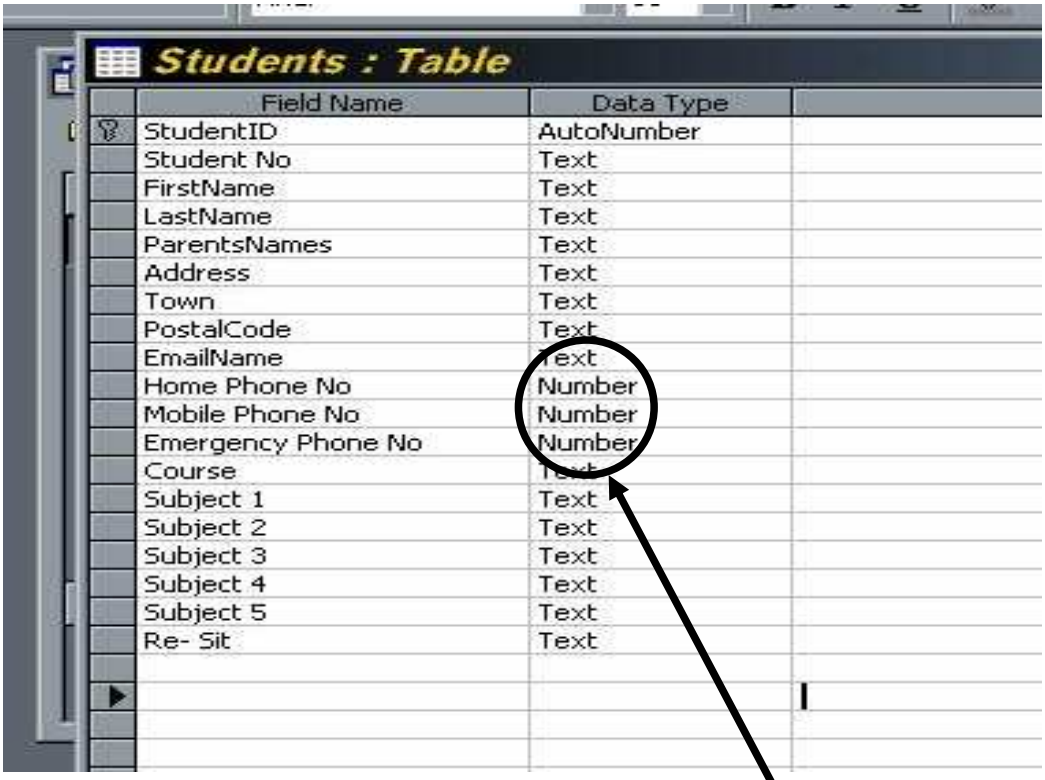
Implementation

I have created a database solution for a college tutor, to help him sort out his student details and to create reports to be sent to parents. I have made tables, Queries, Forms and Reports. This is how I made it:

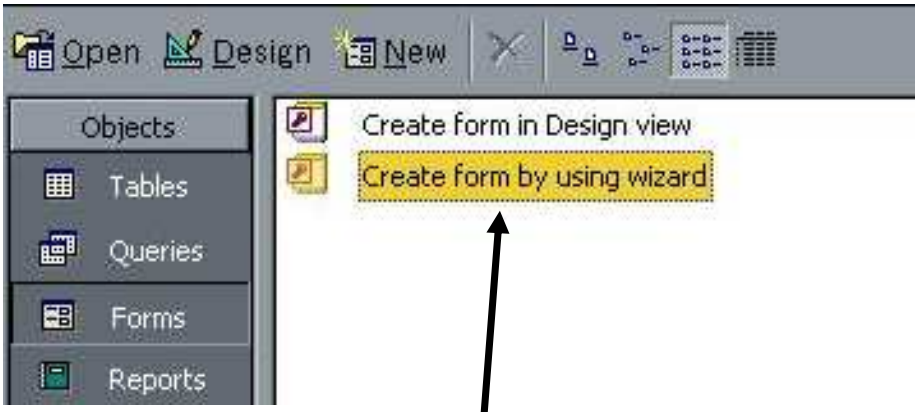



Creating **fields** in the table, where the data will be stored. One of the fields need to be the primary key, because that field will contain data that is unique for each record. For the Students table, I chose **Student ID** to be the primary key.

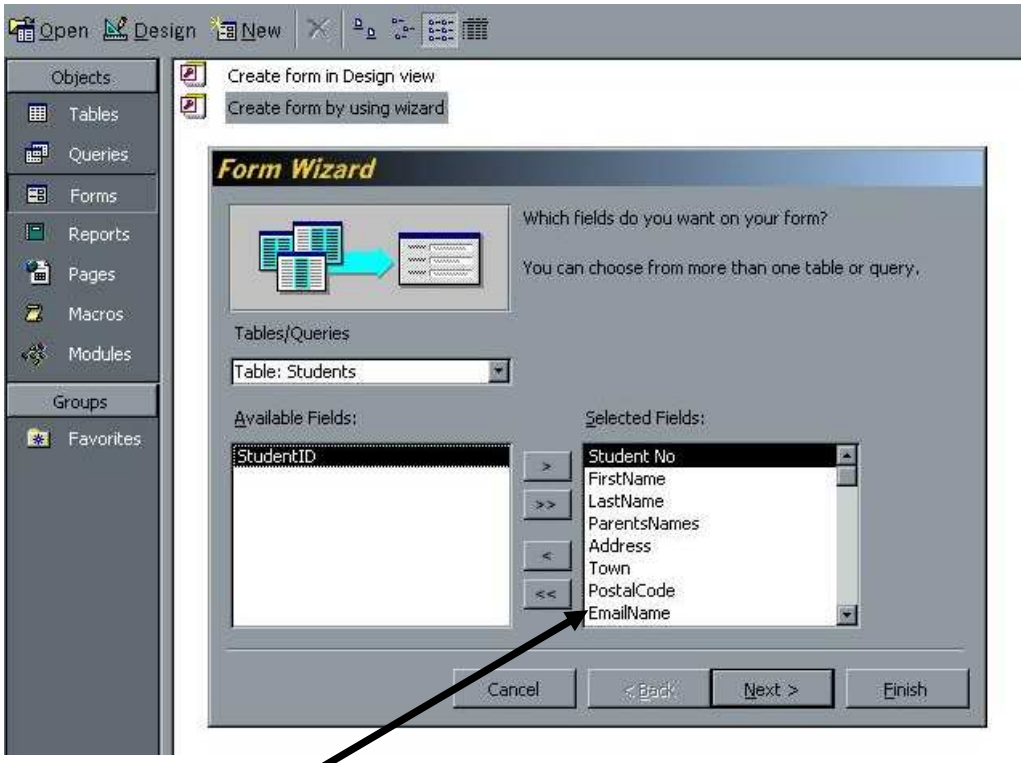





I opened the Students table in design view, and modified the **data type** for each field. I also modified the field size, and input mask of the field, so that it accustomed for a particular format of data type.

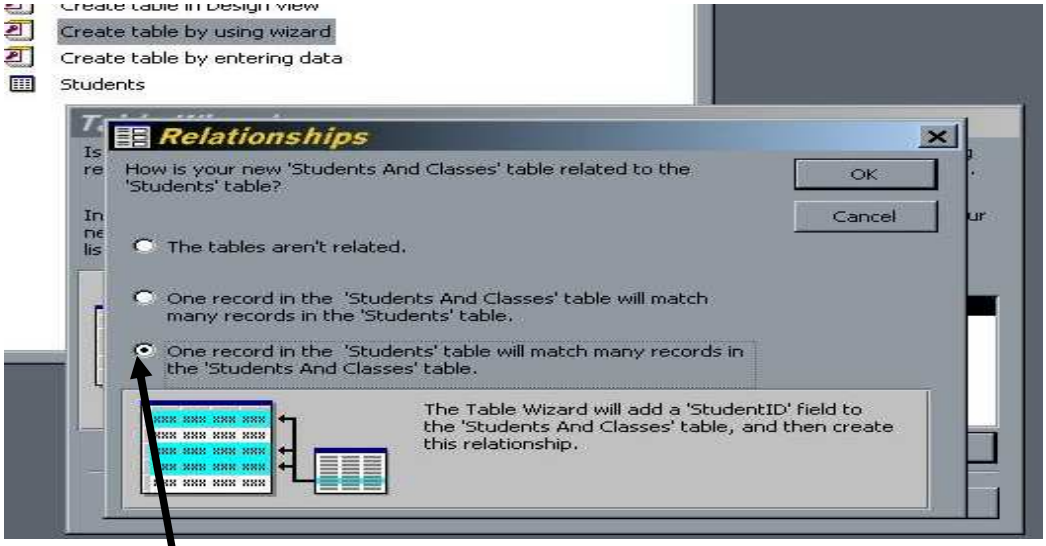



I created a **form**, so that it would be easier for my user, to enter data into the table.

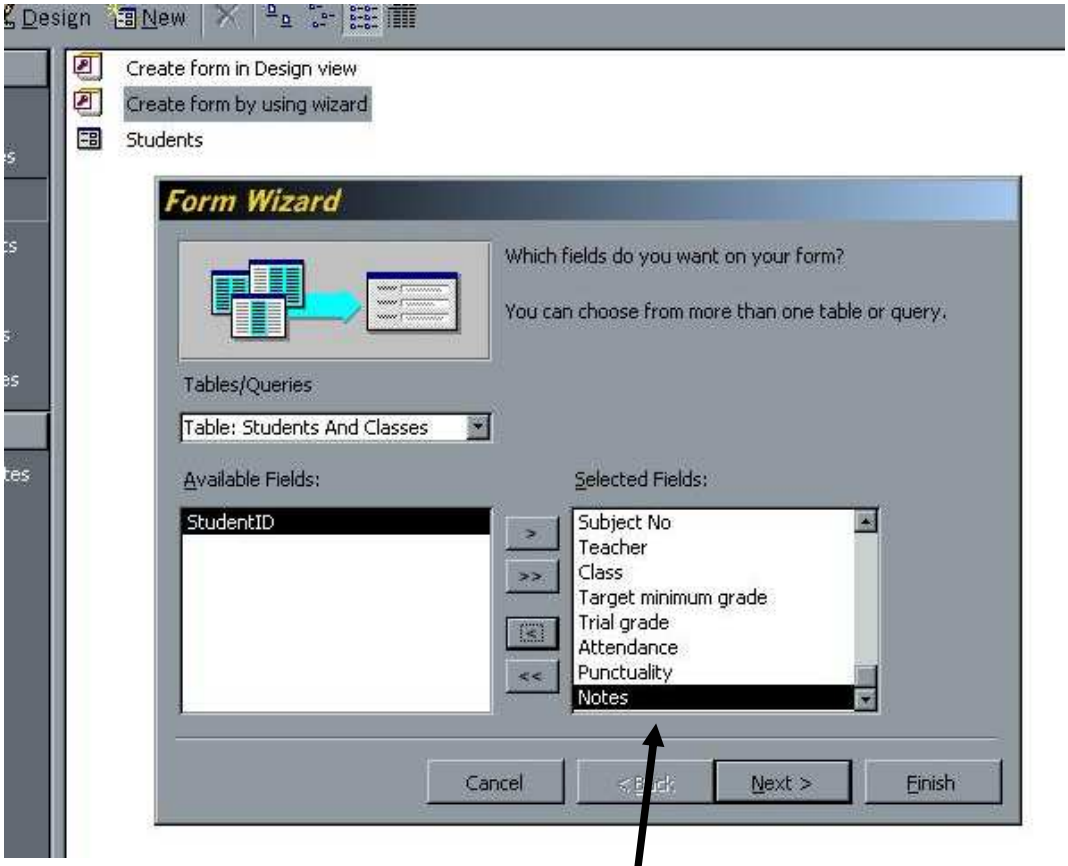



I selected the **fields** from the Students table, which I would want the user to input the data directly into the table.

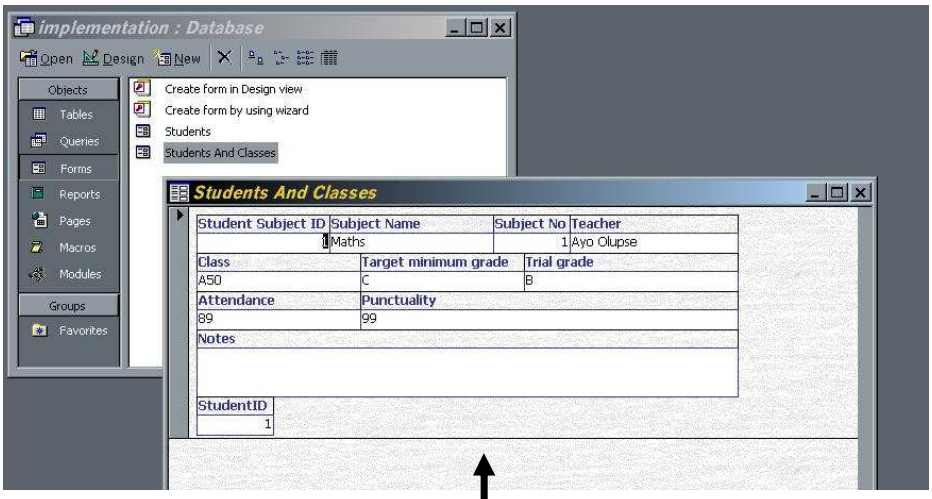

I created another table, called Student and Classes table. This table will hold and sort data about students' subject details, and subject performance.



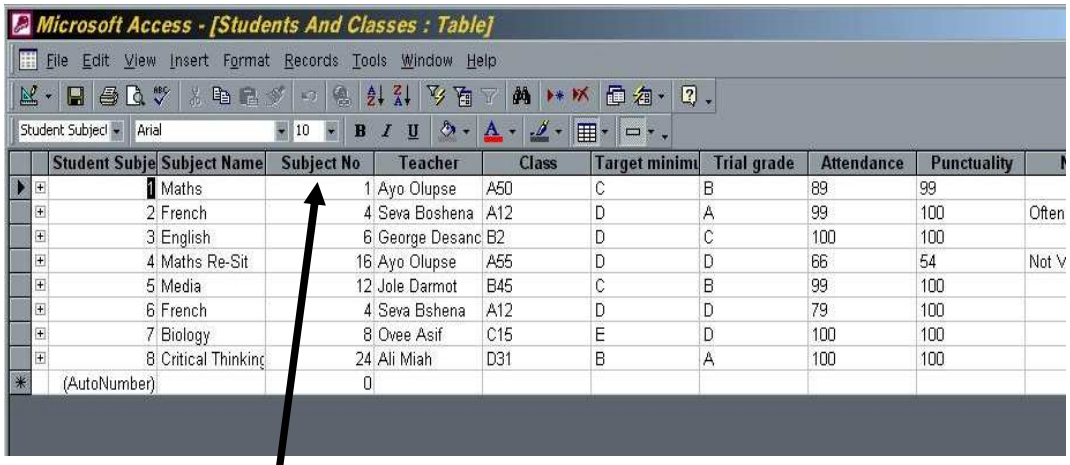

I created a **relationship** between the two tables, so that the information can be linked. One record in the students table will match many records in the Students and classes table.



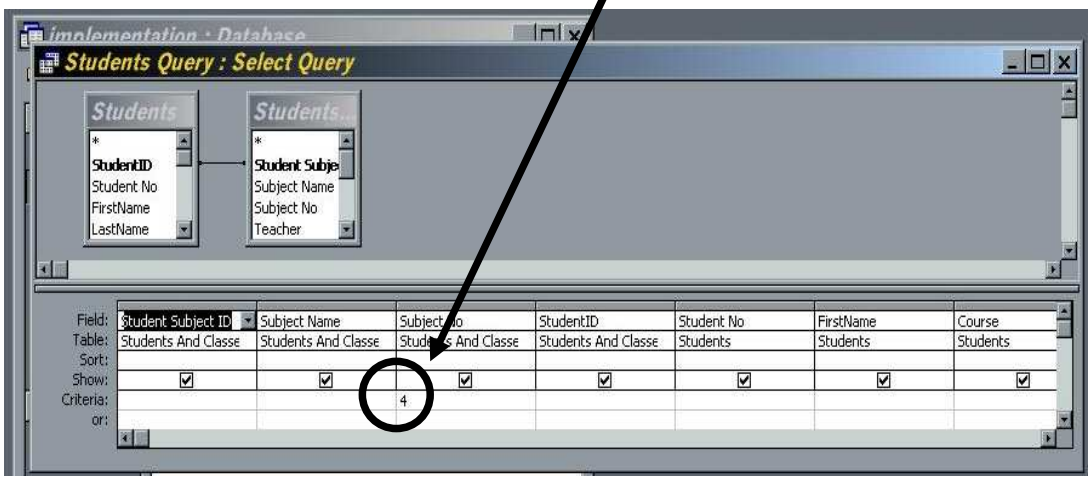

Following the first method, I created a form which will help data entry to the Students and Subjects database.

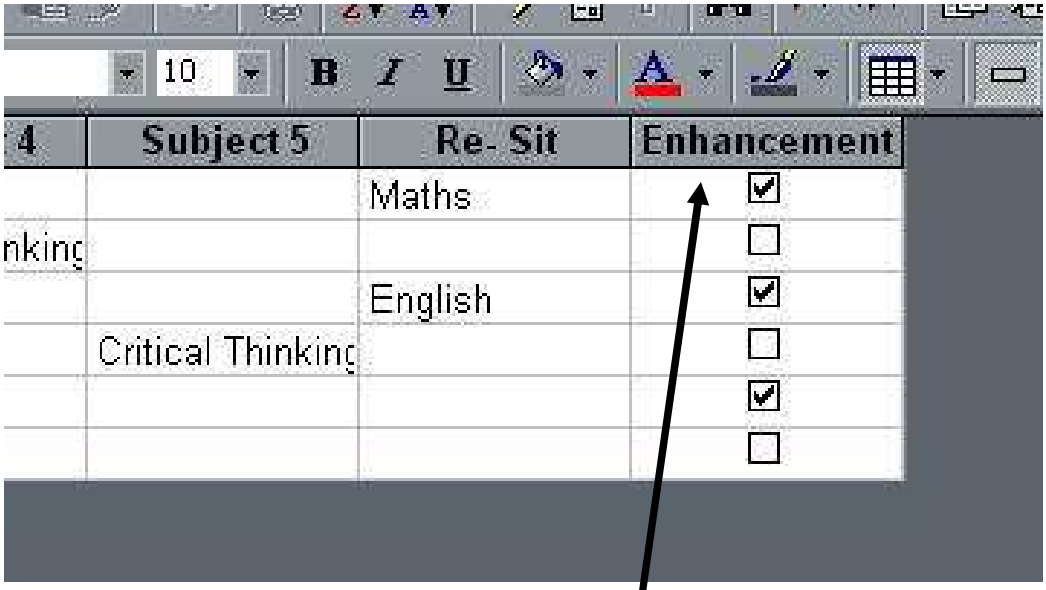



This is what the form looks like.

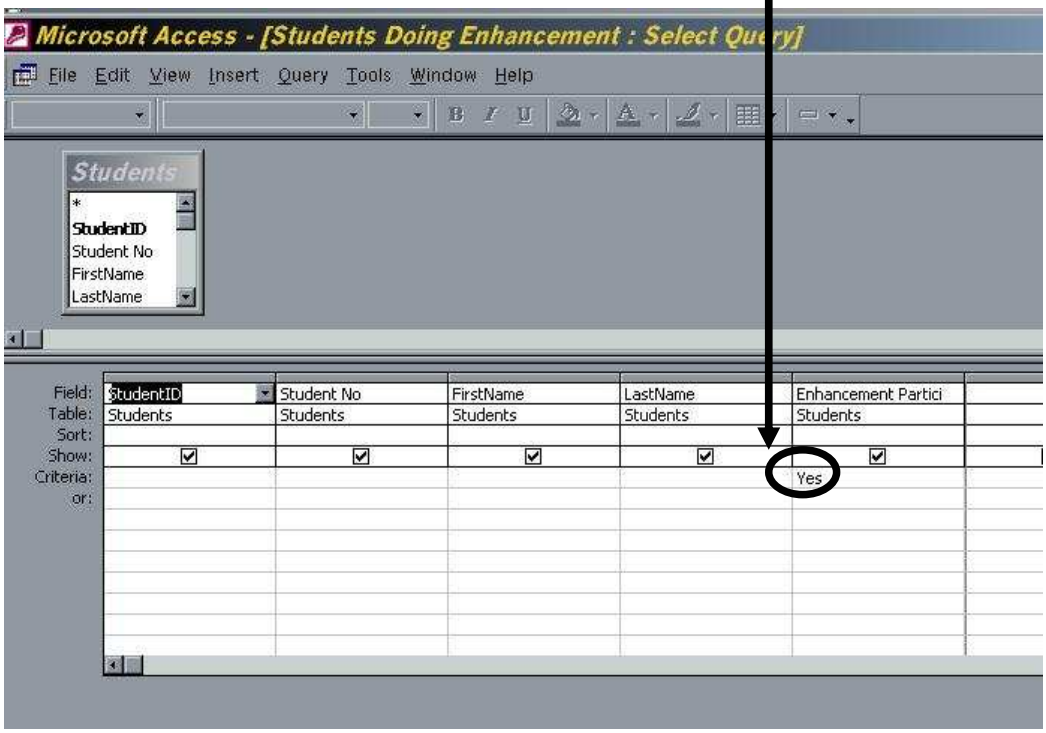


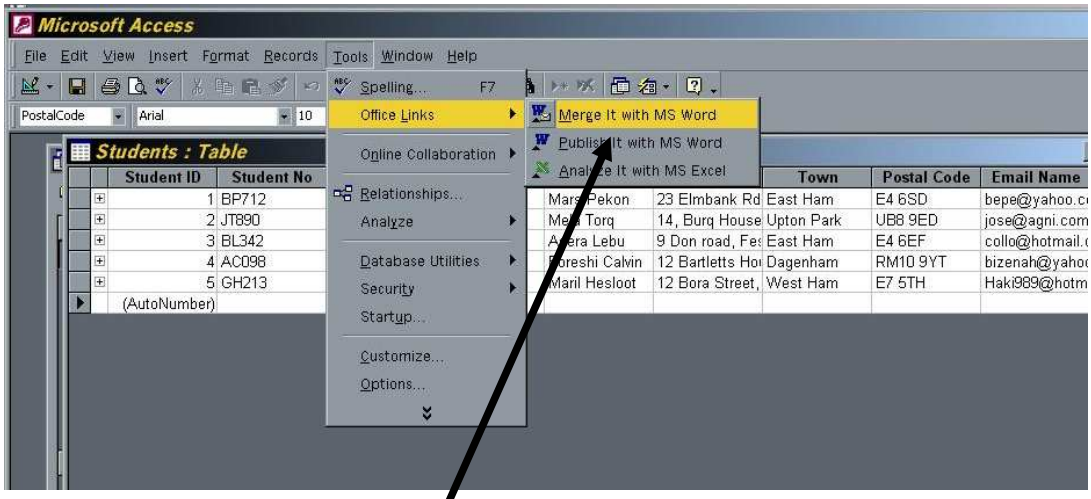

Each Subject has a **Subject No**. I used this no, to create a query, which will display all the students who are doing the specific subject. This is what the query was created, in design view. I put down the value in "**criteria**" under Student no, =4, this way, it will only display people doing French.



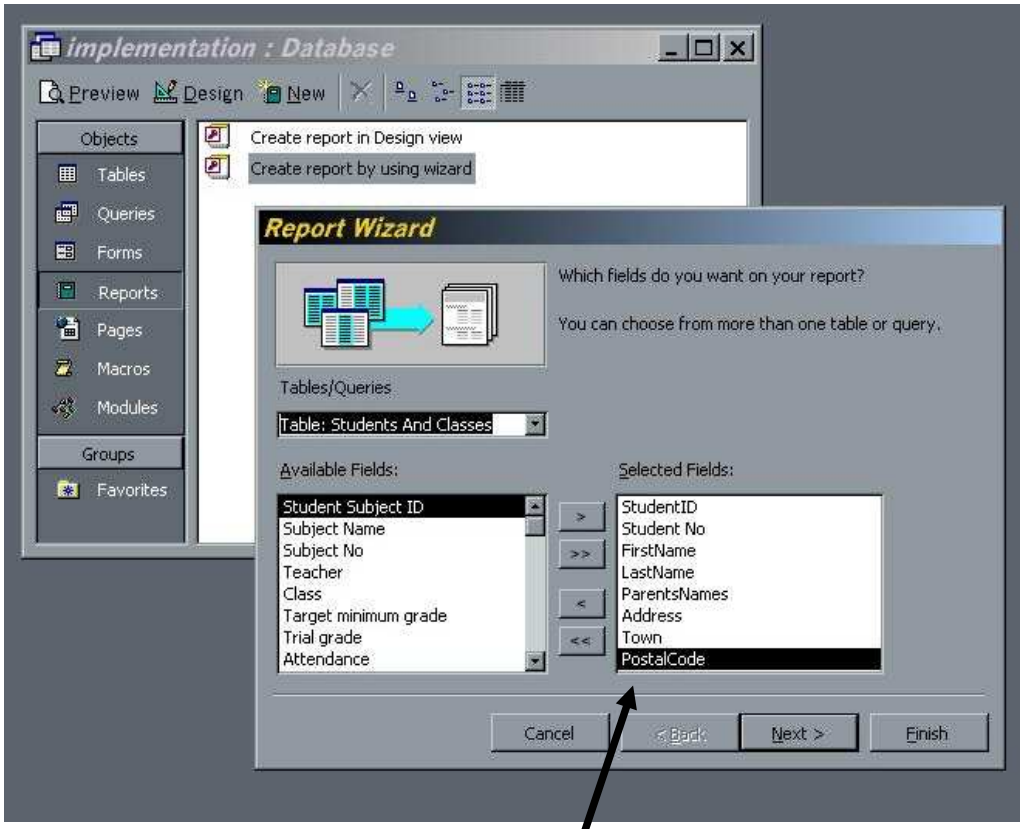



In the Students table, there is a field called **enhancement**, where it is a yes/no tick box whether a student is doing enhancement project. Using this, I have made a query, by putting in the "Criteria" section under Enhancement YES.






I have selected to add a **merge** feature, which will merge the contents of the tables or queries to Microsoft Word.




I have then used a report wizard, and selected all the fields, which will be displayed in the report. Since this report is going to go to the parents, I have selected only the necessary fields from both tables.

# Students

| Student ID | Student No | First Name | Last Name | Parents Names |
|---|---|---|---|---|
| 3 | BL342 | Bart | Lebu | Acera Lebu |

| Address |
|---|
| 9 Donroad, Fessed Lane |

| Town | Postal Code | Student Subject ID | Subject Name | Subject No | Teacher |
|---|---|---|---|---|---|
| East Ham | E4 6EF | 3 | English | 6 | George Desance |

| Class | Target minimum grade | Trial grade | Attendance | Punctuality |
|---|---|---|---|---|
| B2 | D | C | 100 | 100 |

| Notes |
|---|
| |

| Students And Classes_StudentID |
|---|
| 1 |

| Student ID | Student No | First Name | Last Name | Parents Names |
|---|---|---|---|---|
| 4 | AC098 | Ark | Calvin | Foreshi Calvin |

| Address |
|---|
| 12 Barletts House, Vicarage House |

| Town | Postal Code | Student Subject ID | Subject Name | Subject No | Teacher |
|---|---|---|---|---|---|
| Dagenham | RM10 9YT | 4 | Maths Re-Sit | 16 | Ayo Olupse |

| Class | Target minimum grade | Trial grade | Attendance | Punctuality |
|---|---|---|---|---|
| A55 | D | D | 66 | 54 |

| Notes |
|---|
| Not Very commited to this lesson |

| Students And Classes_StudentID |
|---|
| 1 |

This is what the report looks like. It can be mail merged to parents, using the mail merge feature. Now that my database solution is complete, I will test it.

I have tested the whole database solution, and these are my results:

Testing the data entry in tables.
Result: Under the mobile No Field, the number does not allow entering of a full mobile No. I have corrected it, by expanding the field size for that in design view.
Expected result: Working.

Testing Queries.
Result: Queries work perfectly, No flaws.
Expected Result: Working.

Testing Reports.
Result: The reports, although showing the correct information, does not display it properly. The font is very complicated, and the background too, makes it hard to understand. I corrected this, by changing the look of the report in report design view.
Expected Result: Same.

Testing Forms.
Result: Forms work, although there are no keys that lets you select other objects from a list, like it was planned in design chapter.
Expected Result: Form with links and Relationships.

Testing Mail Merge: Works.
Expected Result: Works.

User Manual

1) Open the database system, by clicking on the database icon on desktop.
2) To enter data into a table, go to forms in a main menu, and either chose Students or Students and Classes Form.
3) Enter the data in the spaces provided.
4) Alternatively, you can enter the data directly into the table.
5) To do this, go to main menu, click tables, and select either Students or Students and Classes.
6) To view the table, just click on either tables [Main Menu > Tables > Tables]
7) To find out specific information from the tables, go to [Main Menu > Queries]
8) To find out if a particular subject is taken by any of your students, select Students query. Open in design view. Under criteria, under Subject No, enter the number of the subject you want. Save.
9) To view the query, click on the query.
10) To view which of your students are doing Enhancements, Open the Students Enhancement in design view. Under criteria under Enhancement type yes.
11) Click on the query, to find out which of your students are doing enhancement.
12) To find out which of your students are not doing enhancement, follow step 10, instead of yes on criteria, put No.
13) To Merge the information from either the table or queries, click on the merge button on the main menu, and it will take all information to Ms Word.]
14) To view reports, click reports in main menu, and you can view it. You can either print it out to post or to give to parents in parents evening, or you can mail merge it to the parents e-mail addresses.

# Evaluation

I have created a database solution for a college tutor in my project, to sort out her student database, and also to create reports for parents. The system is quite an user – friendly solution, and since my user's skill level is moderate, he will not have much trouble using it. With this project, I included Analysis, Design, Implementation and User Manual.

I am moderately satisfied with the work I produced. Out of the chapters, Analysis and Design were the two chapters, that I am fully satisfied with. I believe, that with more time, I could have put more information in the implementation and user manual. The last two chapters are proper and correct, but not as elaborate as I planned them to be.

My best part in the project is my analysis chapter, because I have done it with lots of time and care, and I am happy with the way it turned out. My worst part in the project is probably my user manual, because I did this at the end, when the time was running out.

There were a few things, that did not turn out as good as my expectations. I planned to add a few screenshots to my user manual. I wanted a dropdown list in my forms, but unfortunately, I did not know how to do it. I am also unhappy, that I could not turn in this project before the deadline, since I was struggling because of my lack of implementation knowledge. Still, I am proud of the work I produced under these circumstances. I am also quite proud, than I chose to do quite an original project of sorting information, while most of my fellow classmates are doing business solutions.

If I had to do the project again, I would change a few parts of it. I would plan the whole project more thoroughly, and I would put away more time for me to finish the project, so that I could turn it in the deadline. Overall, I am happy that I have produced this work.

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