COMPUTER STUDIES NOTES

FORM 2

**Filtering and Adding Records**

**Adding Records**  
Sorting Data   
Filtering data

1. Click on the drop down arrow next to the Program field name.
2. Click on the check box next to the Select All option to clear all check boxes.
3. Click on the check box next to the Business option to add a check mark to the box.
4. Click OK.
5. Only two students - G. Thompson and F. Smith should be visible since they are the only two enrolled in the business program.
6. To show all records, click on the drop down arrow next to the Program field name.
7. Click on the Clear Filter from "Program" option.

***Adding records into the database***

To add additional records to your database:   
Place your mouse pointer over the small dot in the bottom right hand corner of the table.  
The mouse pointer will change into a two - headed arrow.  
When this happens, click and hold down the right mouse button and drag the pointer down to add a blank row to the bottom of the database.

Add the following data to this new row:  
Cell - Data  
A14 - ST348-255  
B14 - Christopher  
C14 - A.  
D14 - 22  
E14 - Science  
  
***Forms***  
A form is graphical user interface that is used to enter , edit, display and manipulate records in a table or a database.  
  
*Data input Using Forms  
Analysing the Form  
Data input using forms*  
  
Click inside cell A3 of your spreadsheet  
From the Excel menu bar, click on Data  
From the drop down list, click Form  
A form like the one below should pop up on top of your spreadsheet:   
Analying the form  
  
As you can see, the labels for the months are on the left. To the right of each month there is a text box. The numbers currently in them are the numbers inputted on the spreadsheet.

Click the New button at the top  
The text boxes go blank  
Click inside the January text box and enter a new number  
Enter new number for the rest of the months  
When you have finished, click the New button again

**NOTE** When you click the new button, Excel will enter the numbers into your spreadsheet. The text boxes will be blanked out, ready for some new data.   
The form even gives you button to set up some search criteria (Find and Criteria buttons). When you want to get back to your spreadsheet, just click the Close button.  
  
**Totals / Sub-totals function**

Data can be sorted and summarized by creating sub-totals. When a list is summarized excel calculates sub-totals based on the subsets of data and also calculates the grand total.  
  
***Charts and graghs***

1. Identify types of charts and graphs
2. Select data ranges to create charts
3. Format charts

**Introducing Charts and Graphs**

A chart is an effective way of representing values using a visual presentation aid. It is a technique of displaying data using pictures and graphical representations instead of numbers or simple words.  
It works by drawing figures that would represent numbers, adding colors and shapes to the information presented  
  
**Types of charts**

Excel provides for creation of the following types of charts among others.   
Pie   
Bar  
Line   
Column

*Creating a Pie Chart  
Data Range   
Creating a Bar Chart with two Series*

**Databases**

**By the end of this lesson, you should be able to:**

Define a database   
Explain the concepts of a database  
Explain data organization in a database  
Create a table  
Edit a table  
Design a form to view and enter data into a table  
Query a database for specific information  
Generate reports from the tables or queries and create labels  
Print queries, forms and reports  
  
**Definition of a Database**

A database is a collection of related files stored in a computer for controlled access, security and integrity of data.In real life situations, information on; Students records, Patient records in hospitals, Employee records, Stock in a supermarkets is manually stored in books, papers, and files. Similarly, computers can be used to store patient records in hospitals, stock details in supermarkets and employee details in an organization. Information saved in a computer is safer and economical.

**Data Organisation in a Database**

A database is made up of related files. A file is composed of related records. Records are made up of related fields. Fields contain characters. A character is the smallest unit of data. A field is a basic unit of information within a record. A record is a combination of related fields containing information pertaining to one person, place or thing. A file is a collection of related records.

**Database concepts**  
***Advantages of Databases over Flat Files***

Reduced data redundancy i.e. there is no repetition of records stored, since data is normalized. There is improved data integrity i.e. data is always consistent and accurate since all related records are updated at the same time and it is not easy to input wrong data.

Have better security features e.g. there is controlled access to data.   
Have centralized records that can be accessed by remote terminals simultaneously.   
Records can be linked with other applications to enhance sharability.  
Records can be manipulated using specific criteria.  
  
**Organization Structure of a Database**

A database is made up of related files. A file is composed of related records. Records are made up of related fields. Fields contain characters.A character is the smallest unit of data.A field is a memory location that contains a data item.A file is memory location with a unique name that contains related records.  
  
***Database models***

Models are characterized by the way data items relate to each other. Models include:  
Hierarchical  
Networked   
Relational   
Object oriented

**Hierarchical Model**

These are records that are related in a predefined order. E.g. grandparent, parents, children. In this model, each record has one parent record and many children. The level below is subordinate to the one above it. Its also known as a tree model.

**Network Model**

In this model, records are interlinked. This model allows each record to have multiple parent and child records, forming a lattice structure.  
  
**Relational Model**

A database based on the relational model is made up of tables which are linked by a unique field common to the tables (key field). This model allows the definition of data types, and retrieval operations and integrity control. This is the most commonly used model. Examples of Relational Database Management System (RDBMS) are Ms-Access, Oracle and SQL (Structured Query Language).

**Object Oriented Model**

Object oriented Is a model that utilizes Object Oriented Programming technique to manipulate data by creating unique classes and objects which can be reused. Research is on going to in this area.   
  
**Features of a d/base**

A database must contain the following standard features  
The data types and field properties of individual fields must be defined at design time.  
It must provide the user with tools for generating reports.  
Data should be analyzed by use of queries  
It should provide a user interface to enable the user to enter and view data into the database  
Creating and Managing a Database : Introduction  
  
**Creating and Managing a D/base**

***Starting Microsoft Access***  
Creating Tables  
Tables are used to store all the data in the database. Each row in table contains one record. Records are made up of fields that contain a unique data item. Tables are also called relations.

There are three ways to view your table: Table wizard, Datasheet view and Design view. We shall use design view in this lesson to create tables.

When you create a table using Datasheet view, data is entered into a datasheet grid, which consists of rows and columns labeled ‘Field 1’, ‘Field 2’, Field 3’, e.t.c. The data type is determined by Ms-Access, based on the data entered. When you create a table using Wizard, the wizard will walk you through a four step process that is easy to follow. The table created however may not meet your exact requirements.  
  
***Creating a Table***

Creating a table using design view   
Data types   
Text   
Memo  
Number  
Currency  
Time/Data  
Yes/No  
OLE object  
Look-up wizards  
Auto number  
Hyperlink  
Field properties

The field properties of a table are found in the lower part of the design view as shown. The properties include:

A relationship is an association between two common fields in two different tables. They are used to enforce data integrity and avoid data redundancy the tables are linked together using a key field so that any manipulation of data is effected on all similar records. Relationships allow querying of different related tables to obtain a dynaset. There are three types of relationships

*One-to-One relationship  
One to-Many Relationship  
Many to many relationship*  
**One-to-One Relationship**

One record from primary table is associated to only one record in the related table. It is represented by a straight line in Access. This type of relationship is not common since most of information related this way can be in one table. This relationship however is used to divide a table with many fields, isolate fields for security purpose or store information that is a subset of a table.  
  
**One-to-Many Relationship**

A record in the primary table is associated to many records in the related table but a record in the related table has only one matching record in the primary table. This is the most commonly used relationship.

***Steps for creating one to many relationships***

Step 1: Close any tables you have open. You can't create or modify relationships between open tables.

Step 2: Press F11 to switch to the database window .

Step 3: Click Relationships on the toolbar. If you haven't yet defined any relationships in your database, the Show Table dialog box is automatically displayed. If you need to add the tables you want to relate and the Show Table dialog box isn't displayed, click Show Table on the toolbar.

Step 4: Double-click the names of the tables you want to relate, and then close the Show Table dialog box. To create a relationship between a table and itself, add that table twice.

Step 5: Drag the field that you want to relate from one table to the related field in the other table. In most cases, you drag the primary name but MUST be of the same data type and contain the same kind of information.

Step 6: - Set the relationship options if necessary. The options are Enforcing Referential Integrity, cascade update related records and cascade delete related records.

Step 7: Click on create button to create the relationship. The relationship is indicated by a join line between the two tables.  
  
  
**Many-to-many relationship:**

A record in the primary table has many matching records in the related table and B, and a record in related table can have many matching records in Table A. This type of relationship is only possible by defining a third table (called a junction table) primary key consists of two fields: the primary keys from both tables. A May-to-Many relationship is a two One-to-Many relationship with a third table.

**Many-to-Many relationship**

A record in the primary table has many matching records in the related table, and a record in related table can have many matching records in the primary table. This type of relationship is only possible by defining a third table (called a junction table) whose primary key consists of two fields: the primary keys from both tables. A Many-to-Many relationship is a two One-to-Many relationship with a third table