MS-Office

Subject: MS-Office

SYLLABUS

Introduction to Computers
What is a Computer, Characteristics of Computer, History, Computer Generation Types. Basic Computer Organization, Functional units of Computer, Memory System in Computer, Capacity of Primary Memory, Secondary Storage, Input-Output Devices. Introduction, Definition, Functions.

Introduction to Ms-Office
Design Goals of MS-OFFICE, Components of MS-OFFICE: MS-Word, MS-Power Point, MS-Excel, and MSAccess. What is word Processing, Advantages of Word Processing, Importance of Word Processing.

Introduction to Ms-word
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BASIC CONCEPTS OF COMPUTERS

1.1 INTRODUCTION

Let us begin with the word 'compute'. It means 'to calculate'. We all are familiar with calculations in our day-to- day life. We apply mathematical operations like addition, subtraction, multiplication, etc. and many other formulae for calculations. Simpler calculations take less time. But complex calculations take much longer time. Another factor is accuracy in calculations. So man explored with the idea to develop a machine, which can perform this type of arithmetic calculation faster, and with full accuracy. This gave birth to a device or machine called '**computer'**.

The computer we see today is quite different from the one made in the beginning. The number of applications of a computer has increased, the speed and accuracy of calculation has increased. You must appreciate the impact of computers in our day-to - day life. Reservation of tickets in Air Lines and Railways, payment of telephone and electricity bills, deposits and withdrawals of money from banks, business data processing, medical diagnosis, weather forecasting, etc. are some of the areas where computer has become extremely useful.

However, there is one limitation of the computer. Human beings do calculations on their own. But computer is a dumb machine and it has to be given proper instructions to carry out its calculation. This is why we should know how a computer works.

1.2 WHAT IS A COMPUTER?

Computer is an electronic device. As mentioned in the introduction it can do arithmetic calculations faster. But as you will see later it does much more than that. It can be compared to a magic box, which serves different purpose to different people. For a common man computer is simply a calculator, which works automatic and quite fast. For a person who knows much about it, computer is a machine capable of solving problems and manipulating data. It accepts data, processes the data by doing some mathematical and logical operations and gives us the desired output.

Therefore, we may define *computer as a device that transforms data*. Data can be anything like marks obtained by you in various subjects. It can also be name, age, sex, weight, height, etc. of all the students in your class or income, savings, investments, etc., of a country. Computer can be defined in terms of its functions. It can i) accept data ii) store data, iii) process data as desired, and iv) retrieve the stored data as and when required and v) print the result in desired format.

Fig. 1.1: Personal Computer

1.3 CHARACTERISTICS OF COMPUTER

Let us identify the major characteristics of computer. These can be discussed under the headings of speed, accuracy, diligence, versatility and memory.

1.3.1 Speed

As you know computer can work very fast. It takes only few seconds for calculations that we take hours to complete. Suppose you are asked to calculate the average monthly income of one thousand persons in your neighborhood. For this you have to add income from all sources for all persons on a day-to-day basis and find out the average for each one of them. How long will it take for you to do this? One day, two days or one week? Do you know your small computer can finish this work in few seconds? The weather forecasting that you see every day on TV is the results of compilation and analysis of huge amount of data on temperature, humidity, pressure, etc. of various places on computers. It takes few minutes for the computer to process this huge amount of data and give the result.

You will be surprised to know that computer can perform millions (1,000,000) of instructions and even more per second. Therefore, we determine the speed of computer in terms of microsecond (10^{-6} part of a second) or nano-second (10^{-9} part of a second). From this you can imagine how fast your computer performs work.

1.3.2 Accuracy

Suppose some one calculates faster but commits a lot of errors in computing. Such result is useless. There is another aspect. Suppose you want to divide 15 by 7. You may work out up to 2 decimal places and say the dividend is 2.14. I may calculate up to 4 decimal places and say that the result is 2.1428. Some one else may go up to 9 decimal places and say the result is 2.142857143. Hence, in addition to speed, the computer should have accuracy or correctness in computing.

The degree of accuracy of computer is very high and every calculation is performed with the same accuracy. The accuracy level is determined on the basis of design of computer. The errors in computer are due to human and inaccurate data.

1.3.3 Diligence

A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours without creating any error. If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability it overpowers human being in routine type of work.

1.3.4 Versatility

It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills.

1.3.5 Power of Remembering

Computer has the power of storing any amount of information or data. Any information can be stored and recalled as long as you require it, for any numbers of years. It depends entirely upon you how much data you want to store in a computer and when to lose or retrieve these data.

1.3.6 No IQ

Computer is a dumb machine and it cannot do any work without instruction from the user. It performs the instructions at tremendous speed and with accuracy. It is you to decide what you want to do and in what sequence. So a computer cannot take its own decision as you can.

1.3.7 No Feeling

It does not have feelings or emotion, taste, knowledge and experience. Thus it does not get tired even after long hours of work. It does not distinguish between users.

1.3.8 Storage

The Computer has an in-built memory where it can store a large amount of data. You can also store data in secondary storage devices such as floppies, which can be kept outside your computer and can be carried to other computers.

IN-TEXT QUESTIONS 1.1

1. What is a computer? Why is it known as data processor?
2. What are the important characteristics of computer?

1.4 HISTORY OF COMPUTER

History of computer could be traced back to the effort of man to count large numbers. This process of counting of large numbers generated various systems of numeration like Babylonian system of numeration, Greek system of numeration, Roman system of numeration and Indian system of numeration. Out of these the Indian system of numeration has been accepted universally. It is the basis of modern decimal system of numeration (0, 1, 2, 3, 4, 5, 6, 7, 8, 9). Later you will know how the computer solves all calculations based on decimal system. But you will be surprised to know that the computer does not understand the decimal system and uses binary system of numeration for processing.

We will briefly discuss some of the path-breaking inventions in the field of computing devices.

1.4 .1 Calculating Machines

It took over generations for early man to build mechanical devices for counting large numbers. The Egyptian and Chinese people developed the first calculating device called ABACUS.

The word ABACUS means calculating board. It consisted of sticks in horizontal positions on which were inserted sets of pebbles. A modern form of ABACUS is given in

Fig. 1.2. It has a number of horizontal bars each having ten beads. Horizontal bars represent units, tens, hundreds, etc.

Fig. 1.2: Abacus Computer

1.4.2 Napier's bones

English mathematician John Napier built a mechanical device for the purpose of multiplication in 1617 A D. The device was known as Napier's bones.

1.4.3 Slide Rule

English mathematician Edmund Gunter developed the slide rule. This machine could perform operations like addition, subtraction, multiplication, and division. It was widely used in Europe in 16^{th} century.

1.4.4 Pascal's Adding and Subtractory Machine

You might have heard the name of Blaise Pascal. He developed a machine at the age of 19 that could add and subtract. The machine consisted of wheels, gears and cylinders.

1.4.5 Leibniz's Multiplication and Dividing Machine

The German philosopher and mathematician Gottfried Leibniz built around 1673 a mechanical device that could both multiply and divide.

1.4.6 Babbage's Analytical Engine

It was in the year 1823 that a famous English man Charles Babbage built a mechanical machine to do complex mathematical calculations. It was called *difference engine*. Later he developed a general-purpose calculating machine called *analytical engine*. You should know that Charles Babbage is called the *father of computer*.

1.4.7 Mechanical and Electrical Calculator

In the beginning of 19^{th} century the mechanical calculator was developed to perform all sorts of mathematical calculations. Up to the 1960s it was widely used. Later the rotating part of mechanical calculator was replaced by electric motor. So it was called the electrical calculator.

1.4.8 Modern Electronic Calculator

The electronic calculator used in 1960 s was run with electron tubes, which was quite bulky. Later it was replaced with *transistors* and as a result the size of calculators became too small.

The modern electronic calculator can compute all kinds of mathematical computations and mathematical functions. It can also be used to store some data permanently. Some calculators have in-built programs to perform some complicated calculations.

Fig. 1.3: Vacuum tube, transistor, IC

IN-TEXT QUESTIONS 1.2

1. What is the first mathematical device built and when was it built?
2. Who is called the father of Computer Technology.

1.5 COMPUTER GENERATIONS

You know that the evolution of computer started from 16th century and resulted in the form that we see today. The present day computer, however, has also undergone rapid change during the last fifty years. This period, during which the evolution of computer took place, can be divided into five distinct phases known as *Generations of Computers*. Each phase is distinguished from others on the basis of the type of *switching circuits* used.

1.5.1 First Generation Computers

First generation computers used *Thermion valves*. These computers were large in size and writing programs on them was difficult. Some of the computers of this generation were: **ENIAC:** It was the first electronic computer built in 1946 at University of Pennsylvania, USA by John Eckert and John Mauchy. It was named Electronic Numerical Integrator and Calculator (ENIAC). The ENIAC was 30 50 feet long, weighed 30 tons, contained 18,000 vacuum tubes, 70,000 registers, 10,000 capacitors and required 150,000 watts of electricity. Today your favorite computer is many times as powerful as ENIAC, still size is very small.

EDVAC: It stands for Electronic Discrete Variable Automatic Computer and was developed in 1950. The concept of storing data and instructions inside the computer was introduced here. This allowed much faster operation since the computer had rapid access

to both data and instructions. The other advantages of storing instruction was that computer could do logical decision internally.

Other Important Computers of First Generation

EDSAC: It stands for Electronic Delay Storage Automatic Computer and was developed by M.V. Wilkes at Cambridge University in 1949.

UNIVAC-1: Ecker and Mauchly produced it in 1951 by Universal Accounting Computer setup.

Limitations of First Generation Computer

Followings are the major drawbacks of First generation computers.

1. The operating speed was quite slow.
2. Power consumption was very high.
3. It required large space for installation.
4. The programming capability was quite low.

1.5.2 Second Generation Computers

Around 1955 a device called *Transistor* replaced the bulky electric tubes in the first generation computer. Transistors are smaller than electric tubes and have higher operating speed. They have no filament and require no heating. Manufacturing cost was also very low. Thus the size of the computer got reduced considerably.

It is in the second generation that the concept of Central Processing Unit (CPU), memory, programming language and input and output units were developed. The programming languages such as COBOL, FORTRAN were developed during this period. Some of the computers of the Second Generation were

1. IBM 1620: Its size was smaller as compared to First Generation computers and mostly used for scientific purpose.
2. IBM 1401: Its size was small to medium and used for business applications.
3. CDC 3600: Its size was large and is used for scientific purposes.

1.5.3 Third Generation Computers

The third generation computers were introduced in 1964. They used *Integrated Circuits* (ICs). These ICs are popularly known as *Chips*. A single IC has many transistors, registers and capacitors built on a single thin slice of silicon. So it is quite obvious that the size of the computer got further reduced. Some of the computers developed during this period were IBM-360, ICL- 1900, IBM-370, and VAX-750. Higher level language such as BASIC (Beginners All purpose Symbolic Instruction Code) was developed during this period.

Computers of this generations were small in size, low cost, large memory and processing speed is very high.

1.5.4 Fourth Generation Computers

The present day computers that you see today are the fourth generation computers that started around 1975. It uses *large scale Integrated Circuits* (LSIC) built on a single silicon chip called microprocessors. Due to the development of microprocessor it is possible to place computer's *central processing unit* (CPU) on single chip. These computers are called microcomputers. Later *very large scale Integrated Circuits* (VLSIC) replaced LSICs.

Thus the computer which was occupying a very large room in earlier days can now be placed on a table. The personal computer (PC) that you see in your school is a Fourth Generation Computer.

1.5.5 Fifth Generation Computer

The computers of 1990s are said to be Fifth Generation computers. The speed is extremely high in fifth generation computer. Apart from this it can perform *parallel processing*. The concept of *Artificial intelligence* has been introduced to allow the computer to take its own decision. It is still in a developmental stage.

1.6 TYPES OF COMPUTERS

Now let us discuss the varieties of computers that we see today. Although they belong to the fifth generation they can be divided into different categories depending upon the size, efficiency, memory and number of users. Broadly they can be divided it to the following categories.

1. **Microcomputer:** Microcomputer is at the lowest end of the computer range in terms of speed and storage capacity. Its CPU is a microprocessor. The first microcomputers were built of 8-bit microprocessor chips. The most common application of personal computers (PC) is in this category. The PC supports a number of input and output devices. An improvement of 8-bit chip is 16-bit and 32-bit chips. Examples of microcomputer are IBM PC, PC-AT .
2. **Mini Computer**: This is designed to support more than one user at a time. It possesses large storage capacity and operates at a higher speed. The mini computer is used in multi-user system in which various users can work at the same time. This type of computer is generally used for processing large volume of data in an organisation. They are also used as servers in Local Area Networks (LAN).
3. **Mainframes:** These types of computers are generally 32-bit microprocessors. They operate at very high speed, have very large storage capacity and can handle the work load of many users. They are generally used in centralised databases. They are also used as controlling nodes in Wide Area Networks (WAN). Example of mainframes are DEC, ICL and IBM 3000 series.
4. **Supercomputer:** They are the fastest and most expensive machines. They have high processing speed compared to other computers. They have also multiprocessing technique. One of the ways in which supercomputers are built is by interconnecting hundreds of microprocessors. Supercomputers are mainly being used for whether forecasting, biomedical research, remote sensing, aircraft design and other areas of science and technology. Examples of supercomputers are CRAY YMP, CRAY2, NEC SX-3, CRAY XMP and PARAM from India.

IN-TEXT QUESTIONS 3

1. Into how many generations the evolution of computer is divided?
2. What is VLSIC?
3. The personal computer that you see today is in which generation of computer?

1.7 WHAT YOU HAVE LEARNT

In this lesson we have discussed about the major characteristics of computer. The speed, accuracy, memory and versatility are some of the features associated with a computer. But the computer that we see today has not developed over night. It has taken centuries of human effort to see the computer in its present form today. There are five generations of computer. Over these generations the physical size of computer has decreased, but on the other hand the processing speed of computer has improved tremendously. We also discussed about the varieties of computers available today.

1.8 TERMINAL QUESTIONS

1. Why is computer known as data processor?
2. Explain in brief the various generations in computer technology?
3. Write a short note on Fifth Generation of computer. What makes it different from Fourth generation computer?
4. Why did the size of computer get reduced in third generation computer?
5. Give short notes on the following
    - (a) Versatility (b) Storage (c) Slide Rule (d) Babbage's Analytical Engine
6. Distinguish between Microcomputer and Mainframe computer.

1.9 FEEDBACK TO IN-TEXT QUESTIONS

IN-TEXT QUESTIONS 1

1. A computer is an electronic device, which is used to accept, store, retrieve and process the data. It is called as data processor because it is mainly used for processing data for producing meaningful information.
2. The characteristics of computer are speed, accuracy, diligence, versatility and storage.

IN-TEXT QUESTIONS 2

1. Analytical engine, 1823.
2. Charles Babbage

IN-TEXT QUESTIONS 3

1. Five generations
2. Very Large Scale Integrated Circuits
3. Fourth Generation

1.10 TERMINAL QUESTIONS

1. Explain various types of computers.
2. Explain in brief the various generations in computer technology.
3. Write a short note on Fifth Generation of computer. What makes it different from Fourth Generation computer?
4. Why did the size of computer get reduced in Third Generation computer?

COMPUTER ORGANISATION

2.1 INTRODUCTION

In the previous lesson we discussed about the evolution of computer. In this lesson we will provide you with an overview of the basic design of a computer. You will know how different parts of a computer are organized and how various operations are performed between different parts to do a specific task. As you know from the previous lesson the internal architecture of computer may differ from system to system, but the basic organization remains the same for all computer systems.

2.2 BASIC COMPUTER OPERATIONS

A computer as shown in Fig. 2.1 performs basically five major operations or functions irrespective of their size and make. These are 1) it accepts data or instructions by way of input, 2) it stores data, 3) it can process data as required by the user, 4) it gives results in the form of output, and 5) it controls all operations inside a computer. We discuss below each of these operations.

1. Input: This is the process of entering data and programs in to the computer system. You should know that computer is an electronic machine like any other machine, which takes as inputs raw data and performs some processing giving out processed data. Therefore, the input unit takes data from us to the computer in an organized manner for processing.

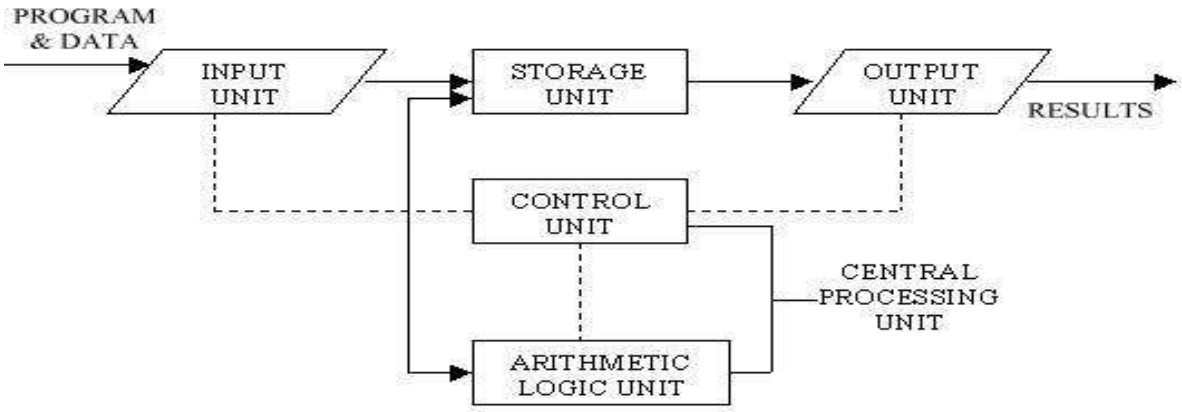


Fig. 2.1 Basic computer Operations

3. **Storage:** The process of saving data and instructions permanently is known as storage. Data has to be fed into the system before the actual processing starts. It is because the processing speed of Central Processing Unit (CPU) is so fast that the data has to be provided to CPU with the same speed. Therefore the data is first stored in the storage unit for faster access and processing. This storage unit or the primary storage of the computer system is designed to do the above functionality. It provides space for storing data and instructions.

The storage unit performs the following major functions:

- All data and instructions are stored here before and after processing.
- Intermediate results of processing are also stored here.

3. Processing: The task of performing operations like arithmetic and logical operations is called processing. The Central Processing Unit (CPU) takes data and instructions from the storage unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit.

4. Output: This is the process of producing results from the data for getting useful information. Similarly the output produced by the computer after processing must also be kept somewhere inside the computer before being given to you in human readable form. Again the output is also stored inside the computer for further processing.

5. Control: The manner how instructions are executed and the above operations are performed. Controlling of all operations like input, processing and output are performed by control unit. It takes care of step-by-step processing of all operations in side the computer.

2.3FUNCTIONAL UNITS

In order to carry out the operations mentioned in the previous section the computer allocates the task between its various functional units. The computer system is divided into three separate units for its operation. They are 1) arithmetic logical unit, 2) control unit, and 3) central processing unit.

2.3.1 Arithmetic Logical Unit (ALU)

After you enter data through the input device it is stored in the primary storage unit. Arithmetic Logical Unit performs the actual processing of the data and instruction. The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison. Data is transferred to ALU from storage unit when required. After processing the output is returned back to storage unit for further processing or getting stored.

2.3.2 Control Unit (CU)

The next component of computer is the Control Unit, which acts like the supervisor seeing that things are done in proper fashion. The control unit determines the sequence in which computer programs and instructions are executed. Things like processing of programs stored in the main memory, interpretation of the instructions and issuing of signals for other units of the computer to execute them. It also acts as a switchboard operator when several users access the computer simultaneously. Thereby it coordinates the activities of computer's peripheral equipment as they perform the input and output. Therefore it is the manager of all operations mentioned in the previous section.

2.3.3 Central Processing Unit (CPU)

The ALU and the CU of a computer system are jointly known as the central processing unit. You may call CPU as the brain of any computer system. It is just like brain that takes all major decisions, makes all sorts of calculations and directs different parts of the computer functions by activating and controlling the operations.

HARDWARE

SOFTWARE

Fig. 2.2: Computer Architecture

Personal Computer Configuration

Now let us identify the physical components that make the computer work. These are

1. Central Processing Unit (CPU)
2. Computer Memory (RAM and ROM)
3. Data bus
4. Ports
5. Motherboard
6. Hard disk
7. Output Devices
8. Input Devices

All these components are inter-connected for the personal computer to work.

IN-TEXT QUESTIONS 1

1. What are the five basic operations performed by the computer?
2. Define ALU, CU and CPU.
3. Choose the correct answer:

(a) The task of performing arithmetic and logical operations is called

(i) ALU (ii) editing (iii) storage (iv) output

(b) The ALU and CU jointly known as

(i) RAM (ii) ROM (iii) CPU (iv) none of the above

(c) The process of producing results from the data for getting useful information

(i) output (ii)input (iii) processing (iv) storage

2.4 MEMORY SYSTEM IN A COMPUTER

There are two kinds of computer memory: *primary* and *secondary*. Primary memory is accessible directly by the processing unit. RAM is an example of primary memory. As soon as the computer is switched off the contents of the primary memory is lost. You can store and retrieve data much faster with primary memory compared to secondary memory. Secondary memory such as floppy disks, magnetic disk, etc., is located outside the computer. Primary memory is more expensive than secondary memory. Because of this the size of primary memory is less than that of secondary memory. We will discuss about secondary memory later on.

Computer memory is used to store two things: i) instructions to execute a program and ii) data. When the computer is doing any job, the data that have to be processed are stored in the primary memory. This data may come from an input device like keyboard or from a secondary storage device like a floppy disk.

As program or the set of instructions is kept in primary memory, the computer is able to follow instantly the set of instructions. For example, when you book ticket from railway reservation counter, the computer has to follow the same steps: take the request, check the availability of seats, calculate fare, wait for money to be paid, store the reservation and get the ticket printed out. The programme containing these steps is kept in memory of the computer and is followed for each request.

But inside the computer, the steps followed are quite different from what we see on the monitor or screen. In computer's memory both programs and data are stored in the binary form. You have already been introduced with decimal number system, that is the numbers 1 to 9 and 0. The binary system has only two values 0 and 1. These are called *bits*. As human beings we all understand decimal system but the computer can only understand binary system. It is because a large number of integrated circuits inside the computer can be considered as switches, which can be made ON, or OFF. If a switch is ON it is considered 1 and if it is OFF it is 0. A number of switches in different states will give you a message like this: 110101.... 10. So the computer takes input in the form of 0 and 1 and gives output in the form 0 and 1 only. Is it not absurd if the computer gives outputs as 0's & 1's only? But you do not have to worry about. Every number in binary system can be converted to decimal system and vice versa; for example, 1010 meaning decimal 10. Therefore it is the computer that takes information or data in decimal form from you, convert it in to binary form, process it producing output in binary form and again convert the output to decimal form.

The primary memory as you know in the computer is in the form of IC's (Integrated Circuits). These circuits are called Random Access Memory (RAM). Each of RAM's locations stores one *byte* of information. (One *byte* is equal to *8 bits*). A bit is an acronym for *binary digit*, which stands for one binary piece of information. This can be either 0 or 1. You will know more about RAM later. The Primary or internal storage section is made up of several small storage locations (ICs) called cells. Each of these cells can store a fixed number of bits called *word length***.**

Each cell has a unique number assigned to it called the address of the cell and it is used to identify the cells. The address starts at 0 and goes up to (N-1). You should know that the memory is like a large cabinet containing as many drawers as there are addresses on memory. Each drawer contains a word and the address is written on outside of the drawer.

Capacity of Primary Memory

You know that each cell of memory contains one character or 1 byte of data. So the capacity is defined in terms of byte or words. Thus 64 kilobyte (KB) memory is capable of storing 64 1024 = 32,768 bytes. (1 kilobyte is 1024 bytes). A memory size ranges from few kilobytes in small systems to several thousand kilobytes in large mainframe and super computer. In your personal computer you will find memory capacity in the range of 64 KB, 4 MB, 8 MB and even 16 MB (MB = Million bytes).

The following terms related to memory of a computer are discussed below:

1. **Random Access Memory (RAM):** The primary storage is referred to as random access memory (RAM) because it is possible to randomly select and use any location of the memory directly store and retrieve data. It takes same time to any address of the memory as the first address. It is also called read/write memory. The storage of data and instructions inside the primary storage is temporary. It disappears from RAM as soon as the power to the computer is switched off. The memories, which loose their content on failure of power supply, are known as **volatile** memories .So now we can say that RAM is volatile memory.
2. **Read Only Memory (ROM):** There is another memory in computer, which is called Read Only Memory (ROM). Again it is the ICs inside the PC that form the ROM. The storage of program and data in the ROM is permanent. The ROM stores some standard processing programs supplied by the manufacturers to operate the personal computer. The ROM can only be read by the CPU but it cannot be changed. The basic input/output program is stored in the ROM that examines and initializes various equipment attached to the PC when the switch is made ON. The memories, which do not loose their content on failure of power supply, are known as **non-volatile** memories. ROM is non-volatile memory.
3. **PROM** There is another type of primary memory in computer, which is called Programmable Read Only Memory (PROM). You know that it is not possible to modify or erase programs stored in ROM, but it is possible for you to store your program in PROM chip. Once the programmes are written it cannot be changed and remain intact even if power is switched off. Therefore programs or instructions written in PROM or ROM cannot be erased or changed.
4. **EPROM:** This stands for Erasable Programmable Read Only Memory, which over come the problem of PROM & ROM. EPROM chip can be programmed time and again by erasing the information stored earlier in it. Information stored in EPROM exposing the chip for some time ultraviolet light and it erases chip is reprogrammed using a special programming facility. When the EPROM is in use information can only be read.
5. **Cache Memory:** The speed of CPU is extremely high compared to the access time of main memory. Therefore the performance of CPU decreases due to the slow speed of main memory. To decrease the mismatch in operating speed, a small memory chip is attached between CPU and Main memory whose access time is very close to the processing speed of CPU. It is called CACHE memory. CACHE memories are accessed much faster than conventional RAM. It is used to store programs or data currently being executed or temporary data frequently used by the CPU. So each memory makes main memory to be faster and larger than it really is. It is also very expensive to have bigger size of cache memory and its size is normally kept small.
6. **Registers:** The CPU processes data and instructions with high speed, there is also movement of data between various units of computer. It is necessary to transfer

the processed data with high speed. So the computer uses a number of special memory units called *registers*. They are not part of the main memory but they store data or information temporarily and pass it on as directed by the control unit.

IN-TEXT QUESTIONS 2

1. Distinguish between bit and byte.
2. Define volatile and non-volatile memory.
3. Write True or False:
   (a) There are two kinds of computer memory primary and secondary.
   (b) The computer takes inputs in the form of 0 and 1.
   (c) The storage of program and data in the RAM is permanent.
   (d) PROM is secondary memory.
   (e) The memories which do not loose their content on failure of power supply are known as non-volatile memories.

2.5 SECONDARY STORAGE

You are now clear that the operating speed of primary memory or main memory should be as fast as possible to cope up with the CPU speed. These high-speed storage devices are very expensive and hence the cost per bit of storage is also very high. Again the storage capacity of the main memory is also very limited. Often it is necessary to store hundreds of millions of bytes of data for the CPU to process. Therefore additional memory is required in all the computer systems. This memory is called *auxiliary memory* or *secondary storage*.

In this type of memory the cost per bit of storage is low. However, the operating speed is slower than that of the primary storage. Huge volume of data are stored here on permanent basis and transferred to the primary storage as and when required. Most widely used secondary storage devices are *magnetic tapes* and *magnetic disk.*

1. **Magnetic Tape:** Magnetic tapes are used for large computers like mainframe computers where large volume of data is stored for a longer time. In PC also you can use tapes in the form of cassettes. The cost of storing data in tapes is inexpensive. Tapes consist of magnetic materials that store data permanently. It can be 12.5 mm to 25 mm wide plastic film-type and 500 meter to 1200 meter long which is coated with magnetic material. The deck is connected to the central processor and information is fed into or read from the tape through the processor. It similar to cassette tape recorder.

Fig. 2.3 Magnetic Tape

Advantages of Magnetic Tape:

- **Compact:** A 10-inch diameter reel of tape is 2400 feet long and is able to hold 800, 1600 or 6250 characters in each inch of its length. The maximum capacity of such tape is 180 million characters. Thus data are stored much more compactly on tape.

- **Economical**: The cost of storing characters is very less as compared to other storage devices.
- **Fast**: Copying of data is easier and fast.
- **Long term Storage and Re-usability**: Magnetic tapes can be used for long term storage and a tape can be used repeatedly with out loss of data.

2. **Magnetic Disk:** You might have seen the gramophone record, which is circular like a disk and coated with magnetic material. Magnetic disks used in computer are made on the same principle. It rotates with very high speed inside the computer drive. Data is stored on both the surface of the disk. Magnetic disks are most popular for *direct access* storage device. Each disk consists of a number of invisible *concentric circles* called *tracks*. Information is recorded on tracks of a disk surface in the form of tiny magnetic spots. The presence of a magnetic spot represents *one bit* and its absence represents zero bit. The information stored in a disk can be read many times without affecting the stored data. So the reading operation is non-destructive. But if you want to write a new data, then the existing data is erased from the disk and new data is recorded.

3. **Floppy Disk:** It is similar to magnetic disk discussed above. They are 5.25 inch or 3.5 inch in diameter. They come in single or double density and recorded on one or both surface of the diskette. The capacity of a 5.25-inch floppy is 1.2 mega bytes whereas for 3.5 inch floppy it is 1.44 mega bytes. It is cheaper than any other storage devices and is portable. The floppy is a low cost device particularly suitable for personal computer system.

Fig. 2.5 Floppy Disk

4. **Optical Disk:**

With every new application and software there is greater demand for memory capacity. It is the necessity to store large volume of data that has led to the development of optical disk storage medium. Optical disks can be divided into the following categories:

1. *Compact Disk/ Read Only Memory (CD-ROM)*: CD-ROM disks are made of reflective metals. CD-ROM is written during the process of manufacturing by high power *laser beam.* Here the storage density is very high, storage cost is very low and access time is relatively fast. Each disk is approximately 4 1/2 inches in diameter and can hold over 600 MB of data. As the CD-ROM can be *read only* we cannot write or make changes into the data contained in it.
2. *Write Once, Read Many (WORM)*: The inconvenience that we can not write any thing in to a CD-ROM is avoided in WORM. A WORM allows the user to write data permanently on to the disk. Once the data is written it can never be erased without physically damaging the disk. Here data can be recorded from keyboard, video scanner, OCR equipment and other devices. The advantage of WORM is that it can store vast amount of data amounting to gigabytes (10^9 bytes). Any document in a WORM can be accessed very fast, say less than 30 seconds.
3. *Erasable Optical Disk*: These are optical disks where data can be written, erased and re-written. This also applies a laser beam to write and re-write the data. These

disks may be used as alternatives to traditional disks. Erasable optical disks are based on a technology known as *magnetic optical* (MO). To write a data bit on to the erasable optical disk the MO drive's laser beam heats a tiny, precisely defined point on the disk's surface and magnetizes it.

2.6 INPUT OUTPUT DEVICES

A computer is only useful when it is able to communicate with the external environment. When you work with the computer you feed your data and instructions through some devices to the computer. These devices are called Input devices. Similarly computer after processing, gives output through other devices called output devices.

For a particular application one form of device is more desirable compared to others. We will discuss various types of I/O devices that are used for different types of applications. They are also known as peripheral devices because they surround the CPU and make a communication between computer and the outer world.

2.6.1 Input Devices

Input devices are necessary to convert our information or data in to a form which can be understood by the computer. A good input device should provide timely, accurate and useful data to the main memory of the computer for processing followings are the most useful input devices.

1. **Keyboard: -** This is the standard input device attached to all computers. The layout of keyboard is just like the traditional typewriter of the type QWERTY. It also contains some extra command keys and function keys. It contains a total of 101 to 104 keys. A typical keyboard used in a computer is shown in Fig. 2.6. You have to press correct combination of keys to input data. The computer can recognise the electrical signals corresponding to the correct key combination and processing is done accordingly.

Fig. 2.6 Keyboard and Mouse

2. **Mouse: -** Mouse is an input device shown in Fig. 2.7 that is used with your personal computer. It rolls on a small ball and has two or three buttons on the top. When you roll the mouse across a flat surface the screen censors the mouse in the direction of mouse movement. The cursor moves very fast with mouse giving you more freedom to work in any direction. It is easier and faster to move through a mouse.

3. **Scanner:** The keyboard can input only text through keys provided in it. If we want to input a picture the keyboard cannot do that. Scanner is an optical device that can input any graphical matter and display it back. The common optical scanner devices are Magnetic Ink Character Recognition (MICR), Optical Mark Reader (OMR) and Optical Character Reader (OCR).
    - **Magnetic Ink Character Recognition (MICR): -** This is widely used by banks to process large volumes of cheques and drafts. Cheques are put inside the MICR. As they enter the reading unit the cheques pass through the magnetic field which causes the read head to recognise the character of the cheques.

- **Optical Mark Reader (OMR):** This technique is used when students have appeared in objective type tests and they had to mark their answer by darkening a square or circular space by pencil. These answer sheets are directly fed to a computer for grading where OMR is used.
- **Optical Character Recognition (OCR):** - This technique unites the direct reading of any printed character. Suppose you have a set of hand written characters on a piece of paper. You put it inside the scanner of the computer. This pattern is compared with a site of patterns stored inside the computer. Whichever pattern is matched is called a character read. Patterns that cannot be identified are rejected. OCRs are expensive though better the MICR.

2.6.2 Output Devices

1. **Visual Display Unit:** The most popular input/output device is the Visual Display Unit (VDU). It is also called the monitor. A Keyboard is used to input data and Monitor is used to display the input data and to receive massages from the computer. A monitor has its own box which is separated from the main computer system and is connected to the computer by cable. In some systems it is compact with the system unit. It can be *color* or *monochrome*.
2. **Terminals:** It is a very popular interactive input-output unit. It can be divided into two types: hard copy terminals and *soft copy* terminals. A *hard copy* terminal provides a printout on paper whereas soft copy terminals provide visual copy on monitor. A terminal when connected to a CPU sends instructions directly to the computer. Terminals are also classified as dumb terminals or intelligent terminals depending upon the work situation.
3. **Printer:** It is an important output device which can be used to get a printed copy of the processed text or result on paper. There are different types of printers that are designed for different types of applications. Depending on their speed and approach of printing, printers are classified as *impact* and *non-impact* printers. Impact printers use the familiar typewriter approach of hammering a typeface against the paper and inked ribbon. *Dot-matrix printers* are of this type. Non-impact printers do not hit or impact a ribbon to print. They use electro-static chemicals and ink-jet technologies. *Laser printers* and *Ink-jet printers* are of this type. This type of printers can produce color printing and elaborate graphics.

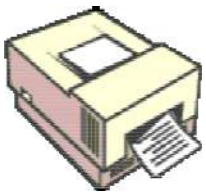


Fig. 2.8 Laser Printer

IN-TEXT QUESTIONS 3

1. Distinguish between impact and non-impact printers.
2. Define soft copy and hard copy terminals.
3. Write True or False:
   (a) Secondary memory is called Auxiliary memory.
   (b) The magnetic tapes and magnetic disk are primary memories.
   (c) A CD-ROM is read only memory.

(d) Mouse is an output device.
(e) Printer is an important output device.

2.7 WHAT YOU HAVE LEARNT

In this lesson we discussed five basic operations that a computer performs. These are input, storage, processing, output and control. A computer accepts data as input, stores it, processes it as the user requires and provides the output in a desired format. The storage unit of a computer is divided into two parts: primary storage and secondary storage. We have discussed the devices used for these two types of storage and their usefulness.

2.8 TERMINAL QUESTIONS

1. What are the five basic operations performed by any computer system?
2. Draw a block diagram to illustrate the basic organization of computer system and explain the function of various units.
3. What is input device? How does it differ from output device?
4. Differentiate between RAM and ROM. Also distinguish between PROM and EPROM.
5. What is cache memory? How is it different from primary memory?
6. Write short notes on (a) Control Unit (b) Random Access Memory (RAM)

2.9 FEEDBACK TO IN-TEXT QUESTIONS

IN-TEXT QUESTIONS 1

1. The five basic operations that a computer performs are input, storage, processing, output and control.
2. ALU: Arithmetic Logic Unit
   CU: Control Unit
   CPU: Central Processing Unit
3. (a) i (b) iii (c) i

IN-TEXT QUESTIONS 2

1. A bit is an acronym for binary digit, which stands for one binary piece of information. This can be either 0 or 1. A byte is equal to 8 bits.
2. The memories which are erased if there is a power failure are known as volatile memories. RAM is an example of volatile memory. The memories, which do not loose their content on failure of power supply, are known as non-volatile memories. ROM is non-volatile memory.
3. (a) T(b) T(c) F(d) F(e) T

IN-TEXT QUESTIONS 3

1. Impact printers use the familiar typewriter approach of hammering a typeface against the paper and inked ribbon. Non-impact printers do not hit or impact a ribbon to print. They use electro-static chemicals and ink-jet technologies.
2. A *hard copy* terminal provides a printout on paper whereas soft copy terminals provide visual copy on monitor.
3. (a) T(b) F(c) T (d) F (e) T

Operating System

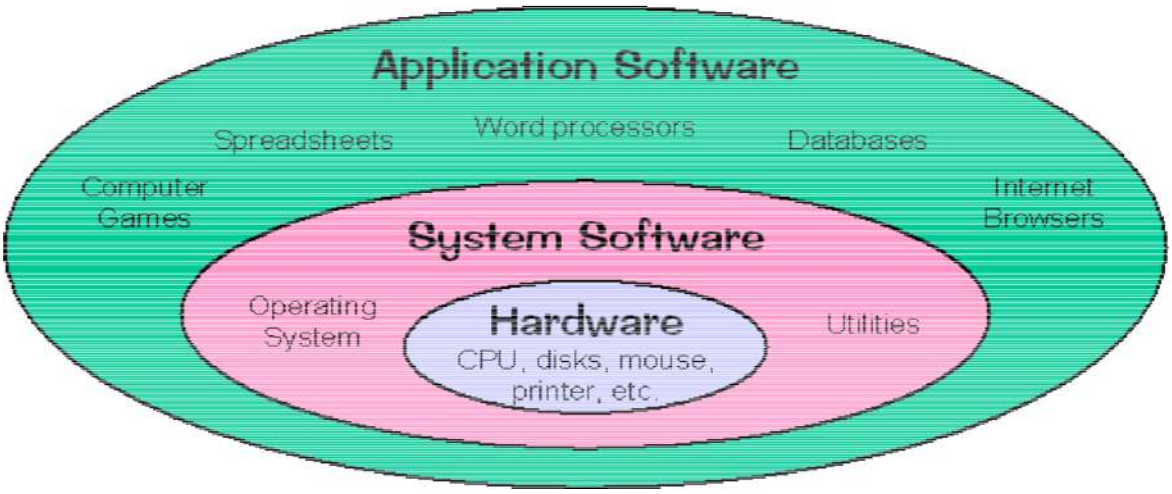
3.1 INTRODUCTION

When the computer starts, it starts the operating system that takes the control of the machine. An Operating System is a set of programs that help in controlling and managing the Hardware and the Software resources of a computer system. A good operating system should have the following features;

1. Help in the loading of programs and data from external sources into the internal memory before they are executed.
2. Help programs to perform input/output operations, such as;
    - Print or display the result of a program on the printer or the screen.
    - Store the output data or programs written on the computer in storage device.
    - Communicate the message from the system to the user through the VDU.
    - Accept input from the user through the keyboard or mouse.

Computer software can be divided into two main categories: application software and system software. " an **Application software** consists of the programs for performing tasks particular to the machine's utilization. Examples of application software include spreadsheets, database systems, desktop publishing systems, program development software, and games." Application software is generally what we think of when someone speaks of computer programs. This software is designed to solve a particular problem for users.

On the other hand, **System Software** is more transparent and less noticed by the typical computer user. This software "provides a general programming environment in which programmers can create specific applications to suit their needs. This environment provides new functions that are not available at the hardware level and performs tasks related to executing the application program". **System software** acts as an interface between the hardware of the computer and the application software that users need to run on the computer. The diagram below illustrates the relationship between application software and system software.



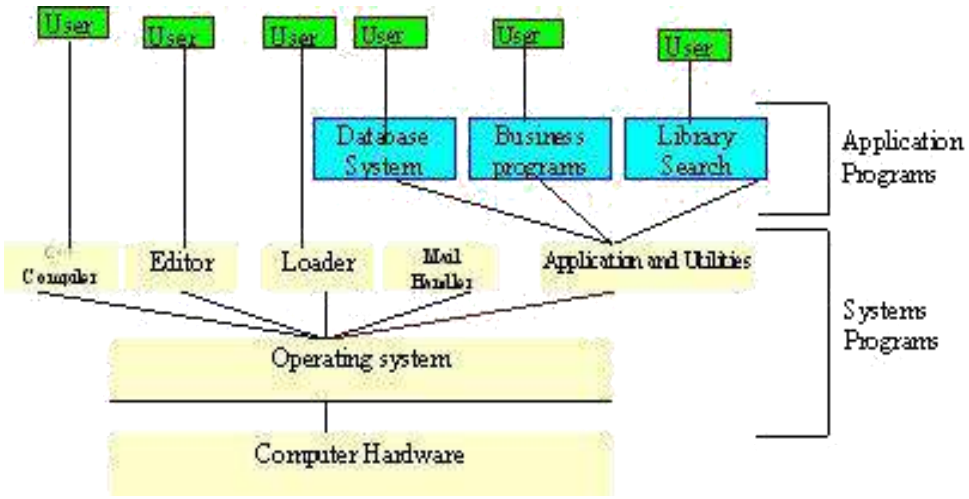


Figure3.1 Conceptual view of a computer system

The central processing unit (CPU) is located on chips inside the system unit. The CPU is the brain of the computer. This is the place where the computer interprets and processes information.

The operating system is the first component of the systems programs that interests us here. Systems programs are programs written for direct execution on computer hardware in order to make the power of the computer fully and efficiently accessible to applications programmers and other computer users. Systems programming is different from application programming because the requires an intimate knowledge of the computer hardware as well as the end users' needs. Moreover, systems programs are often large and more complex than application programs, although that is not always the case. Since systems programs provide the foundation upon which application programs are built, it is most important that systems programs are reliable, efficient and correct.

3.2 Definition

In a computer system the hardware provides the basic computing resources. The applications programs define the way in which these resources are used to solve the computing problems of the users. The operating system controls and coordinates the use of the hardware among the various systems programs and application programs for the various users.

The basic resources of a computer system are provided by its hardware, software and data. The operating system provides the means for the proper use of these resources in the operation of the computer system. It simply provides an environment within which other programs can do useful work.

We can view an operating system as a resource allocator. A computer system has many resources (hardware and software) that may be required to solve a problem: CPU time, memory space, file storage space, input/output devices etc.

The operating system acts as the manager of these resources and allocates them to specific programs and users as necessary for their tasks. Since there may be many, possibly conflicting, requests for resources, the operating system must decide which requests are allocated resources to operate the computer system fairly and efficiently. An operating system is a control program. This program controls the execution of user programs to prevent errors and improper use of the computer.

Operating systems exist because they are a reasonable way to solve the problem of creating a usable computing system. The fundamental goal of a computer system is to execute user programs and solve user problems.

The primary goal of an operating system is a convenience for the user. Operating systems exit because they are supposed to make it easier to compute with an operating system than without an operating system. This is particularly clear when you look at operating system for small personal computers.

A secondary goal is the efficient operation of an computer system. This goal is particularly important for large, shared multi-user systems. Operating systems can solve this goal. It is known that sometimes these two goals, convenience and efficiency, are contradictory.

While there is no universally agreed upon definition of the concept of an operating system, we offer the following as a reasonable starting point:

A computer's operating system (OS) is a group of programs designed to serve two basic purposes:

1. To control the allocation and use of the computing system's resources among the various users and tasks, and.
2. To provide an interface between the computer hardware and the programmer that simplifies and makes feasible the creation, coding, debugging, and maintenance of application programs.

Specifically, we can imagine that an effective operating system should accomplish all of the following:

- Facilitate creation and modification of program and data files through an editor program,
- Provide access to compilers to translate programs from high-level languages to machine language,
- Provide a loader program to move the complied program code to the computer's memory for execution,
- Provide routines that handle the intricate details of I/O programming,
- Assure that when there are several active processes in the computer, each will get fair and non interfering access to the central processing unit for execution,
- Take care of storage and device allocation,
- Provide for long term storage of user information in the form of files, and
- Permit system resources to be shared among users when appropriate, and be protected from unauthorized or mischievous intervention as necessary.

Though systems programs such as editor and translators and the various utility programs (such as sort and file transfer program) are not usually considered part of the operating system, the operating system is responsible for providing access to these system resources.

MICROSOFT OFFICE OVERVIEW

Microsoft Office 2000 is the most efficient suite of applications for document creation, communication and business information analysis. For many functions, the business platform has evolved from paper to the Web. Microsoft Office 2000 extends desktop productivity to the web, streamlining the way you work and making it easier to share, access and analyze information so you get better results. Office 2000 offers a multitude of new features. Of particular importance for this release are the features that affect the entire suite. These Office-wide, or shared features hold the key to the new realm of functionality enabled by Office 2000. Office 2000 offers a new Web-productivity work style that integrates core productivity tools with the Web to streamline the process of sharing information and working with others. It makes it easier to use an organization's intranet to access vital business information and provides innovative analysis tools that help users make better, timelier business decisions. Office 2000 delivers new levels of resiliency and intelligence, enabling users and organizations to get up and running quickly, stay working and achieve great results with fewer resources.

DESIGN GOALS OF MS-OFFICE:

1. **A COMMON USER INTERFACE:**
    - While learning one application of the suite you get to learn the operational basics of the other applications, while maintaining some uniqueness in the applications.
    - Consistency in MS-Office applications is in the form of :
        i. Tool –Bars
        ii. Menus
        iii. Dialog Boxes

iv. Customizable features and operational features are similar too.

2. QUICK ACCESS TO OTHER APPLICATIONS

- The MS-Office provides the Microsoft Office Short cut Bar ,which is used for the following:
  i. Create a new file based on templates and wizards
  ii. Opening existing files and automatically launching the related applications
  iii. Add tasks, make appointments, record tasks and add contacts and journal entries.
  iv. Create a new Outlook Message.
  v. Switch between and launch Microsoft Office Applications.

3. SHARING DATA ACROSS APPLICATIONS

- Microsoft Office Provides several means of sharing data between applications:
  i. Copying – copies the data from the source application to the target applications using the clipboard.
  ii. Linking-links the data from the source document to the target document and saves with the source document.
  iii. Embedding- embeds the data from the source document to the target document and saves with the source document.
- Microsoft Office extends the data sharing beyond application integration by providing workgroup integration with the Microsoft Outlook.

  Users can mail documents, spreadsheets, presentations and data files from within the source applications.

4. PROVIDING A COMMON LANGUAGE:

- Providing the common language has been a more challenging goal from Microsoft Office. It provides a common macro programming language for all the applications –Visual Basic for the Applications.

COMPONENTS OF MICTROSOFT OFFICE:

- **MS-WORD**
- **MS-EXCEL**
- **MS-POWER-POINT**
- **MS-ACCESS**

MS-WORD:

Ms-word is a powerful word processor that allows you to create :

- Memos
- Fax coversheets
- Web pages
- Reports
- Mailing labels
- Brochures
- Tables
- And many other professional and business applications.

Ms-word provides easy graphics handling, calculation of the data tables , ability to create a mailing list, list sorting and efficient file management.

Major enhancements of the Word are as follows:

a) AUTOS SUMMARIZE FEATURE – automatically summarizes the key points in the document. Word determines the most important sentences and gives a custom summary based on the analysis.

b) AUTO COMPLETE FEATURE- automatically offers suggestions to complete the word or the phrase that has been typed partially. To accept suggestions ,press the Enter Key and the Word automatically replaces the partially typed word with the complete word.

Word automatically completes the current date, a day of the week, a month other than the current one, your name and the company name and the AutoText entries.

c) AUTOMATIC GRAMMAR CHECKING-marks the incorrect grammar with a green wavy line as you type.

d) LETTER WIZARD –helps you format and enter the key information for the letters to ensure that they are consistent and professional.

It lets you write quickly and easily and also to add to your letter.

e) OFFICE ASSISTANT – uses *IntelliSense natural-language technology*. The assistant anticipates the kind of help you require and suggests the Help topics on the work that you are doing. This office assistant provides the visual examples and the step –by –step instructions for the specific tasks.

f) SMART SPELLING FEATURE-

- Recognizes your name, your organization's name and the professional names of varying ethnicity.
- Recognizes your writing pattern and does not mark some patterns as errors in the document.
- Ignores the Internet and the file addresses as error in the spellings.

g) NATURAL LANGUAGE grammar checker- offers improved syntactical analysis , better rewrite suggestions and user friendly grammar styles.

h) The Spelling and the grammar checking combination facility – eliminates the separate dialog boxes and provides the interface that lets you proofread the document online.

i) HYPERLINKS FEATURES- links to the Microsoft Outlook, HTML or the other files on any internal and external Web site or file server.

MS-PowerPoint

MS-PowerPoint is a powerful presentation software, used to create

- Professional quality presentations.
- These can be reproduced on the
  - Transparency,
  - Paper,
  - 35mm slide,
  - Photo print ,
  - On screen presentations
- This allows you to easily publish presentations on the Internet.

FEATURES OF MS-POWER POINT:

a) POWER POINT CENTRAL- connect you with the resources like the templates , sounds and the animation clips on the CD-ROM and the sites on the Internet.
b) SLIDE FINDER- allows the previewing and the insertion of slides from the other presentations.
c) QUICK START TUTORIAL – helps to introduce the features of Power Point.
d) GRAPHS-improved charting module for the Power Point has the following features:
    i. ADDITIONAL CHART TYPES- MS-POWER POINT gives new chart types such as bubble, pie of pie and the bar of pie . It also offers additional 3-D and 2-D chart types such as cylinder, pyramid and cone.
    ii. CHART DATA TABLES-enhances the chart by adding explanatory details by attaching the data table that contains the numbers represented diagrammatically.

iii. ROTATED TEXTS ON THE CHART AXES-to display all the necessary data proportionately for easier viewing, the fonts can be scaled and the text rotated along the chart axes.

iv. PICTURE, TEXT AND GRADIENT FILLS- to graphically represent data, you can fill the chart elements such as the bars, areas and the surfaces with texture, imported pictures or gradient fills.

e) MULTIPLE UNDO FEATURE-displays an Undo List on the standard tool bar from which you can select the change you want to reverse.

f) ACTIVE WEB service is used – shared by all Microsoft Office programs- to browse rich webs of the presentations and documents on the local computer, any server, an Intranet or the Web.

g) Power Point has a set of built in buttons for the actions such as Forward, Back, Home, Help, Information, sound and Movie. By clicking on any of these buttons another program can be started.

h) CD-Audio tracks can be played during the presentation.

i) AUTO CONTENT WIZARD- guides user to pick from the set of pre-built templates. It also provides ideas and the starter text for the presentations.

j) Summary slide-is used to create a summary slide based on the titles of the slides created.

k) OFFICE ART is a drawing tool shared by Microsoft Office programs and provides:

i. **AutoShapes**-includes six new auto shapes.

ii. **Bezier Curves**-used to draw exact curves with point positions.

iii. **Transparent Background**- inserts a bit map as a part of design of the slides.

l) ANIMATION EFFECTS AND MULTIMEDIA capabilities include-

i. **Custom Animation**-an easier way to define and preview animated effects.

ii. **Voice narration**-to add a presenters voice to the self-running documentation.

iii. **Music tracks**- to add background music and the sound effects to the presentations.

iv. **Animated templates**- animation effects can be added to the slide master and will be automatically added when the slides are created.

MS-EXCEL:

MS-Excel is a spreadsheet package. When you start excel, a blank workbook appears in the document window. The workbook is the main document using excel for storing and manipulating the data.
A workbook has individual worksheets each of consisting of data. Each work sheet is made up of 256 columns and 65,536 rows.

The FEATURES OF EXCEL:

a) The multiple Undo feature can Undo up to the last 16 actions.
b) When you quit Microsoft Excel with multiple files open, you get a YES to ALL option. You can choose this option to save all the files before exiting, instead of being prompted to close each open file.
c) Conditional Formats dynamically apply a different font style , pattern and the border to the cells whose values fall outside or with in the limit specified by you.. this lets you quickly spot areas of interest without reading through tables of values.
d) The **Hyperlinks Feature** helps you to create hyperlinks that connect to other office files on the system, your network. A hyperlink can be text in the cell , a graphic or you can write a formula that creates a hyperlink.
e) The **Web Queries** features allow you to create and run the queries to retrieve data available on the World Wide Web.
f) The **Internet assistant wizard** steps you through the process of saving the worksheet data and the charts in the HTML format. You can save the data and the chart as a complete new Web Page or add them to an existing Web Page.

g) The new **Share Workbook** feature lets multiple users open a workbook on the network and edit the document simultaneously.

h) **CellTips** and the **ScrollTips** automatically display the comments added to cell.

i) The worksheet has expanded to include 65,536 rows and you can type up to 32,000 characters in a cell.

j) **Natural Language** formulas allow you to create formulas that use row and the column headers instead of the range references.

k) The **Auditing** and the **Validation** facility allow you to circle the invalid data and to see at a glance all the entries that don't meet your validation rules.

l) The enhanced **Get External Data** features enable you to query Access and the other databases either on the system or a network or the Internet or intranet resources.

Microsoft Access :

Ms-Access is the relational database application in the Microsoft Office Professional. With Access, you can perform the following tasks:

a) Organize data into manageable related units.
b) Enter, modify and locate data.
c) Extract subsets of data based on the specific criteria.
d) Create custom forms and reports.
e) Automate common database tasks.
f) Graph data relationships.

The major enhancements of Access are as follows:

- The *Publish to the Web Wizard*-converts your Access information to a dynamic Internet or intranet site including query pages.
- The *Outlook Journal* –helps you to track when a database file was opened or closed, or when an object was printed.
- A new Hyperlink data type is supported to allow insertion of links to other objects, documents, or Internet performance.
- Improved design features include the ability to create forms with multiple tabs.
- *Lightweight Forms and Reports*- load without loading Visual Basic for Applications, leading to faster performance.
- *User-Level Security Wizard-* creates a secured copy of the database.
- The Visual basic code for the objects has been updated with the methods, properties and other language elements.

- Data interpretation is as follows:

DATA RANGE FOR ABBRAVIATED YEAR FORMAT	INTERPRETATION
1/1/00 through 13/31/29	1/1/2000 through 12/31/2029
1/1/30 through 12/31/99	1/1/1930 through 12/31/1999

- The multiple pages button allows you to select the number of pages to preview.
- The Performance Analyzer analyses database objects and suggest ways to make them fast.

INTRODUCTION WORD PROCESSING

1 WORD PROCESSING

Let us consider an office scene. Many letters are typed in the office. The officer dictates a letter. The typist first types a draft copy of the letter. The officer goes through it to check mistakes regarding spelling errors, missing words, etc. and suggests corrections. The typist changes the letter as suggested by the officer. This is a simple example of word processing.

There are many software packages to do the job of word processing. Some of them work in DOS environment. Example are WordStar, Word Perfect and Professional Write. But in these days working in WINDOWS is becoming more and more popular. So let us consider software for word processing which works in WINDOWS. Our choice is MS-WORD because it is the most popular software in these days.

MS-WORD is a part of the bigger package called MS OFFICE, which can do much more than word processing. In fact when you open up MS OFFICE you will find four main components in it. They are MS-WORD (for word processing), MS EXCEL (for spreadsheet), MS ACCESS (for database management) and MS POWERPOINT (for presentation purposes). However, we will limit ourselves to MS-WORD only in this lesson.

2 WHAT IS WORD-PROCESSING?

Word Processor is a Software package that enables you to create, edit, print and save documents for future retrieval and reference. Creating a document involves typing by using a keyboard and saving it. Editing a document involves correcting the spelling mistakes, if any, deleting or moving words sentences or paragraphs.

(a) Advantages of Word Processing

One of the main advantages of a word processor over a conventional typewriter is that a word processor enables you to make changes to a document without retyping the entire document.

(b) Features of Word Processing

Most Word Processor available today allows more than just creating and editing documents. They have wide range of other tools and functions, which are used in formatting the documents. The following are the main features of a Word Processor

i) Text is typing into the computer, which allows alterations to be made easily.
ii) Words and sentences can be inserted, amended or deleted.
iii) Paragraphs or text can be copied /moved throughout the document.
iv) Margins and page length can be adjusted as desired.
v) Spelling can be checked and modified through the spell check facility.
vi) Multiple document/files can be merged.
vii) Multiple copies of letters can be generated with different addresses through
the mail-merge facility.

(c) Some Common Word Processing Packages

The followings are examples of some popular word processor available

- Softword
- WordStar

- Word perfect
- Microsoft word

3 IMPORTANT FEATURES OF MS-WORD

Ms-Word not only supports word processing features but also DTP features. Some of the important features of Ms-Word are listed below:

i) Using word you can create the document and edit them later, as and when required, by adding more text, modifying the existing text, deleting/moving some part of it.

ii) Changing the size of the margins can reformat complete document or part of text.

iii) Font size and type of fonts can also be changed. Page numbers and Header and Footer can be included.

iv) Spelling can be checked and correction can be made automatically in the entire document. Word count and other statistics can be generated.

v) Text can be formatted in columnar style as we see in the newspaper. Text boxes can be made.

vi) Tables can be made and included in the text.

vii) Word also allows the user to mix the graphical pictures with the text. Graphical pictures can either be created in word itself or can be imported from outside like from Clip Art Gallery.

viii) Word also provides the mail-merge facility.

ix) Word also has the facility of macros. Macros can be either attached to some function/special keys or to a tool bar or to a menu.

x) It also provides online help of any option.

1 GETTING STARTED WITH MS-WORD

We have already told you that for working in Ms-Word you should be familiar with WINDOWS. If you have not covered WINDOWS so far then read that first and then go through MS-WORD. By now you must be aware of the fact that a software package is improved from time to time. These improvements are sold in the market as new *versions* of the same software. Thus you will find many versions of MS-WORD being used in different offices. In this lesson we will cover the version MS-WORD 97, which is latest in the market and contain many improvements over the older versions. However, you do not have to worry if you have an older version such as WORD 6.0 or WORD 95. All the commands available in these older versions are also available in WORD 97 and they are compatible.

While working in MS-WORD you have to work with a **mouse.** Also one can work, to some extent, through the keyboard. The use of mouse is simpler as it is fully menu driven. In MS-WORD every command is available in the form of 'icons'.

You can go inside MS-WORD by the following way

1. Take the mouse pointer to START button on the task bar. Click the left mouse button. The monitor will show like as follows:

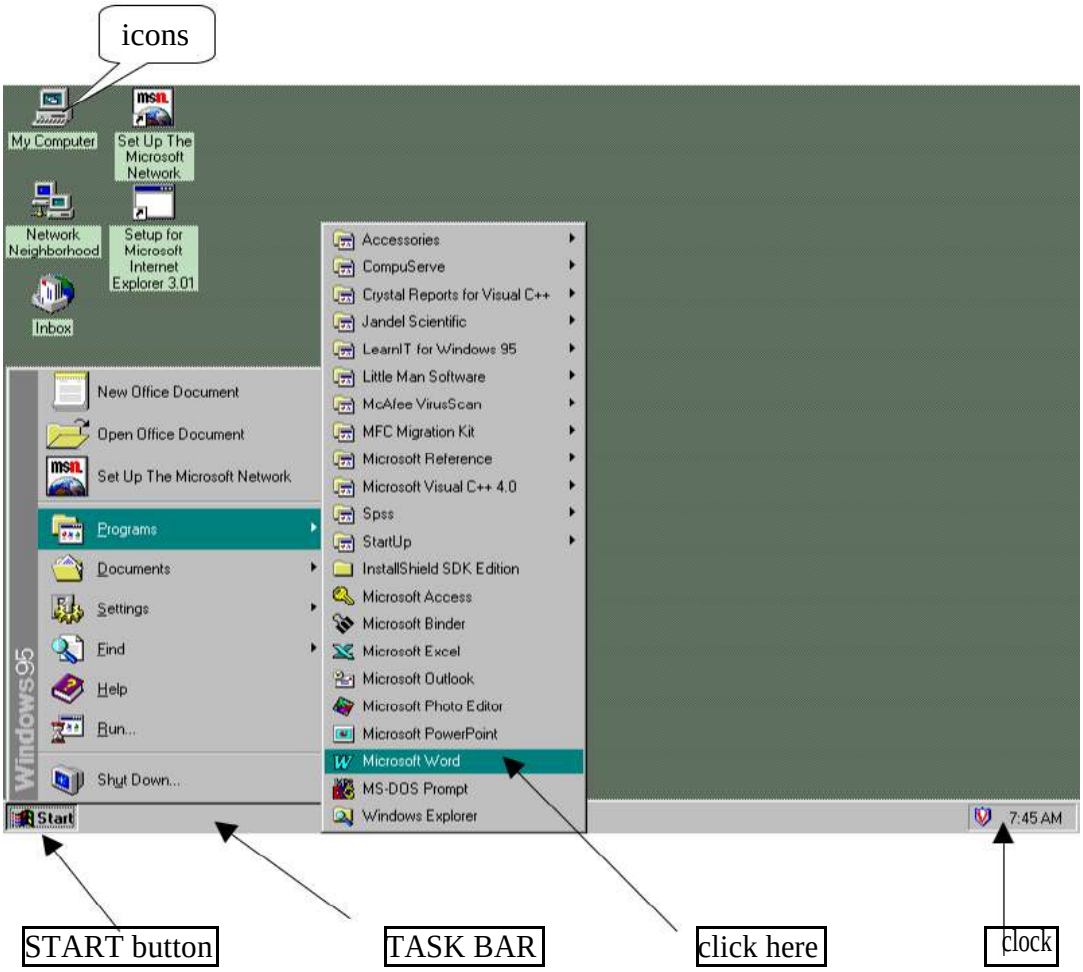
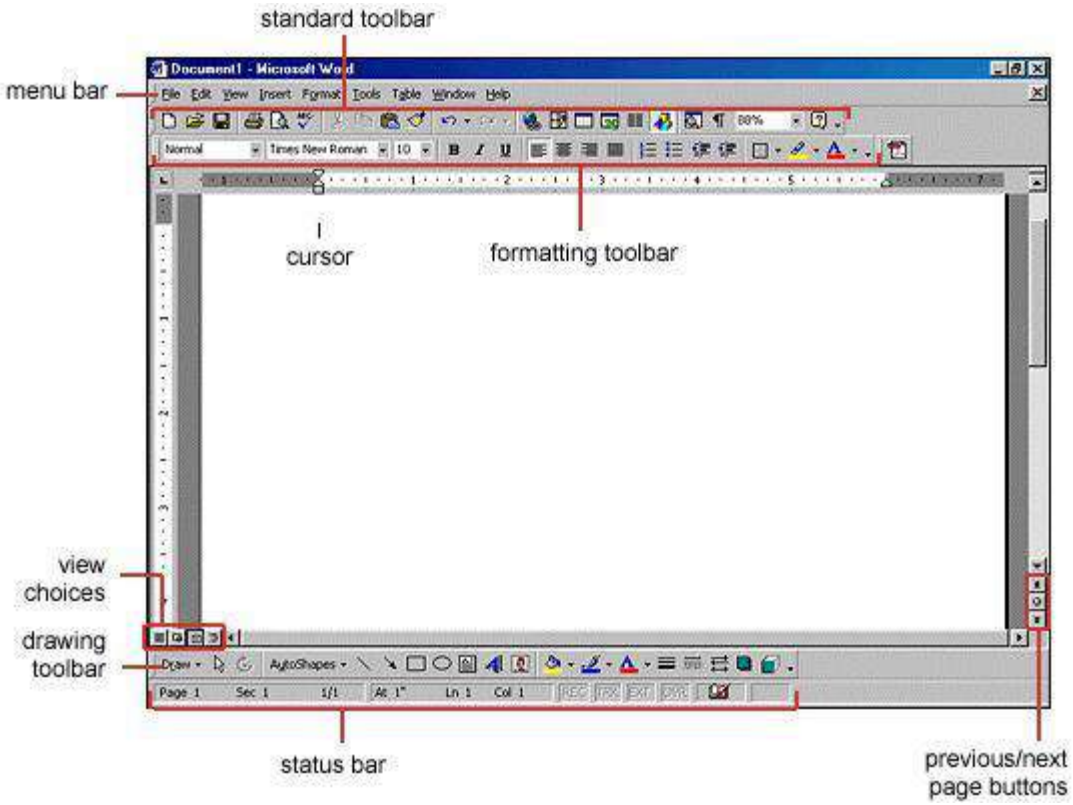

icons
My Computer
Set Up The Microsoft Network
Network Neighborhood
Setup for Microsoft Internet Explorer 3.01
Inbox
New Office Document
Open Office Document
Set Up The Microsoft Network
Programs
Documents
Settings
Find
Help
Run...
Shut Down...
Windows 95
Start
Accessories
CompuServe
Crystal Reports for Visual C++
Jandel Scientific
LearnIT for Windows 95
Little Man Software
McAfee VirusScan
MFC Migration Kit
Microsoft Reference
Microsoft Visual C++ 4.0
Spss
StartUp
InstallShield SDK Edition
Microsoft Access
Microsoft Binder
Microsoft Excel
Microsoft Outlook
Microsoft Photo Editor
Microsoft PowerPoint
Microsoft Word
MS-DOS Prompt
Windows Explorer
7:45 AM
START button
TASK BAR
click here
clock

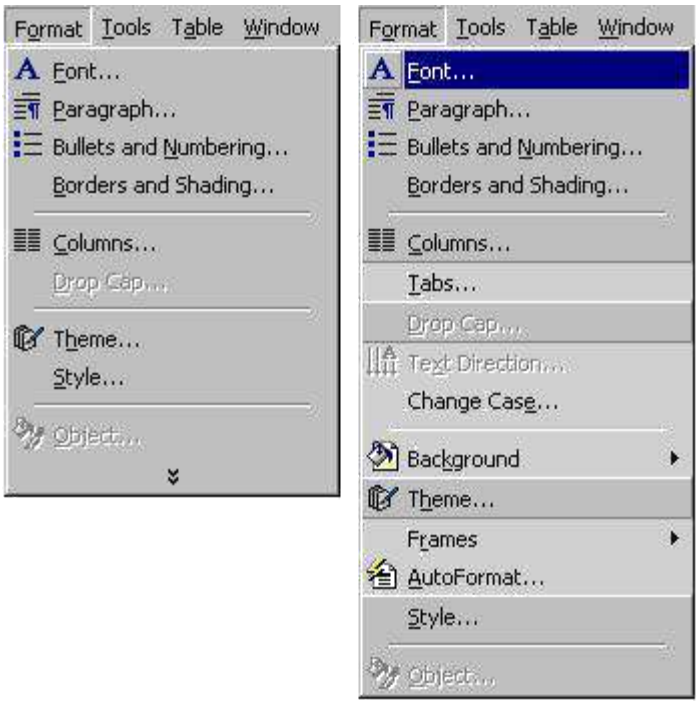
Fig. 1

Screen Layout



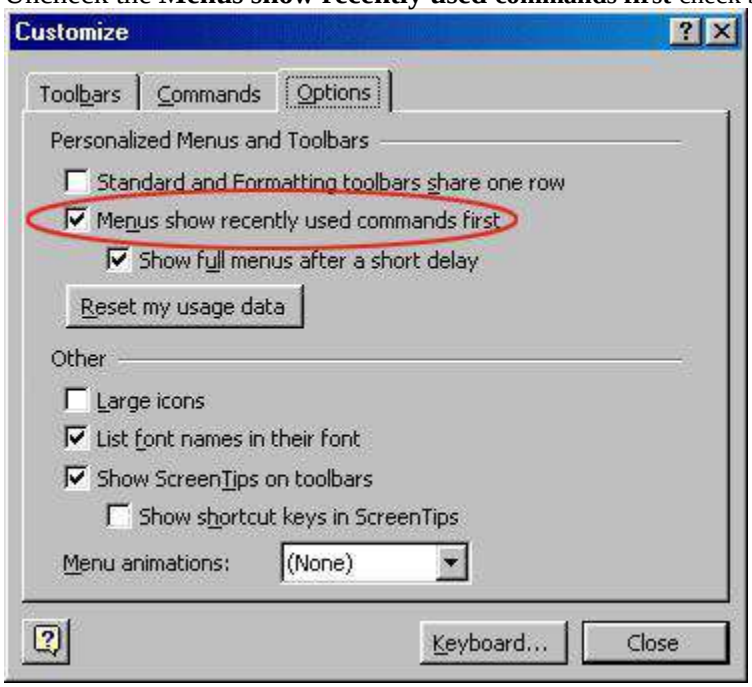
Menus

When you begin to explore Word 2000, you will notice a significant change in the menu structure if you are familiar with previous versions of Word. The menus in Word 2000 display only the commands you have recently used. To view all options in each menu, you must click the double arrows at the bottom of the menu. The images below show the Format menu collapsed (left) and expanded (right) after the double arrows at the bottom of the menu were clicked:



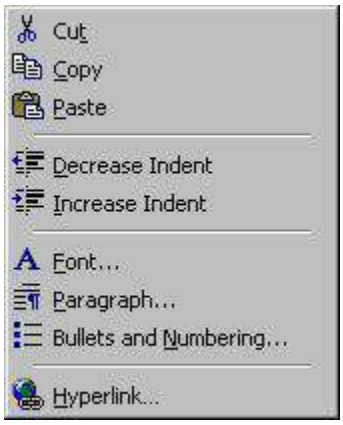
Follow the steps below to display menus similar to previous versions of Word with all the choices listed initially:

Select **View|Toolbars|Customize** from the menu bar.
Click on the **Options** tab.
Uncheck the **Menus show recently used commands first** check box.



Shortcut Menus

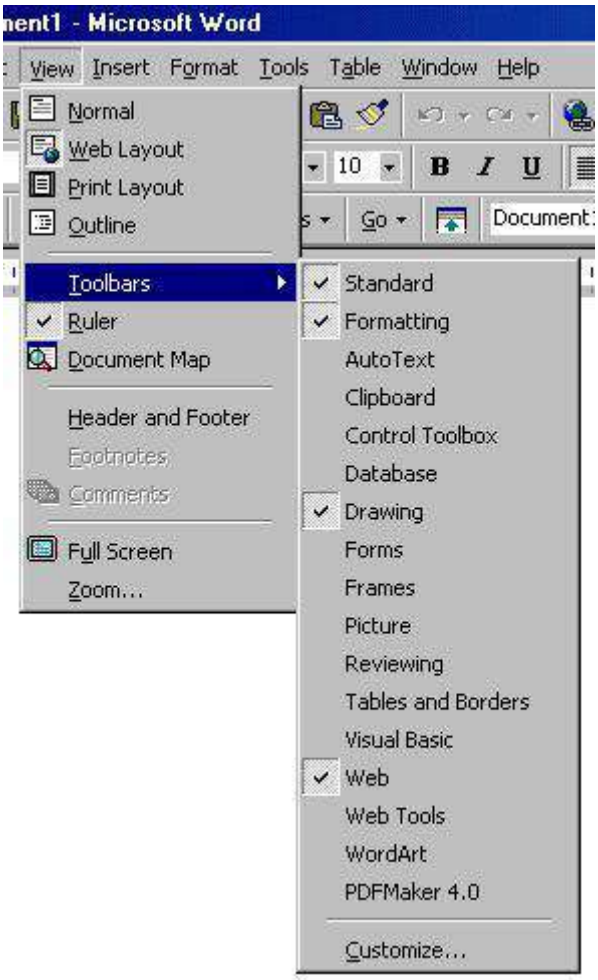
These features allow you to access various Word commands faster than using the options on the menu bar. View shortcut menus by right-clicking with the mouse. The options on this menu will vary depending on the element that was right-clicked. For example, the shortcut menu below is produced by right-clicking on a bulleted list.



Actions such as "Decrease Indent" and "Increase Indent" are only applicable to lists and therefore only appear on the list shortcut menu. The shortcut menus are helpful because they only display the options that can be applied to the item that was right-clicked and, therefore, prevent searching through the many menu options.

Toolbars

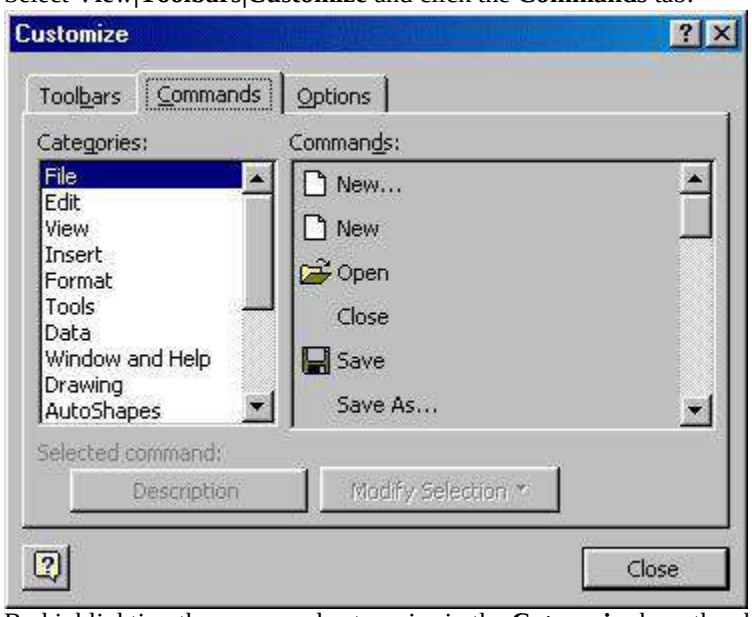
Many toolbars displaying shortcut buttons are also available to make editing and formatting quicker and easier. Select **View|Toolbars** from the menu bar to select the toolbars. The toolbars that are already displayed on the screen are checked. Add a toolbar simply by clicking on the name.



Customizing Toolbars

There may be certain actions on a toolbar that you do not use and there may also be commands that you execute often but that are not located on any toolbar. Word toolbars can be customized so these commands can be added and deleted.

Select **View**|**Toolbars**|**Customize** and click the **Commands** tab.



By highlighting the command categories in the **Categories** box, the choices will change in the **Commands** box to the right.

Select the command you would like to add to the toolbar by selecting it in the **Commands** box. Drag the command with the mouse to the desired location on the toolbar and release the mouse button.

Remove a button from the toolbar by clicking and dragging the button off the toolbar.

2. FILES

Creating and Opening Documents

There are several ways to create new documents, open existing documents, and save documents in Word:

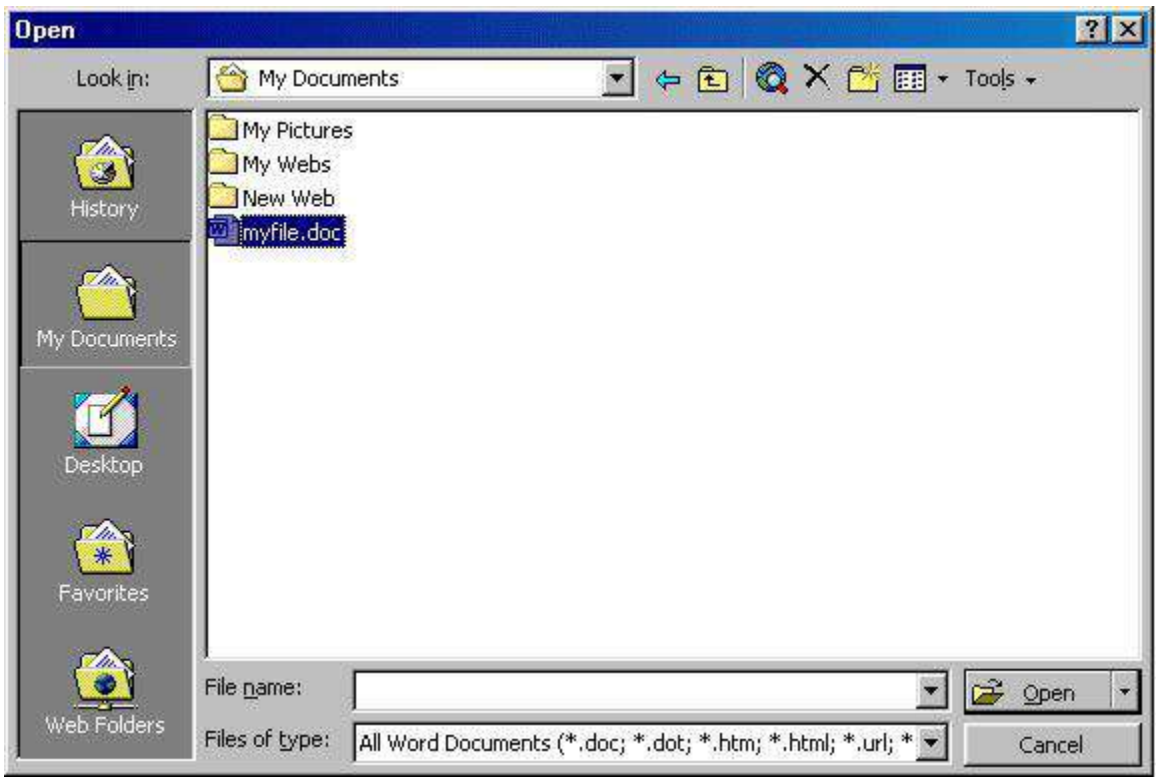
Create a New Document

Click the New Document button on the menu bar.
Choose **File|New** from the menu bar.
Press **CTRL+N** (depress the **CTRL** key while pressing "N") on the keyboard.

Open an Existing Document

Click the Open File button on the menu bar.
Choose **File|Open** from the menu bar.
Press **CTRL+O** on the keyboard.

Each method will show the Open dialog box. Choose the file and click the **Open** button.

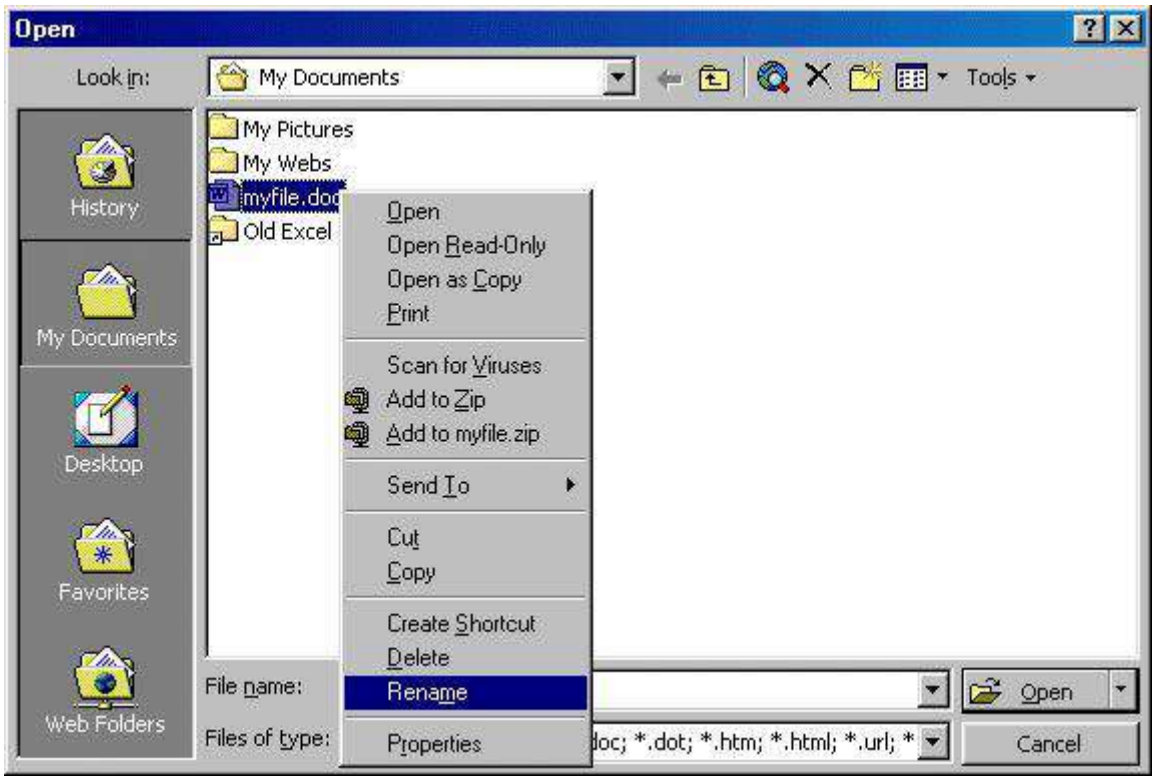


Save a Document

Click the Save button on the menu bar. 
Select **File|Save** from the menu bar.
Press **CTRL+S** on the keyboard.

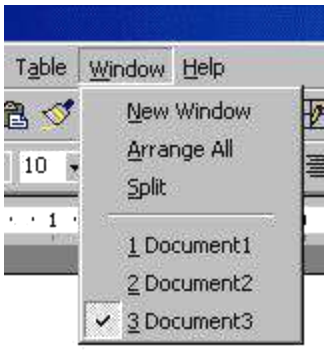
Renaming Documents

To rename a Word document while using the program, select **File|Open** and find the file you want to rename. Right-click on the document name with the mouse and select **Rename** from the shortcut menu. Type the new name for the file and press the **ENTER** key.



Working on Multiple Documents

Several documents can be opened simultaneously if you are typing or editing multiple documents at once. All open documents are listed under the **Window** menu as shown below. The current document has a checkmark beside the file name. Select another name to view another open document or click the button on the Windows taskbar at the bottom of the screen.



Close a Document

Close the current document by selecting **File|Close** or click the Close icon if it's visible on the Standard Toolbar. 

3. TEXT

Typing and Inserting Text

To enter text, just start typing! The text will appear where the blinking cursor is located. Move the cursor by using the arrow buttons on the keyboard or positioning the mouse and clicking the left button. The keyboard shortcuts listed below are also helpful when moving through the text of a document:

Move Action	Keystroke
Beginning of the line	**HOME**
End of the line	**END**
Top of the document	**CTRL+HOME**
End of the document	**CTRL+END**

Selecting Text

To change any attributes of text it must be highlighted first. Select the text by dragging the mouse over the desired text while keeping the left mouse button depressed, or hold down the **SHIFT** key on the keyboard while using the arrow buttons to highlight the text. The following table contains shortcuts for selecting a portion of the text:

Selection	Technique
Whole word	Double-click within the word
Whole paragraph	Triple-click within the paragraph
Several words or Lines	Drag the mouse over the words, or hold down **SHIFT** while using the arrow keys
Entire document	Choose **Edit**|**Select All** from the menu bar, or press **CTRL+A**

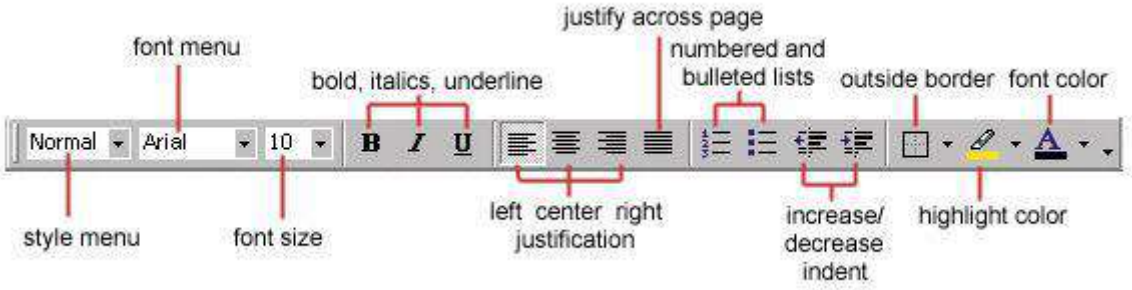
Deselect the text by clicking anywhere outside of the selection on the page or press an arrow key on the keyboard.

Deleting Text

Use the **BACKSPACE** and **DELETE** keys on the keyboard to delete text. Backspace will delete text to the left of the cursor and Delete will erase text to the right. To delete a large selection of text, highlight it using any of the methods outlined above and press the **DELETE** key.

Formatting Text

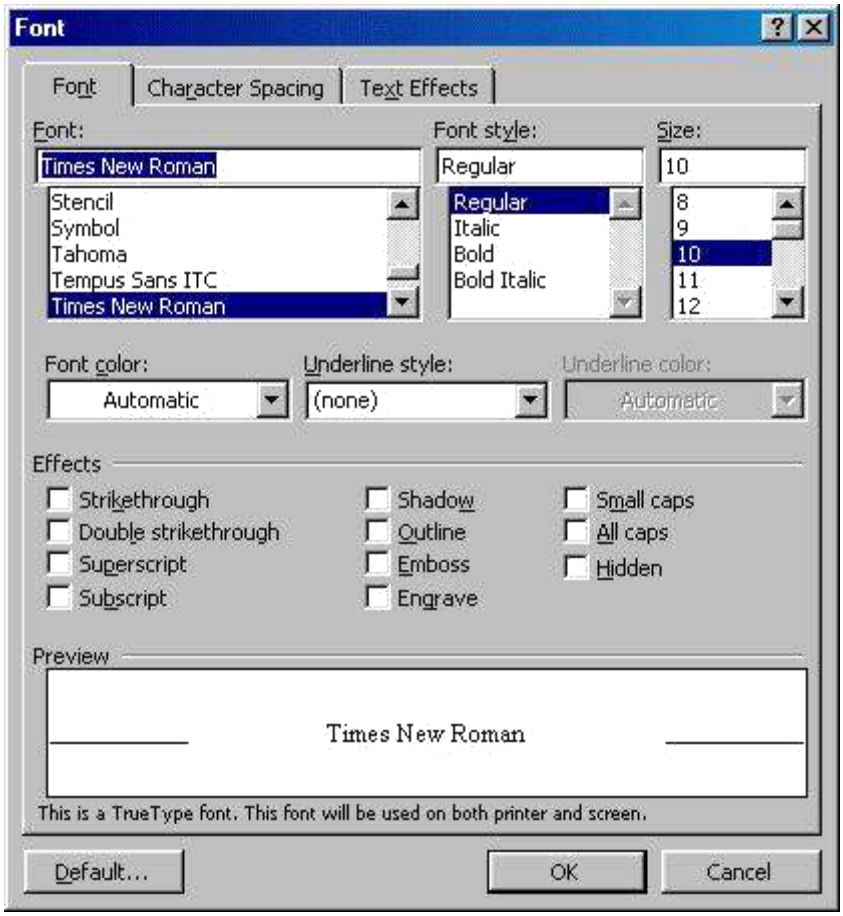
The formatting toolbar is the easiest way to change many attributes of text. If the toolbar as shown below isn't displayed on the screen, select **View|Toolbars** and choose **Formatting**.



Style Menu - Styles are explained in detail later in this tutorial.
Font Face - Click the arrowhead to the right of the font name box to view the list of fonts available. Scroll down to the font you want and select it by clicking on the name once with the mouse. A serif font (one with "feet" circled in the illustration below) is recommended for paragraphs of text that will be printed on paper as they are most readable. The following graphic demonstrates the difference between ***serif*** (Times New Roman on the left) and ***sans-serif*** ("no feet", Arial on the right) fonts.

Font Size - Click on the white part of the font size box to enter a value for the font size or click the arrowhead to the right of the box to view a list of font sizes available. Select a size by clicking on it once. A font size of 10 or 12 is best for paragraphs of text. **Font Style** - Use these buttons to bold, italicize, and underline text.
Alignment - Text can be aligned to the left, center, or right side of the page or it can be justified across the page.
Numbered and Bulleted Lists - Lists are explained in detail later in this tutorial.
Increase/Decrease Indent - Change the indentation of a paragraph in relation to the side of the page.
Outside Border - Add a border around a text selection.
Highlight Color - Use this option to change the color behind a text selection. The color shown on the button is the last color used. To select a different color, click the arrowhead next to the image on the button.
Text Color - This option changes the color of the text. The color shown on the button is the last color chosen. Click the arrowhead next to the button image to select another color.

The **Font** dialog box allows you to choose from a larger selection of formatting options. Select **Format|Font** from the menu bar to access the box.



Format Painter 

A handy feature for formatting text is the **Format Painter** located on the standard toolbar. For example, if you have formatting a paragraph heading with a certain font face, size, and style and you want to format another heading the same way, you do not need to manually add each attribute to the new headline. Instead, use the Format Painter by following these steps:

> Place the cursor within the text that contains the formatting you want to copy.
> Click the **Format Painter** button in the standard toolbar. Notice that your pointer now has a paintbrush beside it.
> Highlight the text you want to add the same format to with the mouse and release the mouse button.

To add the formatting to multiple selections of text, double-click the **Format Painter** button instead of clicking once. The format painter then stays active until you press the **ESC** key to turn it off.

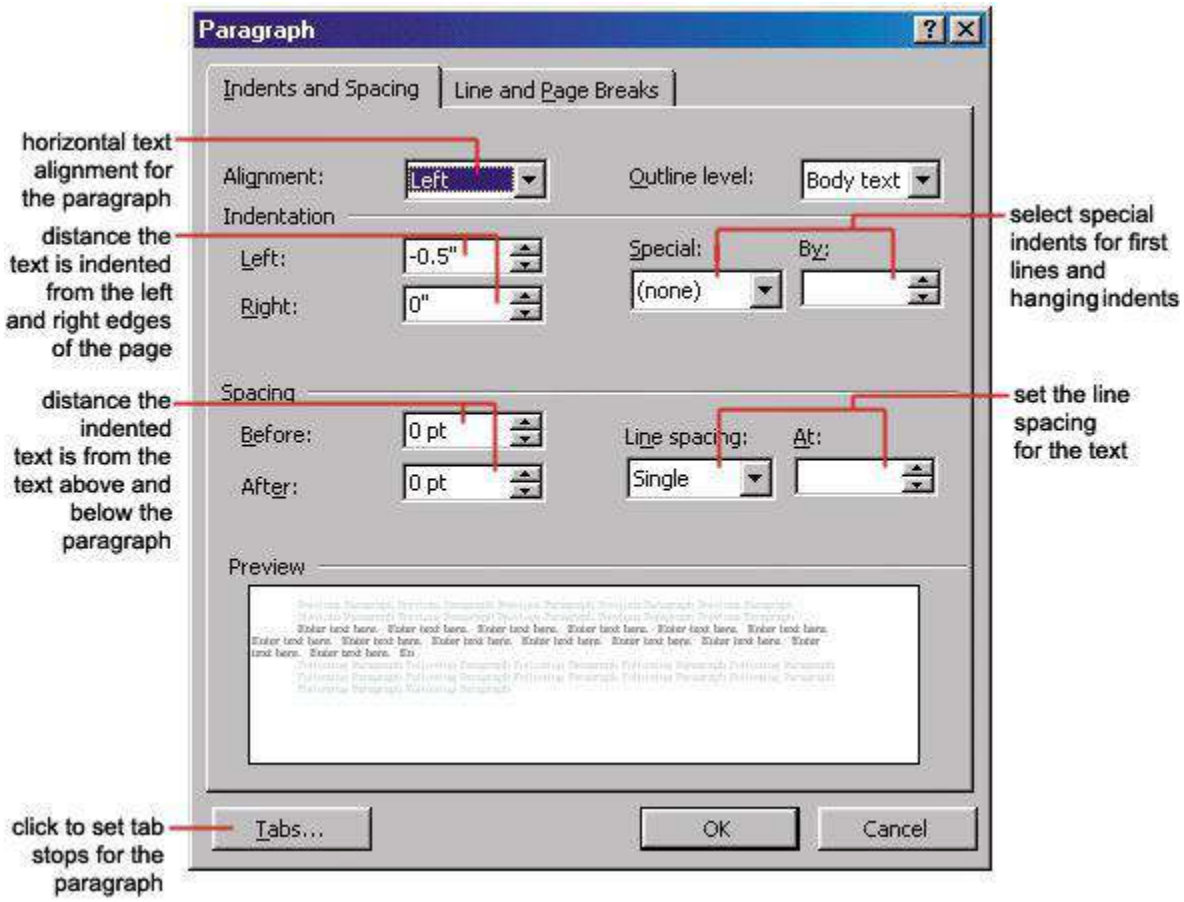
Undo 

Feel free to experiment with various text styles. You can always undo your last action by clicking the **Undo** button on the standard toolbar or selecting **Edit|Undo...** from the menu bar. Click the **Redo** button on the standard toolbar or select **Edit|Redo...** to erase the undo action.

1. FORMATTING PARAGRAPHS

Paragraph Attributes

Format a paragraph by placing the cursor within the paragraph and selecting **Format|Paragraph** from the menu bar.



Moving (Cutting) Text

Highlight the text that will be moved and select **Edit|Cut** from the menu bar, click the **Cut** button on the standard tool bar, or press **CTRL+X** at once. This will move the text to a clipboard.

To move a small amount of text a short distance, the drag-and-drop method may be quicker. Highlight the text you want to move, click the selection with the mouse, drag the selection to the new location, and release the mouse button.

Copying Text

To copy text, choose **Edit|Copy**, click the **Copy** button on the standard toolbar, or press **CTRL+C** to copy the text to the clipboard.

Paste Text

To paste cut or copied text, move the cursor to the location you want to move the text to and select **Edit|Paste** from the menu bar, click the **Paste** button on the standard toolbar, or press **CTRL+V**.

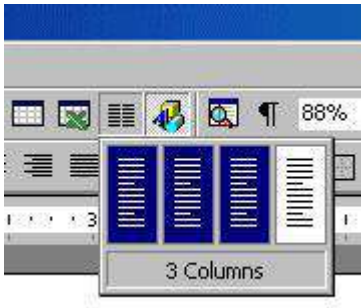
The Clipboard

The last 12 elements that were cut or copied are placed onto Word's clipboard. You can view the elements on the clipboard by selecting **View|Toolbars|Clipboard** from the menu bar.

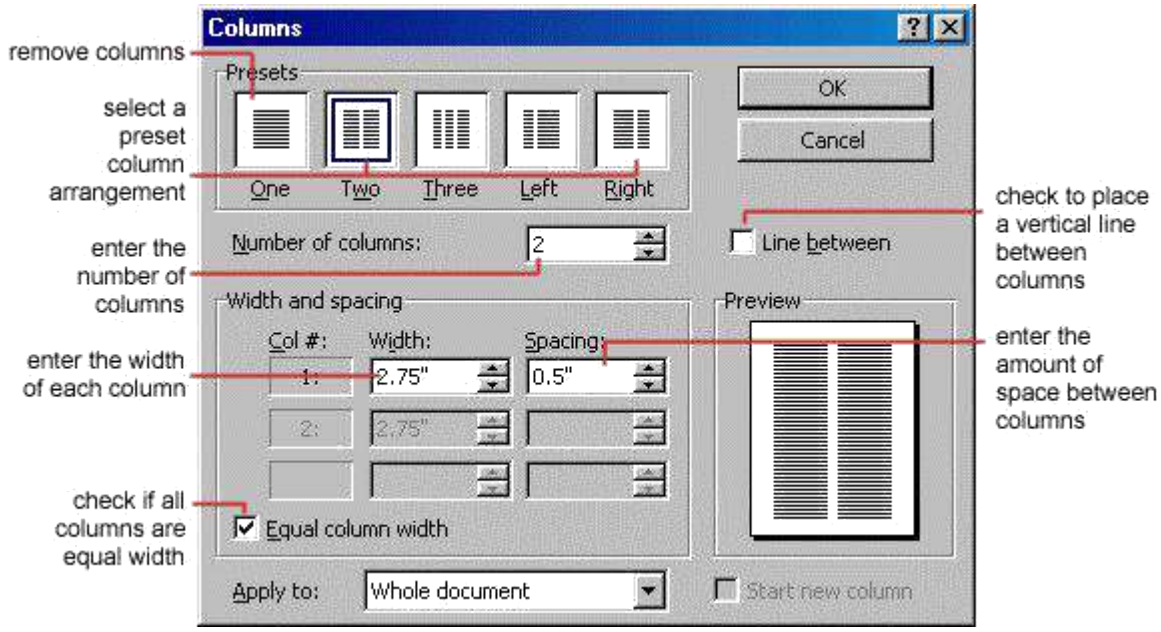
Place the mouse arrow over each element in the clipboard to view the contents of each item and click on an element to add its contents to the document. Click **Paste All** to add all of the items to the document at once. Click the **Clear Clipboard** button (the icon with an "X" over the clipboard image) to clear the contents of the clipboard.

Columns

To quickly place text in a column format, click the **Columns** button on the standard toolbar and select the number of columns by dragging the mouse over the diagram.



For more column options, select **Format|Columns** from the menu bar. The **Columns** dialog box allows you to choose the properties of the columns. Select the number and width of the columns from the dialog box.



Drop Caps

A drop cap is a large letter that begins a paragraph and drops through several lines of text as shown below.

Add a drop cap to a paragraph by following these steps:

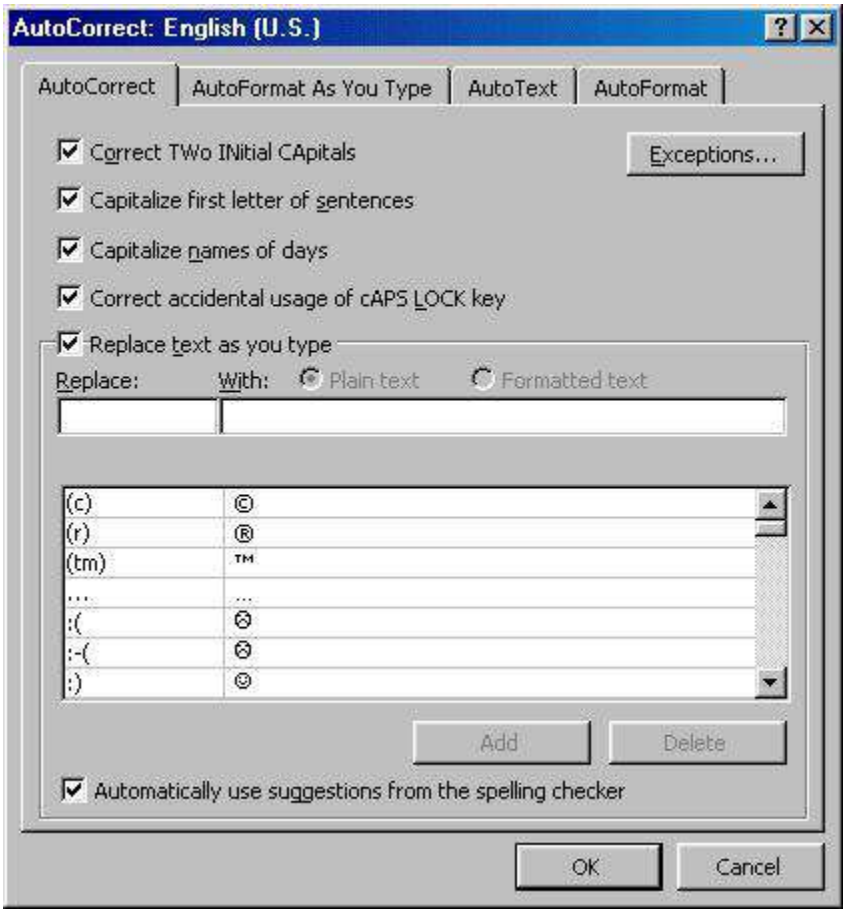
Place the cursor within the paragraph whose first letter will be dropped.
Select **Format|Drop Cap** from the menu bar.
The **Drop Cap** dialog box allows you to select the position of the drop cap, the font, the number of lines to drop, and the distance from the body text.

Click **OK** when all selections have been made.
To modify a drop cap, select **Format|Drop Cap** again to change the attributes, or click on the letter and use the handles to move and resize the letter.

2. SPELLING AND GRAMMAR

AutoCorrect

Word automatically corrects many commonly misspelled words and punctuation marks with the AutoCorrect feature. To view the list of words that are automatically corrected, select **Tools|AutoCorrect** . This may be a hidden feature so click the double arrows at the bottom of the **Tools** menu listing if the AutoCorrect choice is not listed.



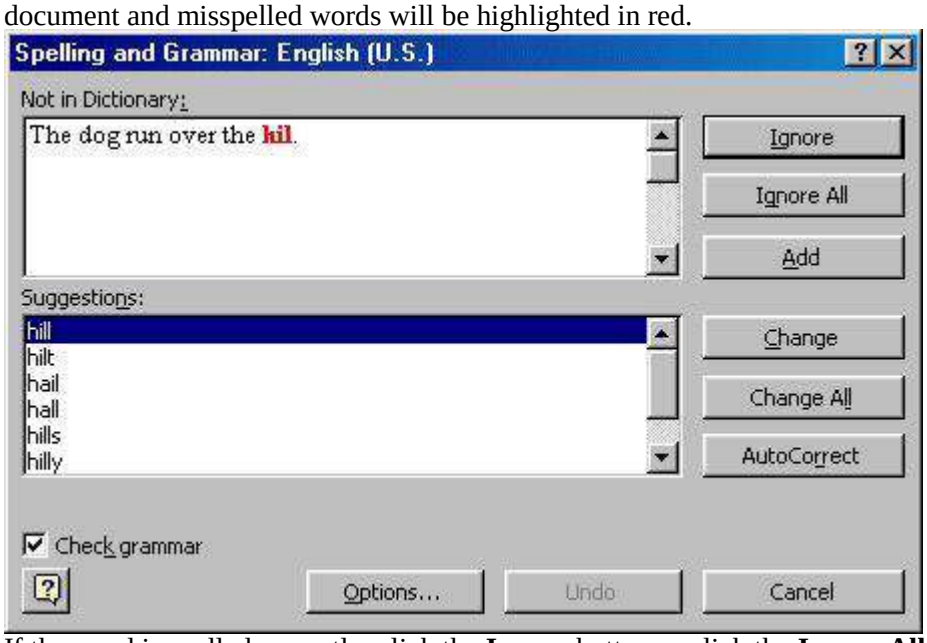
Many options including the accidental capitalization of the first two letters of a word and capitalization of the first word of the sentence can be automatically corrected from this page. If there are words you often misspell, enter the wrong and correct spellings in the **Replace** and **With** fields.

Spelling and Grammar Check

Word will automatically check for spelling and grammar errors as you type unless you turn this feature off. Spelling errors are noted in the document with a red underline. Grammar errors are indicated by a green underline. To disable this feature, select **Tools|Options** from the menu bar and click the **Spelling and Grammar tab** on the dialog box. Uncheck **"Check spelling as you type"** and **"Check grammar as you type"**, and click **OK**.

To use the spelling and grammar checker, follow these steps:

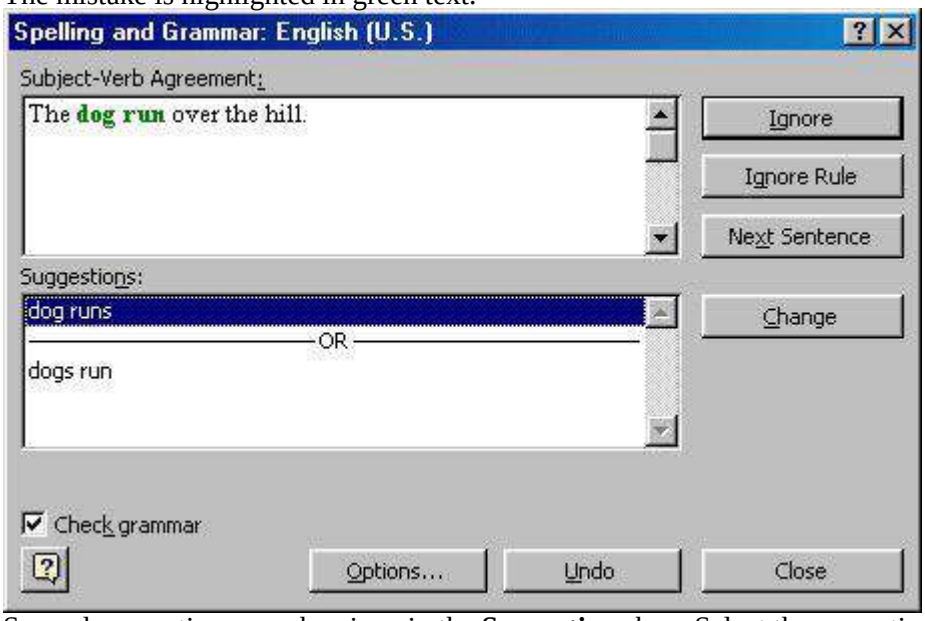
Select **Tools|Spelling and Grammar** from the menu bar.
The **Spelling and Grammar** dialog box will notify you of the first mistake in the document and misspelled words will be highlighted in red.



If the word is spelled correctly, click the **Ignore** button or click the **Ignore All** button if the word appears more than once in the document.
If the word is spelled incorrectly, choose one of the suggested spellings in the **Suggestions** box and click the **Change** button or **Change All** button to correct all occurrences of the word in the document. If the correct spelling is not suggested, enter the correct spelling in the **Not In Dictionary** box and click the **Change** button.
If the word is spelled correctly and will appear in many documents you type (such as your name), click the **Add** button to add the word to the dictionary so it will no longer appear as a misspelled word.

As long as the **Check Grammar** box is checked in the **Spelling and Grammar** dialog box, Word will check the grammar of the document in addition to the spelling. If you do not want the grammar checked, remove the checkmark from this box. Otherwise, follow these steps for correcting grammar:

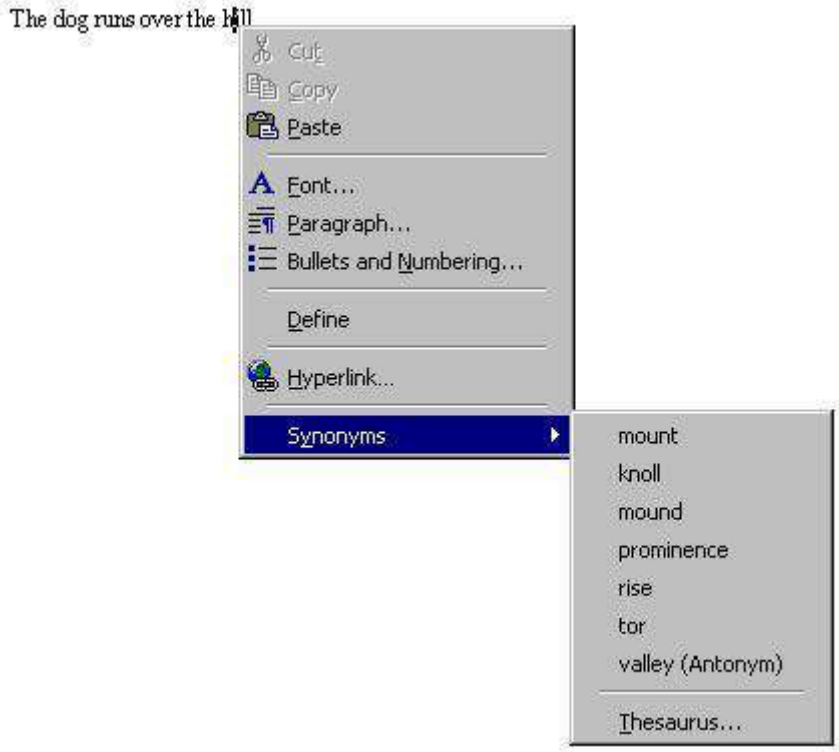
If Word finds a grammar mistake, it will be shown in the box as the spelling errors. The mistake is highlighted in green text.



Several suggestions may be given in the **Suggestions** box. Select the correction that best applies and click **Change**.
If no correction is needed (Word is often wrong more than it is right), click the **Ignore** button.

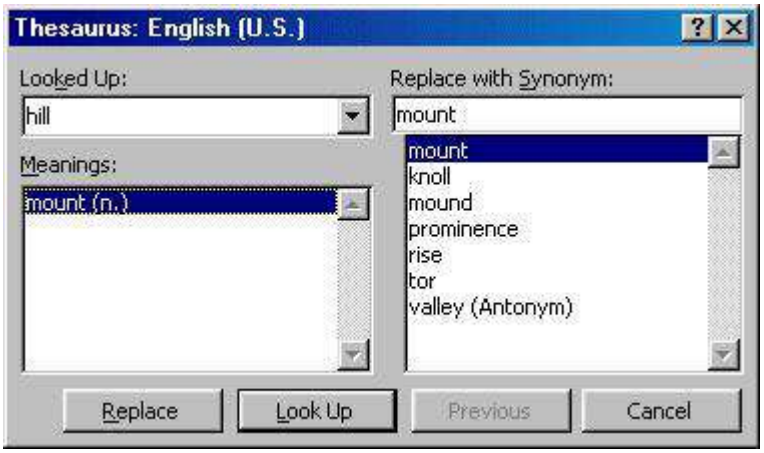
Synonyms

Word 2000 has a new feature for finding synonyms. Simply right-click on the word and select **Synonyms** from the shortcut menu. From the list of suggested words, highlight the word you would like to use or click **Thesaurus...** for more options.



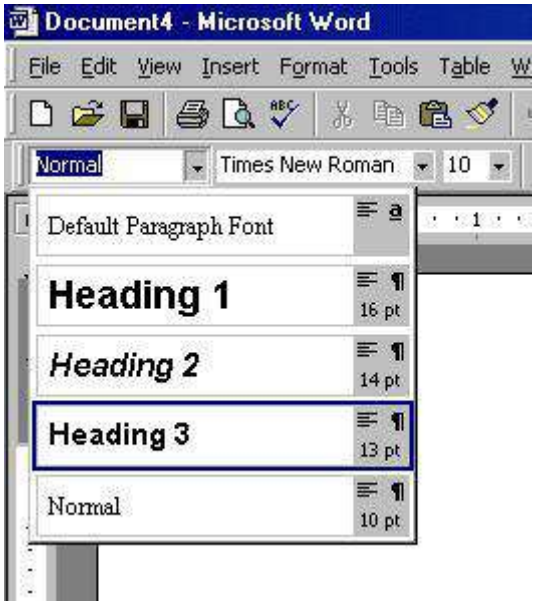
Thesaurus

To use the thesaurus, select **Tools|Language|Thesaurus** from the menu bar or select it from the **Synonyms** shortcut menu as detailed above.



A list of meanings and synonyms are given on the windows. Double-click on the words in the **Meanings** box or click the **Look Up** button to view similar words. Double-click words in the **Replace with Synonym** box to view synonyms of those words. Highlight the word you would like to add and click the **Replace** button.

The use of styles in Word will allow you to quickly format a document with a consistent and professional look. Paragraph and character styles can be saved for use in many documents.

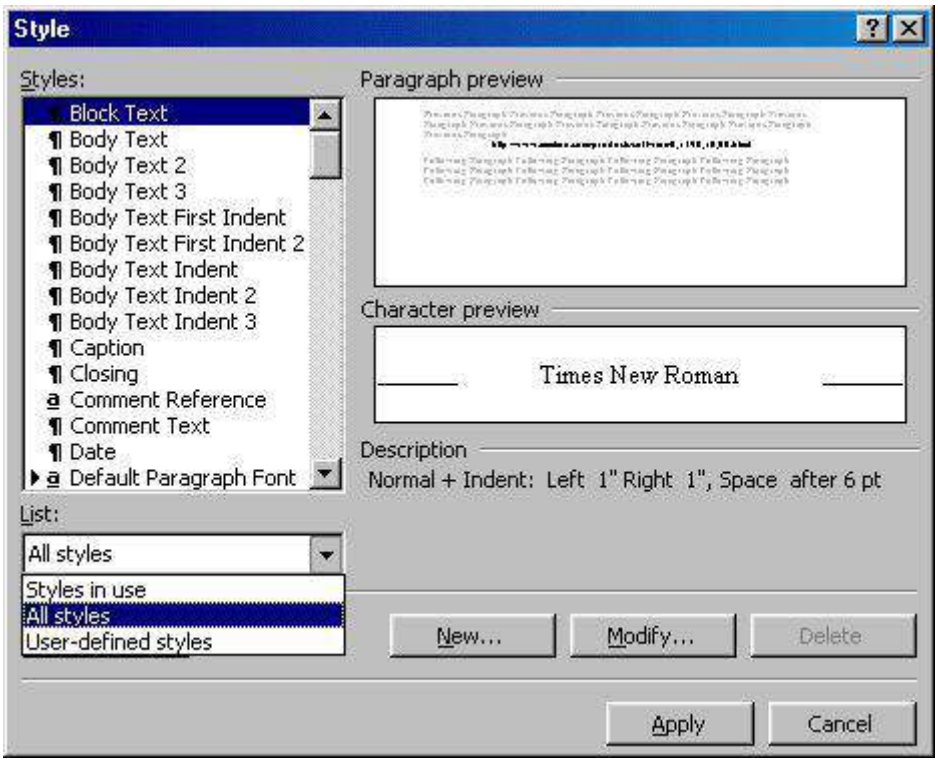


Applying a Style

Place the cursor in the paragraph where the style will be applied.
Click the **Style** drop-down menu on the Formatting toolbar and select a style by clicking on it.
To apply the same style to multiple paragraphs, double click the **Format Painter** button  on the standard toolbar and click in all the paragraphs that the style should be applied to. Press the **ESC** key to disable the Format Painter.

Apply a Style from the Style Dialog Box

Choose from a larger selection of styles from the **Style** dialog box.



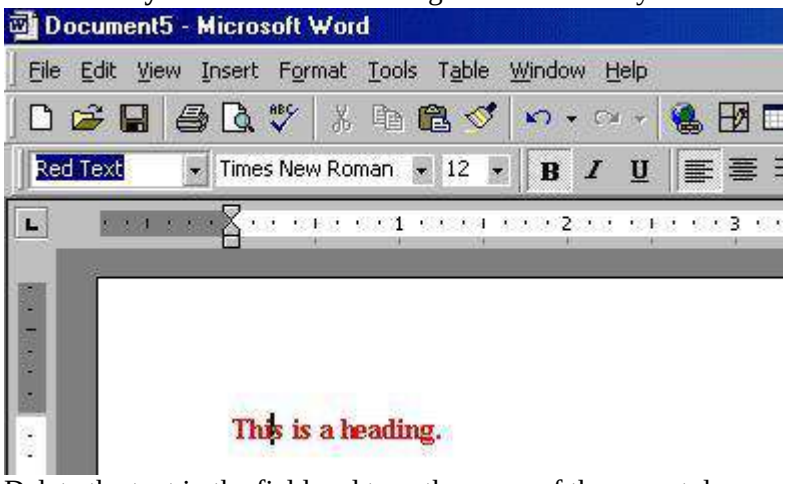
Click in the paragraph you want to add a style to.
Select **Format|Style...** from the menu bar.
From the **List** drop-down menu, choose **All styles** to view all the styles available. The styles are displayed in the **Styles** list. Preview each style by clicking once on the name. Paragraph styles are preceded by the paragraph symbol (¶) and character styles are preceded by an "a" icon (a) . A pointer arrow is located next to the current style.
Highlight the style you want to apply to the paragraph and click **Apply**.

Create a New Style from a Model

To create a style from text that is already formatted in a document, follow these steps:

Place the cursor in the paragraph you would like to set as a new style.

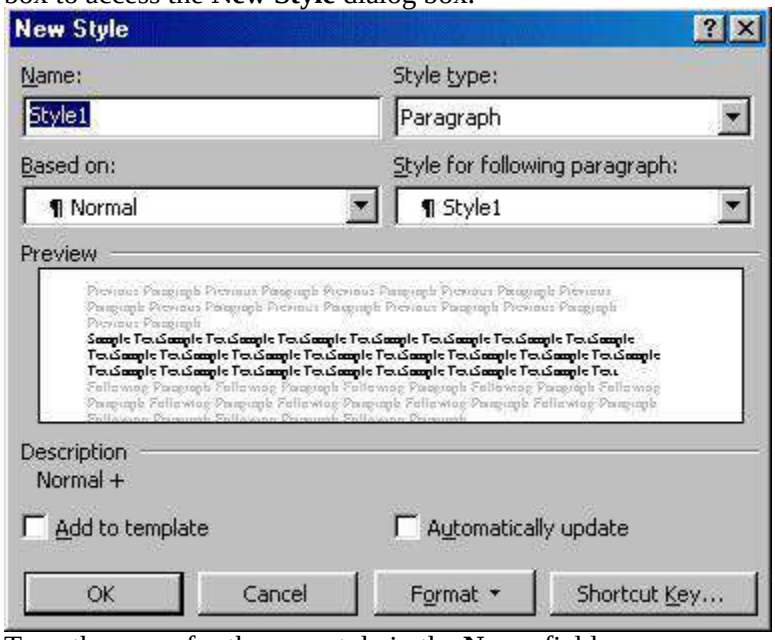
Click the **Style** box on the formatting toolbar so the style name is highlighted.



Delete the text in the field and type the name of the new style.
Press the **ENTER** key to save the new style.

Create a Simple Style from the Style Dialog Box

Select **Format|Style...** from the menu bar and click the **New** button on the **Style** dialog box to access the **New Style** dialog box.



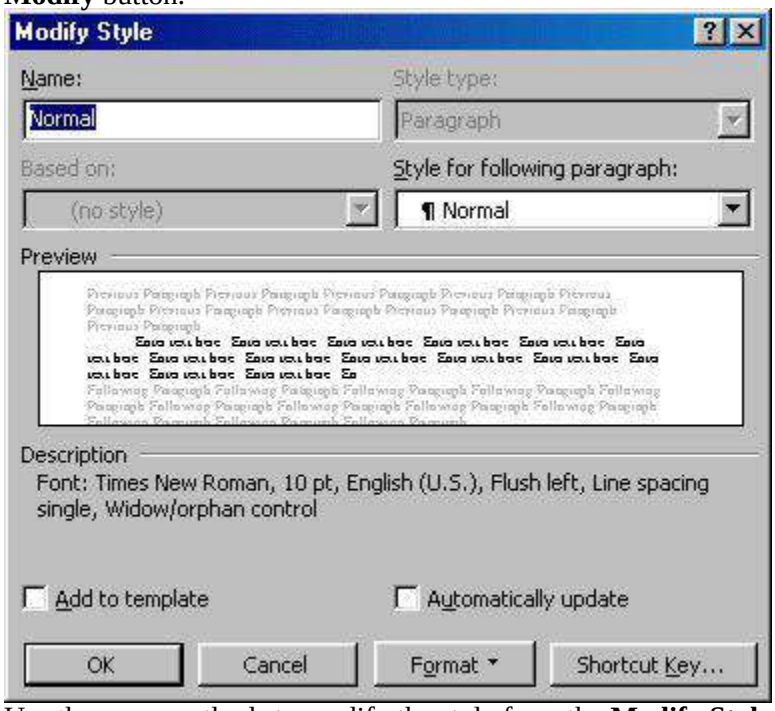
Type the name for the new style in the **Name** field.
Select "Paragraph" or "Character" from the **Style type** drop-down menu.
Click the **Format** button at the bottom of the window and choose the paragraph element that will be formatted for the style. Continue to make changes from the options from the Format button menu, making changes to the dialog boxes for each element you choose.
Click **OK** to set the style and close the **New Style** dialog box.
Click **Apply** on the **Style** dialog box to apply the new style to the current paragraph.

Modify or Rename a Style

An existing style can be changed from the Style dialog box.

Select **Format|Style...** from the menu bar.

Highlight the style from the **Styles** list that you want to modify and click the **Modify** button.



Use the same methods to modify the style from the **Modify Style** dialog box that were used for the New Style box.
To only rename the style, type a new name in the **Name** field.
Click **OK** when you are finished making modifications.
Click **Apply** to update the style in the document.

Delete a Style

Preset styles created by Word cannot be deleted, but to delete a style you have made, follow these steps:

Select **Format|Style...** from the menu bar
Highlight the style from the **Styles** list that you want to delete.
Click the **Delete** button.
You will be asked if you really want to delete the style. Click **Yes**.
Click **Close** on the dialog box.

1.LISTS

To create a bulleted or numbered list, use the list features provided by Word.

Bulleted and Numbered Lists

Click the **Bulleted List** button  or **Numbered List** button  on the formatting toolbar.
Type the first entry and press **ENTER**. This will create a new bullet or number on the next line. If you want to start a new line without adding another bullet or number, hold down the **SHIFT** key while pressing **ENTER**.
Continue to typing entries and press **ENTER** twice when you are finished typing to end the list.

Use the **Increase Indent**  and **Decrease Indent**  buttons on the formatting toolbar to create lists of multiple levels.

NOTE: You can also type the text first, highlight the section, and press the **Bulleted List** or **Numbered List** buttons to add the bullets or numbers.

Nested Lists

To create a nested list, such as a numbered list inside of a bulleted list, follow these steps:

Type the list and increase the indentation of the items that will make up the nested list by clicking the **Increase Indent** button for each item.

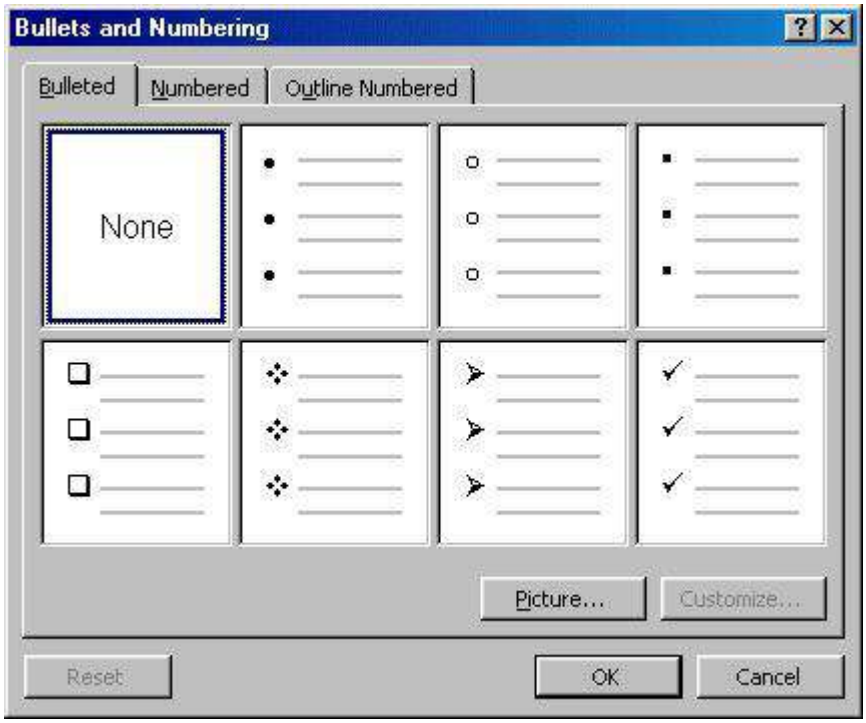
Highlight the items and click the **Numbered List** button on the formatting toolbar.

Formatting Lists

The bullet image and numbering format can be changed by using the **Bullets and Numbering** dialog box.

Highlight the entire list to change all the bullets or numbers, or
Place the cursor on one line within the list to change a single bullet.
Access the dialog box by selecting **Format|Bullets and Numbering** from the menu bar or by right-clicking within the list and selecting **Bullets and Numbering** from the

shortcut menu.



Select the list style from one of the seven choices given, or click the **Picture...** button to choose a different icon. Click the **Numbered** tab to choose a numbered list style. Click **OK** when finished.

2. GRAPHICS

Adding Clip Art

To add a clip art image from the Microsoft library to a document, follow these steps:

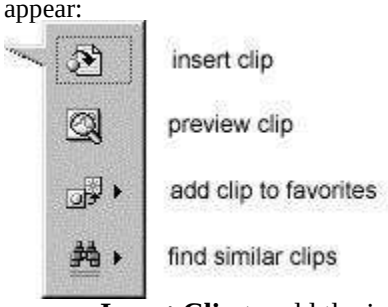
Select **Insert|Picture|Clip Art** from the menu bar.

To find an image, click in the white box following **Search for clips**. Delete the words "Type one or more words. . ." and enter keywords describing the image you want to use.

-OR-

Click one of the category icons.

Click once on the image you want to add to the document and the following popup menu will appear:



Insert Clip to add the image to the document.

Preview Clip to view the image full-size before adding it to the document. Drag the bottom, right corner of the preview window to resize the image and click the

"**x**" close button to end the preview.

Add Clip to Favorites will add the selected image to your favorites directory that can be chosen from the **Insert ClipArt** dialog box.

Find Similar Clips will retrieve images similar to the one you have chosen.

Continue selecting images to add to the document and click the **Close** button in the top, right corner of the **Insert ClipArt** window to stop adding clip art to the document.

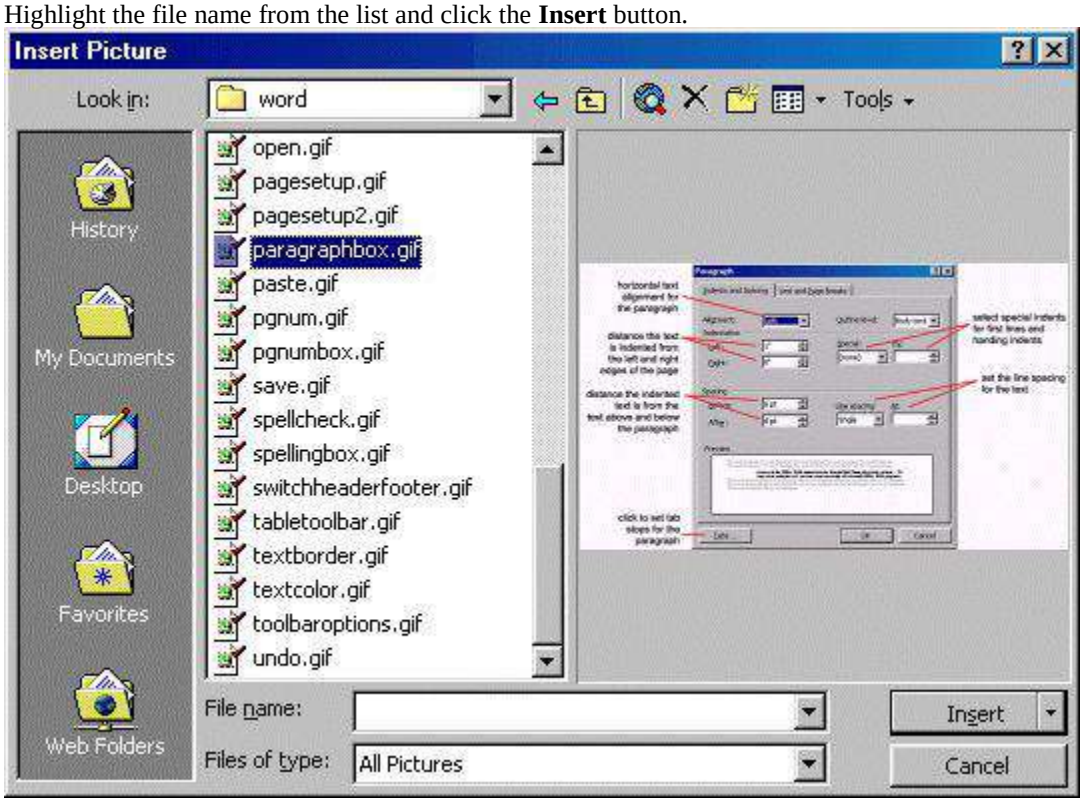
Add An Image from a File

Follow these steps to add a photo or graphic from an existing file:

Select **Insert|Picture|From File** on the menu bar.

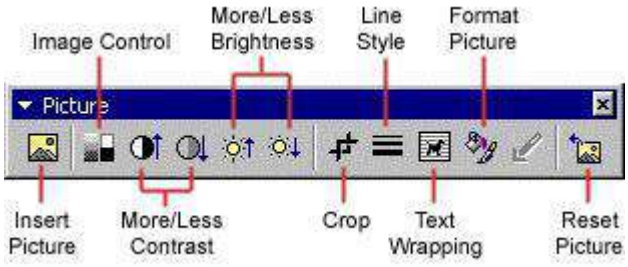
Click the down arrow button on the right of the **Look in:** window to find the image on your computer.

Highlight the file name from the list and click the **Insert** button.



Editing A Graphic

Activate the image you wish to edit by clicking on it once with the mouse. Nine handles will appear around the graphic. Click and drag these handles to resize the image. The handles on the corners will resize proportionally while the handles on the straight lines will stretch the image. More picture effects can be changed using the Picture toolbar. The **Picture toolbar** should appear when you click on the image. Otherwise, select **View|Toolbars|Picture** from the menu bar to activate it.



Insert Picture will display the image selection window and allows you to change the image.

Image Control allows to to make the image grayscale, black and white, or a watermark.

More/Less Contrast modifies the contrast between the colors of the image.

More/Less Brightness will darken or brighten the image.

Click **Crop** and drag the handles on the activated image to delete outer portions of the image.

Line Style will add a variety of borders to the graphic.

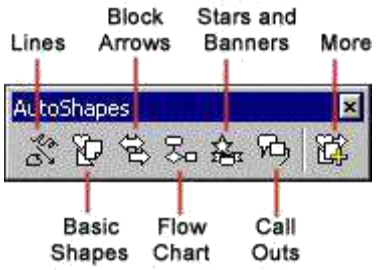
Text Wrapping will modify the way the document text wraps around the graphic.

Format Picture displays all the image properties in a separate window.

Reset Picture will delete all the modifications made to the image.

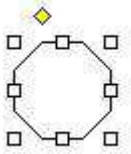
Auto Shapes

The AutoShapes toolbar will allow you to draw many different geometrical shapes, arrows, flow chart symbols, stars, and banners on the document. Activate the AutoShapes toolbar by selecting **Insert|Picture|AutoShapes** or **View|Toolbars|AutoShapes** from the menu bar, or clicking the **AutoShapes** button on the Drawing toolbar. Click each button on the toolbar to view the options for drawing the shape.



Lines - After clicking the Lines button on the AutoShapes toolbar, draw a ***straight line***, ***arrow***, or ***double-ended arrow*** from the first row of options by clicking the respective button. Click in the document where you would like the line to begin and click again where it should end. To draw a ***curved line*** or ***freeform shape***, select curved lines from the menu (first and second buttons of second row), click in the document where the line should appear, and click the mouse every time a curve should begin. End creating the graphic by clicking on the starting end or pressing the **ESC** key. To ***scribble***, click the last button in the second row, click the mouse in the document and hold down the left button while you draw the design. Let go of the mouse button to stop drawing.

Basic Shapes - Click the Basic Shapes button on the AutoShapes toolbar to select from many ***two- and three -dimensional shapes***, ***icons***, ***braces***, and ***brackets***. Use the drag-and-drop method to draw the shape in the document. When the shape has been made, it can be resized using the open box handles and other adjustments specific to each shape can be modified using the yellow diamond handles.



Block Arrows - Select Block Arrows to choose from many types of ***two- and three-dimensional arrows***. Drag- and-drop the arrow in the document and use the open box and yellow diamond handles to adjust the arrowheads. Each AutoShape can also be rotated by first clicking the **Free Rotate** button on the drawing toolbar  . Click and drag the green handles around the image to rotate it. The tree image below was created from an arrow rotated 90 degrees.

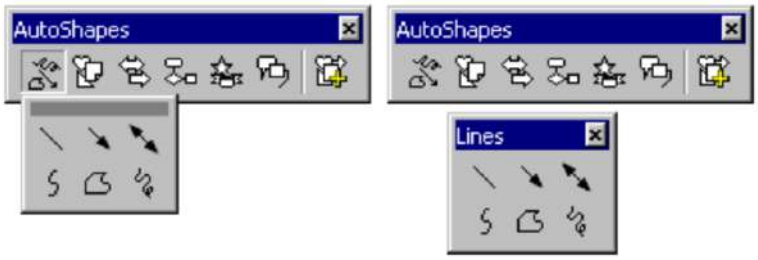
Flow Chart - Choose from the flow chart menu to add ***flow chart elements*** to the document and use the line menu to draw connections between the elements.

Stars and Banners - Click the button to select ***stars***, ***bursts***, ***banners***, and ***scrolls***.

Call Outs - Select from the ***speech and thought bubbles***, and ***line call outs***. Enter the call out text in the text box that is made.

More AutoShapes - Click this button to choose from a list of clip art categories.

Each of the submenus on the AutoShapes toolbar can become a separate toolbar. Just click and drag the gray bar across the top of the submenus off of the toolbar and it will become a separate floating toolbar.

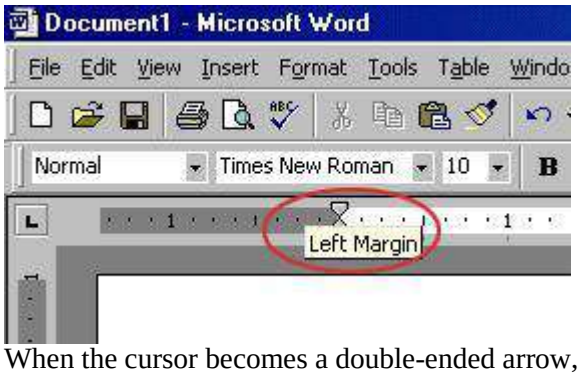


3. PAGE FORMATTING

Page Margins

The page margins of the document can be changed using the rulers on the page and the **Page Setup** window. The ruler method is discussed first:

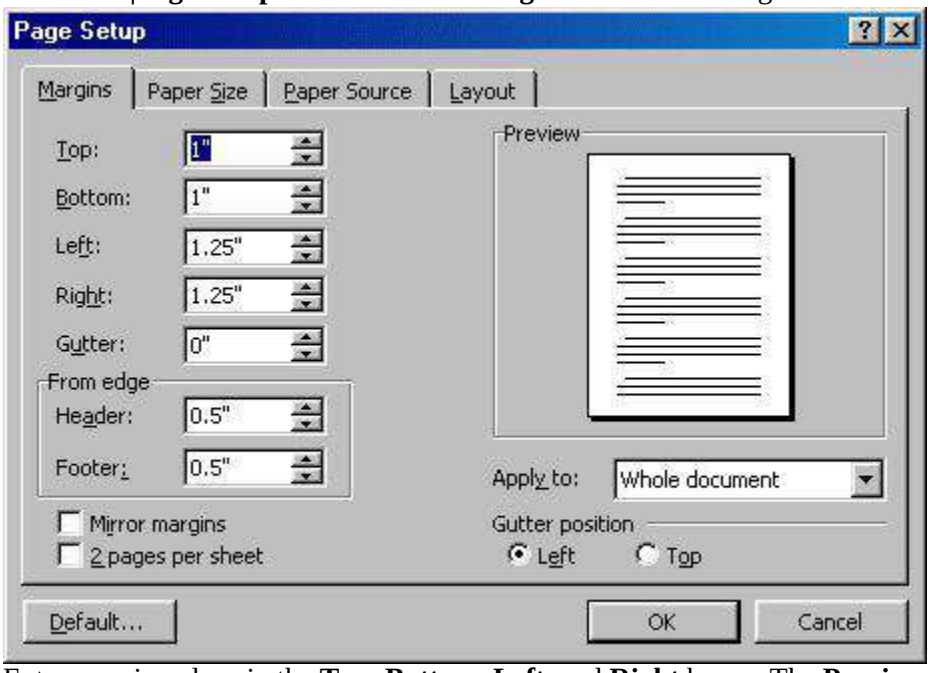
Move the mouse over the area where the white ruler changes to gray.



When the cursor becomes a double-ended arrow, click with the mouse and drag the margin indicator to the desired location.
Release the mouse when the margin is set.

The margins can also be changed using the **Page Setup** dialog box:

Select **File**|**Page Setup** and choose the **Margins tab** in the dialog box.

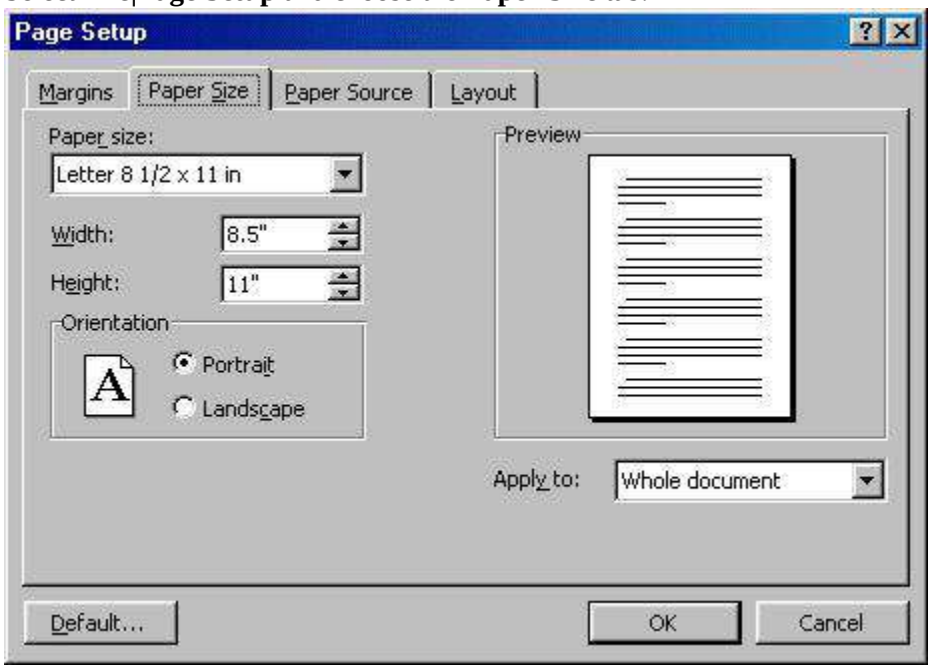


Enter margin values in the **Top**, **Bottom**, **Left**, and **Right** boxes. The **Preview** window will reflect the changes.
If the document has **Headers** and/or **Footers**, the distance this text appears from the edge of the page can be changed.
Click **OK** when finished.

Page Size and Orientation

Change the orientation page within the Page Setup dialog box.

Select **File**|**Page Setup** and choose the **Paper Size** tab.

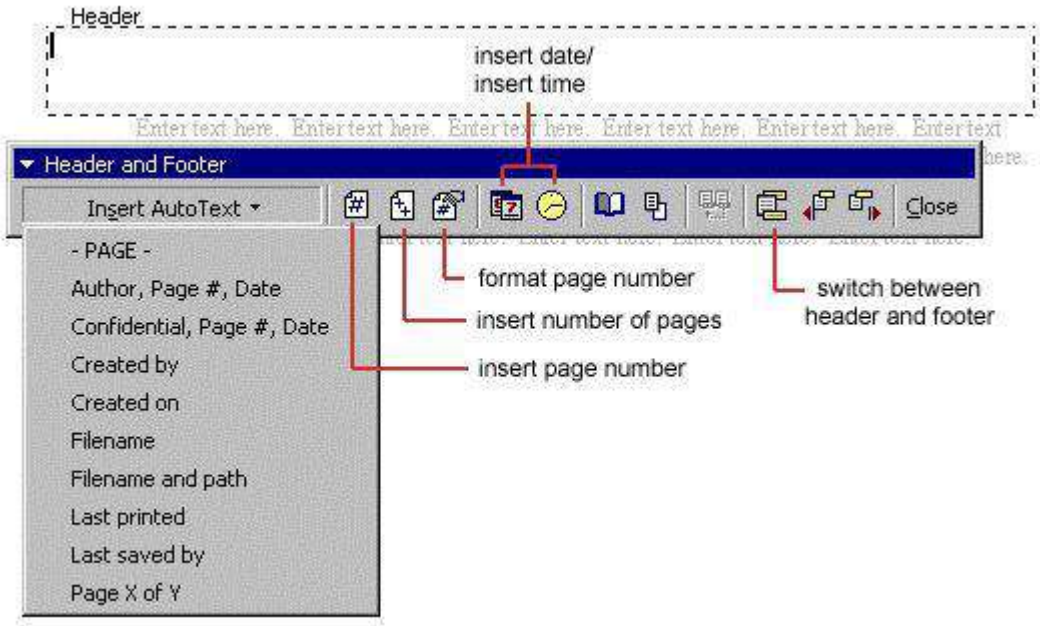


Select the proper paper size from the drop-down menu.
Change the orientation from **Portrait** or **Landscape** by checking the corresponding radio button.

Headers and Footers

A header is text that is added to the top margin of every page such as a document title or page number and a footer is text added to the bottom margin. Follow these steps to add or edit headers and footers in the document:

Select **View|Header and Footer** from the menu bar. The Header and Footer toolbar will appear and the top of the page will be highlighted as shown below.

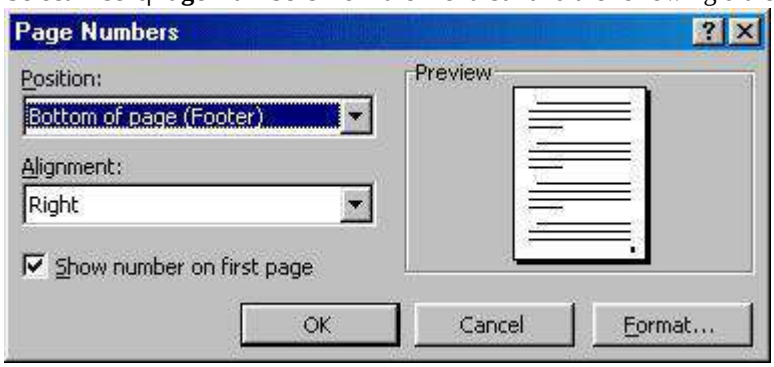


Type the heading in the **Header** box. You may use many of the standard text formatting options such as font face, size, bold, italics, etc.
Click the **Insert AutoText** button to view a list of quick options available.
Use the other options on the toolbar to add page numbers, the current date and time.
To edit the footer, click the **Switch Between Header and Footer button** on the toolbar.
When you are finished adding headers and footers, click the **Close button** on the toolbar.

Page Numbers

Follow these instructions for another way to add page numbers to a document.

Select **Insert|Page Numbers** from the menu bar and the following dialog box will appear.



Select the position of the page numbers by choosing "Top of page" or "Bottom of page" from the **Position** drop-down menu.
Select the alignment of the page numbers in the **Alignment** drop-down menu.
If you do not want the page number to show on the first page (if it is a title page, for example), uncheck the **Show number of first page** box. Click **OK** when finished.

Print Preview and Printing

Preview your document by clicking the Print Preview button on the standard toolbar or by selecting **File|Print Preview**. When the document is ready to print, click the Print button from the Print Preview screen or select **File|Print**.

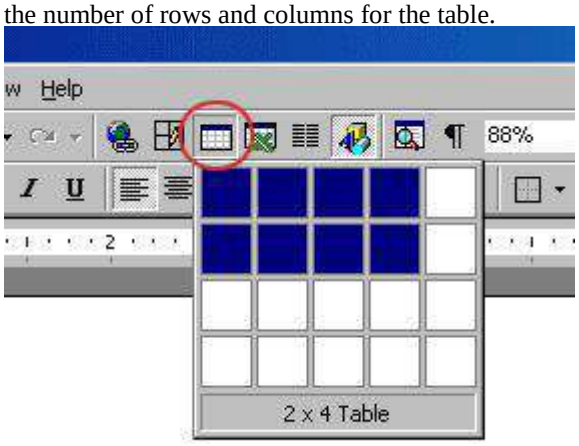
1. TABLES

Tables are used to display data and there are several ways to build them in Word. Begin by placing the cursor where you want the table to appear in the document and choose one of the following methods.

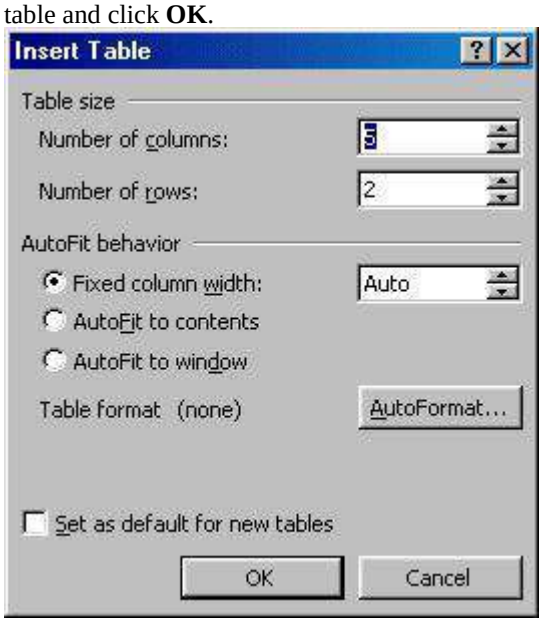
Insert a Table

There are two ways to add a table to the document using the Insert feature:

Click the **Insert Table** button on the standard toolbar. Drag the mouse along the grid, highlighting the number of rows and columns for the table.



Or, select **Table|Insert|Table** from the menu bar. Select the number of rows and columns for the table and click **OK**.



Draw the Table

A table can also be drawn onto the document:

Draw the table by selecting **Table|Draw Table** from the menu bar. The cursor is now the image of a pencil and the **Tables and Borders** toolbar has appeared.

Draw the cells of the table with the mouse. If you make a mistake, click the **Eraser** button and drag the mouse over the area to be deleted. To draw more cells, click on the **Draw Table** button .

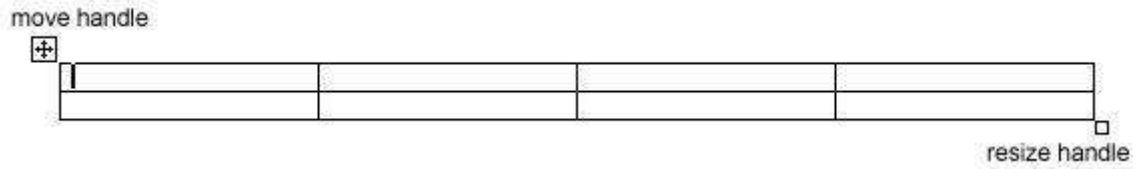
Inserting Rows and Columns

Once the table is drawn, insert additional rows by placing the cursor in the row you want to be adjacent to. Select **Table|Insert|Rows Above** or **Rows Below**. Or, select an entire row and right-click with the mouse. Choose **Insert Rows** from the shortcut menu.

Much like inserting a row, add a new column by placing the cursor in a cell adjacent to where the new column will be added. Select **Table|Insert|Columns to the Left** or **Columns to the Right**. Or, select the column, right-click with the mouse, and select **Insert Columns**.

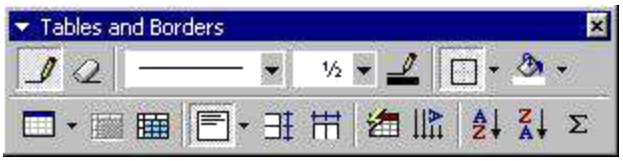
Moving and Resizing a Table

A four-sided moving arrow and open box resizing handle will appear on the corners of the table if the mouse is placed over the table. Click and drag the four-ended arrow to move the table and release the mouse button when the table is positioned where you want it. Click and drag the open box handle to resize the table. Change the column widths and row heights by clicking the cell dividers and dragging them with the mouse.



Tables and Borders Toolbar

The Tables and Borders toolbar allows you to add border styles, shading, text effects, alignment, and more options to your table. Access the toolbar by clicking **Table|Draw Table** or **View|Toolbars|Tables and Borders**.

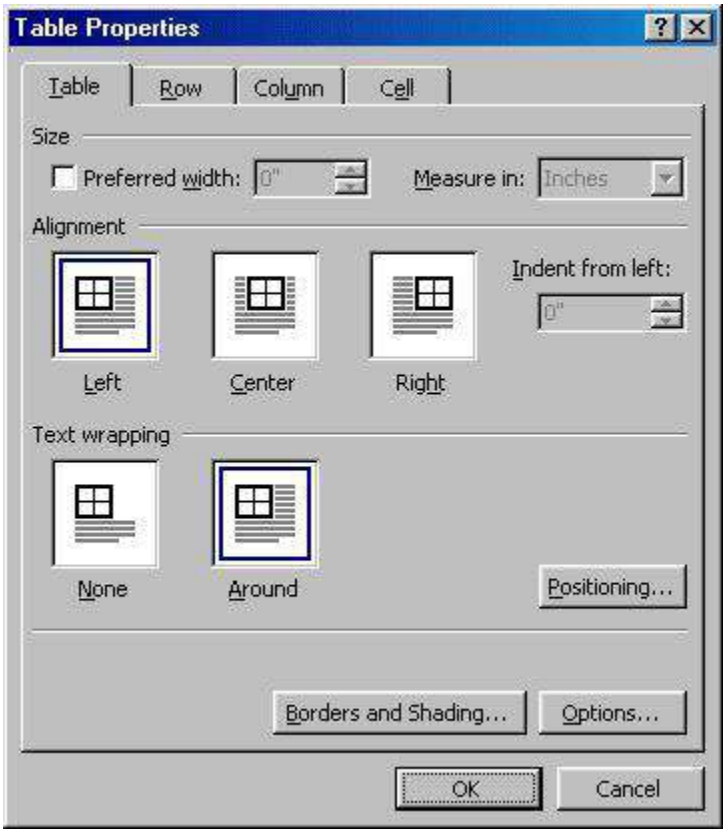


You will need to highlight the cells of the table you want to format. Click and drag the mouse over the cells, or use the following shortcuts:

Selection	Menu Method	Mouse Method
One cell	**Table|Select|Cell**	Click the bottom, left corner of the cell when a black arrow appears
One row	**Table|Select|Row**	Click outside the table to the left of the row
One column	**Table|Select|Column**	Click outside the table above the column when a black arrow appears
Several rows	**(none)**	Click outside the table to the left of the row and drag the mouse down
Several columns	**(none)**	Click outside the table above the column
Entire table	**Table|Select|Table**	Triple-click to the left of the table

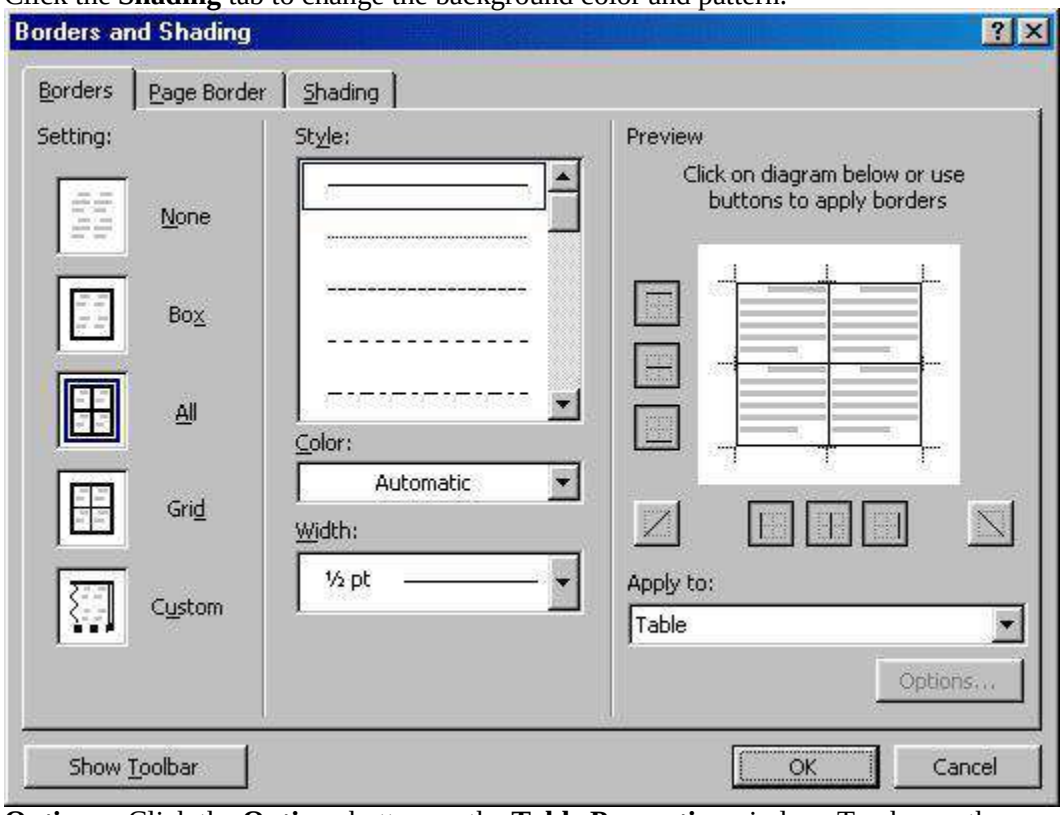
Table Properties

Use the **Table Properties** dialog box to modify the alignment of the table with the body text and the text within the table. Access the box by selecting **Tables|Table Properties**.

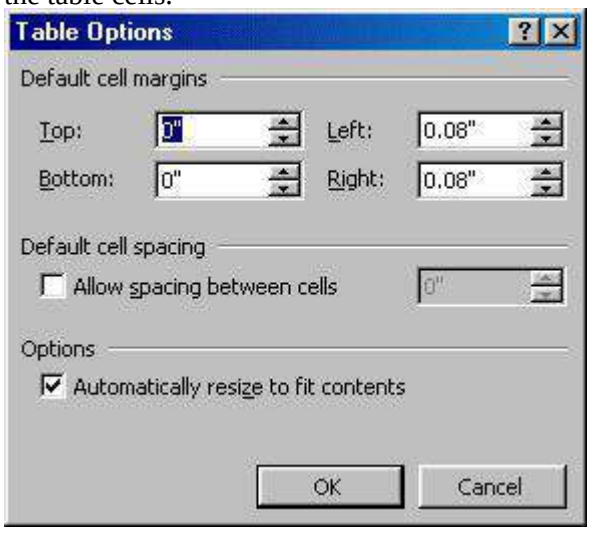


Size - Check the **Preferred width** box and enter a value if the table should be an exact width.
Alignment - Highlight the illustration that represents the alignment of the table in relation to the text of the document.
Text wrapping - Highlight "None" if the table should appear on a separate line from the text or choose "Around" if the text should wrap around the table.

Borders and Shading - Select from a number of border styles, colors, and widths. Click the **Shading** tab to change the background color and pattern.



Options - Click the **Options** button on the **Table Properties** window. To change the spacing between the document text and the table borders under **Default cell margins**. Check the **Allow spacing between cells** box and enter a value to add space between the table cells.



2. TABLE OF CONTENTS

Word will automatically create a Table of Contents page if a document is designed using Heading and Paragraph styles (see the Styles section). Follow the steps on this page to create a Table of Contents.

Mark Table of Contents Entries

Highlight a heading that you would like to appear in the Table of Contents (TOC).
Press **ALT+SHIFT+O** and the **Mark Table of Contents Entry** box will appear.

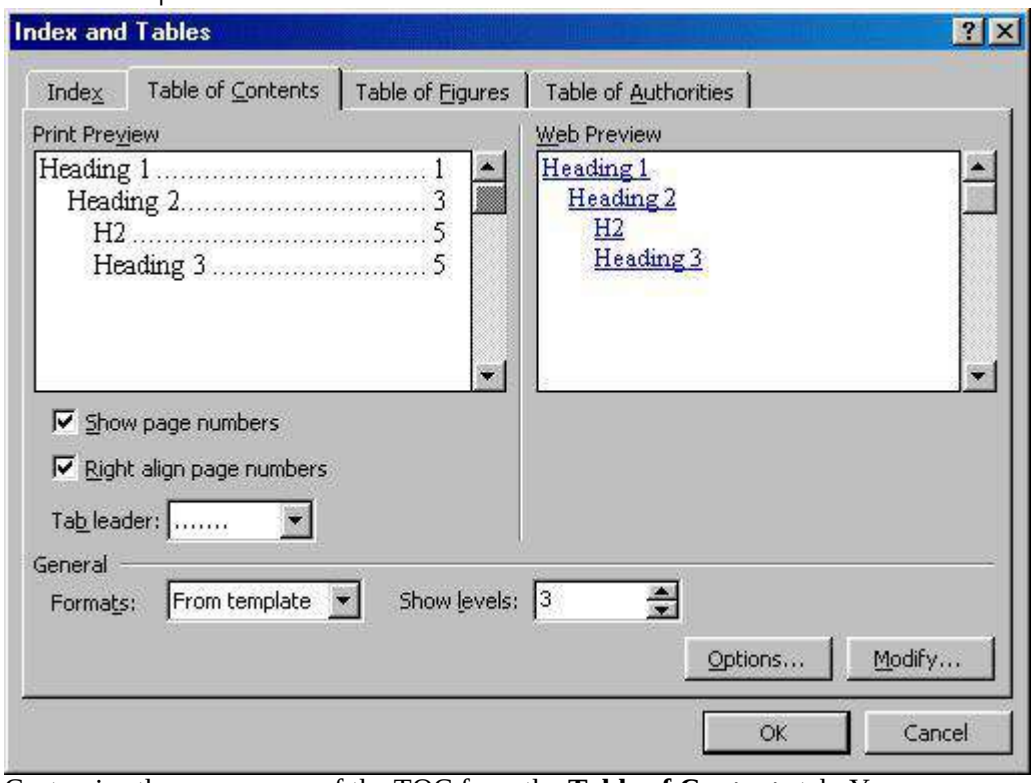
Entry - Rename the entry if you would like a different heading to appear in the TOC.
Table identifier - Select "C".
Level - Choose "1" for first-level heading, "2" for second-level heading, etc.
Click the **Mark** button.
The document will be toggled to "reveal codes" view and notice the TOC field code.
To hide all codes click the **Show/Hide codes button** ¶ on the standard toolbar.
Select another heading to add to the TOC, or click the **Close** button on the **Mark Table of Contents Entry** dialog box.

Generate a Table of Contents

After you have marked all the headings for your TOC, follow these steps to generate the Table of Contents.

Place the cursor where you would like the TOC to appear in the document.

Select **Insert|Index and Tables** from the menu bar.



Customize the appearance of the TOC from the **Table of Contents** tab. You may choose a preset design from the **Formats** drop-down menu. A preview of each design will be shown in the **Print Preview** window.

Check the **Show page numbers** box if you would like page numbers to show on the TOC. Check the **Right align page numbers** box if the page numbers should appear on the right side, then select the **Tab leader** between the heading and the page number. Uncheck the box if the page numbers should appear right next to the heading. Click **OK**.

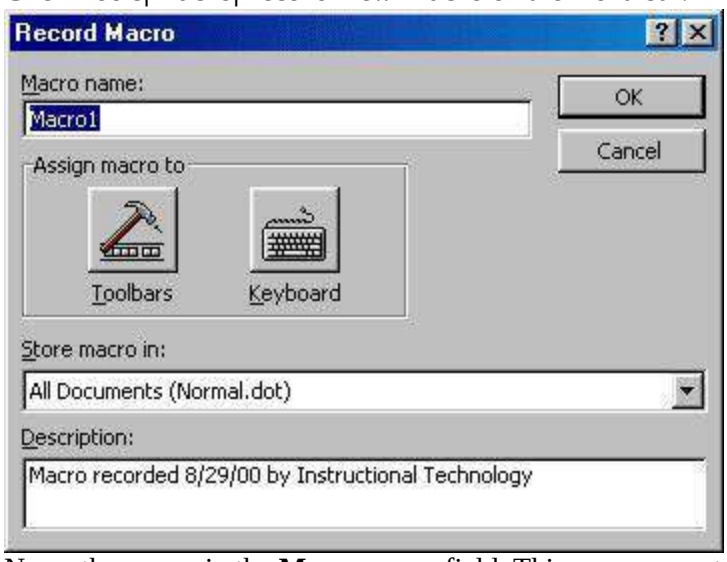
MACROS

Macros are advanced features that can speed up editing or formatting you may perform often in a Word document. They record sequences of menu selections that you choose so that a series of actions can be completed in one step.

Recording A Macro

To record a macro, follow these steps:

Click **Tools**|**Macro**|**Record New Macro** on the menu bar.



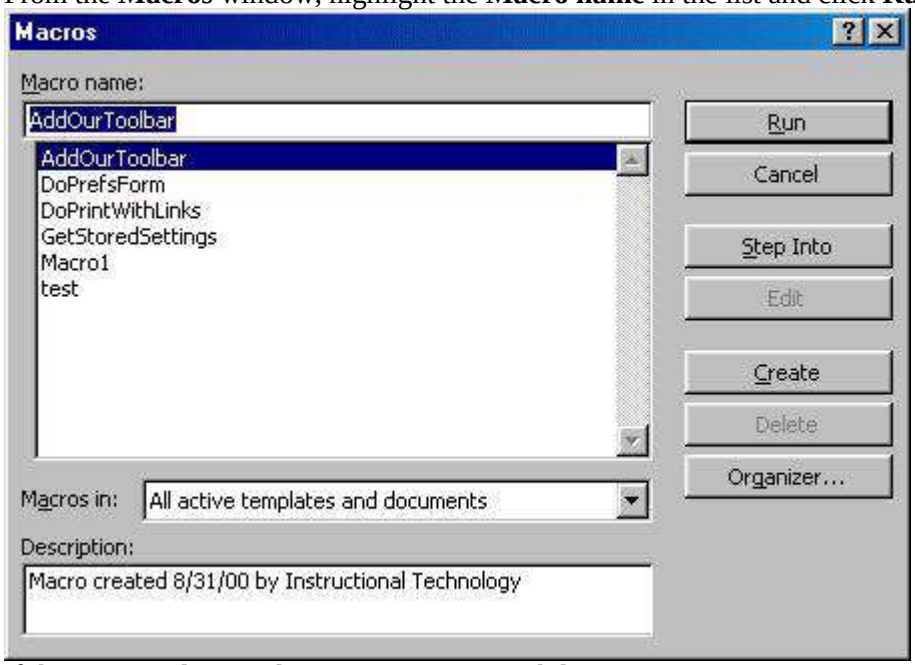
Name the macro in the **Macro name** field. This name cannot contain spaces and or begin with a number.
From the **Store macro in** drop- down box, select the document you would like the macro to be associated with or choose "All Documents" be able to use the macro in any document.
Enter a description of the macro in the **Description** field. This is for your reference only so you remember what the macro does.
Click **OK** to begin recording.
Select options from the drop-down menus and Word will record the options you choose from the dialog boxes, such as changing the margins on the Page Setup window. Select only options that modify the document. Word will not record toggle actions such as **View**|**Toolbars** that have no effect on the document itself.
The recording toolbar will allow you to stop, pause, and resume recording.

Click the **Stop** button the recording toolbar. The macro is now saved.

Running A Macro

To run an existing macro, follow these steps.

Select **Tools**|**Macro**|**Macros** from the menu bar.
From the **Macros** window, highlight the **Macro name** in the list and click **Run**.



If the macro is long and you want to stop it while it is running, press **BREAK** (hold **CTRL** and press **PAUSE**).

Mail Merge

Creating the Data Source for Merges

Description

This lesson begins with a brief discussion of why you would want to use the mail merge feature in Microsoft Word 2000. However, the bulk of the lesson addresses creating the data source document, entering information using the "Data Form" dialog box, how to locate records to edit and delete them, and how to sort information in the data source. You will also look briefly at working with the data in the main document window as a table.

Why Use the Mail Merge Feature

If you need to send similar (or identical) letters to a group of people, or need to create a list of people who will receive a newsletter or flier, you will probably want to use the mail merge feature. You might be sending out thank you letters for people who helped with a workshop or meeting; composing "rejection" letters at the end of a search process; creating a file of people who will receive monthly mailings during the course of a project; or printing name tags for a conference. Basically, to merge you need to create a data source document and a related form, called the mail merge main document. The main document can be a letter, envelope, mailing label, or another type of document which references the data source. The last step is to combine or merge these two documents into a new document. Even if you are sending a similar letter to a unique list of people who you will not need to contact again, it is faster to use the mail merge feature. The alternative—to write one letter, print it, change the address, print the second letter, and so forth—is a rather time consuming task. Also, most offices and professionals have a *clientele* list that is used many times throughout the year, or from one year to the next. This certainly is a job for the mail merge feature.

Comments on the Information Used in a Data Source File

The information used in a merge—the names and addresses used to produce the form letter or the mailing labels—is stored in a document called the data source. The term data source comes from database type of software, like dBase, Access, or Paradox. Data means information. The data source is made up of *records*—a group of related information, like information about one person. Each record, in turn, is made up of *fields*, like a person's name, address, and phone number.

The first row in a data source is called the *header row*.The header row is made up of a list of field names. Word provides a list of commonly used field names; you can add or remove names from that list to develop the header row for your data source.

For most of the exercises in this three- part workshop, we will tell you what fields and field names to use, so everyone will be working with the same data source. This is the data source structure you will use with this lesson series:

FirstName	First and last names must be separate so you can sort by last name and use the first name by itself in the salutation.

LastName	
Company	This field can be blank.
Address1	Mailing address.
City	
State	We will be using the two letter state abbreviation.
PostalCode	This could be a 5 digit zip code, but where possible, start collecting the zip+4 codes in your own files. At some point you may be required by the United States Postal Service to use the zip+4 on your mailings.
WorkPhone	
Subject	This will be a field in which you enter a 'keyword," appropriate to your area of work. With this field you can store all the contacts in one file, since sometimes you mail to everyone, but other times target those people who might be interested in a special topic.

In the exercises that follow, you will create a data source with these nine fields. However, when you create your own applications, you need to decide how you are going to use the data in order to have the fields (or pieces of information) you need. For example, in this lesson series, you will use just one phone field. However, in your own applications, you may need to have a work phone number, a home phone number, and perhaps a fax number or a cellular phone number. As another example, if the data lists members of an organization and will be used for many years, you may want to add a year-joined field. Yet another example might be a committee field, if your list has people helping with a project and they are on different committees.
Since most data source files are used to print mailing labels or form letters, normally all files will have a name, address, city, state, and zip code (called a PostalCode by Word). Again, there is no rule on what fields or how many fields you may use.

Setting View Options

Before you begin the mail merge process, it is a good idea to look at your view options. These options control what types of information you will view within your main document. Under the **TOOLS** menu, select **Options** and then select the **View** tab.
If the **Field Codes** box is checked, click on it to uncheck that selection. By leaving this unchecked, the field codes wil not be displayed in your document and then you cannot inadvertently change a field name. This code also must be hidden to view your merged data properly.
The second item to look at is the **Field Shading**. This option should be set to **always**. When this option is selected, the merge fields easy to recognize because they are shaded in gray.

Creating The Data Source Document

Beginning The Mail Merge Process

To begin the merge process,

1. Open a new document, or have your insertion point at the top of an empty document.
2. Select **TOOLS** on the menu bar, then choose **Mail Merge** to bring up the "Mail Merge Helper" dialog box. There are three sections in this dialog box—**Main Document**, **Data Source**, and **Merge the Data with the Document**.

3. To create the data source, click on the [**Create**] button. A drop-down list appears with four options: **Form Letters**, **Mailing Labels**, **Envelopes** and **Catalog**.
4. Select the type of main document you eventually intend to create. You may change your selection later if you plan to use the data source for more than one type of merged document.
5. Select [**Active Window**] to use the current screen.

Create The Data Source

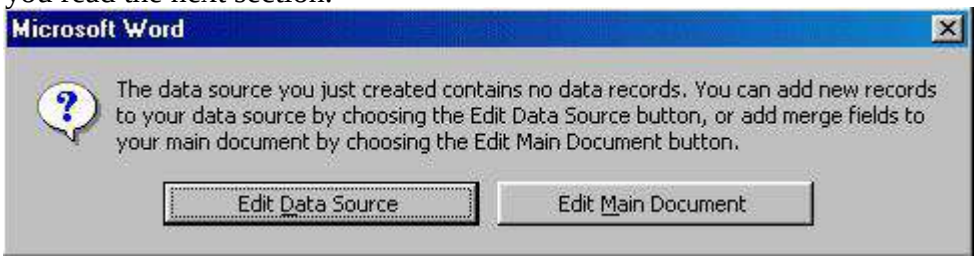
The next step is to identify or create the data source. Click on the [**Get Data**] button in the Mail Merge Helper and, for now, choose **Create Data Source**. If you already have a data source, you can open it, or you can use data from address book entries (ex. Outlook).
In the "Create Data Source" dialog box, the "**Field Names in Header Row**" window lists commonly used field names. Remember, each field is a category of information. If you do not want to use the default field names, you may either delete listed fields or add new ones.
To remove a field from the given listing, highlight the field name and click on [**Remove Field Name**].
To add a field not in the default listing, type the new field name in the " **Field Name**" window and click on [**Add Field Name**]. Field names must be one word. When you add a new field name it is placed at the end of the list. To reposition it in the list, highlight the field name, then click the up and down arrows you see at the right of the field names list.

Exercise 1

Click the [**New**] button on the standard toolbar or select ***FILE, New*** and choose **Blank Document** to get a new document window. Select ***TOOLS, Mail Merge***, and click once on the [**Create**] button. Choose **Form Letters** from the drop-down list and click on [**Active Window**] to work with the existing blank screen. Now click on [**Get Data**] and choose **Create Data Source**.
The "Create Data Source" dialog box appears. Add and remove fields from the field name list provided so that your list contains only the following field names. For example, the first listed field is "Title." Highlight that in the list of fields, and then click [**Remove Field**]. Go down to "JobTitle" and highlight that field, and again click [**Remove Field**]. Continue deleting until you have this listing:

FirstName
LastName
Company
Address1
City
State
PostalCode
WorkPhone
Subject

To add the last field, type in the field name in the "**Field Name**" window and then click on [**Add Field Name**]. **NOTE:** Field names must be less than 40 characters, cannot contain spaces or begin with a number. No two fields may have the same name nor may they contain characters that you cannot put in a filename, such as periods, commas, slashes, backslashes or colons. If you enter an invalid character, the [**Add Field Name]** button will remain inoperable until the error is corrected.
Click on the [**OK**] button. The "Save As" dialog box immediately appears. Name the file "2001 contacts" and click [**Save**]. This file will be saved with the default extension ".doc." The default folder that will be used is My Documents. It is okay to use this folder or place your files in any folder area of your choice.
The next screen gives you the option of entering data or working on the main document form. Click on [**Edit Data Source**] so that you can view the "Data Form" dialog box while you read the next section.



Using the Data Entry Form

Immediately after you save the header list you prepared in the "Create Data Source" dialog box, you may choose [**Edit Data Source**] to enter data. The "Data Form" dialog box that opens is essentially an attempt to make your word processor look more like a database program. Using this data entry form, it is easy to remember what data goes where.
You will see the field names at the left of the window. Type in each piece of data in the appropriate window. You can press <Enter> or <Tab> to go to the next field. If you make a mistake, use your normal keystrokes to correct it, or drag the field with the mouse to select it, and type over the incorrect data.
If you press <Enter> after typing the information for the last field in one record, a blank data entry form appears. You can also click on the [**Add New**] button to go to a blank form.
The United States Post Office (USPS) is getting increasingly fussy about how addresses are displayed on envelopes and mailing labels, because of automatic scanners. For example, they do not want any punctuation marks and they want all uppercase letters. However, since we want to create a letter as one of the forms, we cannot capitalize all letters as we type. In Lesson 2, you will learn an easy way to capitalize all letters on envelopes and labels. We are using USPS approved abbreviations for street designators; a complete list of these will be posted separately.

Exercise 2

Using the "Data Form" dialog box, type in these records. If you press <Enter> to go from field to field, Word will go to a new form screen after the last field.

Record 1
FirstName Mary
LastName Peterson
Company Kodak Fruit and Vegetables
Address1 715 N Park Ave
City Tucson
State AZ
PostalCode 85719-5037

WorkPhone 520-654-9001
Subject nutrition

Record 2
FirstName Harry
LastName Crenshaw
Company
Address1 2306 Wayside Dr
City Bryan
State TX
PostalCode 77802-2450
WorkPhone 409-845-3001
Subject international

Record 3
FirstName Mary Lou
LastName Adams
Company Pickett Elementary School
Address1 PO Box 183
City Hinesburg
State VT
PostalCode 05461-0183
WorkPhone 802-709-9888
Subject nutrition

Record 4
FirstName Harold
LastName Little
Company
Address1 3200 MacCorkle Ave
City Charleston
State WV
PostalCode 25304-1200
Workphone 304-229-6345
Subject cattle

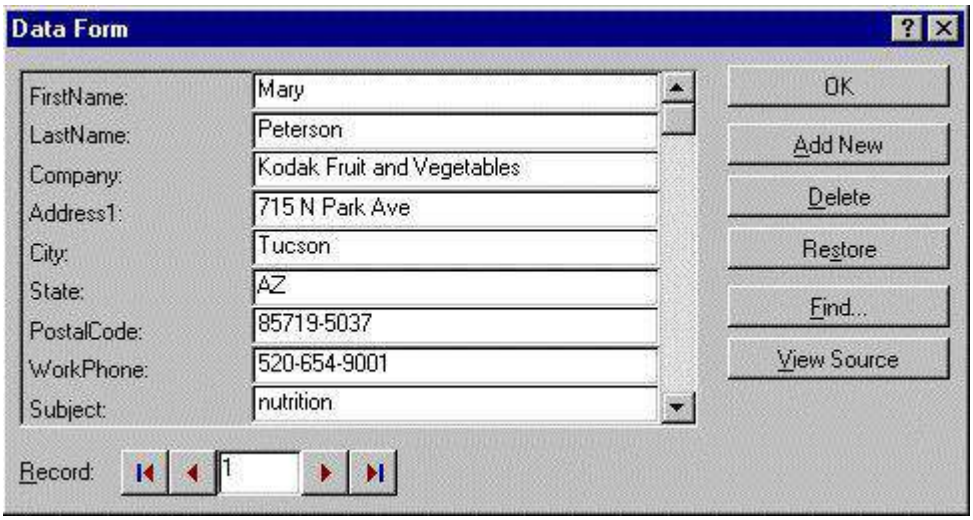
Record 5
FirstName Sam
LastName Gonzales
Company Palm Shadows Advertising
Address1 800 N First Ave
City Phoenix
State AZ
PostalCode 85040-8807
WorkPhone 602-988-9112
Subject finances

Record 6
FirstName Carol
LastName Adams
Company
Address1 HC 1 Box 122
City Ashland
State KS
PostalCode 67831-9709
WorkPhone XXX-988-9112
Subject finances
(You are missing the area code for the phone so put
XXX here for now and later you will find this code

and replace it with the correct area code.)

Record 7
FirstName Rebecca
LastName Littleton
Company
Address1 709 S 6 St
City Fargo
State ND
PostalCode 58102-3254
WorkPhone 701-237-9002
Subject drug ed

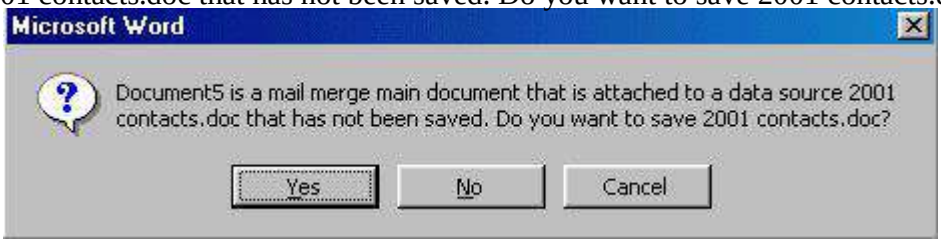
Continue adding more names to your data source file until you have at least 10 records.



Saving the Data File

When you are through entering data, click on the [**OK**] button in the "Data Form" dialog box. The insertion point will be blinking on the blank screen of the mail merge main document. You can verify this if you look at the filename on the title bar. Since we haven't done anything with this document yet, it will have the name Document1 (or some other number) if you were working in Word before starting this lesson.

The data source document you created has not been closed and saved, even though you don't see it on screen at the moment. The file you saved earlier contained field names only-no data! Remember to save the file often while you are entering data so that the new records are saved. To save both the main document AND the data source now, hold down the <Shift> key, click on **FILE, Save All**. The first message from Word is: "Documentx is a mail merge main document that is attached to a data source 2001 contacts.doc that has not been saved. Do you want to save 2001 contacts.doc?"



Click [**Yes**]. Next, the "Save As" dialog box opens, asking for a name for the main document. If you

had already created a main document yet, you could click [**Cancel**]. If you had already created the main document, you would name the file and click [**Save**].

Exercise 3

Click on the [**OK**] button in the "Data Form" dialog box. Now hold down the <Shift> key and choose **FILE, Save All** and click [**Yes**] when Word asks you if you want to save "2001 contacts.doc." Next click [**Cancel**] to avoid saving the empty mail merge main document at this time.
If you had closed the file instead of choosing **FILE, Save All** , you would have seen the same question about saving the file and should have completed the same steps.

Editing the Data File

After the data is saved, the insertion point will be blinking on the blank mail merge main document screen. You will see the mail merge toolbar above the document area. You can quickly return to edit the data source document by clicking on the [**Edit Data Source**] button  near the far right of that bar.

It is typical that you will want to edit data some other time to add more records, delete records, or make changes. There are several ways to access the data source document to do that.

To access the data in the "Data Form" display from a new or existing document choose **TOOLS, Mail Merge**. You will again select the type of main document to create and then choose [**Get Data**]. This time, instead of creating a data source, you will choose **Open Data Source** and select the data source file from the list of filenames displayed.

If you wanted to go directly to editing the data, you would click [**Cancel**] to avoid editing the main document and return to the "Mail Merge Helper" dialog box. Clicking [**Edit**] in the **Data Source** section will open the "Data Form" dialog box.

Exercise 4

Click on the [**Edit Data Source**] button  on the mail merge toolbar, so that you can take a better look at the "Data Form" dialog box as you read the next section.

Scrolling Through the Data Source File

There are four buttons at the bottom of the "Data Form" display to move through your records.

By clicking on the [**Next**] and [**Previous**] buttons you can scroll through your file to look for individual records. You can click in a particular field, selecting it to delete it or use normal editing procedures to make changes. You may also enter a specific record number in the window that appears between the record buttons to go directly to a record.

Deleting Records

To delete a record when it is displayed in the "Data Form," click on the [**Delete**] button.

Exercise 5

Scroll through the data to find one of the records you added yourself. Use the [**Delete**] button to remove the record from the data file. Click [**OK**] to close the "Data Form" window. Save the changes to the data source by holding down the <Shift> key and choosing **FILE, Save All**. Click on [**Yes**] to save "2001 contacts.doc" and click [**Cancel**] to avoid naming the empty main document.
Click [**Edit Data Source**] again.

Adding Records

At any point when you are working with your data file in the "Data Form," click on the [**Add New**] button to get a blank display for a record.

Searching the Data Source File

Field" window,

The search for the designated string of characters will begin with the selected record and proceed to the last record, so you may want to go to the first record in the data file before beginning the search. (If you don't start at the first record, Word will eventually ask you if you want to continue the search at the beginning.) Type in a word or series of characters to search for in the "**Find What**" window, select the field to search in the "**In Field**" window, and then click the [**Find First]** button. Word finds the first occurrence of the phrase in your file and displays the record in the "Data Form" dialog box. If that is not the record you want, click [**Find Next**]. Keep repeating this process until you get a "finished" message**.**

Exercise 6

The "Data Form" dialog box should still be on the screen. Click the [**First**]  button to go to the entry for Mary Peterson. Click on the [**Find**] button and look for the name Little (no punctuation after it) in the LastName field. Where does Word stop? Click on [**Find Next**] and repeat the search until you get a "finished" message. Close this search.

Click on [**First**] to return to the first record. Click [**Find**] and this time look for XXX in the WorkPhone field to find the incomplete phone number. Close the Find window and replace the XXX in the data record with the area code of 913. This is another way you can use **FIND** in a data file—to find a record that has incomplete information.

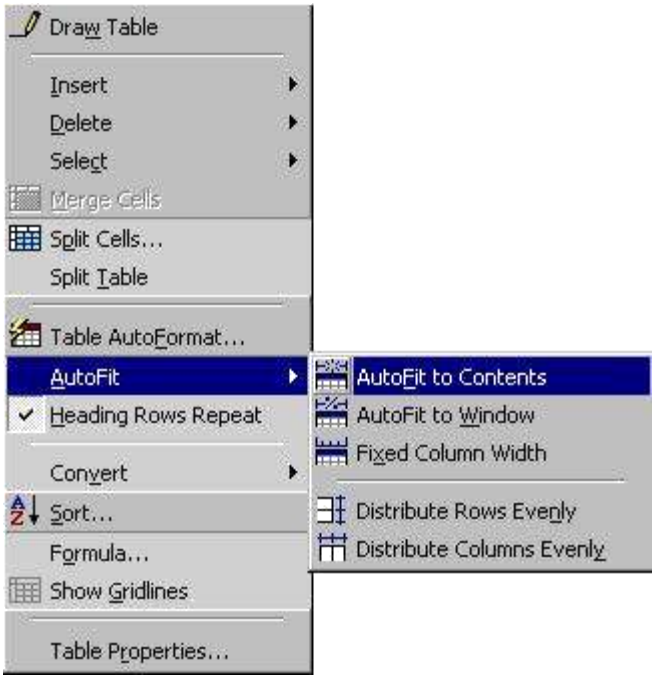
Leave the "Data Form" window open on your screen.

Viewing the Data Source in a Table

If you click on the [**View Source**] button 

you can view all the data in the data source in a table format. This is also how the data document will look if you open the file using the **FILE, Open** command. You can add, delete or edit the data directly in the table. Also, since the data source is the open document, you can use the **FILE, Save** command to save changes when you are working in the table view of the data source document.

The table column widths are based on the width of the field name in the header record—the first record at the top of the table. As a result, the data might be wrapped within the cells and therefore, hard to read. You can select **Table, Table Properties** and adjust the column and row height and width. If you don't have too many columns, you can also click on **Table, AutoFit AutoFit to Contents**.



The main disadvantage of working with a table layout for your data occurs in situations where you have many fields. It gets harder to read the data if your table columns become too narrow. The data will still work correctly with form letters and mailing labels; it is just hard to work with it on the screen to enter and edit data.

If you are familiar with the table feature and you only have a few fields (like 6 to 8) in each record, you can use this table format for editing, adding and deleting data if you wish. The database toolbar is displayed when you are viewing the data table. It contains buttons that will help you make changes to the data. You can return from the data source (table) display to the "Data Form" window by clicking on the [**Data Form**] button in the database toolbar.

Exercise 7

Click on the [**View Source**] button in the "Data Form" dialog box. The insertion point will be blinking in the first column of the last record in the table. Notice the file name on the Title bar at the very top of the screen. It should be "2001 contacts.doc."

Click on the [**Add New Record**] button on the database toolbar and enter information for another person into the row that was added at the end of the table.

Click the [**Save**] button on the standard toolbar and then close the file. The insertion point will now be blinking in the empty mail merge main document window. How do you like entering data directly into the table?

Adding Fields While Viewing the Data Source

Occasionally after you have created a data source, you might want to add, remove or rename fields. To add a field, you must display the data source in the document window. You can either open the data source document using the **FILE, Open** command, or choose [**View Source**] from the "Data Form" dialog box. When the data table is visible, click the [**Manage Fields**] button on the database toolbar (it is the second one from the left). The "Manage Fields" dialog box permits you to add, delete or rename fields. Click [**OK**] when you are finished.

If you add new fields, you can enter data into the fields either directly into the data source table, or by returning to the "Data Form" dialog box.

Sorting the Data Source File

Records in the data source file are initially stored in the order that you enter them. Depending on how you want to use the data, you will want to sort the file by different fields to rearrange the records. The data file will print form letters or mailing labels in the order that the records appear in your data file.

Quick Sort in the Data Source (Table) Display

If you are working in the data source (table display) you may quickly sort by any single field by placing the insertion point in a column and clicking on the [**Sort Ascending**] or the [**Sort Descending**] buttons in the database toolbar. This works well for smaller files, when you only want to sort by one field. As a file gets larger, you may often need to sort by multiple fields.

Sorting by More than One Field

You may sort by up to three fields if you use the [**Query Options**] button in the "Mail Merge Helper" dialog box.

If you do not have a mail merge main document and data source file open, you must do that first. Choose **TOOLS, Mail Merge**. Click on [**Create**] and select a document type, then click on [**Get Data**] and select **Open Data Source**.

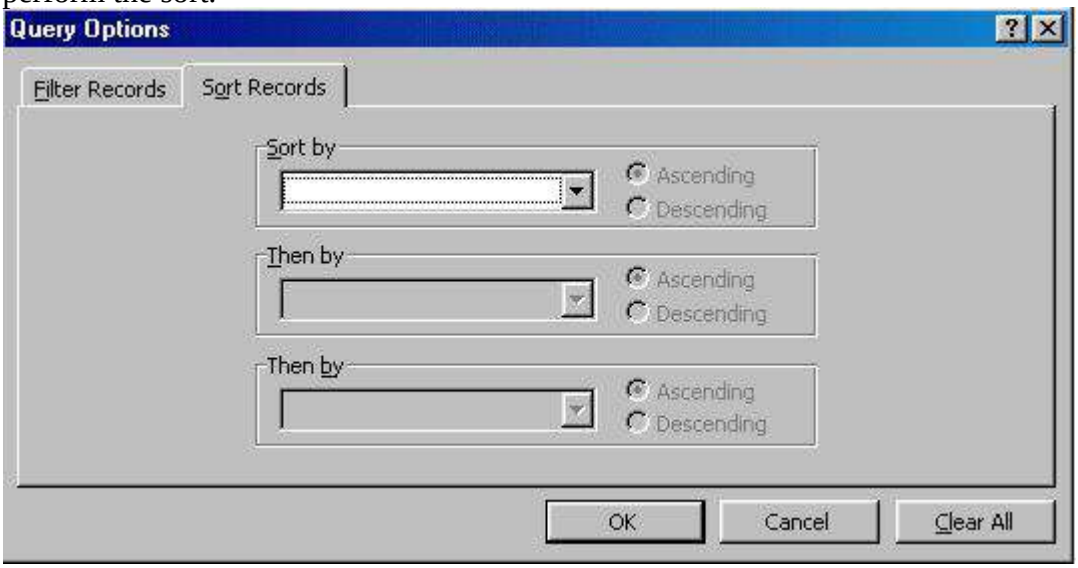
If you are already in a mail merge main document, select **TOOLS, Mail Merge** from the menu bar or click on the [**Mail Merge Helper**] button . Click on the

[**Query Options**] button 

in the Mail Merge Helper dialog box. The "Query Options" dialog box two tabs: **Filter Records** and **Sort Records**.

The "Sort Records" Dialog Box

To sort the data source file, click the **Sort Records** tab. You can sort by up to three fields. If you only want to sort by one field, like PostalCode, click on the "**Sort by**" window and choose that field from the drop down list. Check the button on the right to choose between ascending and descending sorts. If you want to sort the records so that names are listed alphabetically within zip codes, click on the first "**Then by**" window and pick "LastName" from the field list. Click [**OK**] to perform the sort.



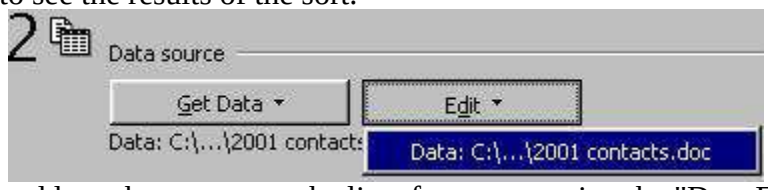
Word will store new records in the sort order you established until you close the file or until you change the sort order. When you want to start over with a completely new sort, click the [**Clear All**] button.

Exercise 8 In this exercise you will go through the steps to sort the file by last name then first name, which is another common order for a mailing list.

If the cursor is blinking on the blank, mail merge main document window, where you left it after Exercise 7, click on the [**Mail Merge Helper**] button 
on the mail merge toolbar.
If it isn't, open a blank document and choose **TOOLS, Mail Merge**, click [**Create**] and select a main document type. Then click on[**Get Data**], **Open Data Source**, and open "2001 contacts.doc". Complete these steps:

1. Click on [**Query Options**] in the "Mail Merge Helper" dialog box.
2. Click on the **Sort Records** tab.
3. Click in the "**Sort By**" window and select LastName.
4. Now click in the "**Then By**" window and select FirstName.
5. Make sure the sort order is **Ascending** for both criteria.
6. Click on [**OK**] to perform the sort.

7. To see the results, click on [**Edit**] in the Data Source section of the "Mail Merge Helper" dialog box and open "2001 contacts.doc." Scroll through the records to see the results of the sort.



8. Now add another person to the list of contacts, using the "Data Form." When you click [**OK**] the "Data Form" dialog box will close. Open it again by clicking the [**Data Form**] button on the database toolbar. Scroll through the entries. The new entry should have been inserted in the same, last name/first name order.

Save this version of "2001 contacts."

This sort remains associated with the data source for the current session only. If you exit Word and come back to the same file to add more records later, they will not be added in the correct order. You will have to sort the file again.

Printing the Data File

If you want a printed list of all the records in the data source document, click on [**View Source**] while you are in the "Data Form." When the data table is displayed in the main document window, choose **FILE, Print** or click the [**Print**] button on the standard toolbar.

Exercise 9 Click the [Data Form] button on the Database toolbar and then click [View Source] in the "Data Form" dialog box. Click the [Print] button on the standard toolbar to print a table listing of your data.

Close the "2001 contacts"document.

Command Review

TOOLS, Mail Merge	One way to begin creating a data source document or mail merge main document
<SHIFT> FILE, Save All	A way to save data entered into the data source document

The mail merge feature is useful when you need to create multiple copies of similar (or identical) documents for many people, like a thank you letter for volunteers. The first step is to create a data source document. A list of common field names is provided. This list can be edited to remove unneeded fields or add fields if you want. The data source can have as many fields as necessary for your project. You may determine the field names and their order. The "Data Form" dialog box makes entering information easy. After closing the "Data Form," the related mail merge main document will be open in the document screen, even if it is empty. Click on the [**Data Form**] button on the Database toolbar to get back into the form for editing or deleting records, or adding more records. Use the [**Find**] button on the "Data Form" display to look for a specific entry in a given field, in a larger file. Choose Query Options from the "Mail Merge Helper" dialog box to sort and reorder your data file. A data source file created from the "Mail Merge Helper" will

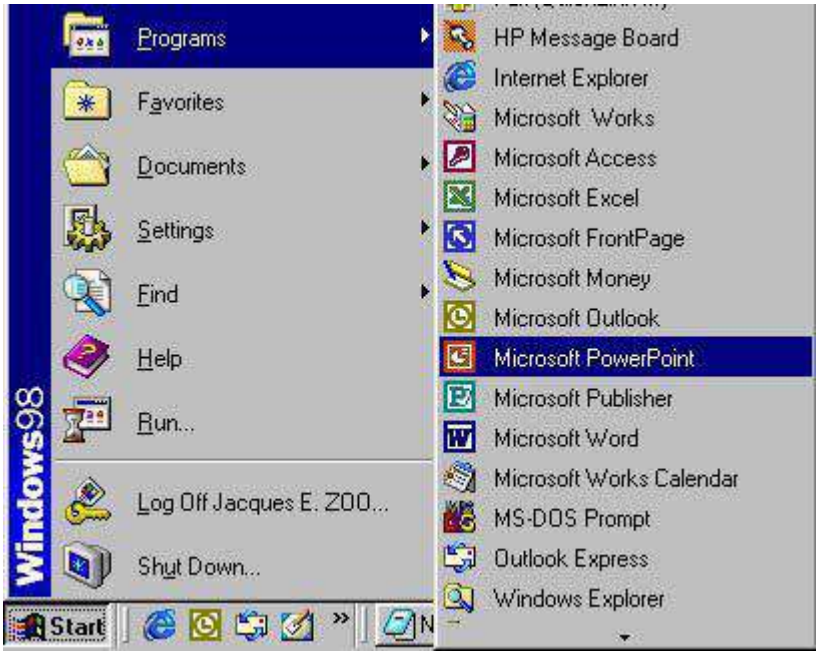
be stored as a table. You may choose to view and edit the data source while in the document table layout, if you wish.

More Exercises and Questions

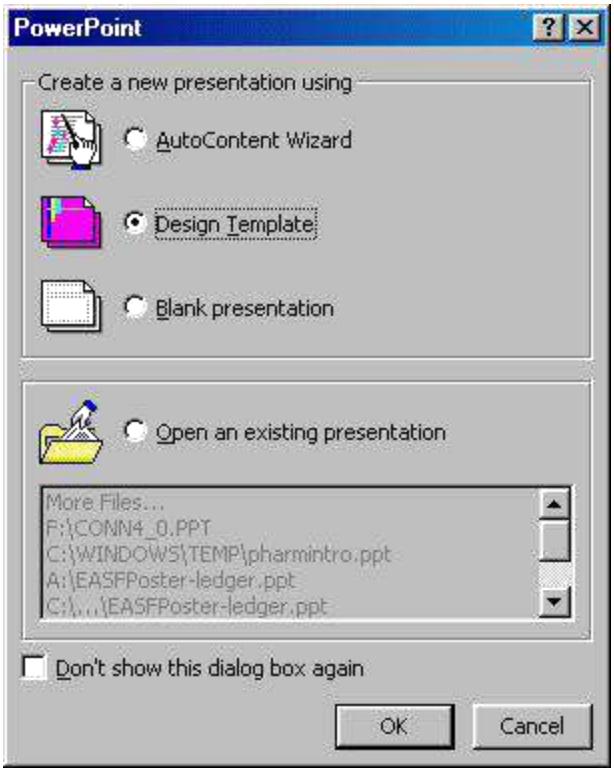
10. Name some ways you might use the merge feature in your work.
11. What is the first thing you need to do to begin a merge data file?
12. How many fields must you have in a data file?
13. What is the purpose of the "Data Form" display?
14. How do you sort data in a data source document?
15. Use the **FILE, Open** command to open the "2001 contacts" document source file as a table and save it as "practice." Now close the file. Open a new, blank document and select **TOOLS, Mail Merge**. Choose any type of main document, then click [**Get Data**] and open the practice.doc data source. Go to the [**Query Options**] and sort the data source records so they are sorted by state, then by last name. Then go to the "Data Form" dialog box and scroll through the practice file to see if the records are in the correct order. If you were working with a multi-state project, would this type of sort be useful?
16. Still using the "practice" file, practice using the [**Find**] button in the "Data Form window" to find one of the people in your data file.
17. Still using the "practice" file in the "Data Form" windows, click on [**View Source**]. Your file should still be sorted by state, then by last name. With your cursor anywhere in the last name column, click on the [**Sort Ascending**] button in the Database toolbar. Now sort the file so that PostalCodes are listed in descending order.
18. While viewing the practice data source as a table, try adding a new field for home phone numbers. While still in the table, add phone numbers to each record

INTRODUCTION TO MS-POWER POINT

Microsoft PowerPoint is a software product used to perform computer-based presentations. There are various circumstances in which a presentation is made: teaching a class, introducing a product to sell, explaining an organizational structure, etc. When performing a presentation, there are two main kinds of presentation you can deliver: before an audience or not. The preparation and the actual delivery of each are quite different. Before getting into the details of each, we will first take a look at the software and analyze what it has to offer a presentation.



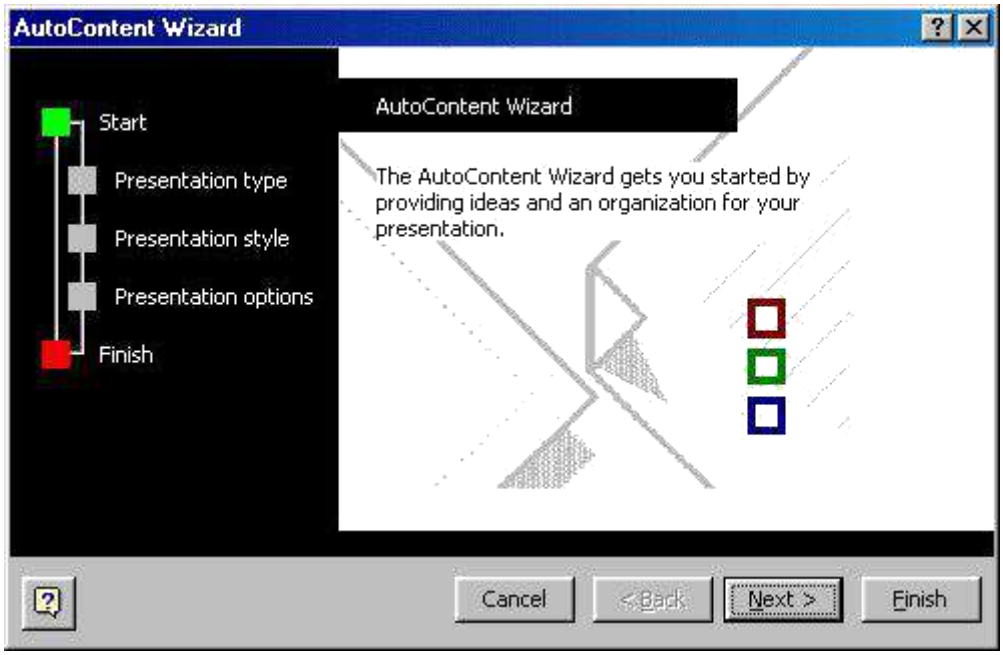
Open Power Point and you will be prompted by a dialog box with four choices. Each of these options is explained on this page. If Power Point is already open or this box does not appear, select **File|New** from the menu bar.



1 . GETTING STARTED

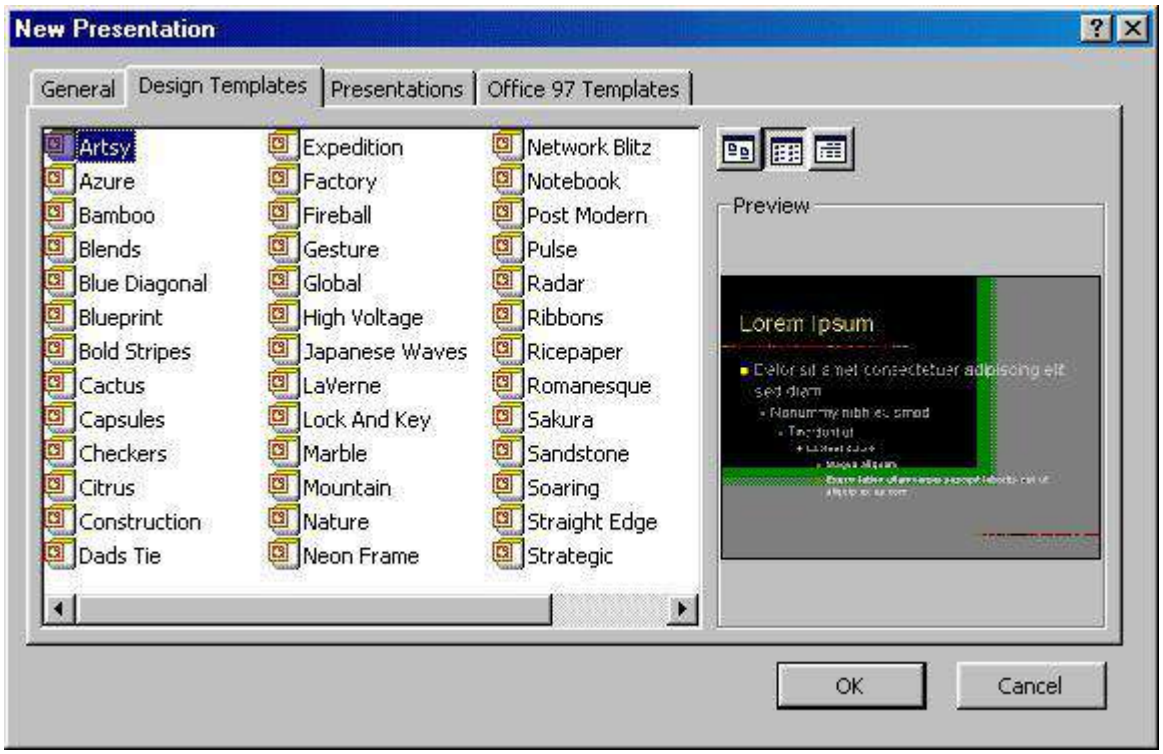
AutoContent Wizard

The AutoContent Wizard provides templates and ideas for a variety of presentation types. Page through the wizard by clicking the **Next** button on the bottom of each page after making necessary choices.



Design Template

Power Point provides many templates with different backgrounds and text formatting to begin your presentation. Preview each design by highlighting the template name on the list. Press **OK** after you have chosen the design.

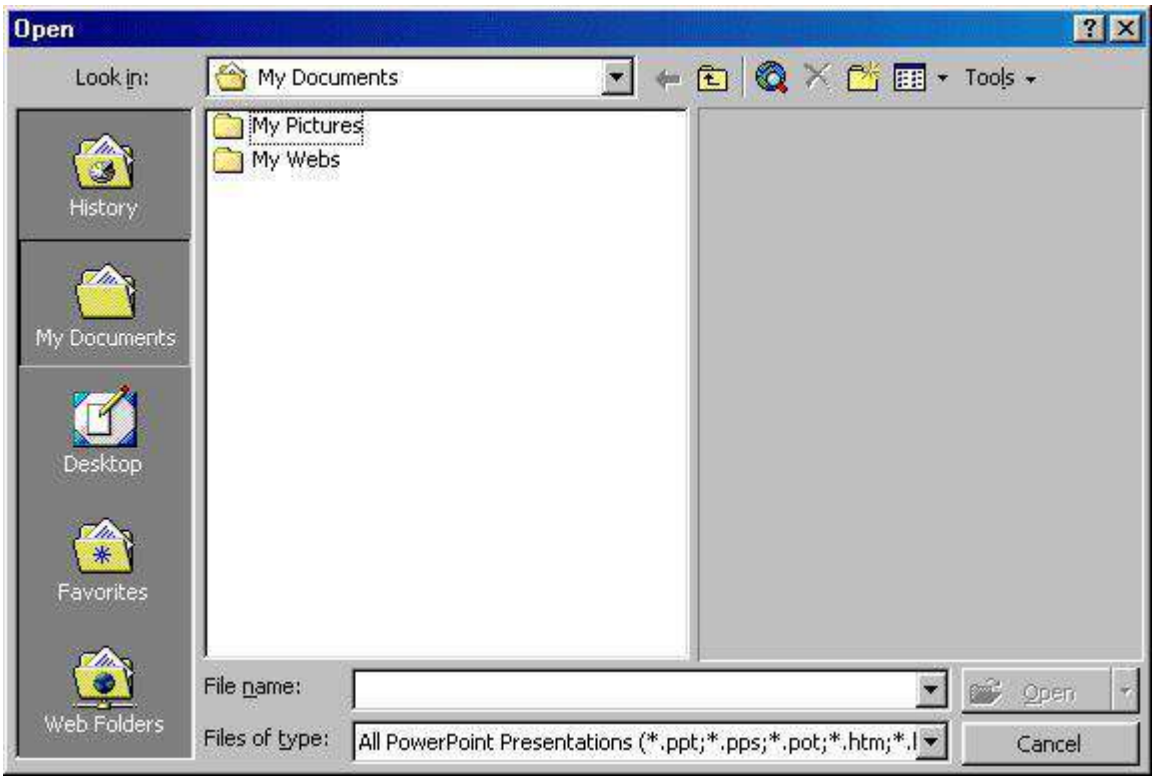


Blank Presentation

Select Blank Presentation to build the presentation from scratch with no preset graphics or formatting.

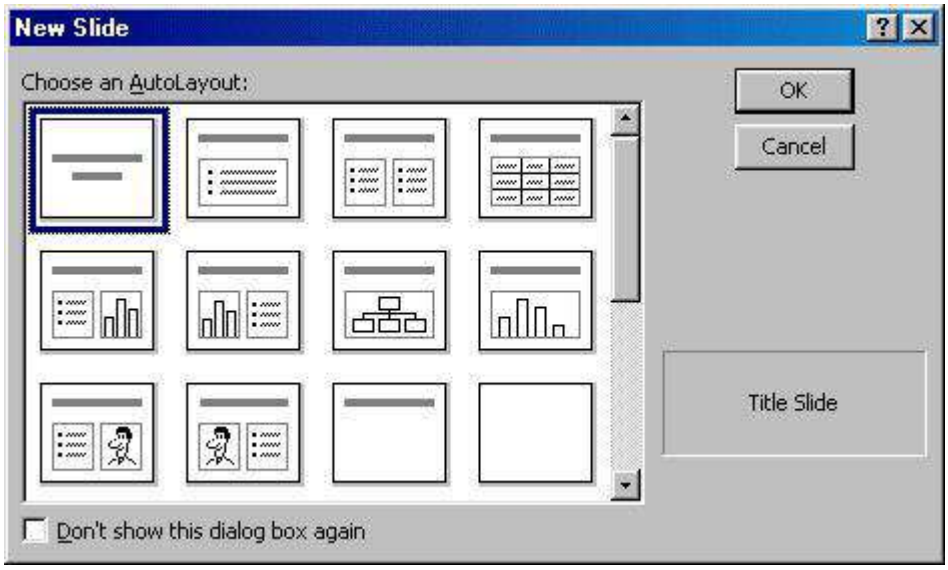
Open an Existing Presentation

Select this option to open a Power Point presentation that already exists. Select the folder the file is located in from the **Look in:** drop-down menu and highlight the file on the list. Click **Open** to open the presentation.



AutoLayout

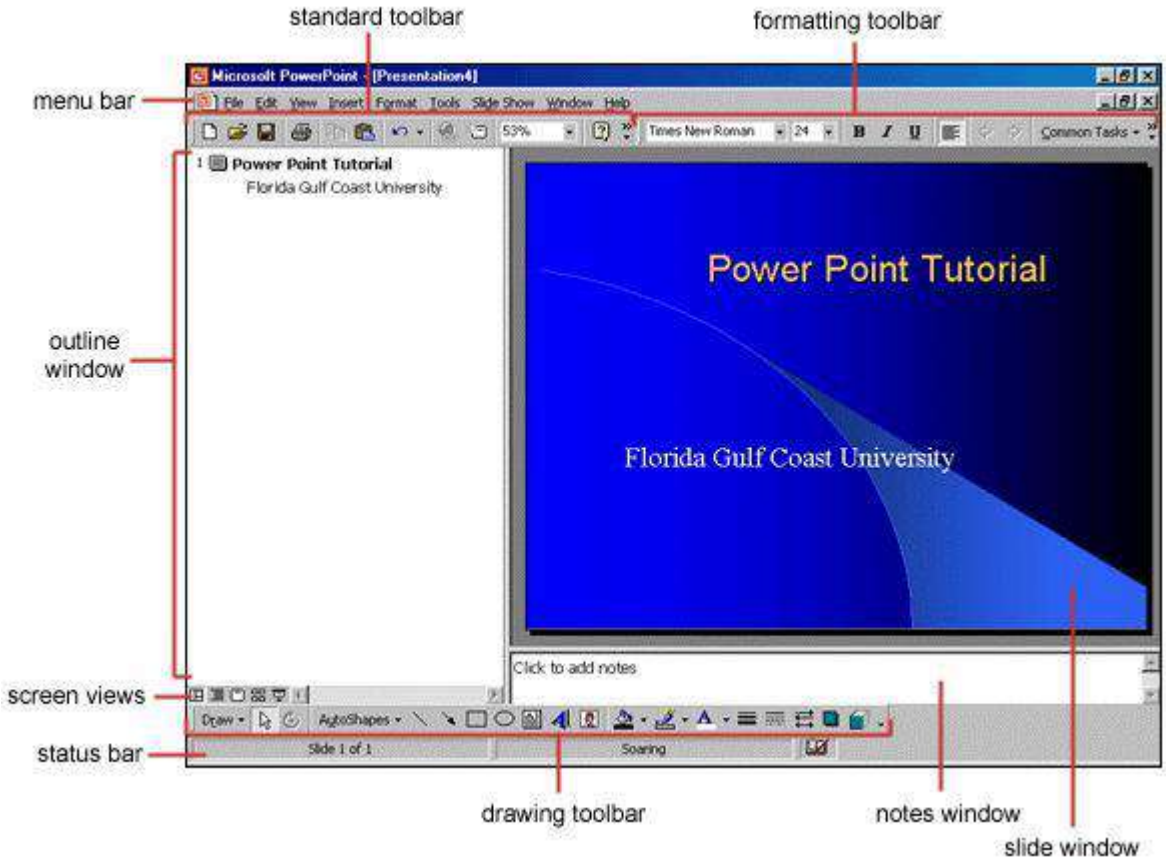
After selecting the presentation type, you will be prompted to choose the layout of the new slide. These layouts include bulleted lists, graphs, and/or images. Click on each thumbnail image and a description will be printed in the message box. Highlight the layout you want and click **OK**.



2. POWER POINT SCREEN

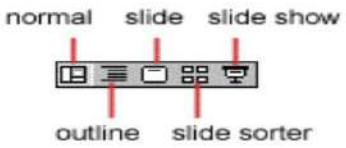
Screen Layout

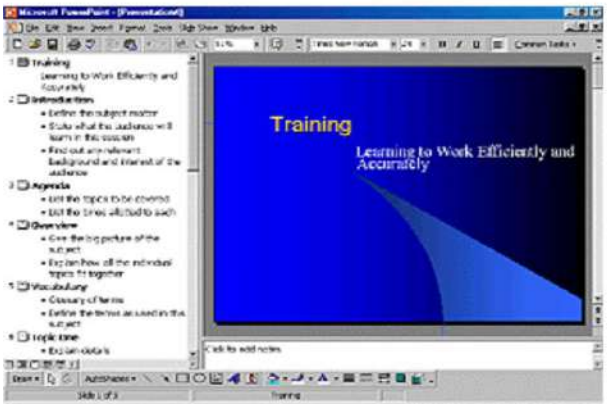
The Power Point screen layout in **Normal View**:



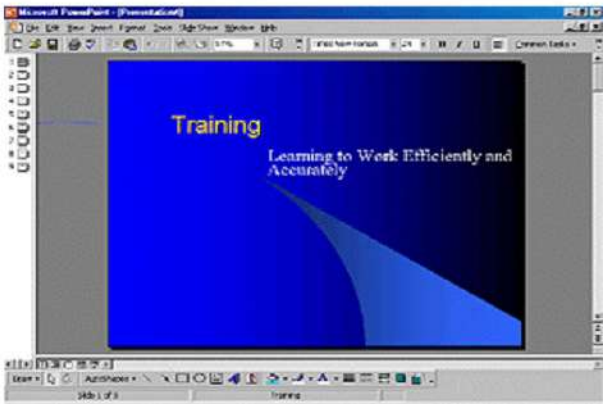
Views

Power Point gives you four screen layouts for constructing your presentation in addition to the Slide Show. You can select the page view by clicking the buttons just above the formatting toolbar and the bottom of the page.

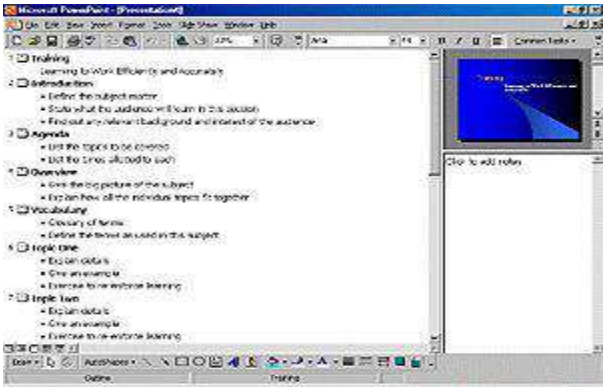




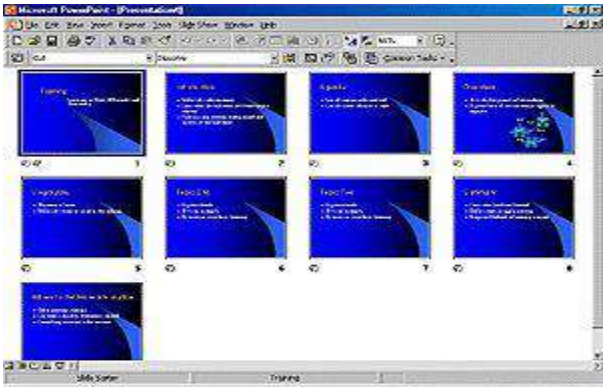
Normal View
This screen is split into three sections showing the presentation outline on the left, the slide in the main window, and notes at the bottom.



Slide View
The slide view displays each slide on the screen and is helpful for adding images, formatting text, and adding background styles.



Outline View
The presentation outline is displayed on the majority of the screen with small windows for the slide and notes. This view is recommended for editing text.



Slide Sorter View
A small image of each slide is displayed in Slide Sorter view. Slides can easily be ordered and sorted from this screen.

Click the **Slide Show** button to view the full-screen slide show.

3. WORKING WITH SLIDES

Insert a New Slide

Follow these steps to insert a new slide into the presentation:

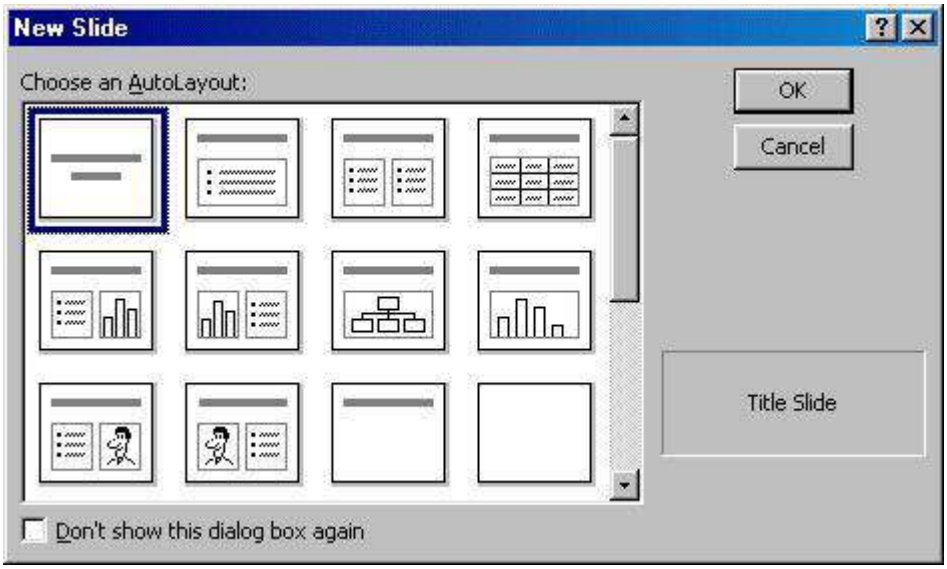
In the Outline window, select the slide you want the new slide to appear after by clicking the slide's number.
Select **Insert|New Slide** from the menu bar or click the new slide button on the standard toolbar.
Choose the page layout from the window and press **OK**.

Applying a Design Template

To add a design template or changing the existing one, selection **Format|Design Template** from the menu bar. Select the template and click **Apply**.

Changing Slide Layouts

To change the layout template of the slide select **Format|Slide Layout** from the menu bar. Select one of the layout thumbnail images and click **Apply**.



Reordering Slides

To reorder a slide in **Slide Sorter View**, simply click on the slide you wish to move and drag it to the new location. In **Normal** or **Outline View**, click the slide icon 5 beside the number of the slide you want to move and drag the icon to a new location.

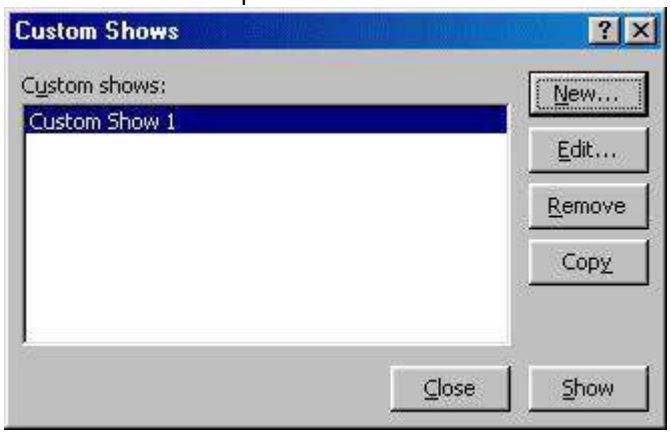
Hide Slides

If you do not want a slide to appear during the slide show, but do not want to delete the slide as it may be used later, the slide can be hidden by selecting **Slide Show|Hide Slide** from the menu bar. To add the slide back to the slide show, select **Slide Show|Hide Slide** again.

Create a Custom Slide Show

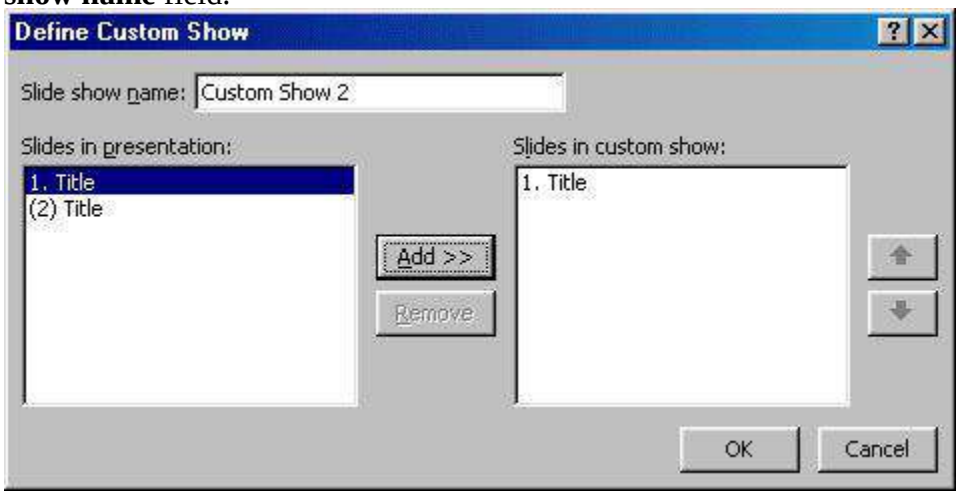
The Custom Slide Show feature allows you to select the slides you want to display in the slide show if not all the slides should be used.

Select **Slide Show|Custom Slide Show** from the menu bar.



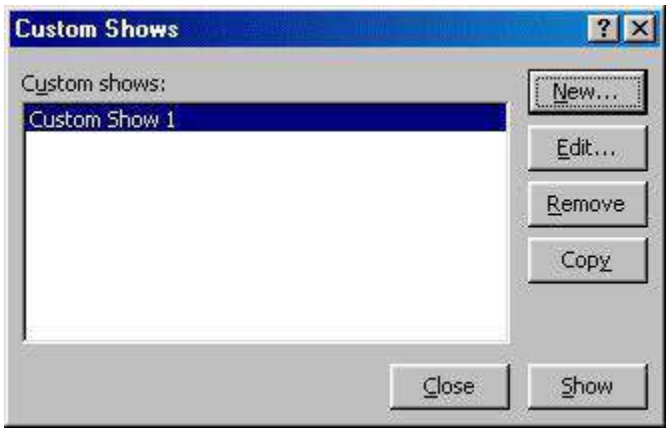
Click the **New...** button in the **Custom Shows** window.

In the **Define Custom Show** window, type a name for the slide in the **Slide show name** field.



Add slides to the custom show by highlighting them in the **Slides in presentation** window and clicking the **Add** >> button. Those slides will then appear in the **Slides in custom show** window.
To remove slides from the custom show, highlight their names in the **Slides in custom show** window and click the **Remove** button.
To reorder slides in the custom show, highlight the slide that should be moved and click the up and down arrows to change its order in the show. Click **OK** when finished.
Click the **Show** button on the Custom Shows window to preview the custom slide show and click **Close** to exit.

Edit a Custom Slide Show



Select **Slide Show|Custom Slide Show** from the menu bar.
Edit the show by highlighting the name in the **Custom shows** box and clicking the **Edit...** button.
To delete a show, highlight the name and click **Remove**.
Create a copy of a show by clicking the **Copy** button. The copy can then be renamed by clicking the **Edit...** button.
Click the **Show** button to preview the custom slide show and click **Close** to exit.

1.ADDING CONTENT

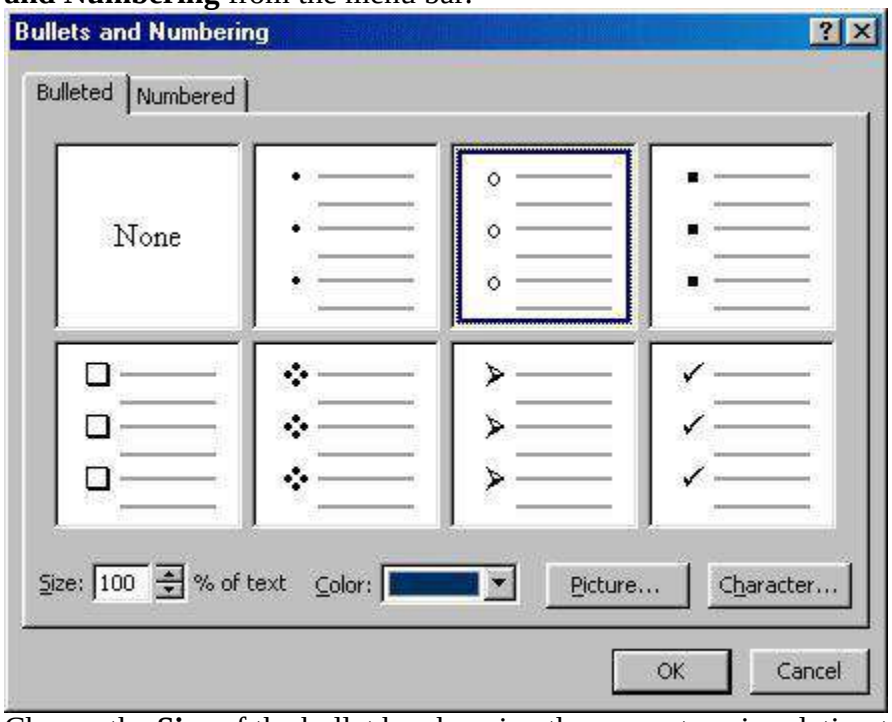
Bulleted Lists on Design Templates

Bulleted lists allow you to clearly display the main points of your presentation on slides. The text boxes on design templates already include bulleted lists. Click the place holder on the slide to begin adding text and press the **ENTER** key to return to the next line and add a new bulleted item. To go to the next line without adding another bullet, hold down the **SHIFT** key while pressing **ENTER**.

Bulleted List from a Text Box

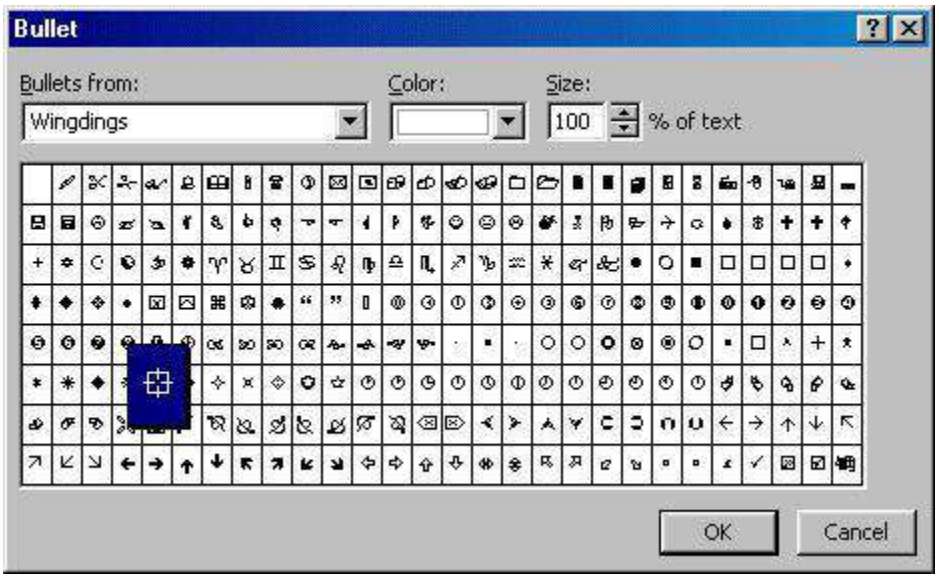
If you are not creating a bulleted list from an existing placeholder on a design template, or if you would like to add an additional bulleted list, follow these steps to create a new list:

In slide view, create a text box by selecting **Insert**|**Text Box** from the menu bar. "Draw" the text box on the slide by holding down the left mouse button while you move the mouse until the box is the size you want it. Choose **Format**|**Bullets and Numbering** from the menu bar.



Change the **Size** of the bullet by changing the percentage in relation to the text. Choose a color for the bullet from the **Color** menu. Click **More Colors** for a larger selection.

Select one of the seven bullet types shown and click **OK**.
-OR-
Click the **Picture** button to view the **Picture Bullet** window. Select one of the bullets and click **OK**.
-OR-
Click the **Character** button to select any character from the fonts on the computer. Select a symbol font such as Wingdings or Webdings from the **Bullets from** drop -down menu for the best selection of icons. Click on the characters in the grid to see them larger. Click **OK** when you have chosen the bullet you want to use.



Click **OK** on the **Bullets and Numbering** window and use the same methods described in the "Bulleted Lists on Design Templates" to enter text into the bulleted list.

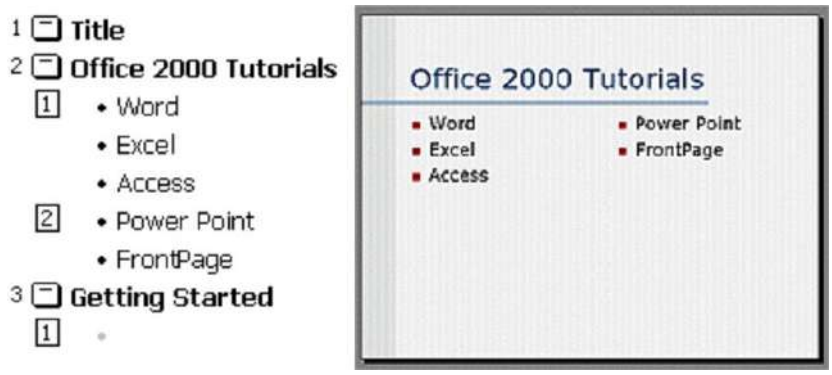
Bulleted Lists and New Slides from an Outline

In **Normal** or **Outline** view, text can easily be entered in the outline window and new slides are automatically added. Follow the steps below to become familiar with adding slide content in outline view:

Next to the **Slide 1** icon, type the title of the slide. The text you type beside the slide icons will be the large-type titles on each slide.
Press **ENTER** to type the next line. This will automatically create a new slide. To create a bulleted list for the first slide, press the **TAB** key or click the **demote** button on the **More Buttons** menu accessible by clicking the "triple arrow" button at the end of the formatting toolbar .
-OR-
Press **ALT+SHIFT+Right Arrow** to demote the selection to a bulleted list item.

Continue entering text for the bulleted list, pressing **ENTER** at the end of each line to create a new bullet.
Create a multilevel list by executing the demote action again to create a bulleted sublist. Press the **promote** button on the **More Buttons** menu or press **ALT+SHIFT+Left Arrow** to return to the original list.
Create a new slide by executing the **promote** action until a new slide icon appears.
Continue creating new slides and bulleted lists by using the demote and promote actions until the presentation is completed. Use the formatting instructions below to format the lists.

If there is more than one bulleted list on the slide, the lists will be designated by numbers enclosed in black boxes. The example below shows the slide created from the outline on the left. The bulleted list on the left side of the slide is labeled list "1" on the outline and the list on the right is labeled list "2". When typing the outline, begin typing in the new list by pressing **CTRL+ENTER**. In this example, **CTRL+ENTER** was pressed after typing "Access".

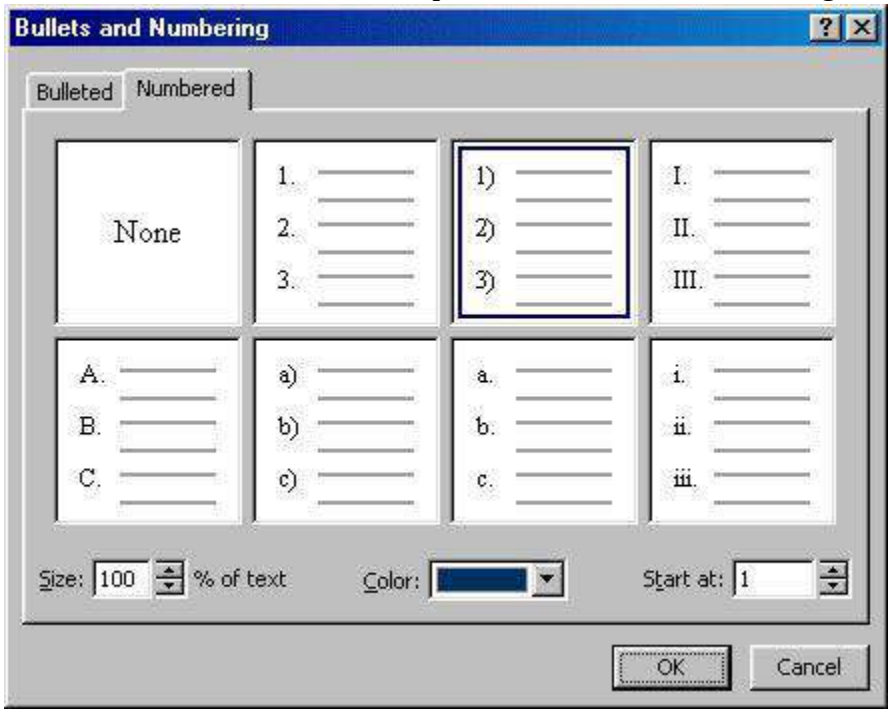


Numbered List

Follow these steps to create a numbered list:

Create a text box.
With the text box selected, choose **Format|Bullets and Numbering** from the menu bar.

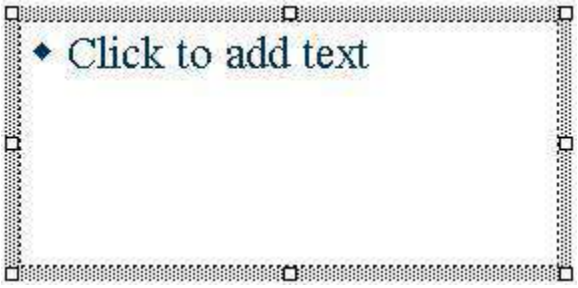
Click the **Numbered** tab at the top of the Bullets and Numbering window.



Change the size of the numbers by changing the percentage in relation to the text.
Choose a color for the numbers from the **Color** menu. Click **More Colors** for a larger selection.
Change the **Start at** value if the numbers should not begin with 1.
Select one of the the seven list types shown and click **OK**.

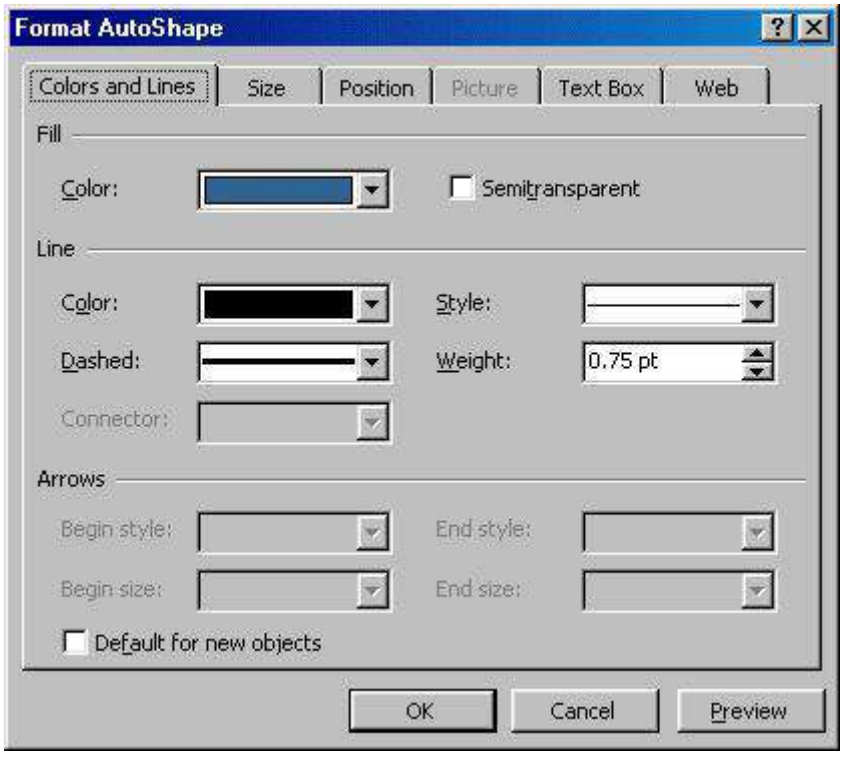
Resizing a Text Box

Select a text box by clicking on it with the mouse. A border with nine handles will appear around the text box. The four handles on the corners will resize the length and the width of the box at once while the handles on the sides will resize only in one direction. Click one of the handles and drag it with the mouse. Release the mouse button when it is the size you want it to be. Move the text box by clicking and dragging the thick, dotted border with the mouse.



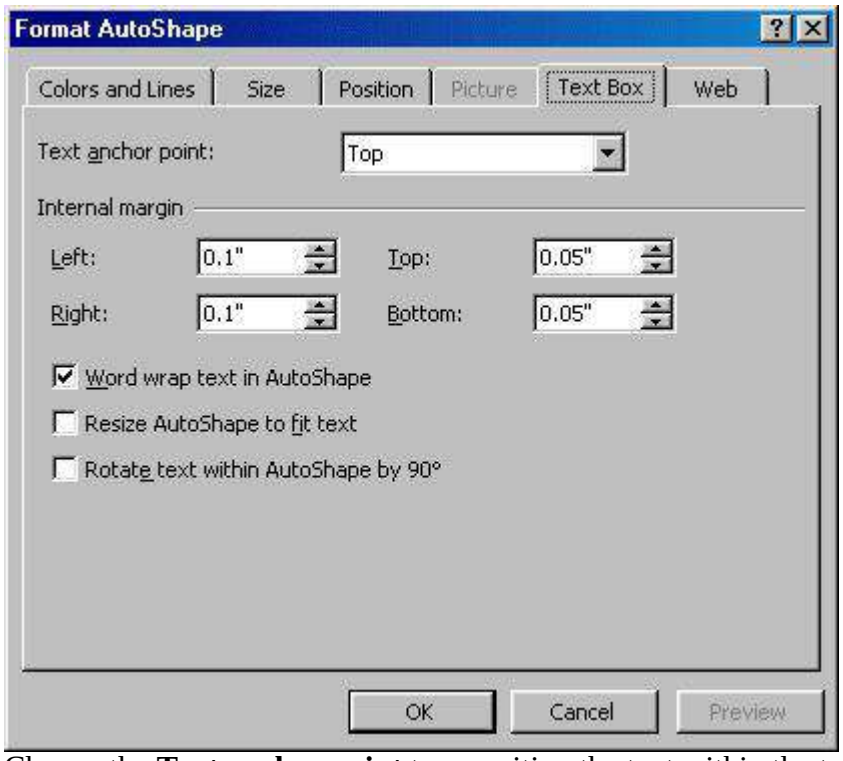
Text Box Properties

Change the colors, borders, and backgrounds of a text box from the **Format AutoShape** dialog box.



Activate the textbox by clicking on it and select **Format|Colors and Lines** from the menu bar.
Under the **Colors and Lines tab**, select a **Fill** color that will fill the background of the text box. Check the **Semitransparent** box if you want the slide background to show through the color.
Select a **Line** color that will surround the box as well as a **Style** or **Weight** for the thickness of the line and a **Dashed** property if the line should not be solid.

Click the **Text Box tab**.



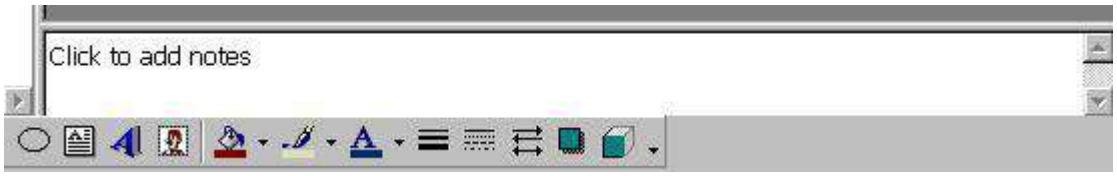
Change the **Text anchor point** to reposition the text within the text box.
Set **Internal margins** to the distance the text should be to the text box edges.
Click **OK** to add the changes to the text box.

Delete a Text Box

To delete a text box from a template, simply click the border of the text box and press the **DELETE** key on the keyboard.

Adding Notes

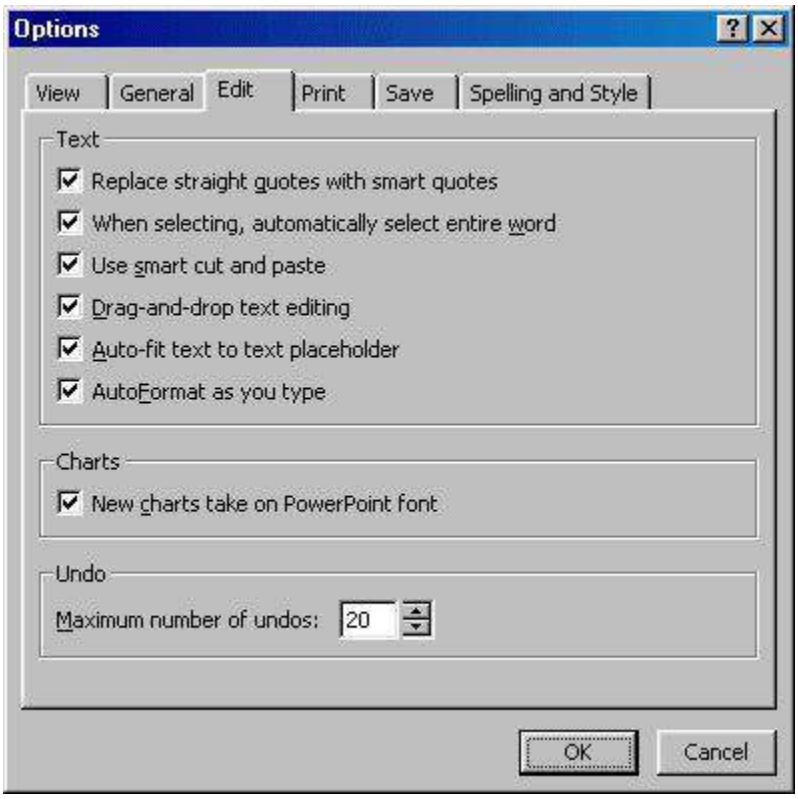
From **Normal View**, notes can be added to the slide. These notes will not be seen on your presentation, but they can be printed out on paper along with the slide the notes refer to by selecting **Print What: Notes Pages** on the Print menu.



2. WORKING WITH TEXT

Adding Text

If the slide layout includes text boxes, simply click on the text box to add text. To add a text box to the slide, select **Insert**|**Text Box** from the menu bar and draw the text box with the mouse. Set text editing options by selecting **Tools**|**Options** from the menu bar and clicking the **Edit** tab.

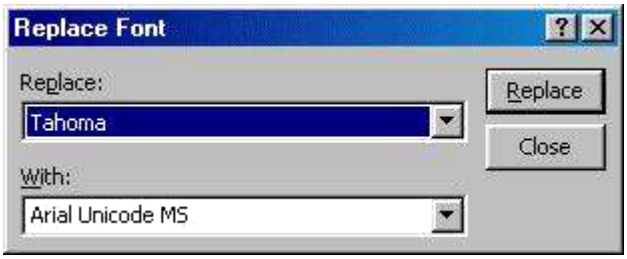


Formatting Text

Select the text that will be formatted by highlighting the text either on the outline or on the slide. Choose **Format**|**Font** from the menu bar or right- click on the highlighted selection and select **Font** from the popup shortcut menu or. Select a font face, size, style, effect, and color from the **Font** dialog box. Click the **Preview** button to see how the changes will appear on the slide before making a decision.

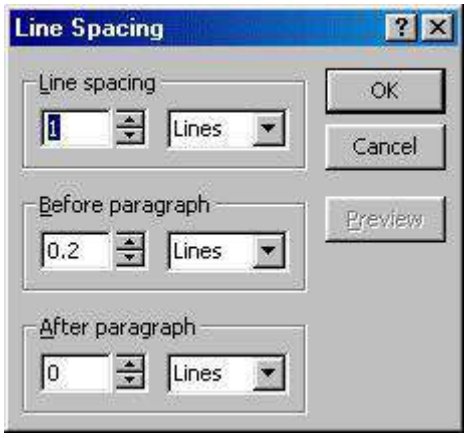
Replace Fonts

Design templates have a preset font that you may want to change or you may want to change the font used on for the entire presentation for a number of reasons. This can be accomplished quickly using the Replace Fonts feature. Select **Format**|**Replace Font** from the menu bar. Choose the font you want to **Replace** from the first drop-down menu and the font it should be replaced **With** from the second menu, and click the **Replace** button.



Line Spacing

Change the amount of space between lines in a text box by selecting **Format|Line Spacing** from the menu bar.



Line spacing - Select the amount of vertical space between lines. A value of "1" is equal to single spacing and "2" is double spacing. Values between and above these numbers are valid as well.

Before paragraph and After paragraph - This value will determine the amount of vertical space before and after each paragraph in a text box.

Change Case

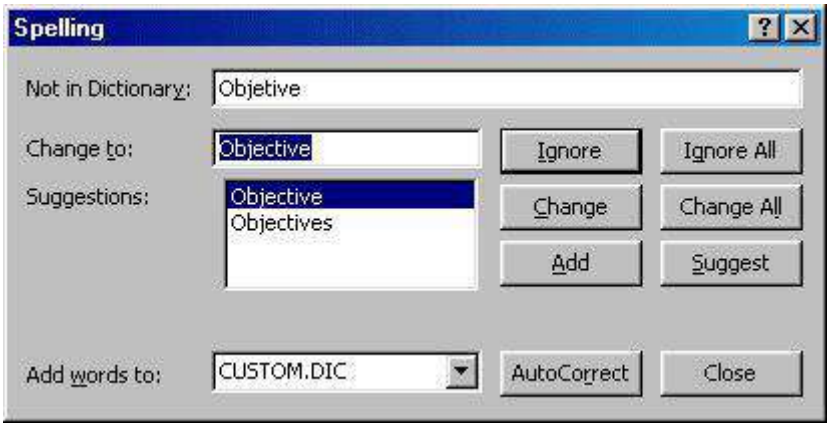
Change the case of the characters in a paragraph by selecting **Format|Change Case** from the menu bar without having to retype the text.

Sentence case - Capitalizes the first letter of the first word in each sentence.
Lowercase and **Uppercase** - Changes the case of all the letters.
Title case - Capitalizes the first letter of every word and reduces the rest to lowercase.

Toggle case - The opposite of Title case, it makes the first letter of every word lowercase and capitalizes the remaining letters.

Spell Check

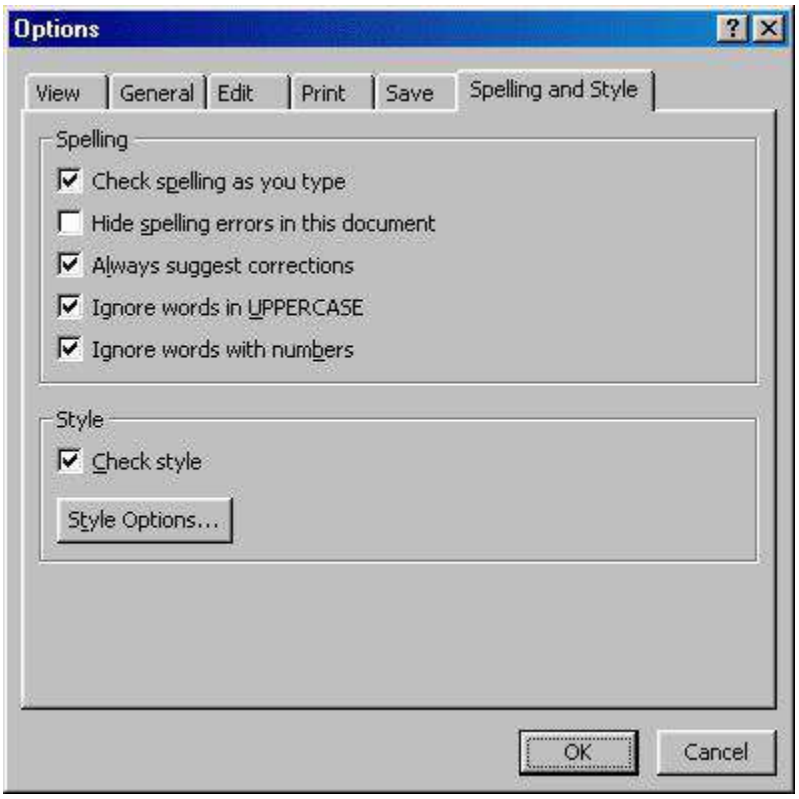
Correct the spelling in the presentation by selecting **Tools|Spelling** from the menu bar or by pressing the **F7** key on the keyboard.



The spell checker will prompt you to make corrections of the first word that is spelled wrong.
If the word is spelled correctly, click **Ignore** or **Ignore All** if the same word appears several times during the presentation. If this word will appear in many presentations (such as your name), click **Add** to add the word to the dictionary and you won't be prompted by a misspelling again.
If the word is spelled wrong, highlight one of the the **Suggestions** or type your own revision in the **Change to** box. Click **Change** to correct this occurrence of the word or **Change All** to correct all occurrences of the word in the presentation. Click **Close** to abort the spelling check early.
When the spell checker has read through the entire presentation, you will be prompted by a window telling you that the spelling check is complete. Click **OK**.

Spelling Options

Select **Tools|Options** from the menu bar and click the **Spelling and Style** tab.



Check spelling as you type - If this box is checked, Power Point will check the spelling of every word as you type. Misspelled words will be underlined with wavy red lines.
Hide spelling errors in this document - Check this box to remove the wavy red lines from words that are spelled wrong.
Always suggest corrections - If this box is checked, suggestions for misspelled words will appear when you activate the spell checker.
Ignore words in UPPERCASE - Power Point recommends that you don't type slide titles in all uppercase letters so it will treat words like this and other all - uppercase acronyms as misspelled. Check this box to ignore this suggestion and acronyms that are typically typed in all caps.
Ignore words with numbers - Check to ignore words that are combinations of letters and numbers.

1. COLOR SCHEME

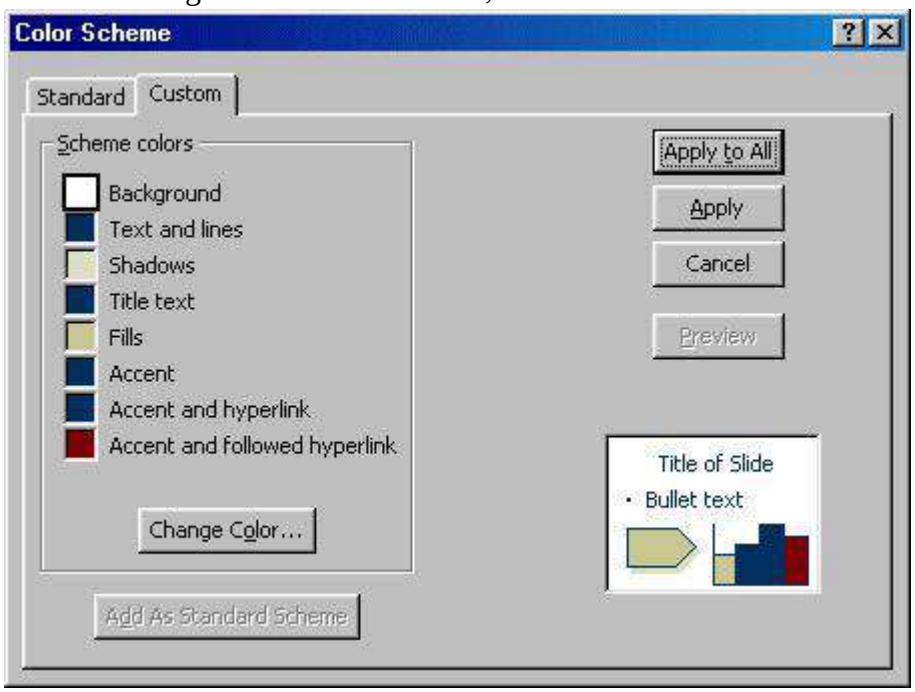
The colors of predesigned slide templates can be changed and a color scheme can be added to blank presentations. This page explains how to add color schemes and background images to slides.

Color Schemes

Select **Format|Slide Color Scheme** from the menu bar.
Click one of the preset color scheme thumbnail images in the **Color schemes** box.

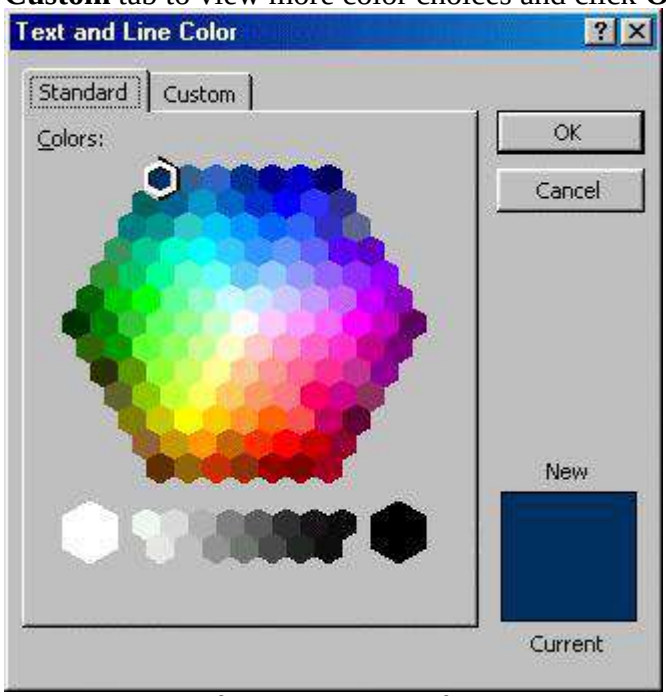
Click the **Preview** button to see how the scheme will appear on the slide.

To make changes to the color scheme, click the **Custom** tab on the dialog box.



Change the colors of the slide elements by selecting the color swatch beside the name of the element and clicking the **Change color** button.

Highlight one of the colors from the **Text and Line Color** window or select the **Custom** tab to view more color choices and click **OK** when finished.

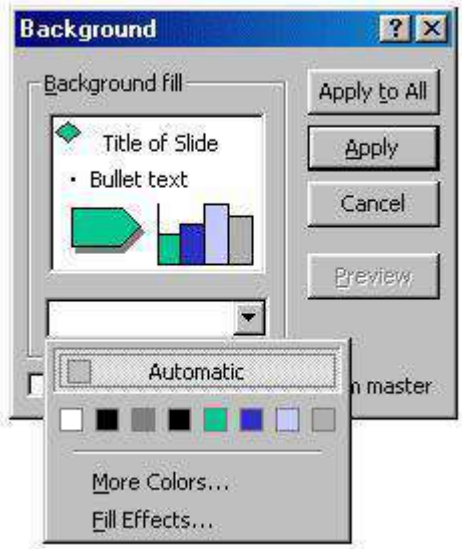


When you have finished all color formatting, click **Apply to All** to apply the color scheme to all the slides in the presentation or **Apply** to add the scheme only to the current slide.

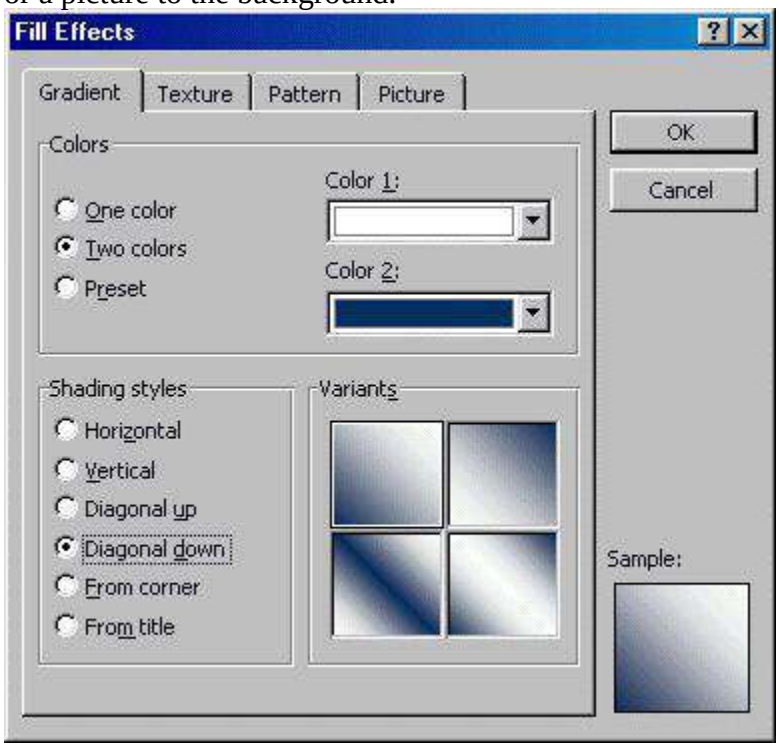
Backgrounds

Follow these steps to add background colors and patterns to a slide:

Select **Format|Background** from the menu bar.



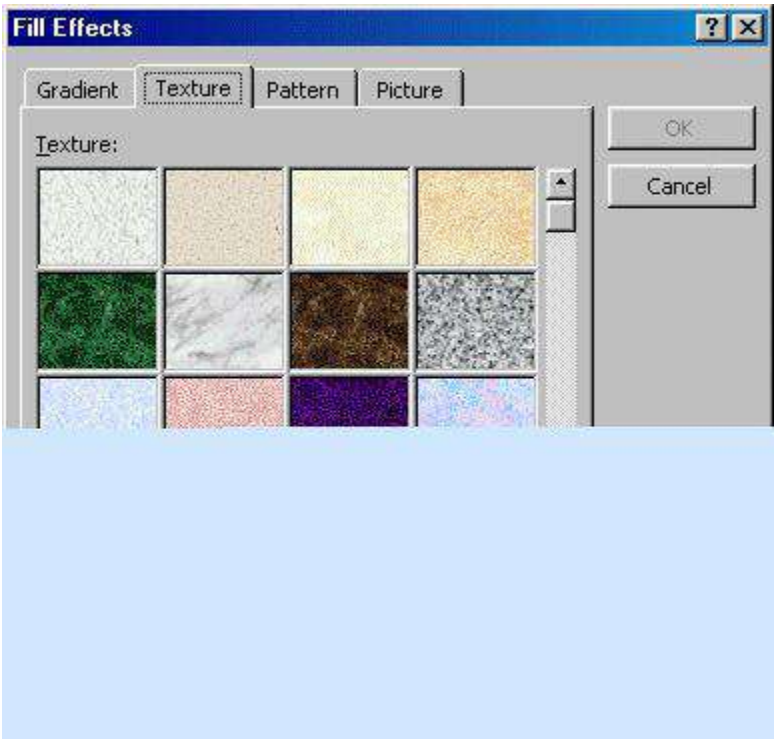
Select a color from the drop- down menu below the **Background fill** preview or choose **More Colors...** for a larger selection.
Select **Fill Effects** from the drop-down menu to add gradients, texture, patterns, or a picture to the background.



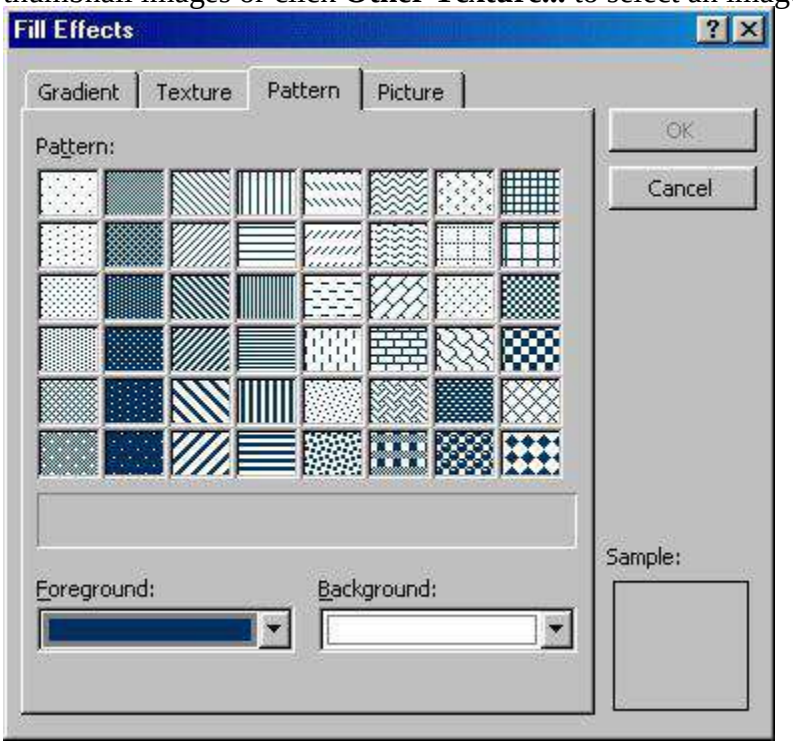
Gradient tab

Select **One color** if the color chosen will fade into the background and select the color from the **Color 1** drop-down menu. Choose **Two colors** if the gradient will use two colors and select those colors from the **Color 1** and **Color 2** drop-down menus. **Preset** provides a selection of color combinations. Select one from the **Preset colors** drop-down menu.

Select the type of gradient from **Shading styles**.
Click one of the four **Variants** of the styles chosen.

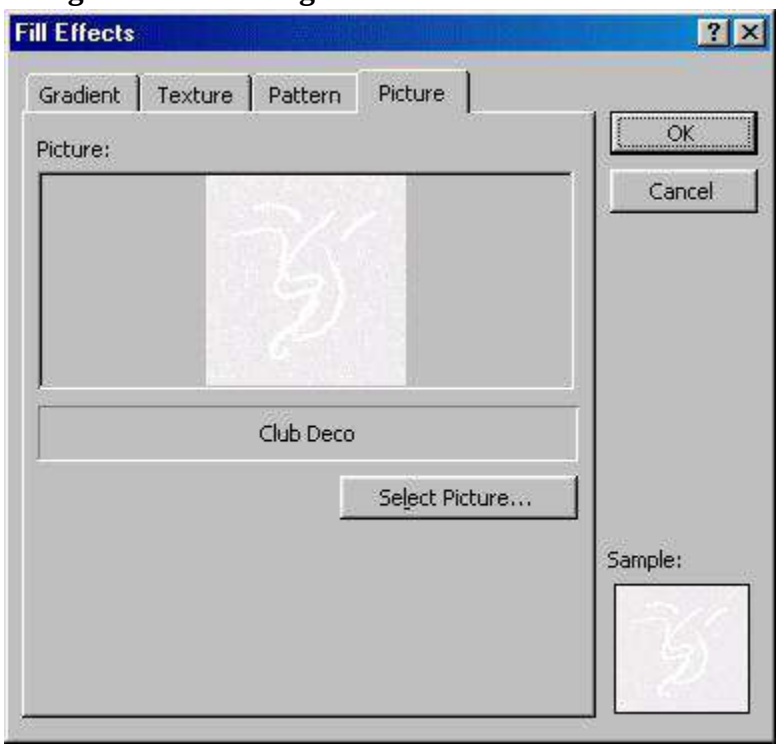


Texture tab
From the Texture window, select a repeating background by scrolling through the thumbnail images or click **Other Texture...** to select an image from a file.



Pattern tab
Select a two-tone pattern by clicking one of the pattern swatches and selecting the

Foreground and **Background** colors.



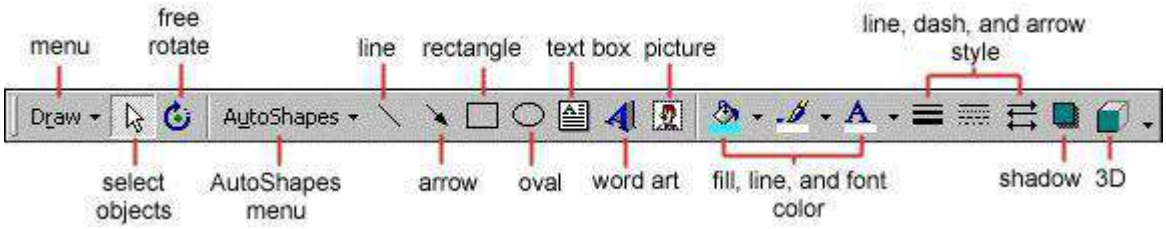
Picture tab

Click the **Select Picture** button to choose a picture from a file. After the picture is selected, a preview and description will be shown in this window. Click **OK** to apply the changes made from the **Fill Effects** windows.

Click **Apply to All** to add the changes to every slide or **Apply** to make changes only to the current Slide.

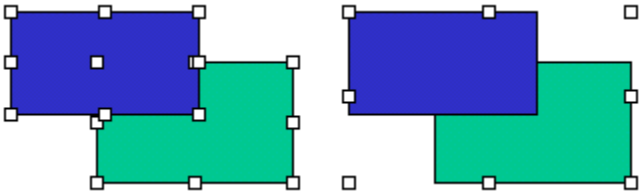
2. GRAPHICS

The Drawing Toolbar provides many commands for creating and editing graphics. The toolbar is located at the bottom of the Power Point screen or it can be activated by selecting **View|Toolbars|Drawing** from the menu bar.

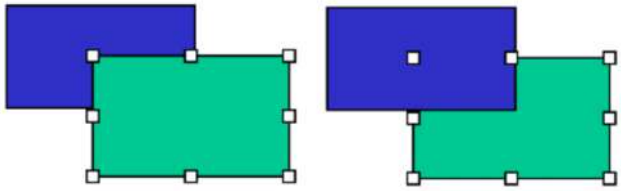


Menu -

Grouping - Images can be grouped together so they become one image and can be moved together or the same formatting changes can be applied to both at once. Select all the images that will be grouped by holding down the **SHIFT** key and clicking once on each image. Then select **Group** from the **Draw** menu. The images can be ungrouped by selecting **Ungroup** from the same menu. The rectangles in the image to the left are separate images with their own sets of handles and they are grouped together in the image to the right:



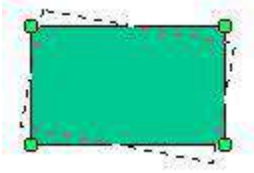
Order - The order of overlapping images can be changed using this feature. In the example of two rectangles below, the green rectangle is selected and the **Send Backward** command was used to move the image below the blue rectangle. Send Backward and Bring Forward will move elements by one layer. Send to Back and Bring to Front move the elements to the back or top of a series of several overlapping graphics.



Nudge - Use the nudge actions to move an object slightly in one direction.
Align or Distribute - Select a group of objects and choose one of the the commands from the Align or Distribute menu to change the position of the objects in relation to one another.
Rotate or Flip - Rotate an object 90 degrees or flip the object over its x- or y-axis.

Select objects - Deactivate all drawing functions.

Free rotate - This button will place green handles on certain objects so they can be arbitrarily rotated. Click and drag the handles to rotate the objects.



AutoShapes menu - Click the small down arrow to the right of the "AutoShapes" text to select a shape.
Line and **Arrow** - Click and drag the mouse on the slide to add lines. Hold down the **SHIFT** key to draw a straight line. Use the end points of the completed line to stretch and reposition the line.
Rectangle and **Oval** - Click and drag the mouse on the slide to add rectangles and ovals. Hold down the **SHIFT** key to add squares and circles. **Text box** - Click to draw a text box on the slide.
Word art - Click to add WordArt.
Picture - Click to add a clip art image to the slide.
Fill color - Choose a fill color for rectangles, ovals, and clip art.
Line color - Select a border color for shapes and pictures.
Font color - Highlight text on the slide and click the small down arrow next to the Font color icon to select a color.
Line style - Highlight a line or arrow that has been drawn and click this button to select a thickness or style for the line.
Dash style - Highlight a line or arrow and select a dash style.
Arrow style - Change the arrow head style for an existing arrow or change a line to an arrow.
Shadow - Select a text box to add shadow to text or choose any other object on the slide to add a drop shadow.
3D - Add a three-dimensional effect to text and other objects.

Adding Clip Art

To add a clip art image to a slide, follow these steps:

Select **Insert|Picture|Clip Art** from the menu bar or click the **Picture** button on the Drawing toolbar..

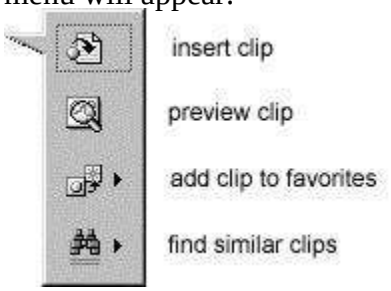
To find an image, click in the white box following **Search for clips** and enter keywords describing the image you want to find.

-OR-

Click one of the category icons.

Click once on the image to want to add to the slide and a selection bar will appear.

Click once on the image you want to add to the slide and the following popup menu will appear:



Insert Clip to add the image to the slide.

Preview Clip to view the image full -size before adding it to the slide. Drag the bottom, right corner of the preview window to resize the image

and click the "**x**" close button to end the preview.

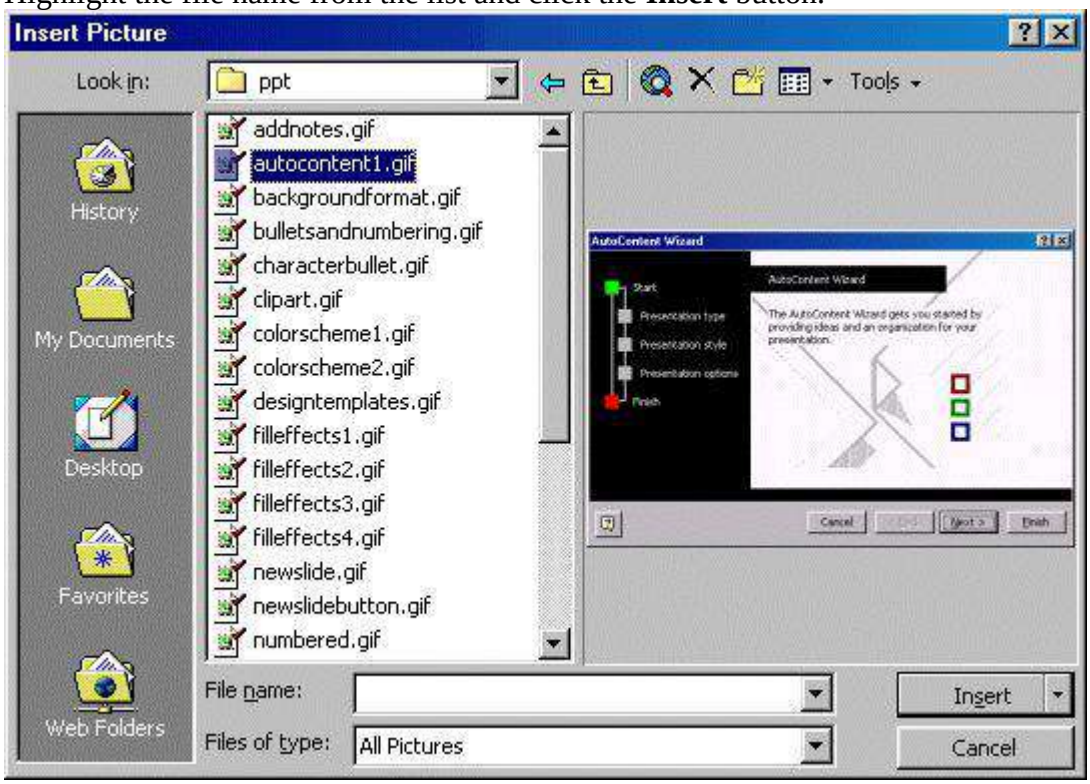
Add Clip to Favorites will add the selected image to your favorites directory that can be chosen from the **Insert ClipArt** dialog box.
Find Similar Clips will retrieve images similar to the one you have chosen.

Click the **Close** button in the top, right corner of the **Insert Clip** window to stop adding clip art to the slide.

Add An Image from a File

To add a photo or graphic from a file:

Select **Insert|Picture|From File** from the menu bar.
Click the down arrow button on the right side of the **Look in:** window to find the image on your computer.
Highlight the file name from the list and click the **Insert** button.

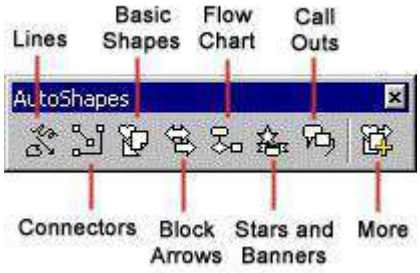


Editing A Graphic

Activate the image you wish to edit by clicking on it once with the mouse. Several handles will appear around the graphic. Click and drag these handles to resize the image. The handles on the corners will resize proportionally while the handles on the straight lines will stretch the image. More picture effects can be changed using the **Picture** toolbar.

Auto Shapes

The AutoShapes toolbar allows you to draw a number of geometrical shapes, arrows, flow chart elements, stars, and other graphics on a slide. Activate the AutoShapes toolbar by selecting **Insert|Picture|AutoShapes** or **View|Toolbars|AutoShapes** from the menu bar. Click the buttons on the toolbar to view the options for drawing each shape.

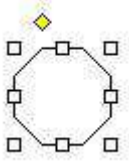


Lines - After clicking the Lines button on the AutoShapes toolbar, draw a ***straight line***, ***arrow***, or ***double-ended arrow*** from the first row of options by clicking the respective button. Click in the slide where you would like the line to begin and click again where it should end. To draw a ***curved line*** or ***freeform shape***, select curved lines from the menu (first and second buttons of second row), click in the slide where the line should appear, and click the mouse every time a curve should begin. End creating the graphic by clicking on the starting end or pressing the **ESC** key. To ***scribble***, click the last button in the second row, click the mouse in the slide and hold down the left button while you draw the design. Let go of the mouse button to stop drawing.

Connectors - Draw these lines to connect flow chart elements.

Basic Shapes - Click the Basic Shapes button on the AutoShapes toolbar to select from many ***two- and three -dimensional shapes***, ***icons***, ***braces***, and ***brackets***. Use the drag -and -drop method to draw the shape in the slide. When the shape has been made, it can be resized using the open box handles and other adjustments specific

to each shape can be modified using the yellow diamond handles.



Block Arrows - Select Block Arrows to choose from many types of ***two- and three-dimensional arrows***. Drag- and-drop the arrow in the slide and use the open box and yellow diamond handles to adjust the arrowheads. Each AutoShape can also be rotated by first clicking the **Free Rotate** button on the drawing toolbar . Click and drag the green handles around the image to rotate it. The tree image below was created from an arrow rotated 90 degrees.

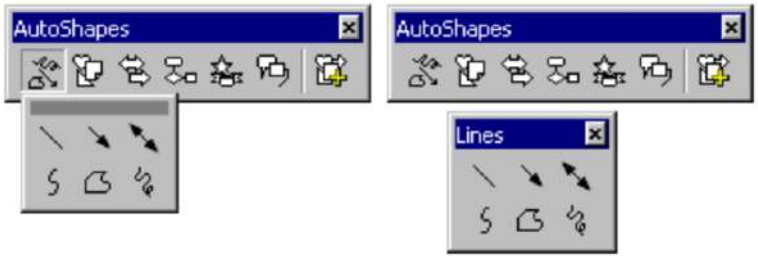
Flow Chart - Choose from the flow chart menu to add ***flow chart elements*** to the slide and use the line menu to draw connections between the elements.

Stars and Banners - Click the button to select ***stars***, ***bursts***, ***banners***, and ***scrolls***.

Call Outs - Select from the ***speech and thought bubbles***, and ***line call outs***. Enter the call out text in the text box that is made.

More AutoShapes - Click the More button to choose from a list of clip art categories.

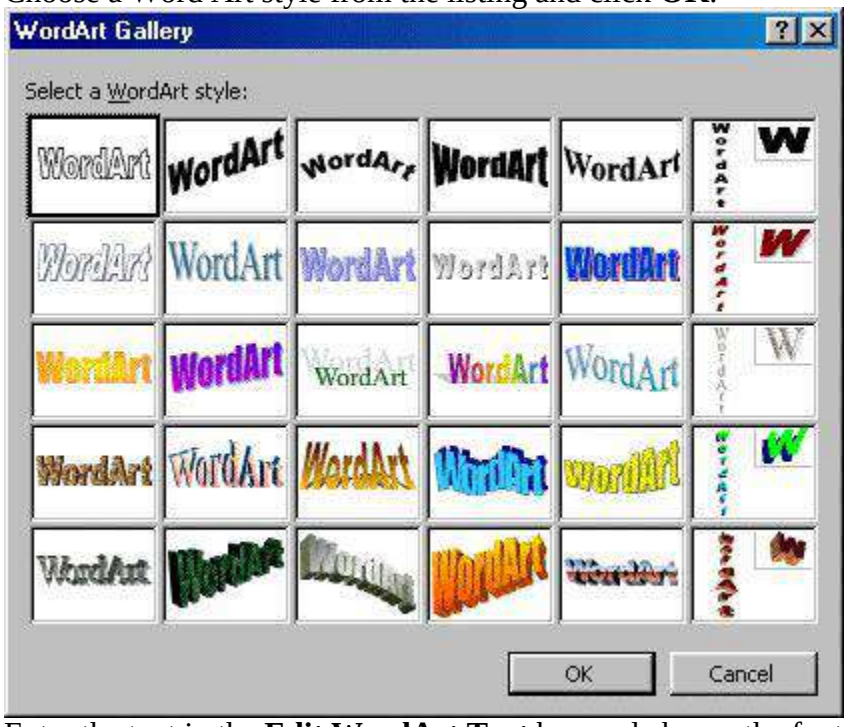
Each of the submenus on the AutoShapes toolbar can become a separate toolbar. Just click and drag the gray bar across the top of the submenus off of the toolbar and it will become a separate floating toolbar.



WordArt

Add headlines in striking colors and shapes to your presentation using Word Art.

Select **Insert|Picture|WordArt** from the menu bar or click the **Word Art** button on the Drawing toolbar.
Choose a Word Art style from the listing and click **OK**.



Enter the text in the **Edit WordArt Text** box and choose the font, size, and style for the text. Click **OK**.

Use the white box handles around the word art to resize it on the slide.
Drag the yellow diamond handle to change the shape of the text. To revert back to no shape, double-click the diamond.

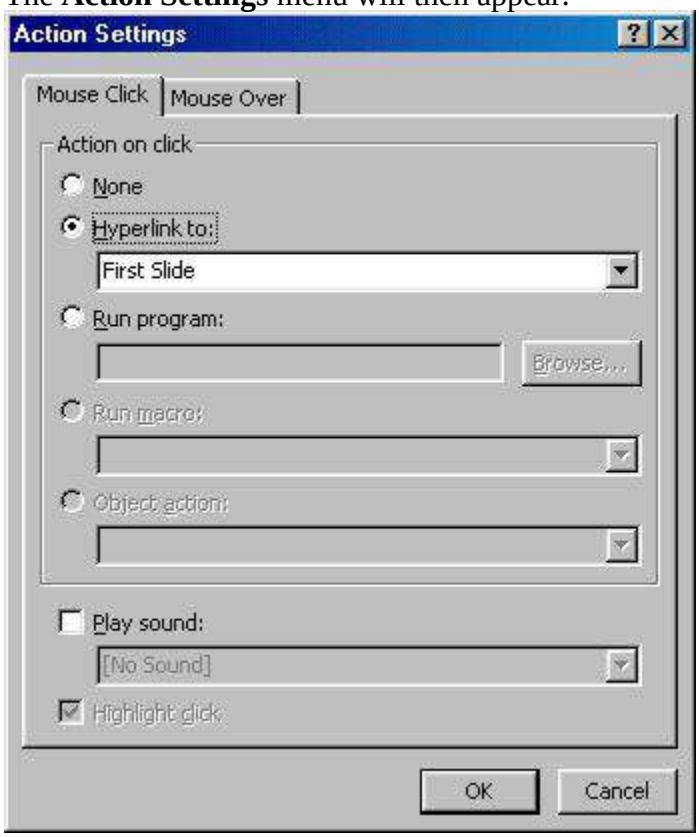
3.SLIDE EFFECTS

Action Buttons

Use the action button toolbar to add functioning buttons to slides in a presentation.

Select **Slide Show|Action Buttons** from the menu bar. Click the bar across the top of the button menu and drag it off the menu so it becomes a floating toolbar.

Click one of the button faces and draw the button on the slide using the mouse. The **Action Settings** menu will then appear.

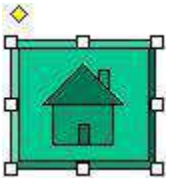


Set the actions under either the **Mouse Click** or **Mouse Over** tabs. Actions specified for Mouse Click will execute when the button is clicked on the slide while actions for Mouse Over will occur when the mouse pointer hovers over the button.

Select an action for the button by choosing a **Hyperlink to** destination.

If you want a sound to be played when the button is clicked, check the **Play sound** box and choose a sound from the drop-down menu.

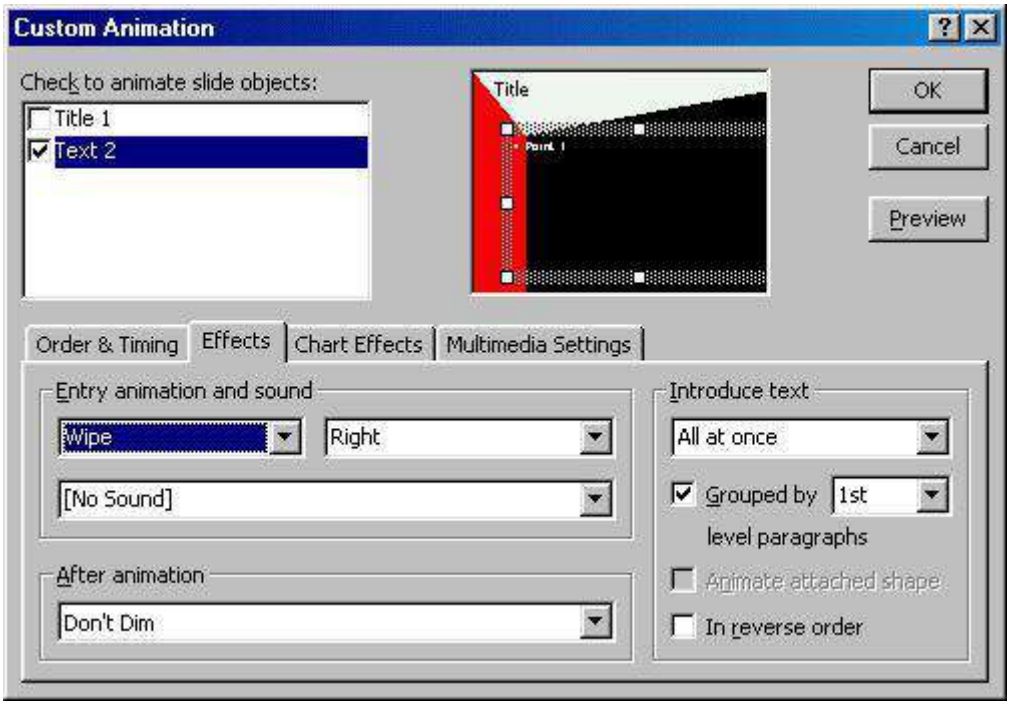
Click **OK** when finished.



The button on the slide can be resized using the white box handles and the depth of the button can be changed by dragging the yellow diamond.

Slide Animation

Several animations for slide objects are available through the drop-down menus on the menu bar. First, select the text box or graphic that will be animated. Select **Slide Show|Preset Animation** and choose from one of the options. To select a different animation or turn the animation off, select the appropriate choice from the same menu. For more options, follow the procedure below:



Select **Slide Show|Custom Animation** from the menu bar.
Select the object on the slide that will be animated from the **Check to animate slide objects** list.
Under the **Effects tab**, select the animation type (or select "No Effect" to turn an animation off) and direction from the drop-down menus and select a sound if you wish.
Select an **After animation** effect if the text should change colors after the animation executes.

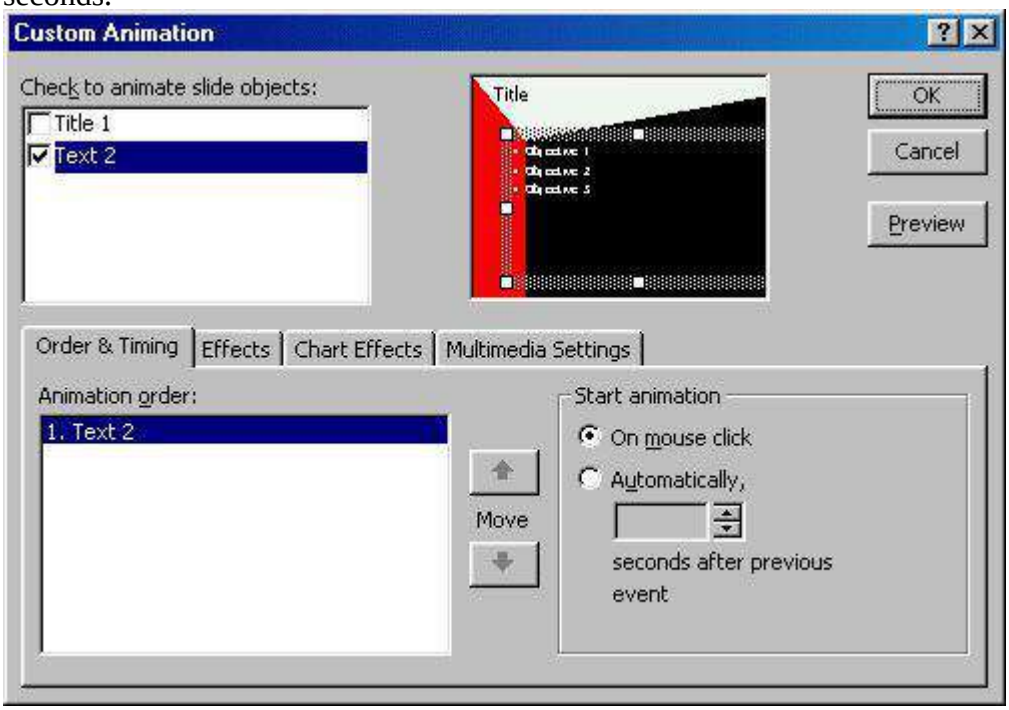
Color palette - Select one of the color swatches or click **More Colors** for a larger selection. The text will change to the selected color when the mouse is clicked during the slide show.
Don't Dim - This option erases all After Animation effects.

Hide After Animation - Text will be immediately erased after the animation is completed.

Hide on Next Mouse click - The text will be erased when the mouse is clicked.

Choose the style of displaying the text under the **Introduce text** section. The drop-down menu provides options for displaying the characters for each bulleted item. Select "All at once" for the text to appear immediately, "by Word" for the text to appear one word at a time, or "by Letter" for a typewriter effect that displays one letter at a time.

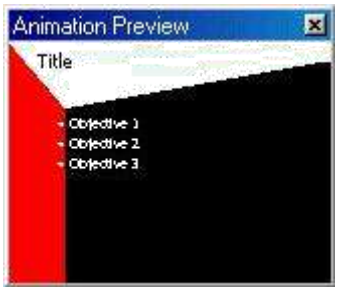
Click the **Order & Timing tab** to alter the order that the objects appear on the slide. Highlight the object in the **Animation order** box and click the **Move** arrows to move the object's position within the animation sequence. Under **Start animation**, choose "On mouse click" to activate the animation by clicking the mouse or "Automatically" for the animation to execute after a set number of seconds.



Click the **Preview** button at any time to preview the animation on the slide and click **OK** when finished.

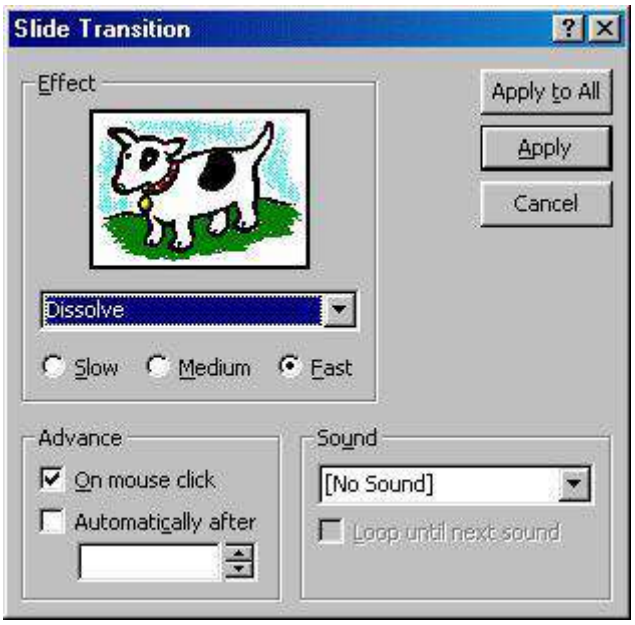
Animation Preview

Select **Slide Show|Animation Preview** from the menu bar to view the Animation Preview window. Click anywhere within this window with the mouse to preview the animations that have been set. To hide the window, click the **x** close button in the top, right corner.



Slide Transitions

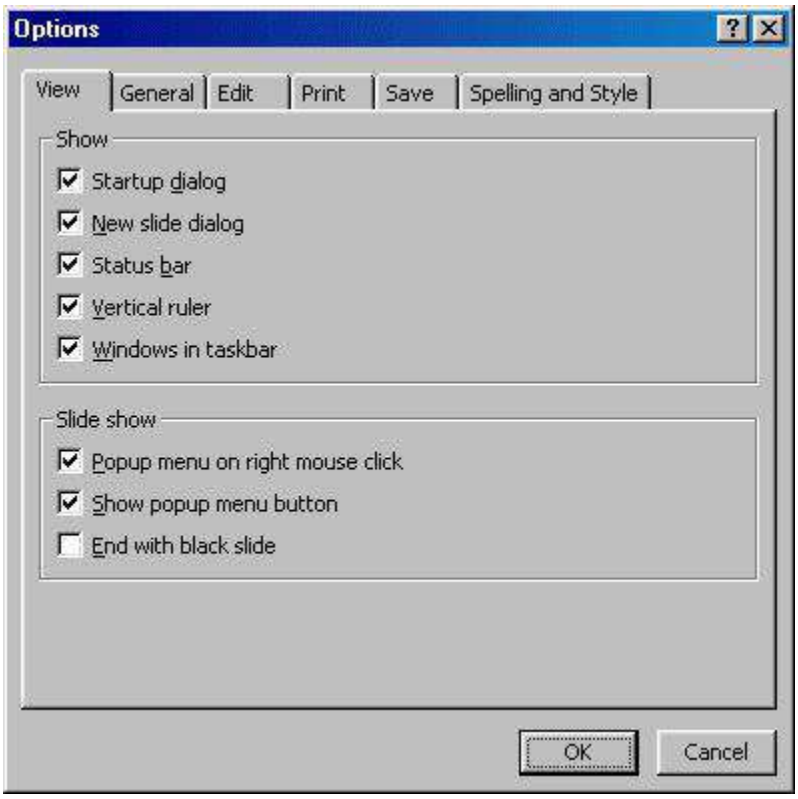
Add transition effects when changing slides by following these steps:



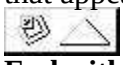
Select **Slide Show|Slide Transition** from the menu bar.
From the **Effect** section, choose a transition from the drop-down menu and notice the preview after the transition is selected. Select a speed for the transition as well.
Under **Advance**, check "On mouse click" for the slide transition to occur by clicking the mouse or using keystrokes or check "Automatically after" and a number of seconds if the transition should occur automatically.
Select a **Sound** if necessary and check the **Loop until next sound** if it should keep repeating until the next sound is played.
Click **Apply to All** if the transition effects should be added to every slide or **Apply** if the effects should be added only to the current slide.

Slide Show Options

Select **Tools|Options** and click the **View** tab to choose from several more slide show options.



Popup menu on right mouse click - Check this box if you want to be able to access the shortcut menu during a presentation.
Show popup menu button - Check this box to activate the menu button that appears in the bottom, left corner of the screen during a presentation.



End with black slide - Insert a blank, black slide to the end of the presentation.

1.MASTER SLIDES

Slide Master

Change the style of all slides in the presentation by changing the properties on the **Slide Master**. Each Design Template has its own Slide Master that can be altered. If you create slides from scratch, a consistent style can be added to the presentation by formatting the Slide Master.

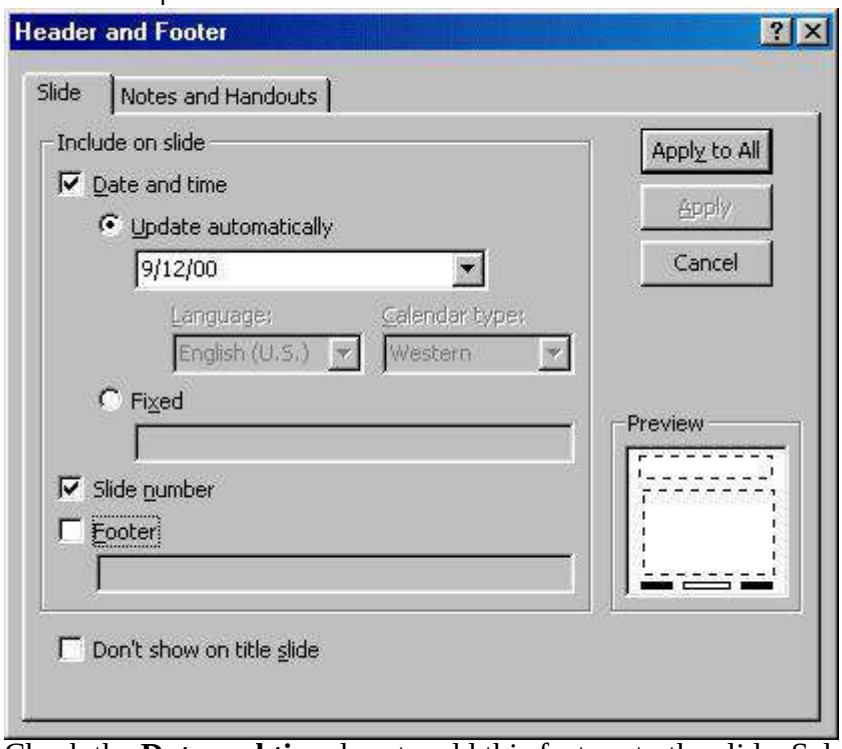
Select **View**|**Master**|**Slide Master** from the menu bar.

Format the master slide just as you would format a regular slide by formatting text, formatting lists, adding background patterns and effects, and setting footers. Click the **Close** button on the **Master toolbar** to quit editing the master slide and return to the presentation.

Headers and Footers

Add the date and time, slide numbers, and other footer text to the master slide from the Header and Footer window.

Select **View|Header and Footer...** from the menu bar.



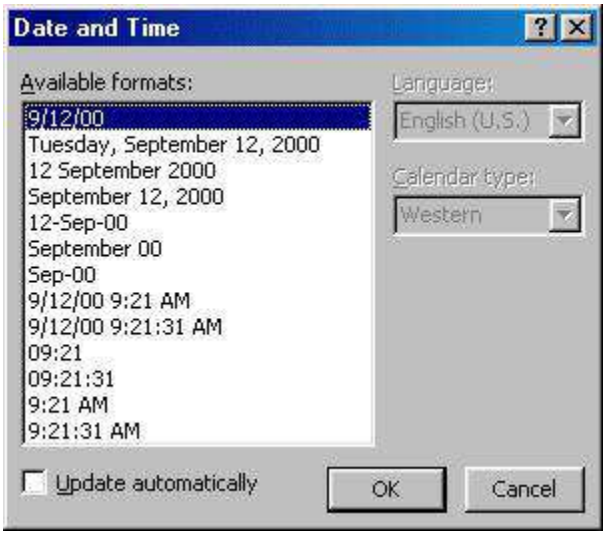
Check the **Date and time** box to add this feature to the slide. Select **Update automatically** to always display the current date and time or click **Fixed** and enter a date that will not change in the text field provided. Check the **Slide number** box to add this feature to the slides.
Click the **Footer** box and add other text to the footer area of the slide.
Check the **Don't show on title slide** box to hide these features on the title slide of the presentation.
Click the **Notes and Handouts** tab to make the same changes to notes and handouts pages.
Click **Apply to All** to add the changes to every slide or **Apply** to add only to the current slide.

Slide Numbers

To add the slide numbers in a fixed position on the slide, use the **Header and Footer** window detailed above. The slide number can otherwise be added anywhere on the slide by placing the cursor where the slide number should appear and selecting **Insert|Slide Number** from the menu bar. The text of the slide number can the formatting just as regular text style is changed.

Date and Time

A date and/or time can also be added using the **Header and Footer** window or anywhere else on the slide. Place the cursor where the date and time should appear on the slide and select **Insert|Date and Time** from the menu bar. Select a format from the **Available formats** box and click **Update automatically** if this feature should always be updated to reflect the current date and time. Click **OK** to finish.



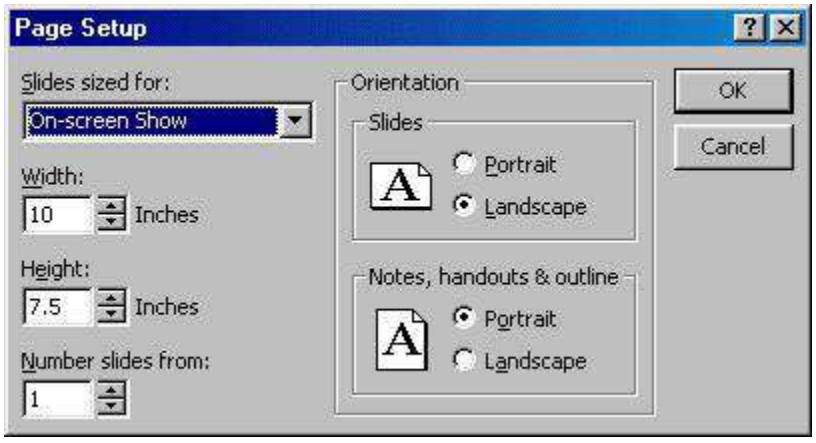
2 .SAVING AND PRINTING

Save as Web Page

Presentations can be saved by selecting **File|Save** from the menu bar. However, if you want to post Power Point presentations on the Internet, you may want to save them as web pages so students and other visitors to your web site can view the presentation even if they do not have Power Point installed on their computers. Select **File|Save As Web Page** from the menu bar. Choose your web page directory on the network from the **Look in:** drop-down menu and name the file in the **File name:** box. Click **Save** to save the presentation in web format.

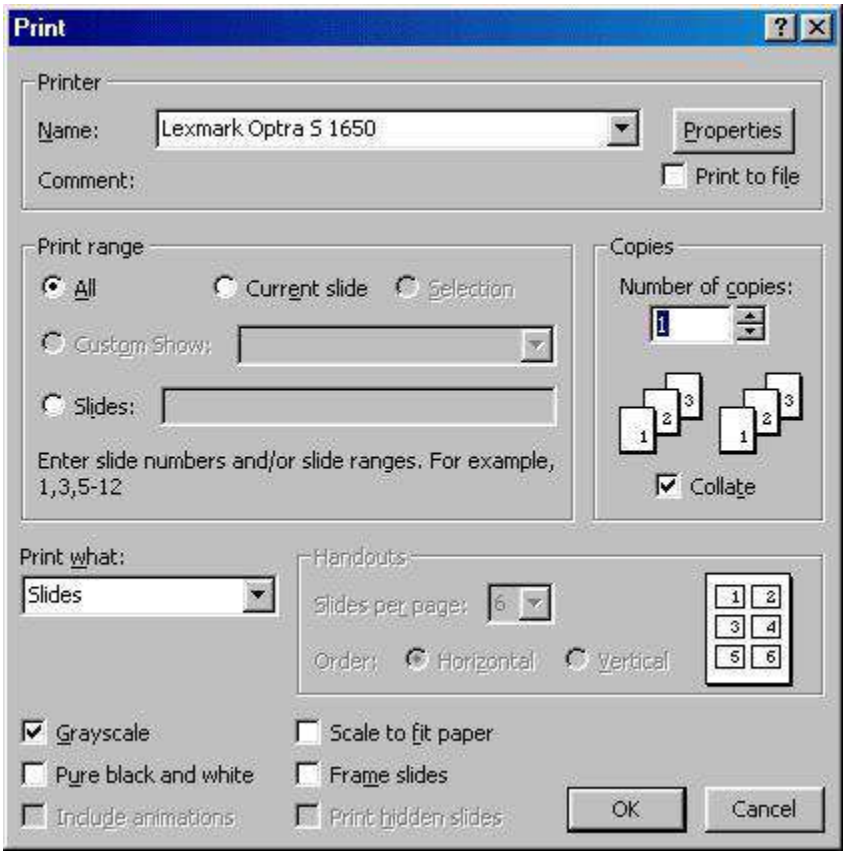
Page Setup

Select **File|Page Setup** from the menu bar to access options for printing the presentation slides. Select the format the printed slides will be used for from the **Slides sized for** drop-down menu or enter a specific print size using the **Width** and **Height** boxes. Select the page orientation for the slides and for other print material from the presentation in the **Orientation** section.



Print

Select **File|Print** from the menu bar to print the presentation.



Print range - Select **All** to print all the slides in the presentation, **Current slide** to print only the current slide, or enter slide numbers in the **Slides** field to print only certain slides.

Copies - Enter the number of copies of each slide specified in Print range and check the **Collate** box if necessary.

Print What -

Slides prints a full-page slide on each page.
Handouts prints as many slides as you designate on each page.
Notes Page prints one slide with that slide's notes on each page
Outline view prints the outline of the presentation

Click **OK** to print.

3. TIPS

Design Tips

Use contrasting colors for the text and the background so the text will be easy to read.

Use font size large enough to be seen from the back of the room where the presentation will be held. A font size of 24-point or larger is recommended.

Use short phrases and sentences to convey your message.

Use simple slide transitions. Too many different transitions will distract your audience from the subject of the presentation.

Avoid cluttering the slides with too much text or graphics. Your audience should hear what you have to say and not be distracted by a busy screen.

Keep text simple and easy to read by not using many different text effects such as **bold**, *italics*, underlining, larger font size for emphasis within a sentence, or a different font all on the same slide.

Presentation Basics

Begin the slide show by clicking the Slide Show button on the bottom of the screen. 

Move to the next slide by pressing the **SPACE BAR**, **ENTER**, **PAGE DOWN**, or right arrow keys or by clicking the left mouse button.

Go back to the previous slide by pressing **BACKSPACE**, **PAGE UP**, or the left arrow key.

To end the slideshow before it is complete press **ESC** on the keyboard.

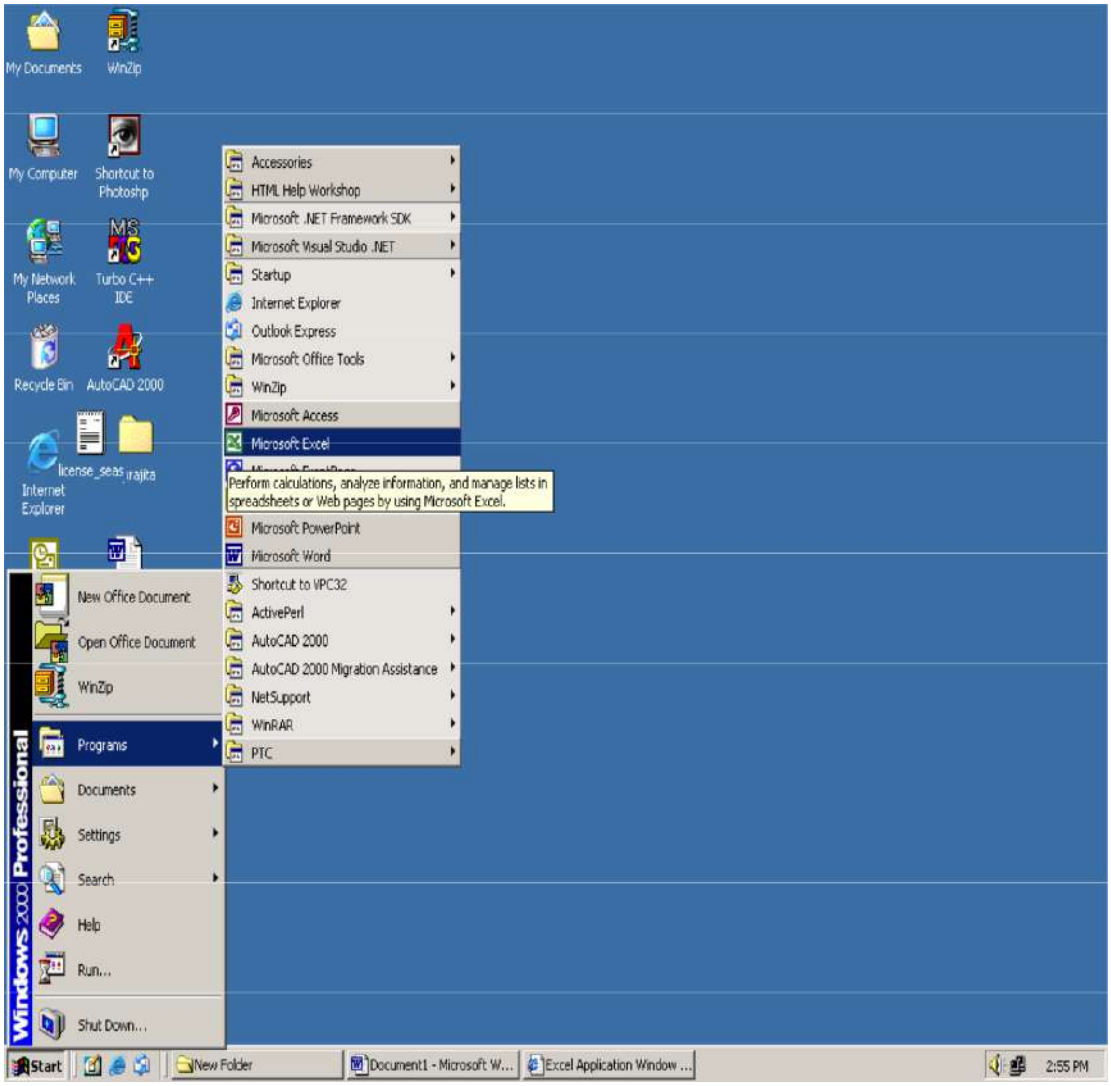
A pen tool is available for drawing on the screen with the mouse. Press **CTRL+P** or click the right mouse button at any time and a popup window will appear. Choose **Pen** and the pointer will change to a pen that allows you to draw freehand on the screen using the mouse. Press the **E** key to erase all pen strokes. Press **CTRL+A** to disable the pen feature and revert the pen back to a pointer arrow.

If you would like to use the pen to draw on a blank screen during a presentation, press the **B** or **W** keys, or select **Screen/Black Screen** from the popup menu and the screen will turn black. Press **B** or **W** again or choose **Next** from the popup menu to return to the presentation when you are finished drawing.

To hide the pointer and button from the screen press the **A** key.

Be sure to preview the slide show using a projector if one will be used during the presentation. The projector may cut off words or graphics that are close to the edge of the screen.

INTRODUCTION TO MS-EXCEL



Microsoft Excel is a member of the spreadsheet family of software. Spreadsheet software is used to store information in columns and rows, which can then be organized and/or processed. Spreadsheets are designed to work well with numbers but often include text. Sometimes text in a spreadsheet is called a label, because it is labeling columns and rows of numbers. Numbers are called values sometimes, and can include numbers for counts or measurements, dates, times, and calculations from numbers. Spreadsheets can help organize information, like alphabetizing a list of names or other text or reordering

records according to a numeric field. However, spreadsheets are more often used for calculating, such as totaling a column of numbers or generating a more sophisticated formula to calculate some statistical measure on a list of numbers.

Spreadsheets and databases are in competition and have similar features. Yet the way they work in the background is different. When you work in a spreadsheet, you view the data you are entering as a section. In a database, you only see the data you are entering--you have to request a report or different display to see more of the information. Other differences are: (1) databases are more often used for applications with long textual entries, (2) very large applications (thousands of entries) are more often handled in databases; and (3) spreadsheets are easier to learn to use and get calculations from than a database program. This latter reason is why many researchers and students prefer spreadsheets for keeping track of their data over databases.

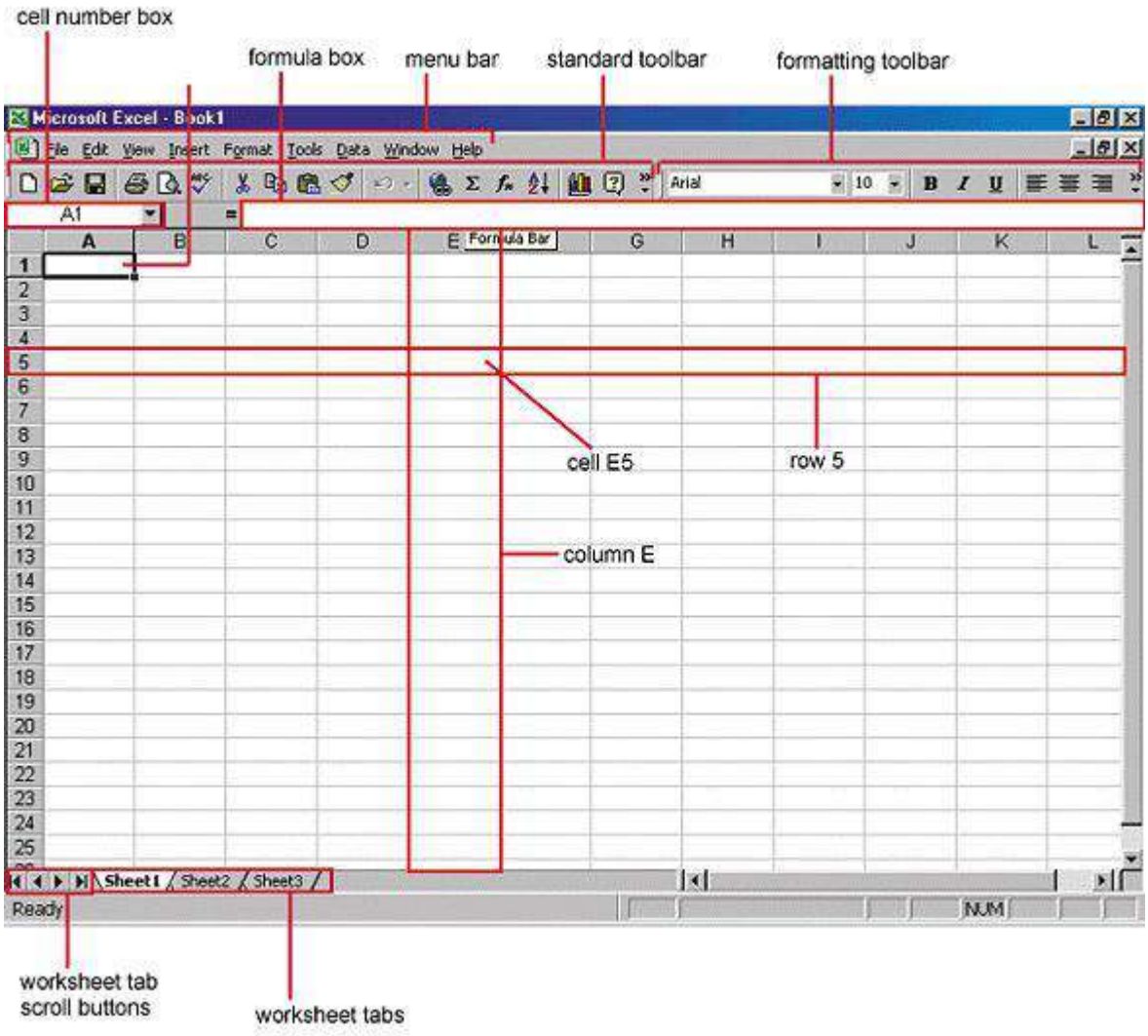
It is impossible to give a complete listing of applications that can be done in spreadsheets, but they include budgeting displays, checkbook registers, enrollment records, inventories, coded surveys, field and laboratory research data, and financial and accounting applications.

The capacities of Excel are as follows. You can have 256 columns of information. You can have up to 16,384 rows. That comes out to over 4,194,000,000 cells of information and that's only on the first sheet!!! You can have 16 sheets of information in one workbook, and the number of sheets can be increased, if needed. Excel refers to each file as a workbook, because there can be multiple sheets (pages) in one file.

You will want to load Excel at this time to continue this first lesson. Double-click on the Excel icon to start the program.

Excel allows you to create spreadsheets much like paper ledgers that can perform automatic calculations. Each Excel file is a **workbook** that can hold many **worksheets**. The worksheet is a grid of **columns** (designated by letters) and **rows** (designated by numbers). The letters and numbers of the columns and rows (called **labels**) are displayed in gray buttons across the top and left side of the worksheet. The intersection of a column and a row is called a **cell**. Each cell on the spreadsheet has a **cell address** that is the column letter and the row number. Cells can contain either text, numbers, or mathematical formulas.

Microsoft Excel 2000 Screen Elements

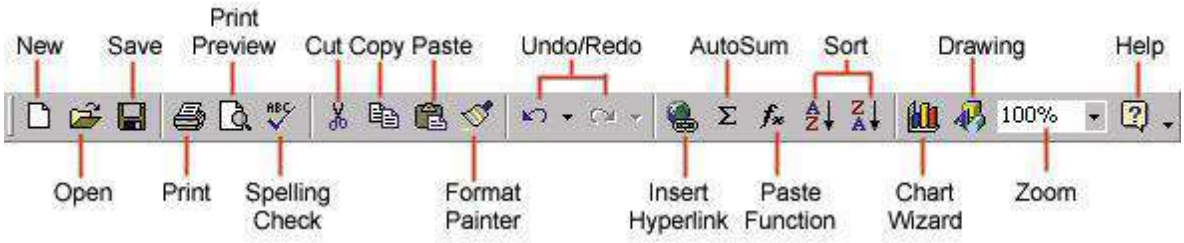


Adding and Renaming Worksheets

The worksheets in a workbook are accessible by clicking the worksheet tabs just above the status bar. By default, three worksheets are included in each workbook. To add a sheet, select **Insert|Worksheet** from the menu bar. To rename the worksheet tab, right-click on the tab with the mouse and select **Rename** from the shortcut menu. Type the new name and press the **ENTER** key.

The Standard Toolbar

This toolbar is located just below the menu bar at the top of the screen and allows you to quickly access basic Excel commands.



New - Select **File|New** from the menu bar, press **CTRL+N**, or click the **New** button to create a new workbook.

Open - Click **File|Open** from the menu bar, press **CTRL+O**, or click the **Open** folder button to open an existing workbook.

Save - The first time you save a workbook, select **File|Save As** and name the file. After the file is named click **File|Save**, **CTRL+S**, or the Save button on the standard toolbar.

Print - Click the Print button to print the worksheet.

Print Preview - This feature will allow you to preview the worksheet before it prints.

Spell Check - Use the spell checker to correct spelling errors on the worksheet.

Cut, Copy, Paste, and Format Painter - These actions are explained in the *Modifying A Worksheet* section.

Undo and Redo - Click the backward **Undo** arrow to cancel the last action you performed, whether it be entering data into a cell, formatting a cell, entering a function, etc. Click the forward **Redo** arrow to cancel the undo action.

Insert Hyperlink - To insert a hyperlink to a web site on the Internet, type the text into a cell you want to be the link that can be clicked with the

mouse. Then, click the Insert Hyperlink button and enter the web address you want the text to link to and click **OK**.

Autosum, Function Wizard, and Sorting - These features are discussed in detail in the *Functions* tutorial.

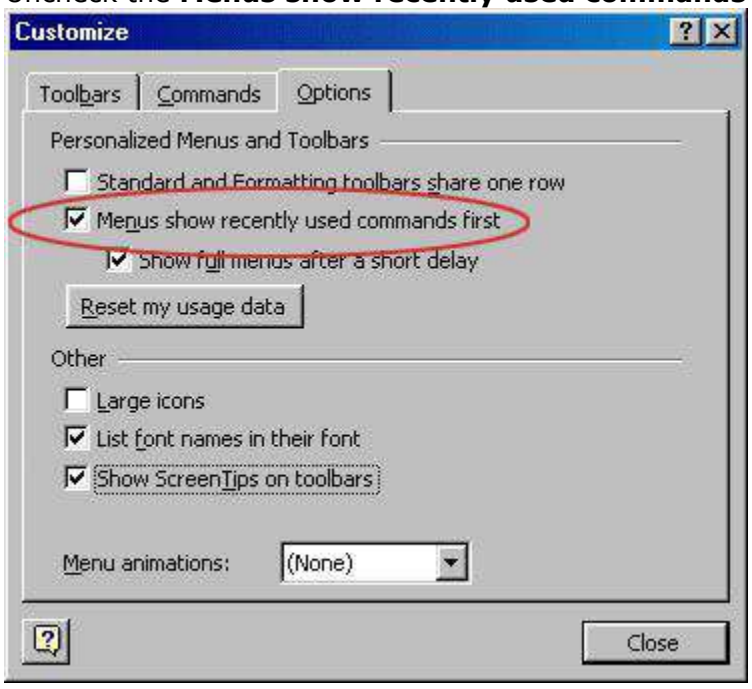
Zoom - To change the size that the worksheet appears on the screen, choose a different percentage from the Zoom menu.

2. Customizing Excel

Menus

Unlike previous versions of Excel, the menus in Excel 2000 initially list only the commands you have recently used. To view all options in each menu, click the double arrows at the bottom of the menu. If you would like to revert to the way older versions of Excel displayed menu options, follow these steps:

Select **View|Toolbars|Customize** from the menu bar.
Click on the **Options** tab.
Uncheck the **Menus show recently used commands first** check box.



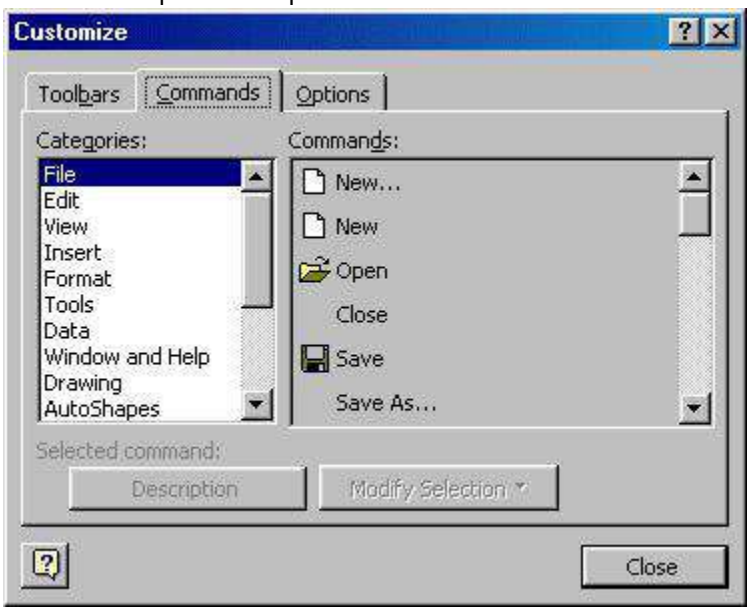
Toolbars

Many toolbars displaying shortcut buttons are available. Select **View|Toolbars** from the menu bar to select more toolbars.

Customize Toolbars

Customizing toolbars allows you to delete certain shortcut buttons from a toolbar if you do not use them and add the shortcut buttons for commands you use often.

Select **View|Toolbars|Customize** and select the **Commands** tab.



By clicking on the command categories in the **Categories** box, the commands will change in the **Commands** box to the right.

Select the command you would like to add to the toolbar by selecting it from the **Commands** box.

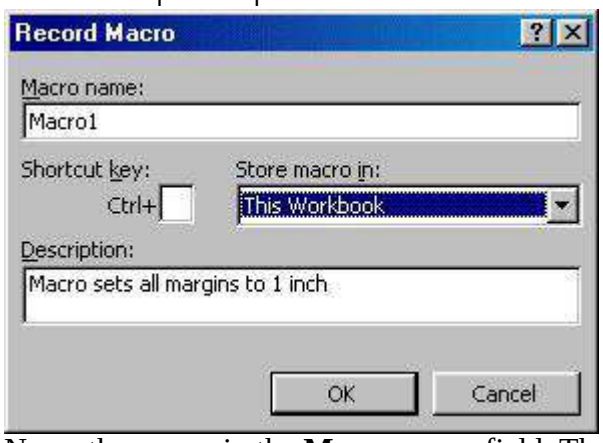
Drag the command with the mouse to the desired location on the toolbar and release the mouse button. The shortcut button should now appear on the toolbar.

Remove buttons from the toolbars by reversing these steps. Highlight the button on the toolbar, drag it off the toolbar with the mouse, and release the mouse button.

Recording A Macro

Macros can speed up any common editing sequence you may execute in an Excel spreadsheet. In this example we will make a simple macro that will set all the margins on the page to one inch.

Click **Tools**|**Macro**|**Record New Macro** from the menu bar.



Name the macro in the **Macro name** field. The name cannot contain spaces and must not begin with a number.

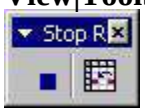
If you would like to assign a shortcut key to the macro for easy use, enter the letter under **Shortcut key**. Enter a lower case letter to make a CTRL+number shortcut and enter an upper case letter to assign a CTRL+SHIFT+number shortcut key. If you select a shortcut key that Excel already uses, your macro will overwrite that function.

Select an option from the **Store macro in** drop-down menu.

Enter a description of the macro in the **Description** field. This is for your reference only so you remember what the macro does. Click **OK** when you are ready to start recording.

Select options from the drop down menus and Excel will record the options you choose from the dialog boxes, such as changing the margins on the Page Setup window. Select **File**|**Page Setup** and change all the margins to 1". Press **OK**.

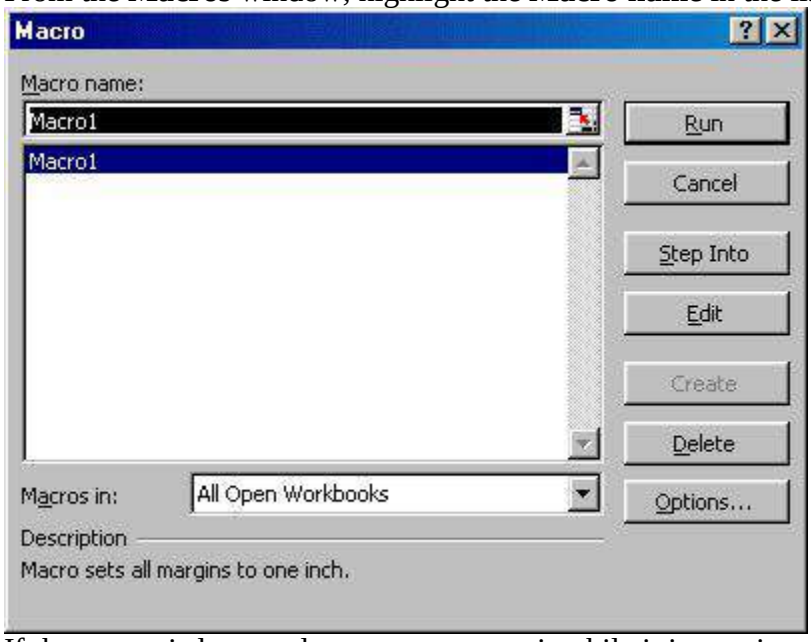
Replace this step with whatever commands you want your macro to execute. Select only options that modify the worksheet. Toggle actions such as **View**|**Toolbars** that have no effect on the worksheet will not be recorded.



Click the **Stop** button the recording toolbar. The macro is now saved.

Running A Macro

To run a macro you have created, select **Tools|Macro|Macros** from the menu bar. From the **Macros** window, highlight the **Macro name** in the list and click **Run**.



If the macro is long and you want to stop it while it is running, press **BREAK** (hold **CTRL** and press **PAUSE**).

3.Modifying a Spread Sheet

Moving Through Cells

Use the mouse to select a cell you want to begin adding data to and use the keyboard strokes listed in the table below to move through the cells of a worksheet.

Movement	Key stroke
One cell up	up arrow key
One cell down	down arrow key or **ENTER**
One cell left	left arrow key
One cell right	right arrow key or **TAB**
Top of the worksheet (cell A1)	**CTRL+HOME**
End of the worksheet (last cell containing data)	**CTRL+END**
End of the row	**CTRL+**right arrow key
End of the column	**CTRL+**down arrow key
Any cell	**File|Go To** menu bar command

Adding Worksheets, Rows, and Columns

Worksheets - Add a worksheet to a workbook by selecting **Insert|Worksheet** from the menu bar.
Row - To add a row to a worksheet, select **Insert|Rows** from the menu bar, or highlight the row by clicking on the row label, right-click with the mouse, and choose **Insert**.
Column - Add a column by selecting **Insert|Columns** from the menu bar, or highlight the column by click on the column label, right-click with the mouse, and choose **Insert**.

Resizing Rows and Columns

There are two ways to resize rows and columns.

Resize a row by dragging the line below the label of the row you would like to resize. **Resize a column** in a similar manner by dragging the line to the right of the label corresponding to the column you want to resize.
-OR-
Click the row or column label and select **Format|Row|Height** or **Format|Column|Width** from the menu bar to enter a numerical value for the height of the row or width of the column.

Selecting Cells

Before a cell can be modified or formatted, it must first be selected (highlighted). Refer to the table below for selecting groups of cells.

Cells to select	Mouse action
One cell	click once in the cell
Entire row	click the row label
Entire column	click the column label
Entire worksheet	click the whole sheet button
Cluster of cells	drag mouse over the cells or hold down the **SHIFT** key while using the arrow keys

To activate the contents of a cell, double-click on the cell or click once and press **F2**.

Moving and Copying Cells

Moving Cells 
To cut cell contents that will be moved to another cell select **Edit|Cut** from the menu bar or click the **Cut** button on the standard toolbar.

Copying Cells 
To copy the cell contents, select **Edit|Copy** from the menu bar or click the **Copy** button on the standard toolbar.

Pasting Cut and Copied Cells 
Highlight the cell you want to paste the cut or copied content into and select **Edit|Paste** from the menu bar or click the **Paste** button on the standard toolbar.

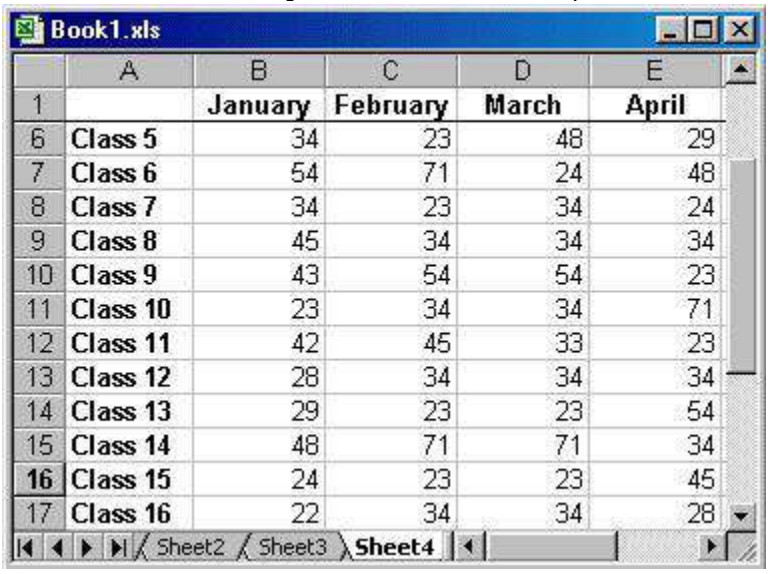
Drag and Drop
If you are moving the cell contents only a short distance, the drag- and - drop method may be easier. Simply drag the highlighted border of the selected cell to the destination cell with the mouse.

Freeze Panes

If you have a large worksheet with column and row headings, those headings will disappear as the worksheet is scrolled. By using the Freeze Panes feature, the headings can be visible at all times.

Click the label of the row below the row that should remain frozen at the top of the worksheet.
Select **Window|Freeze Panes** from the menu bar.

To remove the frozen panes, select **Window|Unfreeze Panes**.

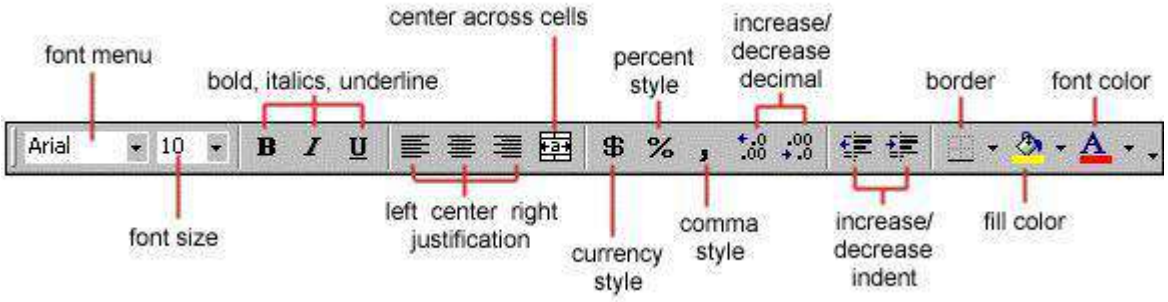


Freeze panes has been added to row 1 in the image above. Notice that the row numbers skip from 1 to 6. As the worksheet is scrolled, row 1 will remain stationary while the remaining rows will move.

4. Formatting cells

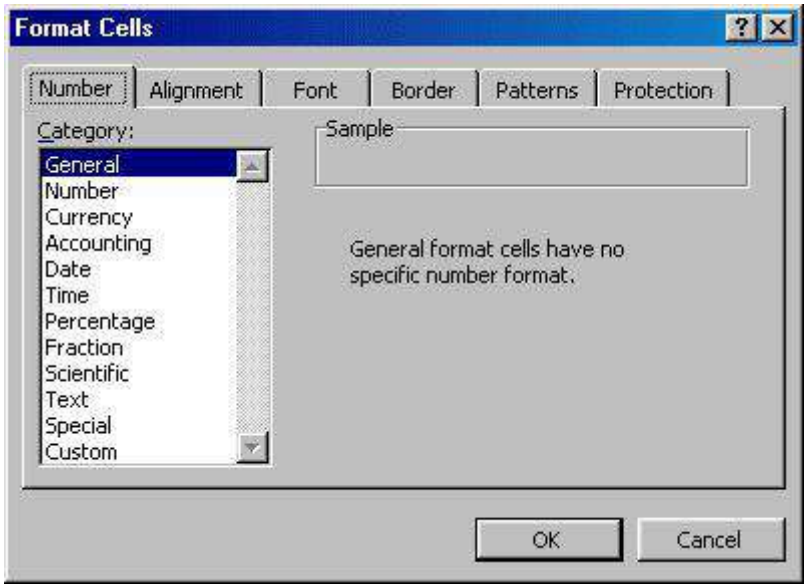
Formatting Toolbar

The contents of a highlighted cell can be formatted in many ways. Font and cell attributes can be added from shortcut buttons on the formatting bar. If this toolbar is not already visible on the screen, select **View|Toolbars|Formatting** from the menu bar.



Format Cells Dialog Box

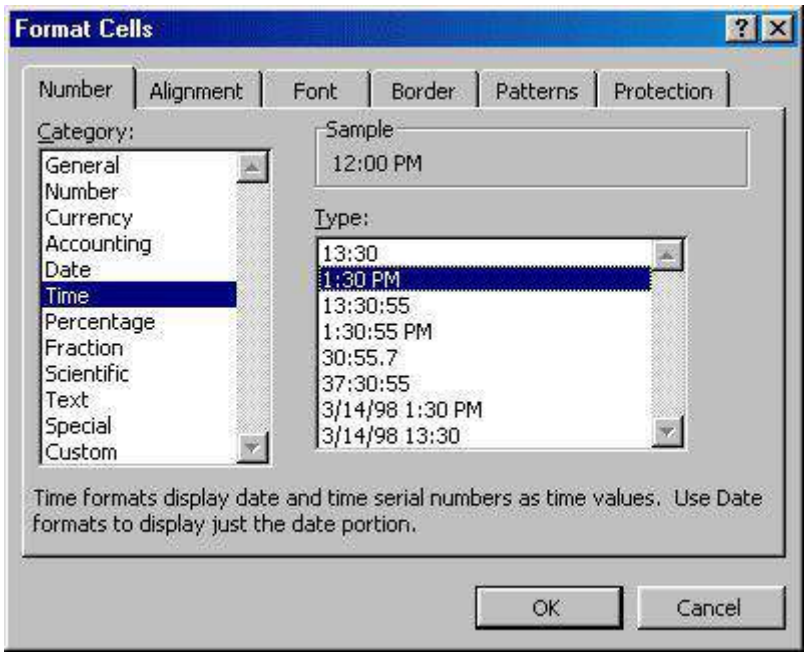
For a complete list of formatting options, right- click on the highlighted cells and choose **Format Cells** from the shortcut menu or select **Format|Cells** from the menu bar.



Number tab - The data type can be selected from the options on this tab. Select **General** if the cell contains text and number, or another numerical category if the cell is a number that will be included in functions or formulas.
Alignment tab - These options allow you to change the position and alignment of the data with the cell.
Font tab - All of the font attributes are displayed in this tab including font face, size, style, and effects.
Border and Pattern tabs - These tabs allow you to add borders, shading, and background colors to a cell.

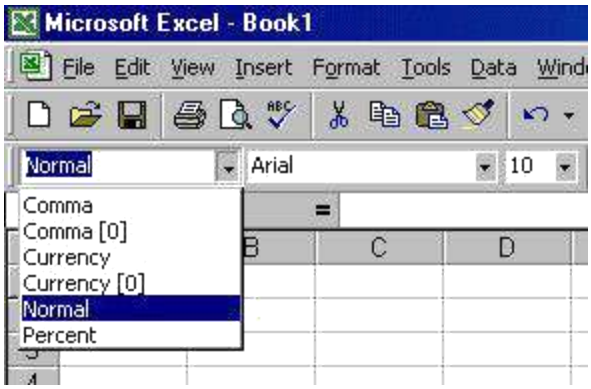
Dates and Times

If you enter the date "January 1, 2001" into a cell on the worksheet, Excel will automatically recognize the text as a date and change the format to "1-Jan-01". To change the date format, select the **Number** tab from the **Format Cells** window. Select "Date" from the **Category** box and choose the format for the date from the **Type** box. If the field is a time, select "Time" from the **Category** box and select the type in the right box. Date and time combinations are also listed. Press **OK** when finished.



Styles

The use of styles in Excel allow you to quickly format your worksheet, provide consistency, and create a professional look. Select the Styles drop-down box from the formatting toolbar (it can be added by customizing the toolbar). Excel provides several preset styles:

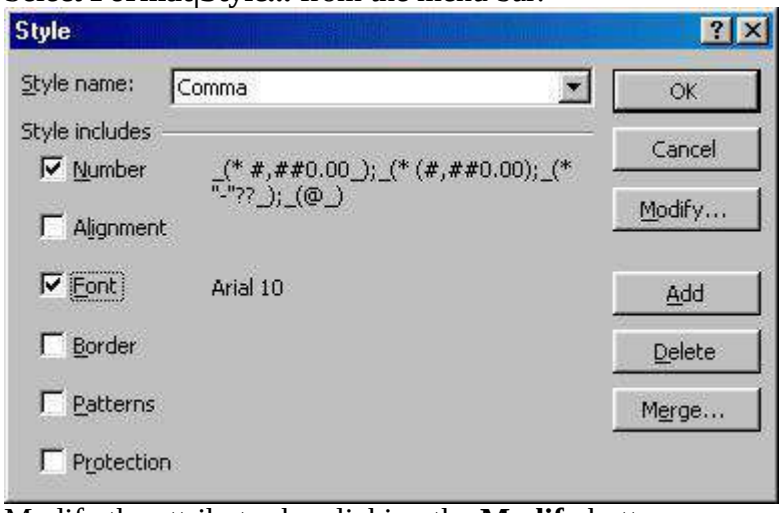


Comma - Adds commas to the number and two digits beyond a decimal point.
Comma [0] - Comma style that rounds to a whole number. **Currency** - Formats the number as currency with a dollar sign, commas, and two digits beyond the decimal point.
Currency [0] - Currency style that rounds to a whole number.
Normal - Reverts any changes to general number format.
Percent - Changes the number to a percent and adds a percent sign.

Style Dialog Box

Create your own styles from the Style Dialog Box.

Highlight the cell(s) you want to add a style to.
Select **Format|Style...** from the menu bar.

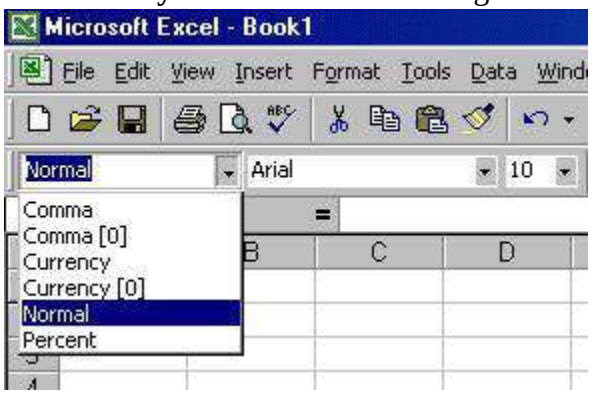


Modify the attributes by clicking the **Modify** button.
Check all the items under **Style includes** that the style should format.
Click **Add** to preview the formatting changes on the worksheet.
Highlight the style you want to apply to the paragraph and click **Apply**.

Create a New Style

Select the cell on the worksheet containing the formatting you would like to set as a new style.

Click the **Style** box on the Formatting toolbar so the style name is highlighted.



Delete the text in the Style box and type the name of the new style.
Press **ENTER** when finished.

Format Painter

A handy feature on the standard toolbar for formatting text is the Format Painter. If you have formatted a cell with a certain font style, date format, border, and other formatting options, and you want to format another cell or group of cells the same way, place the cursor within the cell containing the formatting you want to copy. Click the **Format Painter** button in the standard toolbar (notice that your pointer now has a paintbrush beside it). Highlight the cells you want to add the same formatting to.

To copy the formatting to many groups of cells, double-click the **Format Painter** button. The format painter remains active until you press the **ESC** key to turn it off.

AutoFormat

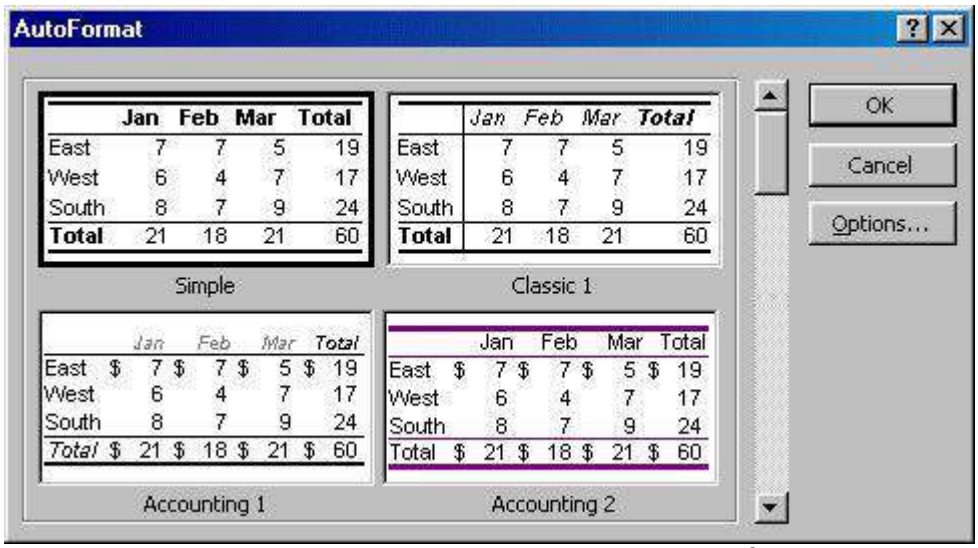
Excel has many preset table formatting options. Add these styles by following these steps:

Highlight the cells that will be formatted.

	A	B	C	D
1	Textbook	Quantity	Price	
2	Biology	4	$99.99	
3	Chemistry	2	$79.95	
4	Calculus	7	$65.99	
5	English	12	$49.99	

Select **Format|AutoFormat** from the menu bar.
On the AutoFormat dialog box, select the format you want to apply to the table by clicking on it with the mouse. Use the scroll bar to view all of the formats

available.



Click the **Options...** button to select the elements that the formatting will apply to. Click **OK** when finished.

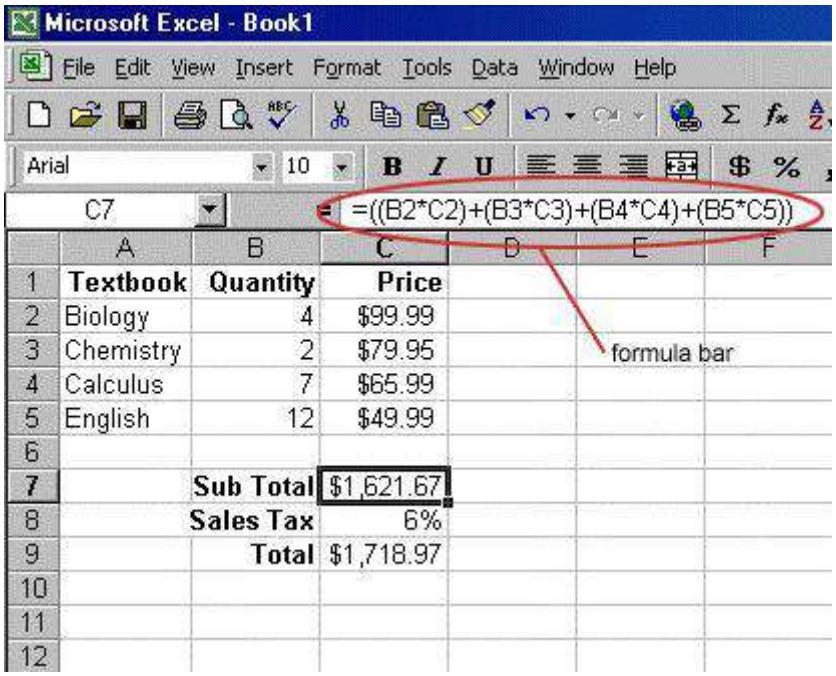
	A	B	C	D
1	*Textbook*	*Quantity*	*Price*	
2	Biology	4	$99.99	
3	Chemistry	2	$79.95	
4	Calculus	7	$65.99	
5	English	12	$49.99	

1. Formulas and functions

The distinguishing feature of a spreadsheet program such as Excel is that it allows you to create mathematical formulas and execute functions. Otherwise, it is not much more than a large table for displaying text. This page will show you how to create these calculations.

Formulas

Formulas are entered in the worksheet cell and must begin with an equal sign "=". The formula then includes the addresses of the cells whose values will be manipulated with appropriate operands placed in between. After the formula is typed into the cell, the calculation executes immediately and the formula itself is visible in the formula bar. See the example below to view the formula for calculating the sub total for a number of textbooks. The formula multiplies the quantity and price of each textbook and adds the subtotal for each book.



	A	B	C	D	E	F
1	**Textbook**	**Quantity**	**Price**			
2	Biology	4	$99.99			
3	Chemistry	2	$79.95			
4	Calculus	7	$65.99			
5	English	12	$49.99			
6						
7		**Sub Total**	$1,621.67			
8		**Sales Tax**	6%			
9		**Total**	$1,718.97			
10						
11						
12						

Linking Worksheets

You may want to use the value from a cell in another worksheet within the same workbook in a formula. For example, the value of cell A1 in the current worksheet and cell A2 in the second worksheet can be added using the format "sheetname!celladdress". The formula for this example would be "=A1+Sheet2!A2" where the value of cell A1 in the current worksheet is added to the value of cell A2 in the worksheet named "Sheet2".

Relative, Absolute, and Mixed Referencing

Calling cells by just their column and row labels (such as "A1") is called **relative referencing**. When a formula contains relative referencing and it is copied from one cell to another, Excel does not create an exact copy of the formula. It will change cell addresses relative to the row and column they are moved to. For example, if a simple addition formula in cell C1 "=(A1+B1)" is copied to cell C2, the formula would change to "=(A2+B2)" to reflect the new row. To prevent this change, cells must be called by **absolute referencing** and this is accomplished by placing dollar signs " $" within the cell addresses in the formula. Continuing the previous example, the formula in cell C1 would read "=($A $1+$B$1)" if the value of cell C2 should be the sum of cells A1 and B1. Both the column and row of both cells are absolute and will not change when copied. **Mixed referencing** can also be used where only the row OR column fixed. For example, in the formula "=(A$1+$B2)", the row of cell A1 is fixed and the column of cell B2 is fixed.

Basic Functions

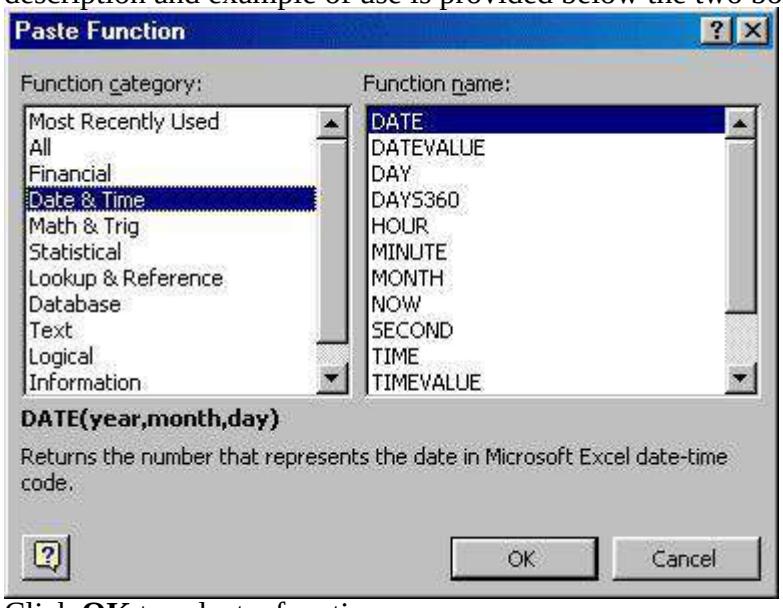
Functions can be a more efficient way of performing mathematical operations than formulas. For example, if you wanted to add the values of cells D1 through D10, you would type the formula "=D1+D2+D3+D4+D5+D6+D7+D8+D9+D10". A shorter way would be to use the SUM function and simply type "=SUM(D1:D10)". Several other functions and examples are given in the table below:

Function	Example	Description
SUM	=SUM(A1:100)	finds the sum of cells A1 through A100
AVERAGE	=AVERAGE(B1:B10)	finds the average of cells B1 through B10
MAX	=MAX(C1:C100)	returns the highest number from cells C1 through C100
MIN	=MIN(D1:D100)	returns the lowest number from cells D1 through D100
SQRT	=SQRT(D10)	finds the square root of the value in cell D10
TODAY	=TODAY()	returns the current date (leave the parentheses empty)

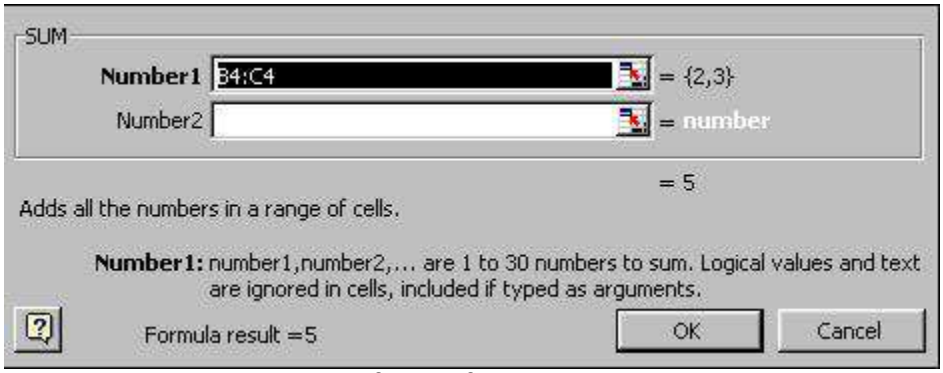
Function Wizard 

View all functions available in Excel by using the Function Wizard.

Activate the cell where the function will be placed and click the **Function Wizard** button on the standard toolbar.
From the **Paste Function** dialog box, browse through the functions by clicking in the **Function category** menu on the left and select the function from the **Function name** choices on the right. As each function name is highlighted a description and example of use is provided below the two boxes.



Click **OK** to select a function.
The next window allows you to choose the cells that will be included in the function. In the example below, cells B4 and C4 were automatically selected for the sum function by Excel. The cell values {2, 3} are located to the right of the **Number 1** field where the cell addresses are listed. If another set of cells, such as B5 and C5, needed to be added to the function, those cells would be added in the format "B5:C5" to the **Number 2** field.

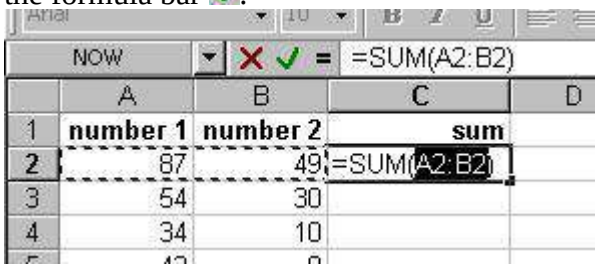


Click **OK** when all the cells for the function have been selected.

Autosum Σ

Use the Autosum function to add the contents of a cluster of adjacent cells.

Select the cell that the sum will appear in that is outside the cluster of cells whose values will be added. Cell C2 was used in this example.
Click the **Autosum** button (Greek letter sigma) on the standard toolbar.
Highlight the group of cells that will be summed (cells A2 through B2 in this example).
Press the **ENTER** key on the keyboard or click the green check mark button on the formula bar ✓.



6. Sorting AND Filling

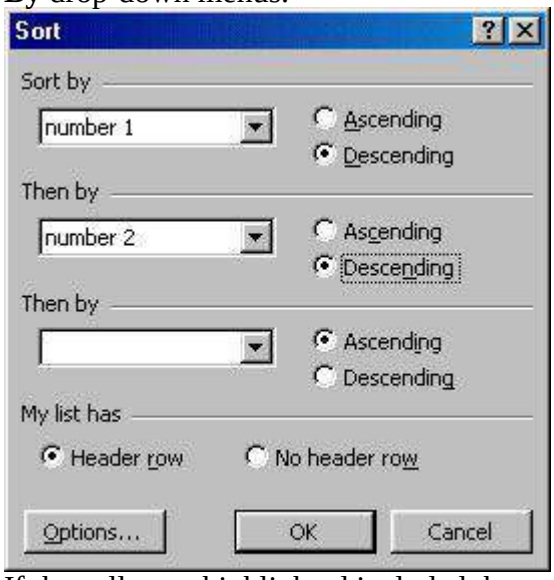
Basic Sorts

To execute a basic descending or ascending sort based on one column, highlight the cells that will be sorted and click the **Sort Ascending** (A-Z) button or **Sort Descending** (Z-A) button on the standard toolbar.

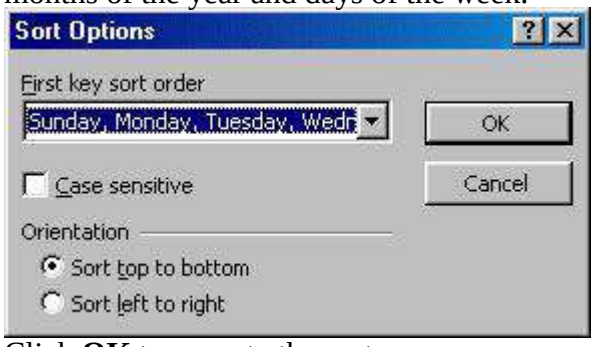
Complex Sorts

To sort by multiple columns, follow these steps:

Highlight the cells, rows, or columns that will be sorted.
Select **Data**|**Sort** from the menu bar.
From the **Sort** dialog box, select the first column for sorting from the **Sort By** drop-down menu and choose either ascending or descending.
Select the second column and, if necessary, the third sort column from the **Then By** drop-down menus.



If the cells you highlighted included the text headings in the first row, mark **My list has**...**Header row** and the first row will remain at the top of the worksheet.
Click the **Options** button for special non- alphabetic or numeric sorts such as months of the year and days of the week.



Click **OK** to execute the sort.

Autofill

The Autofill feature allows you to quickly fill cells with repetitive or sequential data such as chronological dates or numbers, and repeated text.

> Type the beginning number or date of an incrementing series or the text that will be repeated into a cell.
> Select the handle at the bottom, right corner of the cell with the left mouse button and drag it down as many cells as you want to fill. Release the mouse button.

If you want to autofill a column with cells displaying the same number or date you must enter identical data to two adjacent cells in a column. Highlight the *two* cells and drag the handle of the selection with the mouse.

Alternating Text and Numbers with Autofill

The Autofill feature can also be used for alternating text or numbers. For example, to make a repeating list of the days of the week, type the seven days into seven adjacent cells in a column. Highlight the seven cells and drag down with the mouse.

Autofilling Functions

Autofill can also be used to copy functions. In the example below, column A and column B each contain lists of numbers and column C contains the sums of columns A and B for each row. The function in cell C2 would be "=SUM(A2:B2)". This function can then be copied to the remaining cells of column C by activating cell C2 and dragging the handle down to fill in the remaining cells. The autofill feature will automatically update the row numbers as shown below if the cells are reference relatively.

C2 = =SUM(A2:B2)

	A	B	C	D
1	**number 1**	**number 2**	**sum**	
2	87	49	136	
3	54	30		
4	34	10		
5	43	8		
6	24	23		
7	93	97		
8	40	32		
9	59	30		
10	82	87		
11	39	57		

C11 = =SUM(A11:B11)

	A	B	C	D
1	**number 1**	**number 2**	**sum**	
2	87	49	136	
3	54	30	84	
4	34	10	44	
5	43	8	51	
6	24	23	47	
7	93	97	190	
8	40	32	72	
9	59	30	89	
10	82	87	169	
11	39	57	96	

Charts

Chart Wizard 

The Chart Wizard brings you through the process of creating a chart by displaying a series of dialog boxes.

Enter the data into the worksheet and highlight all the cells that will be included in the chart including headers.

	A	B	C
1		Students	
2	English	34	
3	Biology	32	
4	Calculus	26	
5	Physics	28	
6	History	39	

Click the Chart Wizard button on the standard toolbar to view the first **Chart Wizard** dialog box.

Chart Type - Choose the **Chart type** and the **Chart subtype** if necessary. Click **Next**.

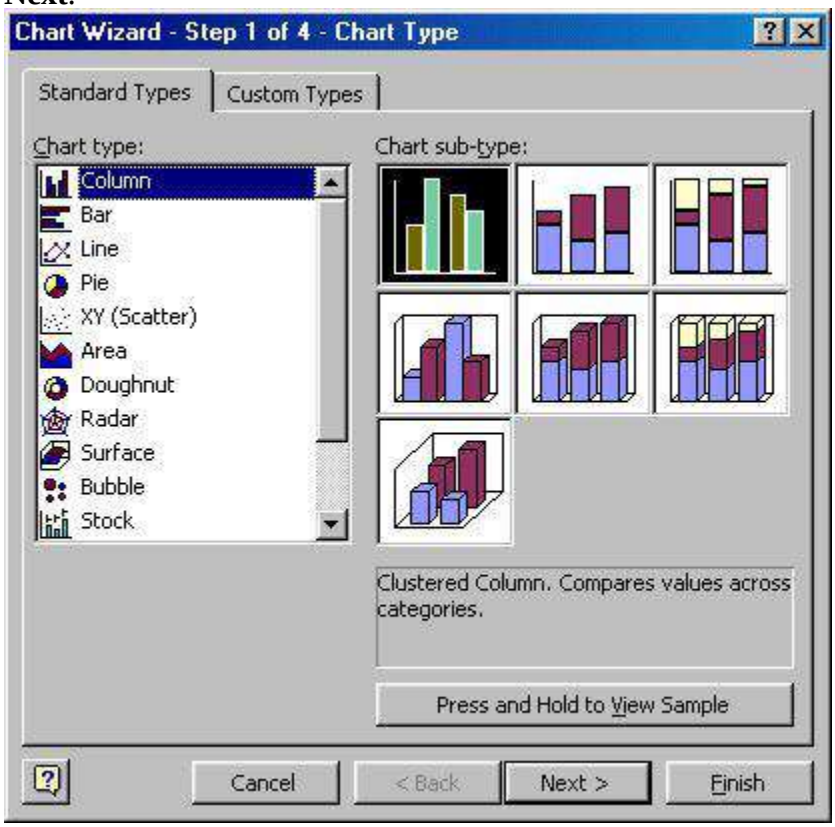


Chart Source Data - Select the data range (if different from the area highlighted in step 1) and click **Next**.

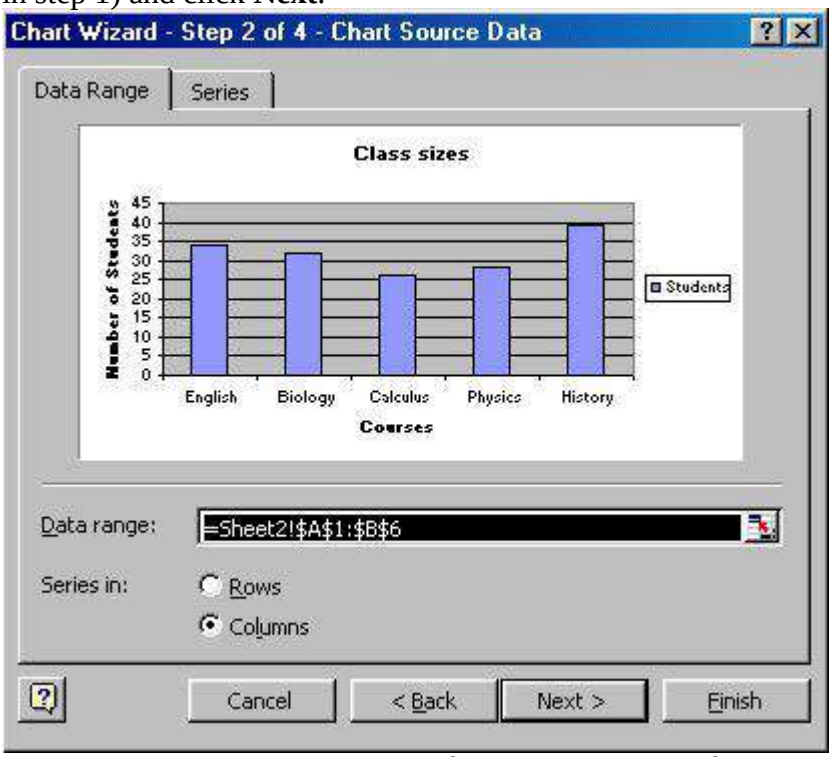


Chart Options - Enter the name of the chart and titles for the X- and Y -axes. Other options for the axes, grid lines, legend, data labels, and data table can be changed by clicking on the tabs. Press **Next** to move to the next set of options.

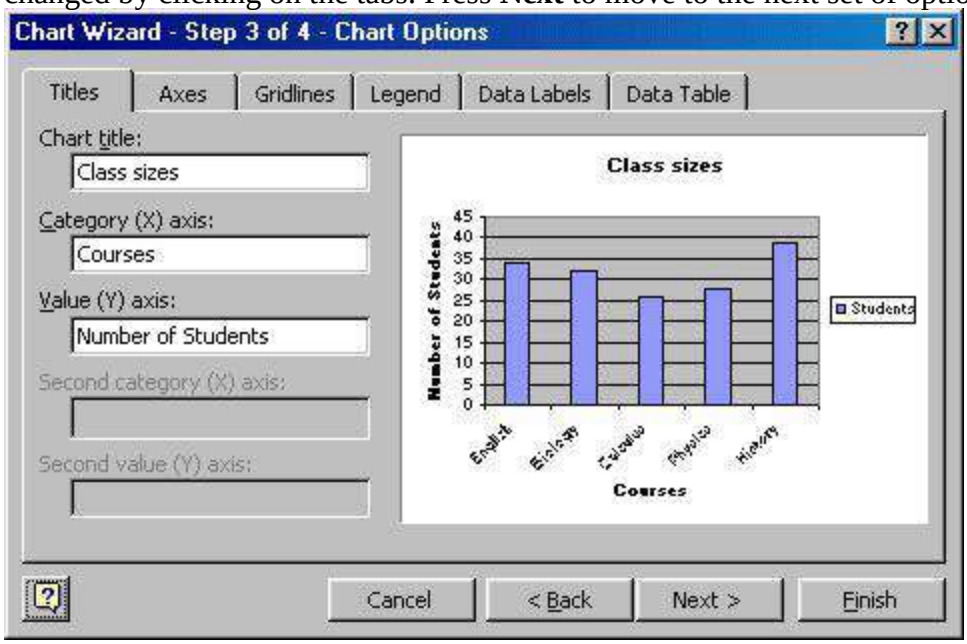
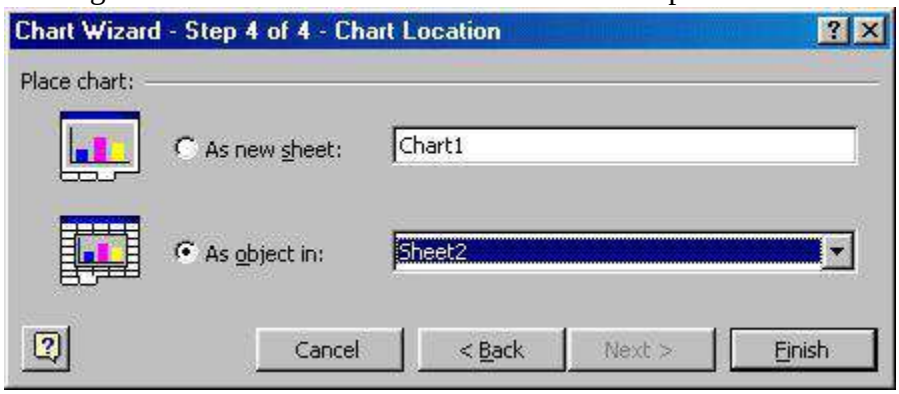
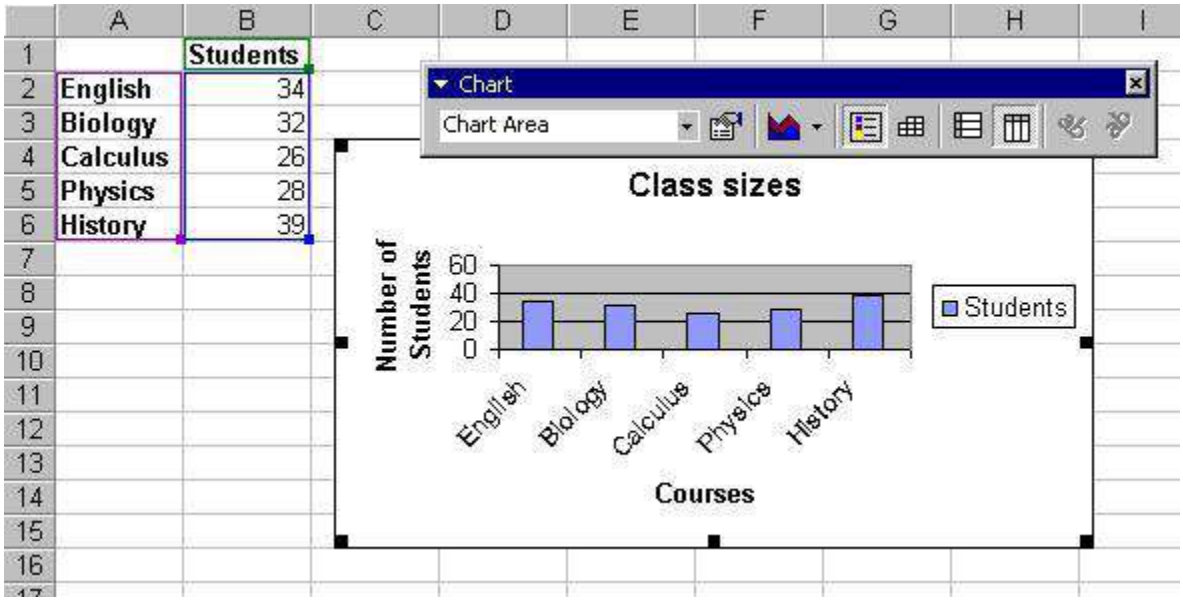


Chart Location - Click **As new sheet** if the chart should be placed on a new, blank worksheet or select **As object in** if the chart should be embedded in an

existing sheet and select the worksheet from the drop-down menu.



Click **Finish** to create the chart.



Resizing the Chart

To resize the chart, click on its border and drag any of the nine black handles to change the size. Handles on the corners will resize the chart proportionally while handles along the lines will stretch the chart.

Moving the Chart

Select the border of the chart, hold down the left mouse button, and drag the chart to a new location. Elements within the chart such as the title and labels may also be moved within the chart. Click on the element to activate it, and use the mouse to drag the element to move it.

Chart Formatting Toolbar

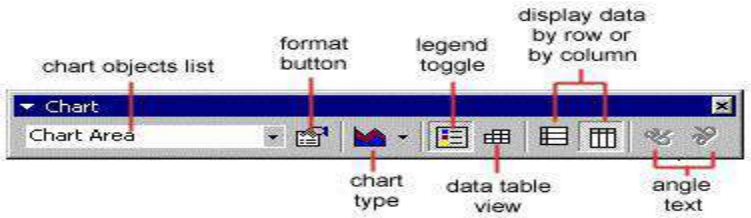


Chart Objects List - To select an object on the chart to format, click the object on the chart or select the object from the **Chart Objects List** and click the **Format button**. A window containing the properties of that object will then appear to make formatting changes.

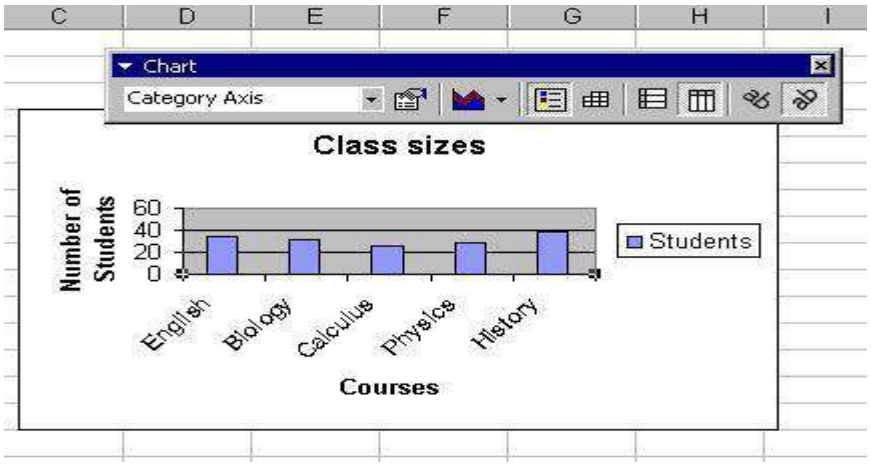
Chart Type - Click the arrowhead on the chart type button to select a different type of chart.

Legend Toggle - Show or hide the chart legend by clicking this toggle button.

Data Table view - Display the data table instead of the chart by clicking the Data Table toggle button.

Display Data by Column or Row - Charts the data by columns or rows according to the data sheet.

Angle Text - Select the category or value axis and click the **Angle Downward** or **Angle Upward** button to angle the the selected by +/- 45 degrees.



Copying the Chart to Microsoft Word

A finished chart can be copied into a Microsoft Word document. Select the chart and click **Copy**. Open the destination document in Word and click **Paste**.

1. Paper properties and printing

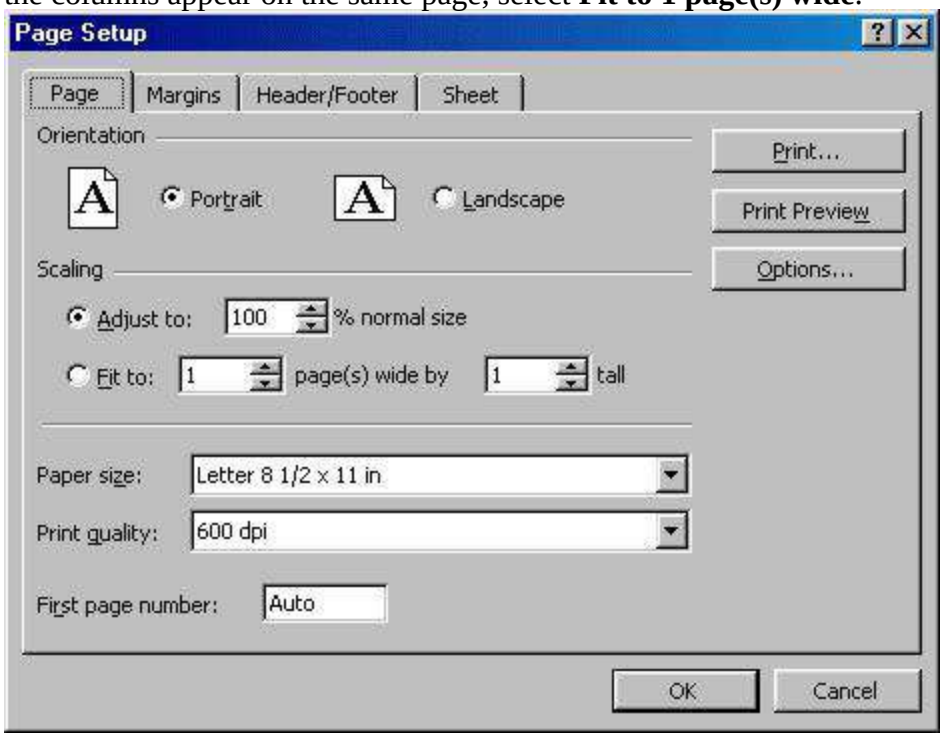
Page Breaks

To set page breaks within the worksheet, select the row you want to appear just below the page break by clicking the row's label. Then choose **Insert|Page Break** from the menu bar. You may need to click the double down arrow at the bottom of the menu list to view this option.

Page Setup

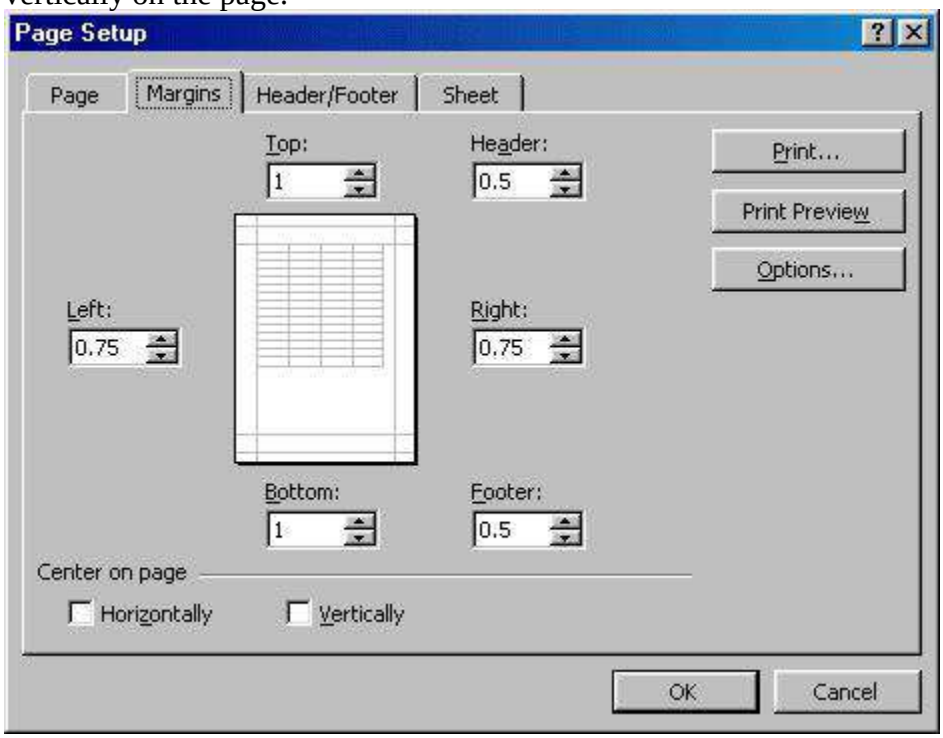
Select **File|Page Setup** from the menu bar to format the page, set margins, and add headers and footers.

Page
Select the **Orientation** under the **Page** tab in the Page Setup window to make the page Landscape or Portrait. The size of the worksheet on the page can also be formatting under **Scaling**. To force a worksheet to print only one page wide so all the columns appear on the same page, select **Fit to 1 page(s) wide**.



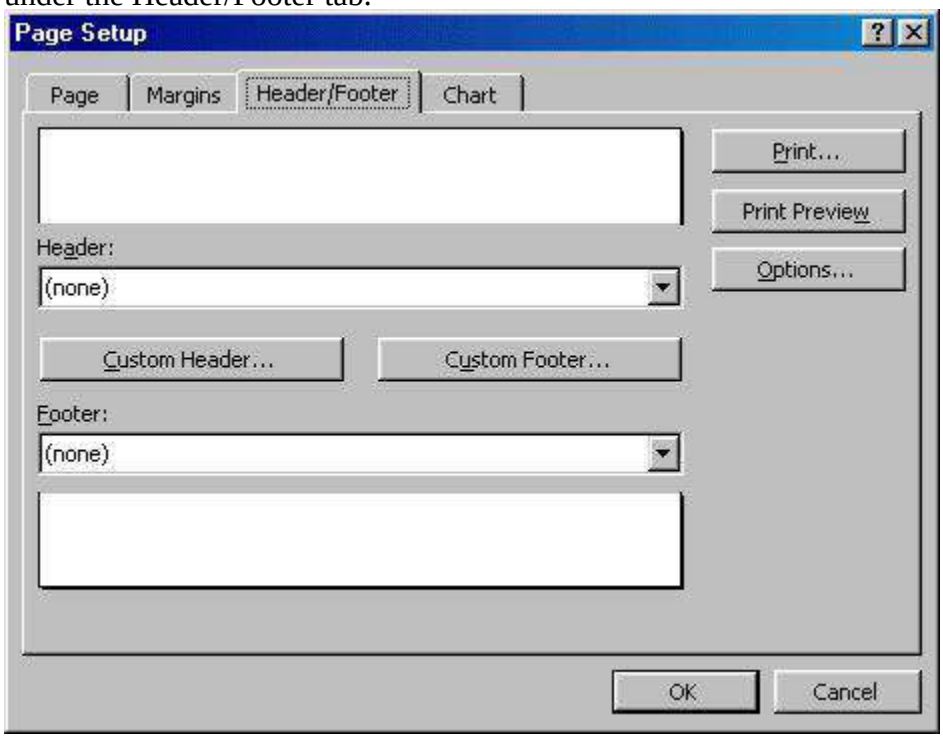
Margins

Change the top, bottom, left, and right margins under the **Margins** tab. Enter values in the header and footer fields to indicate how far from the edge of the page this text should appear. Check the boxes for centering horizontally or vertically on the page.



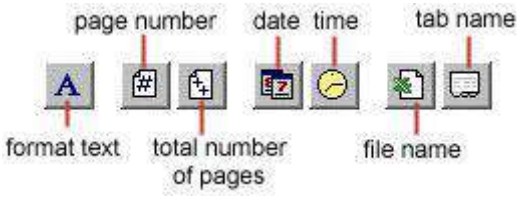
Header/Footer

Add preset headers and footers to the page by clicking the drop-down menus under the Header/Footer tab.



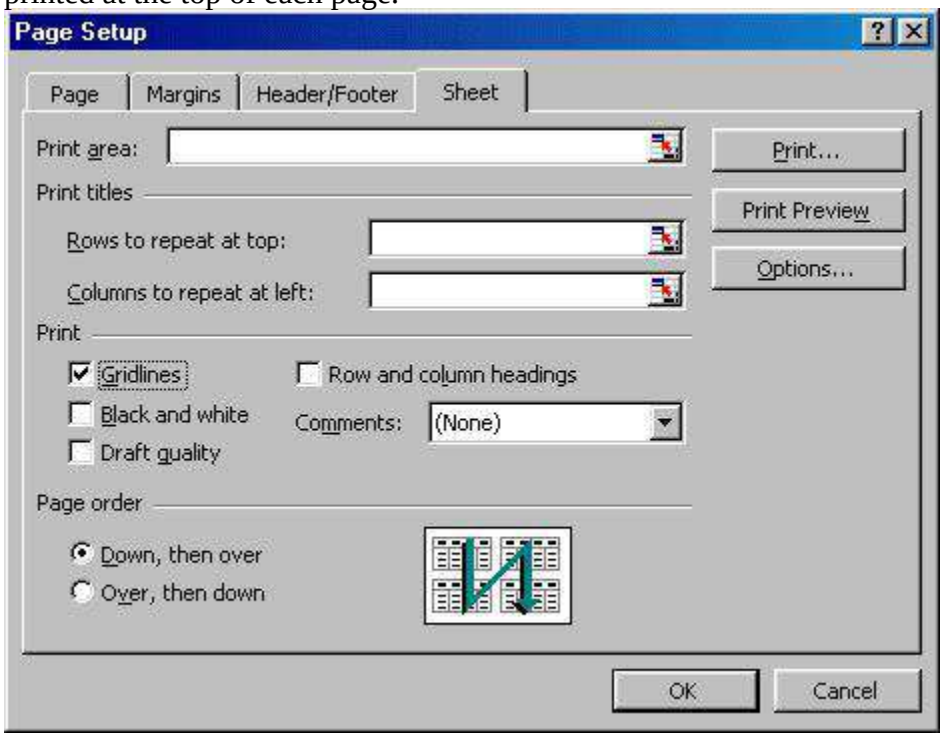
To modify a preset header or footer, or to make your own, click the **Custom**

Header and **Custom Footer** buttons. A new window will open allowing you to enter text in the left, center, or right on the page.



Format Text - Click this button after highlighting the text to change the font, size, and style.
Page Number - Insert the page number of each page.
Total Number of Pages - Use this feature along with the page number to create strings such as "page 1 of 15".
Date - Add the current date.
Time - Add the current time.
File Name - Add the name of the workbook file.
Tab Name - Add the name of the worksheet's tab.

Sheet
Check **Gridlines** if you want the gridlines dividing the cells to be printed on the page. If the worksheet is several pages long and only the first page includes titles for the columns, select **Rows to repeat at top** to choose a title row that will be printed at the top of each page.



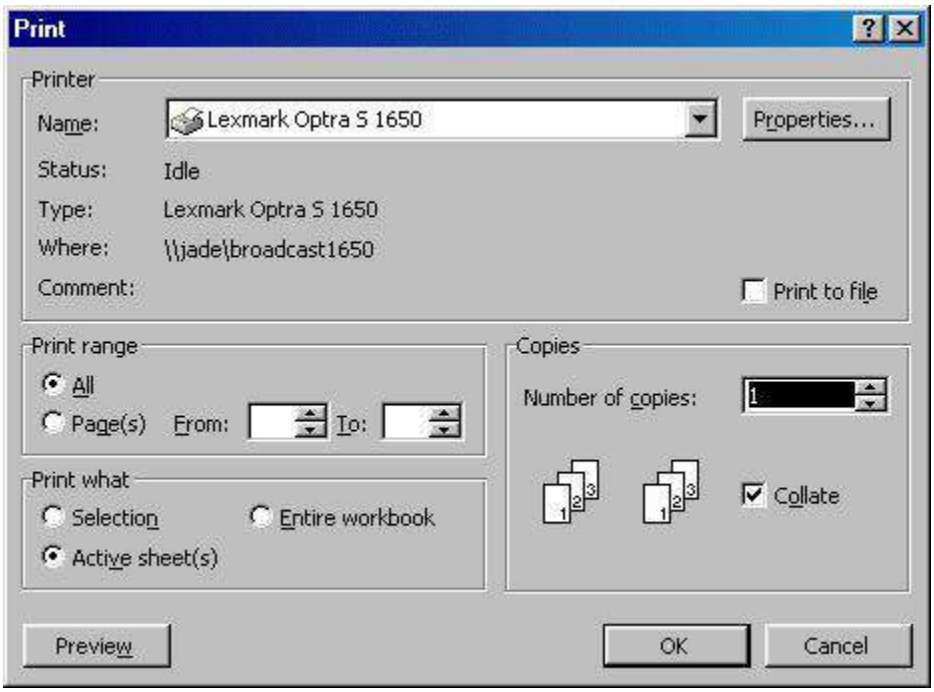
Print Preview

Select **File|Print Preview** from the menu bar to view how the worksheet will print. Click the **Next** and **Previous** buttons at the top of the window to display the pages and click the **Zoom** button to view the pages closer. Make page layout

modifications needed by clicking the **Page Setup** button. Click **Close** to return to the worksheet or **Print** to continue printing.

Print

To print the worksheet, select **File|Print** from the menu bar.



Print Range - Select either all pages or a range of pages to print.
Print What - Select selection of cells highlighted on the worksheet, the active worksheet, or all the worksheets in the entire workbook.
Copies - Choose the number of copies that should be printed. Check the **Collate** box if the pages should remain in order.

Click **OK** to print.

MS-ACCESS

INTRODUCTION TO DATABASE

All of us are familiar with the term *data*. In fact, unknowingly we come across data in our day-to- day life everyday. The age of a person, price of potato, number of students in a school, pin code of a city, etc. are some examples of data. In our life we have to remember so much of data. But it is easier for us to remember all information for a few individuals. For example, you may be in a position to tell accurately the age, height, complexion, income, educational qualification, residential address, etc. of your close friends. But it is too difficult for you to memorize all these information for a large number of individuals. Let us consider the example of University. Every year
about one-lakh students take admission in NU. If you are asked to memorize records of date of birth, subjects offered and postal address of all these students, it will not be possible for you.

To deal with such problems we construct a database. We arrange all information about students in a tabular form. We keep all the records so that if I am asked, 'How many students are there in Economics?' I am in a position to answer.

1. Getting Started with Ms- Access

What is a database?

A *database* is a collection of data which is organized in a manner that can be easily retrieved. They consist of fields, records, and files, much like a telephone book. A *field* is a single piece of information (your last name is one field); a *record* is one complete set of fields (your entry in the telephone book is a record); and a *file* is a collection of records (the entire telephone book). When you look at the phone book for someone's telephone number, you are the "search engine" for the telephone book database. The only difference is that the search engine included with database programs is probably a little faster than you are at retrieving information.

Let us begin with the concept ‘database’ and its management. Database is a collection of information in a structured way. We can say that it is a collection of a group of facts. Your personal address book is a database of names you like to keep track of, such as personal friends and members of your family.

What is a Relational Database?

A *relational database* is a single database spread across multiple tables. Think of a database as a file cabinet and each drawer of the file cabinet is a table.

Example. All of the employee information is kept in the first drawer; all of the vendor information is kept in the second drawer; and all of the purchase orders are kept in the third drawer. To connect each of these drawers (which is what makes it "relational"), a set piece of data from one drawer has to be present in one of the other drawers.
For instance, a purchase order will have a vendor name, address, & phone number on it, along with the items purchased, purchase price, and any discounts. If the vendor name is the "set" piece of data, it is entered in the purchase order table, but the address & phone number are retrieved from the vendor table instead of having to re-type that information each time it is needed in the purchase order table.

Let us at an example closer to our understanding, look into our example of information on students in NU. A sample of 5 students is presented in the table below (see, Fig 1). We have given 6 items of information on every student, namely, Roll No, Name, Date of birth, Sex, Postal address and Subjects offered by the student.

Fig. 1 contains required details about each student. There are six pieces of information on each student. They are Roll No, Name, Date of birth, Sex, Address and Subjects. Each piece of information in database is called a **Field**. We can define ***field* as *the smallest unit in a database***. Each field represents one and only one characteristic of an event or item. Thus there are six fields in this database.

ROLL NO	NAME	DATE OF BIRTH	SEX	ADDRESS	SUBJECTS

9721001	Subrat Das	21.05.1980	M	C36, Sector 2, Bhubaneswar Orissa	Pol Sc, Eco, History, Eng, Hindi
9721002	Aditya Bhoi	12.06.1981	M	At/Po. Burla, Sambal Pur	Phy, Chem, Biology, Eng, Hindi
9732012	Madhu Jain	03.01.1979	F	A31, Pilani, Rajasthan	Pol Sc, Eco, History, Eng, Hindi
9724004	Ahmad Ali	23.11.1979	M	12A, Sheikh Sarai-I, New Delhi	Phy, Chem, Biology, Eng, Hindi
9715023	C. Suresh	07.09.1980	M	96, Malviya Nagar, Bhopal	Pol Sc, Eco, History, Eng, Hindi

Fig. 1

If you take a close look at all these fields, they are not of the same type. Date of birth is *date* type whereas Name is *character* type. In database there can be five categories of fields. They are:

- Numeric
- Character
- Logic
- Memo
- Date

When Should I Use Access to Store Data?

Databases, like Access, are used to store large quantities of information. The information can be viewed, sorted, manipulated, retrieved, and printed in various ways. The database gives you the flexibility to obtain this data in multiple formats. If the information you need to store is vast, interrelated, and you need to retrieve it fast & accurately, Access is probably the way to go.

A Few Terms

These words are used often in Access so you will want to become familiar with them before using the program and this tutorial.

A **database** is a collection of related information.

An **object** is a competition in the database such as a table, query, form, or macro. A **table** is a grouping of related data organized in fields (columns) and records (rows) on a datasheet. By using a common field in two tables, the data can be combined. Many tables can be stored in a single database.
A **field** is a column on a datasheet and defines a data type for a set of values in a table. For a mailing list table might include fields for first name, last name, address, city, state, zip code, and telephone number.
A **record** in a row on a datasheet and is a set of values defined by fields. In a mailing list table, each record would contain the data for one person as specified by the intersecting fields.
Design View provides the tools for creating fields in a table.
Datasheet View allows you to update, edit, and delete in formation from a table.

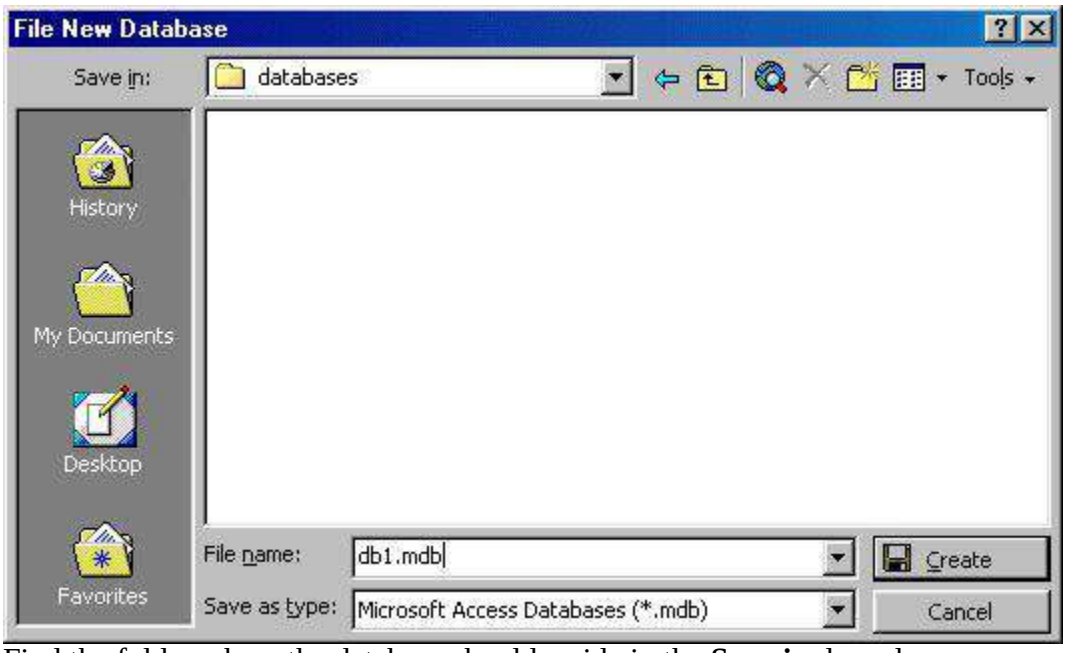
Getting Started

After opening Access, you will be presented with the window shown below. Select one of the first two options if you are creating a new database, or the third if you want to edit an existing database. All three choices are explained in detail below.

Blank Access database

Unlike Word documents, Excel worksheets, and Power Point presentations, you must save an Access database before you start working on it. After selecting "Blank Access database", you will first be prompted to specify a location and

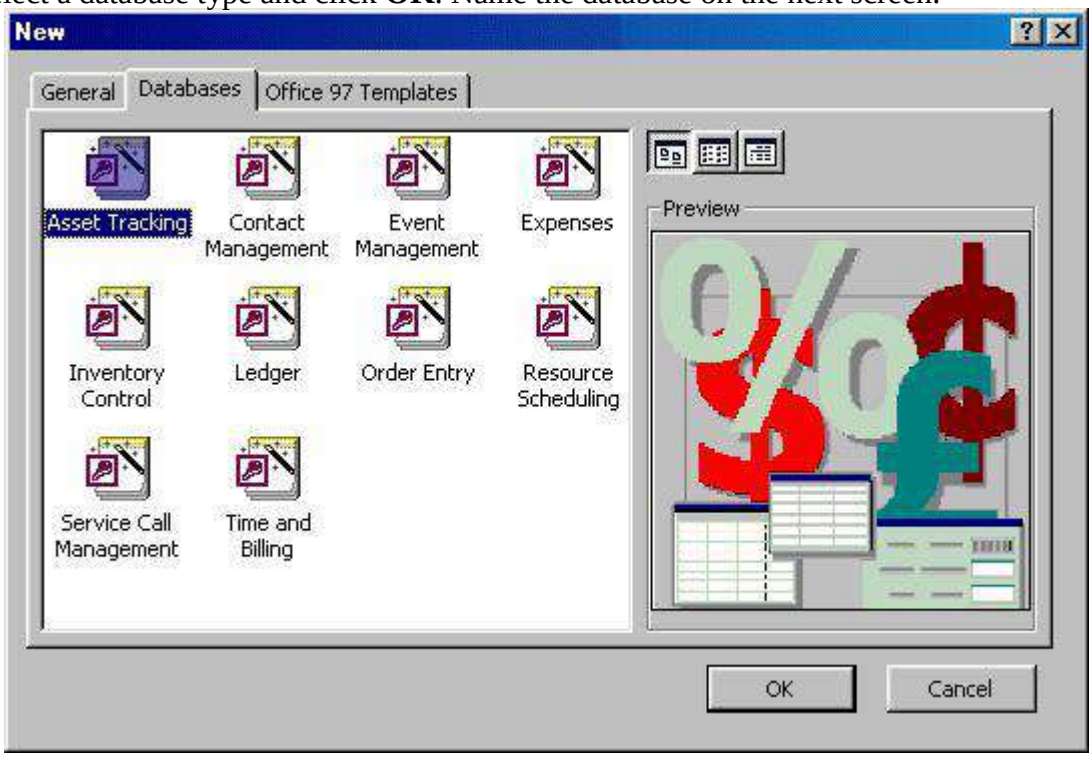
name for the database.



Find the folder where the database should reside in the **Save in** drop-down menu. Type the name of the database in the **File name** line and click the **Create** button.

Access database wizards, pages, and projects

Access' wizards and layout are existing database structures that only need data input. Select a database type and click **OK**. Name the database on the next screen.



Open an existing database

If the database was opened recently on the computer, it will be listed on the main window. Highlight the database name and click **OK**. Otherwise, highlight "More Files..." in the list and click **OK** . From the subsequent window, click the "Look In:" drop-down menu to find the folder where the database is located, highlight the database name in the listing and click **OK**.

Converting to Access 2000

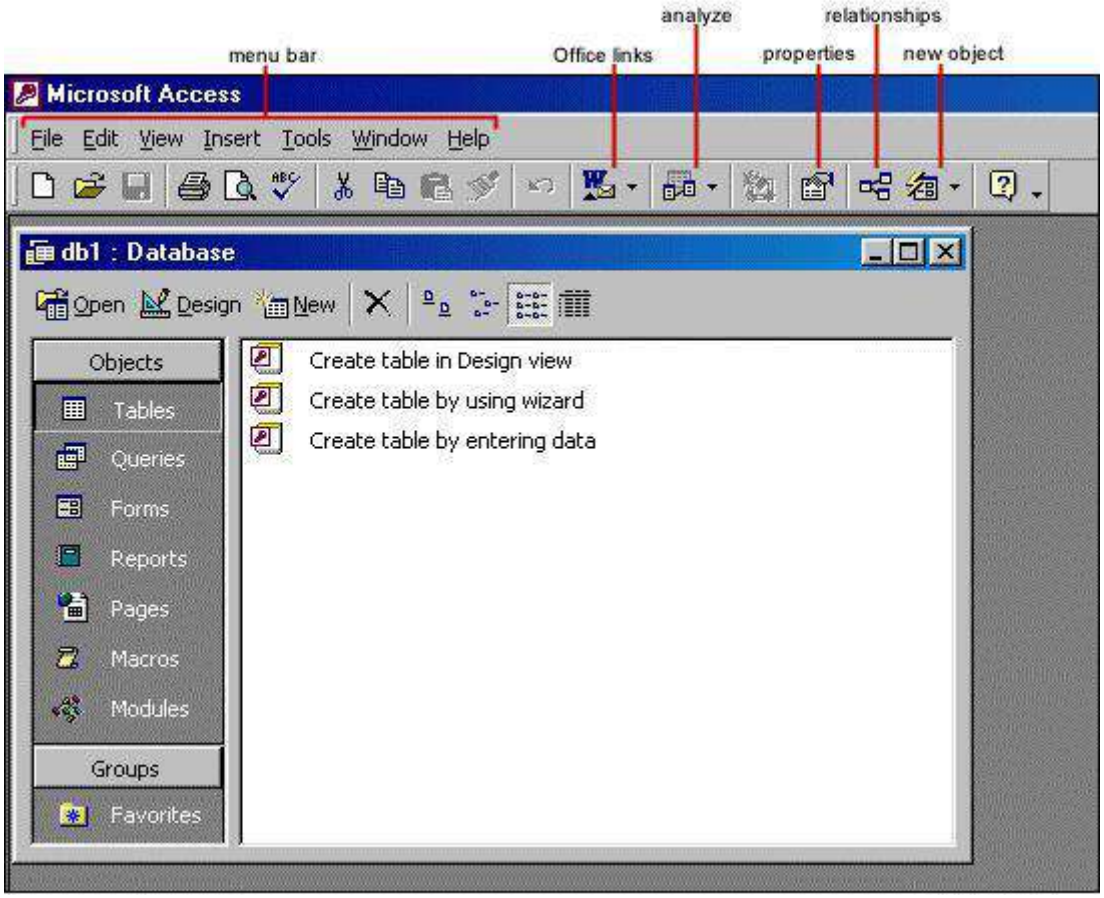
Before opening an existing file that was created in a previous version of Access, it must first be converted to Access 2000 format. Convert a database by following these steps:

Open Access and select **Tools|Database Utilities|Convert Database|To Current Access Database Version** from the menu bar.
Select the database that should be converted and click the **Convert** button.
The new version will be a completely separate database and the old one will remain intact so you must then name the new version of the database.

2.Screen Layout

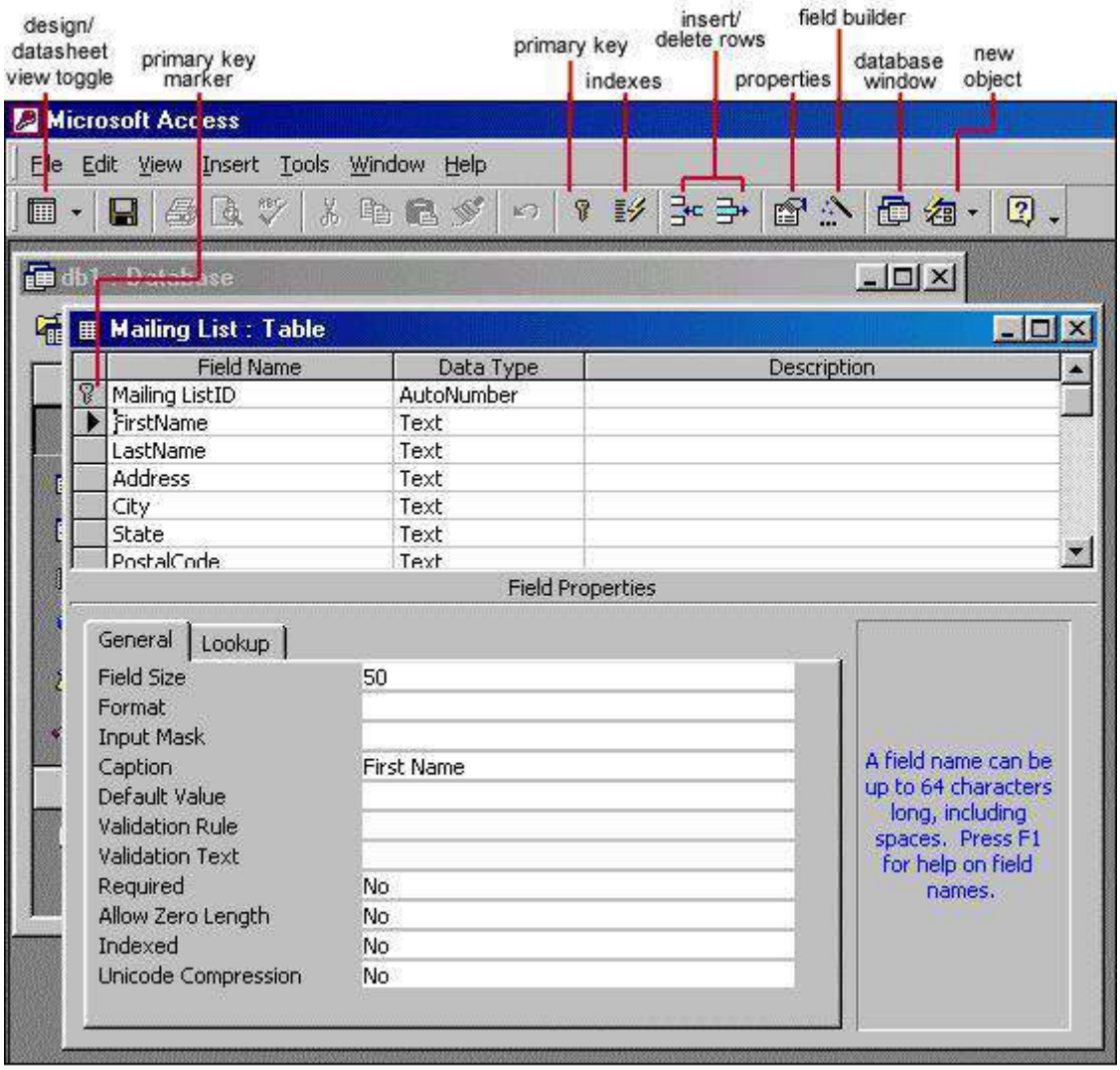
Database Window

The Database Window organizes all of the objects in the database. The default tables listing provides links for creating tables and will list all of the tables in the database when they have been added.



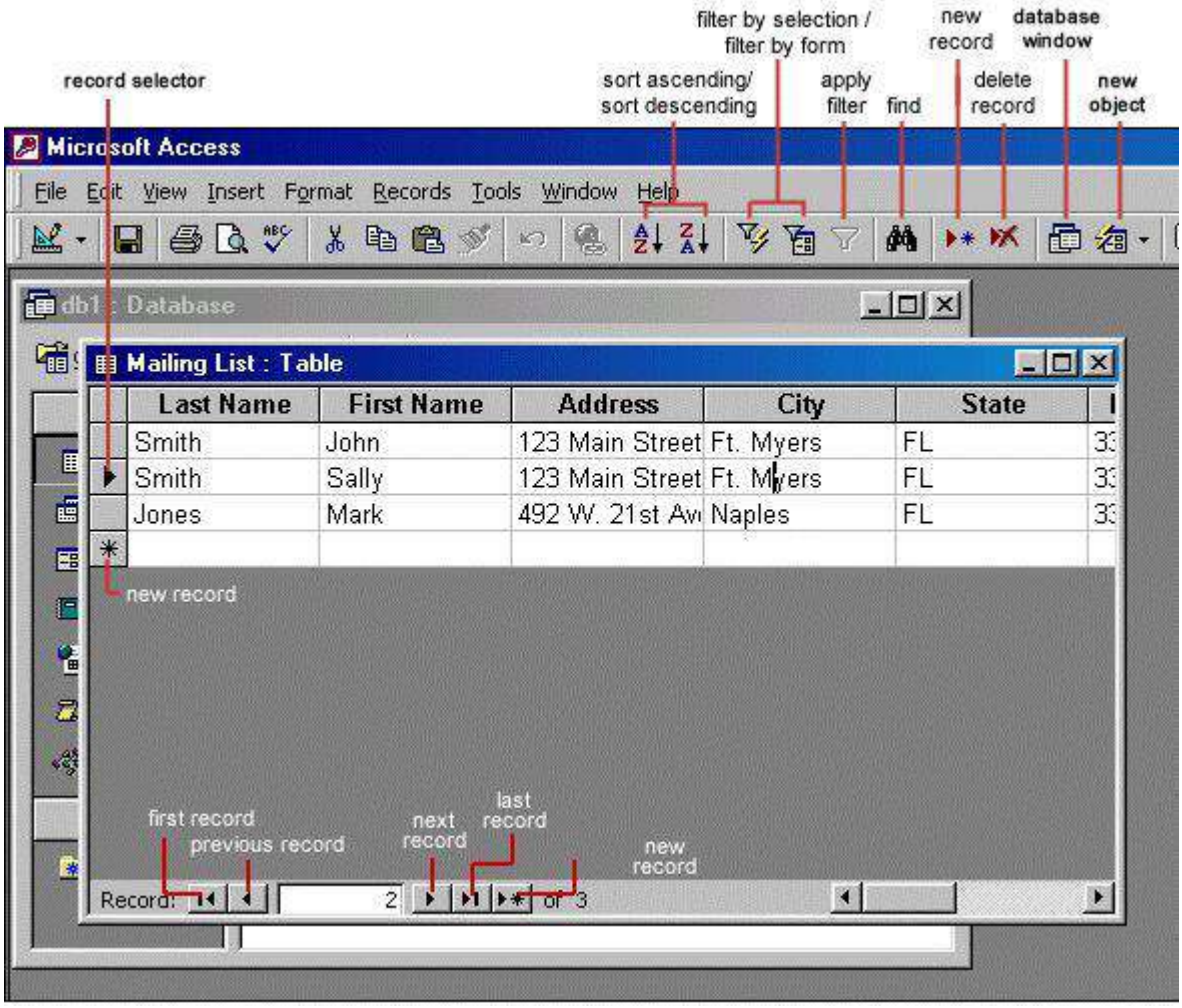
Design View

Design View customizes the fields in the database so that data can be entered.



Datasheet View

The datasheet allows you to enter data into the database



3. Creating Tables

Introduction to Tables

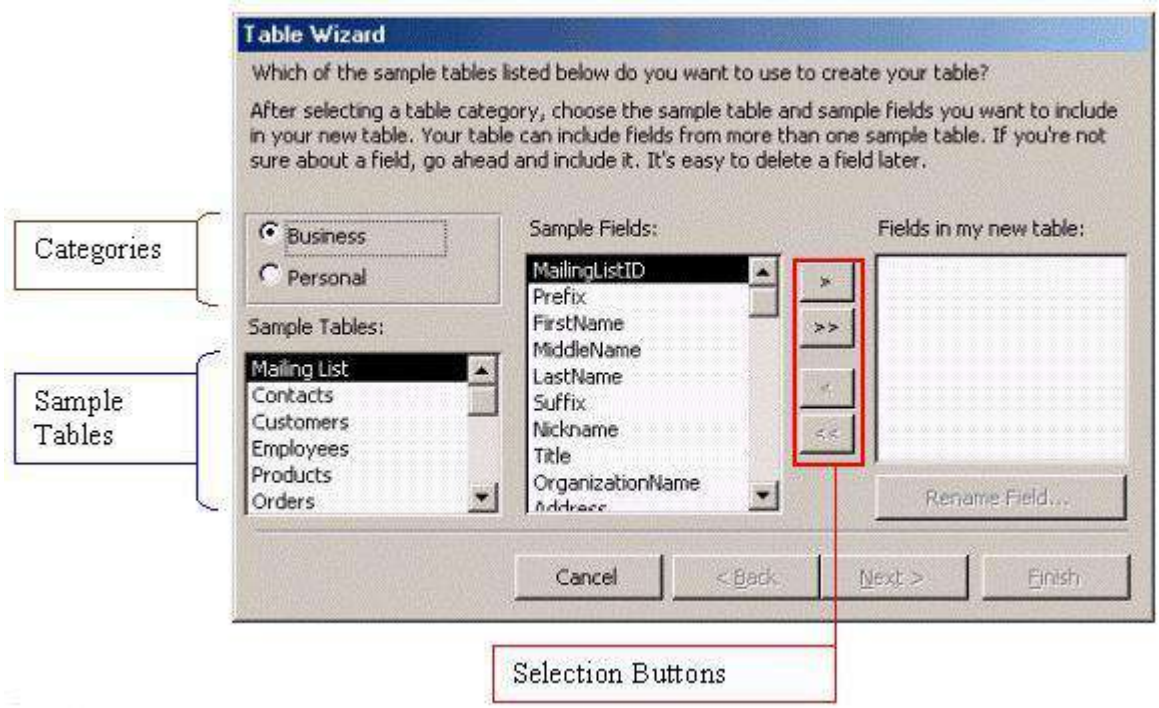
Tables are grids that store information in a database similar to the way an Excel worksheet stores information in a workbook. Access provides three ways to create a table for which there are icons in the Database Window. Double-click on the icons to create a table.

the Database Window

Create table in Design view will allow you to create the fields of the table. This is the most common way of creating a table and is explained in detail below. **Create table using wizard** will step you through the creation of a table. **Create table by entering data** will give you a blank datasheet with unlabelled columns that looks much like an Excel worksheet. Enter data into the cells and click the **Save** button. You will be prompted to add a **primary key** field. After the table is saved, the empty cells of the datasheet are trimmed. The fields are given generic names such as "Field1", "Field2", etc. To rename them with more descriptive titles that reflect the content of the fields, select **Format|Rename Column** from the menu bar or highlight the column, right-click on it with the mouse, and select **Rename Column** from the shortcut menu.

The Table Wizard

Microsoft Access is filled with wizards, step-by-step dialog boxes that allow you to create objects or fields on a database. Like the Database Wizard, Microsoft Access provides the Table Wizard used to easily create a table. It allows you to add fields that are necessary for a particular table. The fields have been configured in the general sense so you can use them in your database. Of course you can modify any field that was created using the wizard. To use the Table Wizard, on the main menu, you can click Insert -> Table. Alternatively, on the Database Window, when in the Tables section, you can click the New button. These two actions would display the New Table dialog box from where you would select Table Wizard. If you are using Microsoft Access 2000 and later, from the Tables section of the Database Window, you can double-click Create Table By Using Wizard

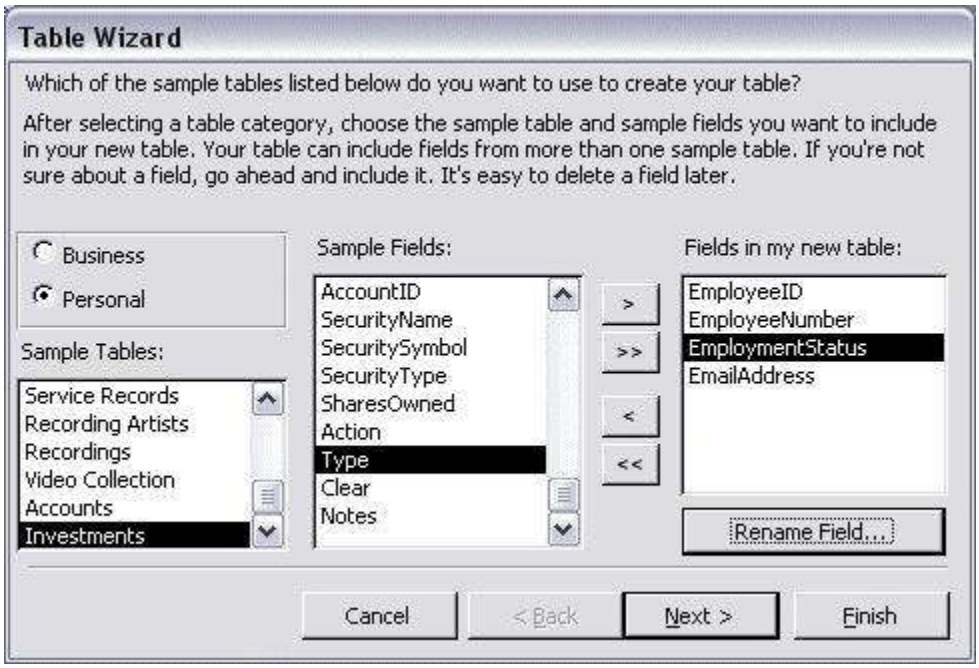


In the Table Wizard, the tables are organized in two primary categories: Business and Personal. To select one of those categories, you can click its radio button. Each main category is made of various sample tables. To select a sample table, you can click its name in the **Sample Tables** list. In the middle, the **Sample Fields** list, the fields associated with the selected sample table are displaying. From that list, you can select the desired field(s). Once a field has been selected, it displays in the **Fields In My New Table** list. You can then select a different table to mix fields from as many tables as desired. The 4 buttons between the **Sample Fields** list and the **Fields In My New Table** list allow you to add or subtract fields. To help with selection and de-selection, the wizard provides four buttons:

Button	Role
>	Used to select one field
>>	Used to select all fields from the sample table
<	Used to deselect one field
<<	Used to deselect all fields

During field selection, if you select a field, its corresponding name appears in the right list. If you select a field of the same name more than once, for example, if you select Address twice, the 2nd Address would be called Address1. Sometimes that will be what you want, and sometimes it will be by mistake. If then you make a mistake when selecting fields, you can double-click the unwanted field in the **Fields In My New Table** list and that field will be removed.

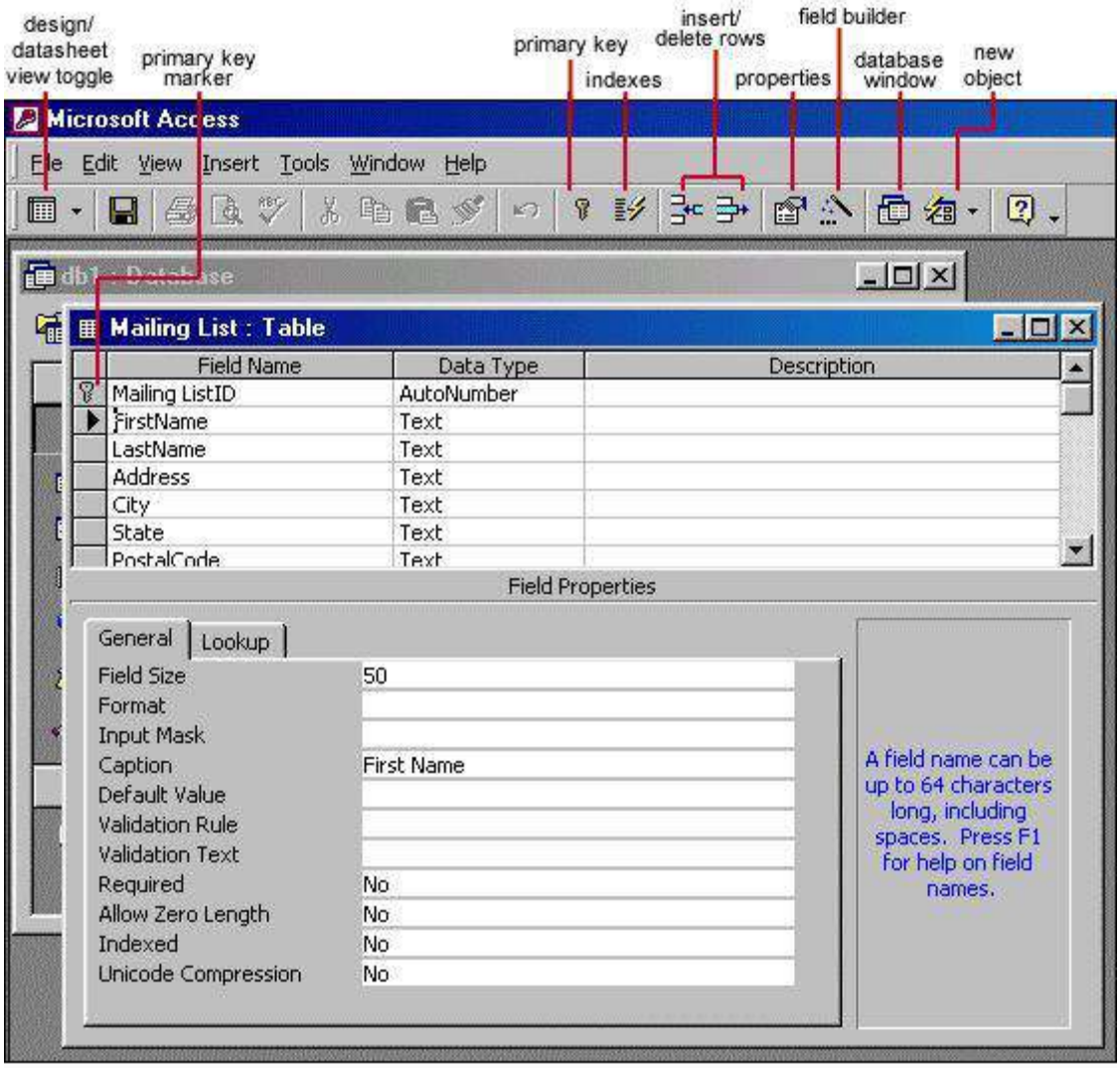
After making your choices, you can keep the names provided by Microsoft Access into your table, or you can rename any field to suit your needs. To rename a field, first select it in the **Fields In My New Table** list. Then, click the **Rename Field** button. In the Rename Field dialog box, type the desired name and click OK:



If you try providing a name for a field that already exists, you would receive an error:

Create a Table in Design View

Design View will allow you to define the fields in the table before adding any data to the datasheet. The window is divided into two parts: a top pane for entering the field name, data type, and an option description of the field, and a bottom pane for specifying field properties.



Field Name - This is the name of the field and should represent the contents of the field such as "Name", "Address", "Final Grade", etc. The name can not exceed 64 characters in length and may include spaces.

Data Type is the type of value that will be entered into the fields.

Text - The default type, text type allows any combination of letters and numbers up to a maximum of 255 characters per field record. ***Memo*** - A text type that stores up to 64,000 characters.

Number - Any number can be stored.

Date/Time - A date, time, or combination of both. ***Currency*** - Monetary values that can be set up to automatically include a dollar sign ($) and correct decimal and comma positions.

AutoNumber - When a new record is created, Access will automatically assign a unique integer to the record in this field. From the General options, select Increment if the numbers should be assigned in order or random if any random number should be chosen. Since every record in a datasheet must include at least one field that distinguishes it from all others, this is a useful data type to use if the existing data will not produce such values.
Yes/No - Use this option for True/False, Yes/No, On/Off, or other values that must be only one of two.
OLE Object - An OLE (Object Linking and Embedding) object is a sound, picture, or other object such as a Word document or Excel spreadsheet that is created in another program. Use this data type to embed an OLE object or link to the object in the database.
Hyperlink - A hyperlink will link to an Internet or Intranet site, or another location in the database. The data consists of up to four parts each separated by the pound sign (#):
DisplayText#Address#SubAddress#ScreenTip. The Address is the only required part of the string. Examples:

Home Page#http://www.raiunuversity.edu#

#c:\My Documents\database.mdb#MyTable

Description (optional) - Enter a brief description of what the contents of the field are.
Field Properties - Select any pertinent properties for the field from the bottom pane.

Field Properties

Properties for each field are set from the bottom pane of the Design View window.

Field Size is used to set the number of characters needed in a text or number field. The default field size for the text type is 50 characters. If the records in the field will only have two or three characters, you can change the size of the field to save disk space or prevent entry errors by limiting the number of characters allowed. Likewise, if the field will require more than 50 characters, enter a number up to 255. The field size is set in exact characters for Text type, but options are give for numbers:

Byte - Positive integers between 1 and 255
Integer - Positive and negative integers between -32,768 and 32,768
Long Integer (default) - Larger positive and negative integers between -2 billion and 2 billion.
Single - Single-precision floating-point number **Double** - Double-precision floating-point number **Decimal** - Allows for Precision and Scale property control

Format conforms the data in the field to the same format when it is entered into the datasheet. For text and memo fields, this property has two parts that are separated by a semicolon. The first part of the property is used to apply to the field and the second applies to empty fields.

Text and memo format.

Text Format			
Format	**Datasheet Entry**	**Display**	**Explanation**
@@@-@@@@	1234567	123-4567	@ indicates a required character or space
@@@-@@@&	123456	123-456	& indicates an optional character or space
<	HELLO	hello	< converts characters to lowercase
>	hello	HELLO	> converts characters to uppercase
@\!	Hello	Hello!	\ adds characters to the end
@;"No Data Entered"	Hello	Hello	
@;"No Data Entered"	(blank)	No Data Entered	

Number format. Select one of the preset options from the drop down menu or construct a custom format using symbols explained below:

Number Format			
Format	**Datasheet Entry**	**Display**	**Explanation**
###,##0.00	123456.78	123,456.78	0 is a placeholder that displays a digit or 0 if there is none. # is a placeholder that displays a digit or nothing if there is none.
$###,##0.00	0	$0.00	
###.00%	.123	12.3%	% multiplies the number by 100 and added a percent sign

Currency format. This formatting consists of four parts separated by semicolons: format for positive numbers; format for negative numbers; format for zero values; format for Null values.

Currency Format	
Format	**Explanation**
$##0.00;($##0.00)[Red];$0.00;"none"	Positive values will be normal currency format, negative numbers will be red in parentheses, zero is entered for zero values, and "none" will be written for Null values.

Date format. In the table below, the value "1/1/01" is entered into the datasheet, and the following values are displayed as a result of the different assigned formats.

Date Format		
Format	**Display**	**Explanation**
dddd","mmmm d","yyyy	Monday, January 1, 2001	dddd, mmmm, and yyyy print the full day name, month name, and year
ddd","mmm ". " d", '"yy	Mon, Jan. 1, '01	ddd, mmm, and yy print the first three day letters, first three month letters, and last two year digits
"Today is " dddd	Today is Monday	
h:n:s: AM/PM	12:00:00 AM	"n" is used for minutes to avoid confusion with months

Yes/No fields are displayed as check boxes by default on the datasheet. To change the formatting of these fields, first click the Lookup tab and change the Display Control to a text box. Go back to the General tab choices to make formatting changes. The formatting is designated in three sections separated by semicolons. The first section does not contain anything but the semicolon must be included. The second section specifies formatting for Yes values and the third for No values.

Yes/No Format	
Format	**Explanation**
;"Yes"[green];"No"[red]	Prints "Yes" in green or "No" in red

Default Value - There may be cases where the value of a field will usually be the same for all records. In this case, a changeable default value can be set to prevent typing the same thing numerous times. Set the Default Value property.

Primary Key

Every record in a table must have a primary key that differentiates it from every other record in the table. In some cases, it is only necessary to designate an existing field as the primary key if you are certain that every record in the table will have a different value for that particular field. A social security number is an example of a record whose values will only appear once in a database table.
Designate the primary key field by right-clicking on the record and selection **Primary Key** from the shortcut menu or select **Edit|Primary Key** from the menu bar. The primary key field will be noted with a key image to the left. To remove a primary key, repeat one of these steps.
If none of the existing fields in the table will produce unique values for every record, a separate field must be added. Access will prompt you to create this type of field at the beginning of the table the first time you save the table and a primary key field has not been assigned. The field is named "ID" and the data type is "autonumber". Since this extra field serves no purpose to you as the user, the autonumber type automatically updates whenever a record is added so there is no extra work on your part. You may also choose to hide this column in the datasheet as explained on a later page in this tutorial.

Indexes

Creating indexes allows Access to query and sort records faster. To set an indexed field, select a field that is commonly searched and change the Indexed property to **Yes (Duplicates OK)** if multiple entries of the same data value are allowed or **Yes (No Duplicates)** to prevent duplicates.

Field Validation Rules

Validation Rules specify requirements (change word) for the data entered in the worksheet. A customized message can be displayed to the user when data that violates the rule setting is entered. Click the expression builder ("**...**") button at the end of the Validation Rule box to write the validation rule. Examples of field validation rules include **<> 0** to not allow zero values in the record, and **???** to only all data strings three characters in length.

Input Masks

An input mask controls the value of a record and sets it in a specific format. They are similar to the Format property, but instead display the format on the datasheet before the data is entered. For example, a telephone number field can formatted with an input mask to accept ten digits that are automatically formatted as "(555) 123-4567". The blank field would look like (___) ___-____. An an input mask to a field by following these steps:

In design view, place the cursor in the field that the input mask will be applied to.

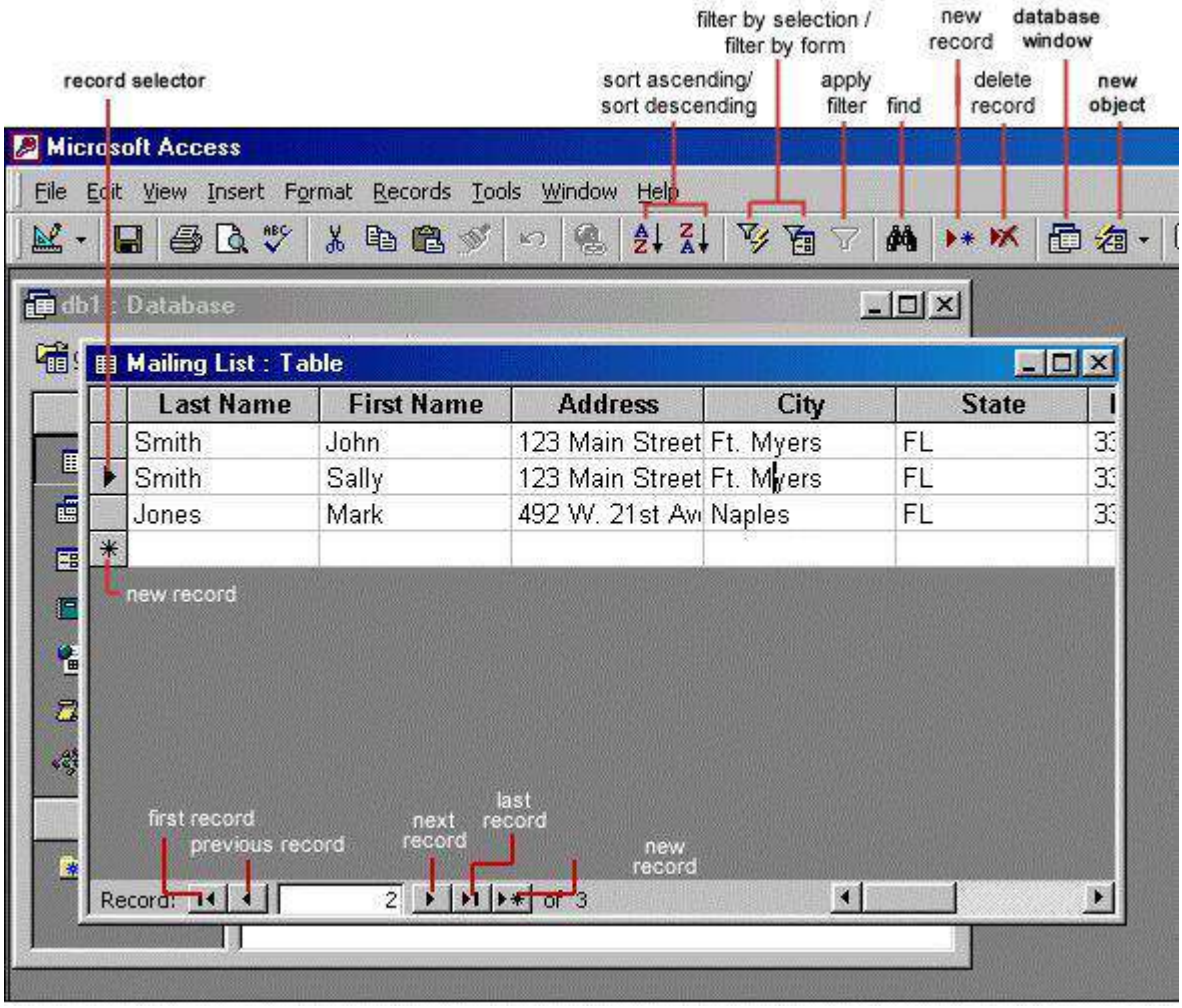
Click in the white space following **Input Mask** under the **General** tab. Click the "**...**" button to use the wizard or enter the mask, (@@@) @@@-@@@@, into the field provided. The following symbols can be used to create an input mask from scratch:

Input Mask Symbols	
Symbol	**Explanation**
A	Letter or digit
0	A digit 0 through 9 without a + or - sign and with blanks displayed as zeros
9	Same as 0 with blanks displayed as spaces
#	Same as 9 with +/- signs
?	Letter
L	Letter A through Z
C or &	Character or space
<	Convert letters to lower case
>	Convert letters to upper case

4. Datasheet Records

Adding Records

Add new records to the table in datasheet view by typing in the record beside the asterisk (*) that marks the new record. You can also click the new record button at the bottom of the datasheet to skip to the last empty record.



Editing Records

To edit records, simply place the cursor in the record that is to be edited and make the necessary changes. Use the arrow keys to move through the record grid. The previous, next, first, and last record buttons at the bottom of the datasheet are helpful in maneuvering through the datasheet.

Deleting Records

Delete a record on a datasheet by placing the cursor in any field of the record row and select **Edit|Delete Record** from the menu bar or click the **Delete Record** button on the datasheet toolbar.

Adding and Deleting Columns

Although it is best to add new fields (displayed as columns in the datasheet) in design view because more options are available, they can also be quickly added in datasheet view. Highlight the column that the new column should appear to the left of by clicking its label at the top of the datasheet and select **Insert|Column** from the menu bar.

Placing the cursor in the column and selecting Edit|Delete Column from the menu bar can delete entire columns.

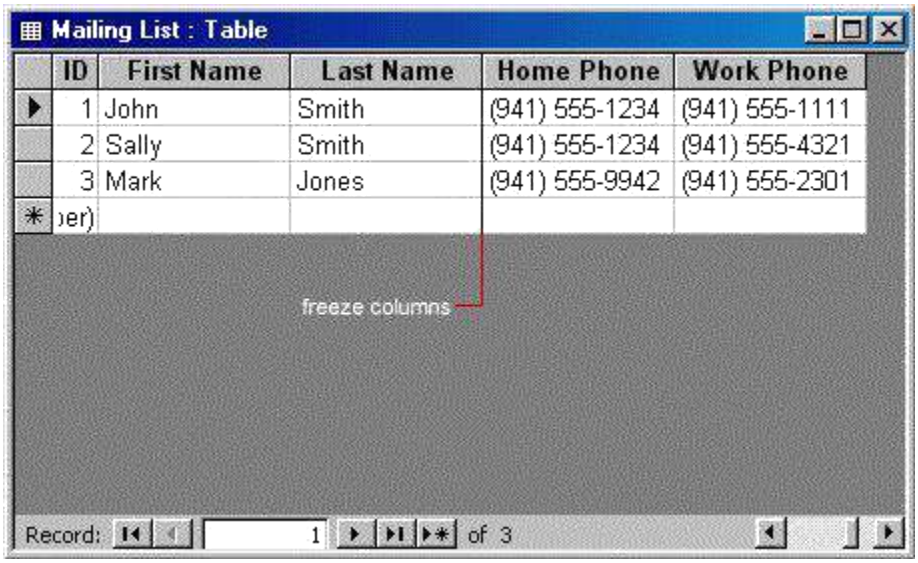
Resizing Rows and Columns

Dragging the gray sizing line between row labels up and down with the mouse can change the height of rows on a datasheet. By changing the height on one row, the height of all rows in the datasheet will be changed to the new value.

Column width can be changed in a similar way by dragging the sizing line between columns. Double click on the line to have the column automatically fit to the longest value of the column. Unlike rows, columns on a datasheet can be different widths. Selecting **Format|Row** Height or **Format|Column** Width can assign more exact values from the menu bar.

Freezing Columns

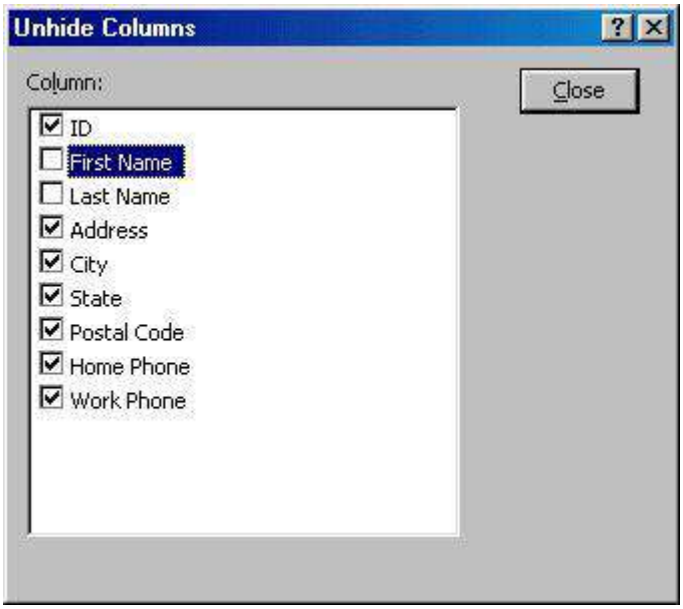
Similar to freezing panes in Excel, columns on an Access table can be frozen. This is helpful if the datasheet has many columns and relevant data would otherwise not appear on the screen at the same time. Freeze a column by placing the cursor in any record in the column and select **Format|Freeze Columns** from the menu bar. Select the same option to unfreeze a single column or select **Format|Unfreeze All Columns**.



Hiding Columns

Columns can also be hidden from view on the datasheet although they will not be deleted from the database. To hide a column, place the cursor in any record in the column or highlight multiple adjacent columns by clicking and dragging the mouse along the column headers, and select **Format|Hide Columns** from the menu bar.

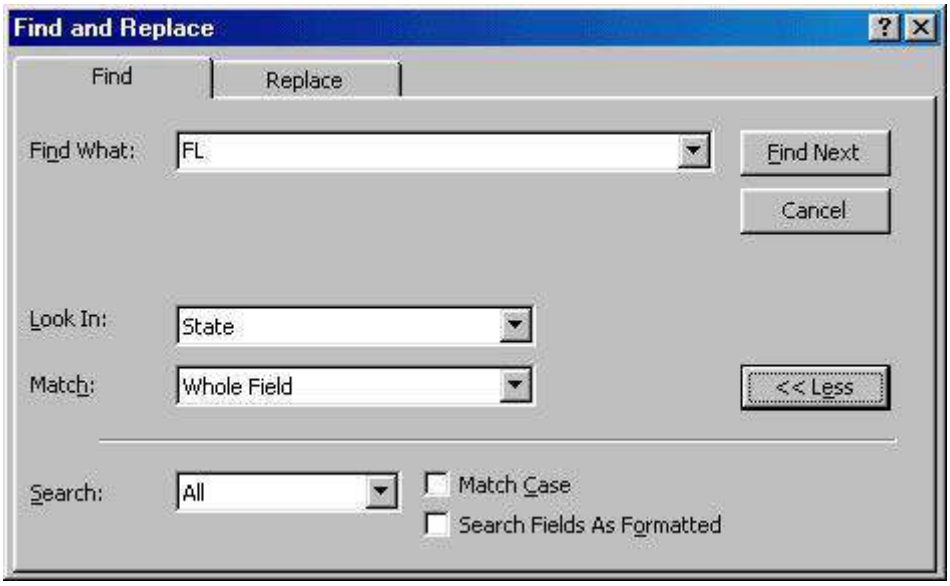
To show columns that have been hidden, select **Format|Unhide Columns** from the menu bar. A window displaying all of the fields in the table will be listed with check boxes beside each field name. Check the boxes beside all fields that should be visible on the data table and click the **Close** button.



Finding Data in a Table

Data in a datasheet can be quickly located by using the **Find** command.

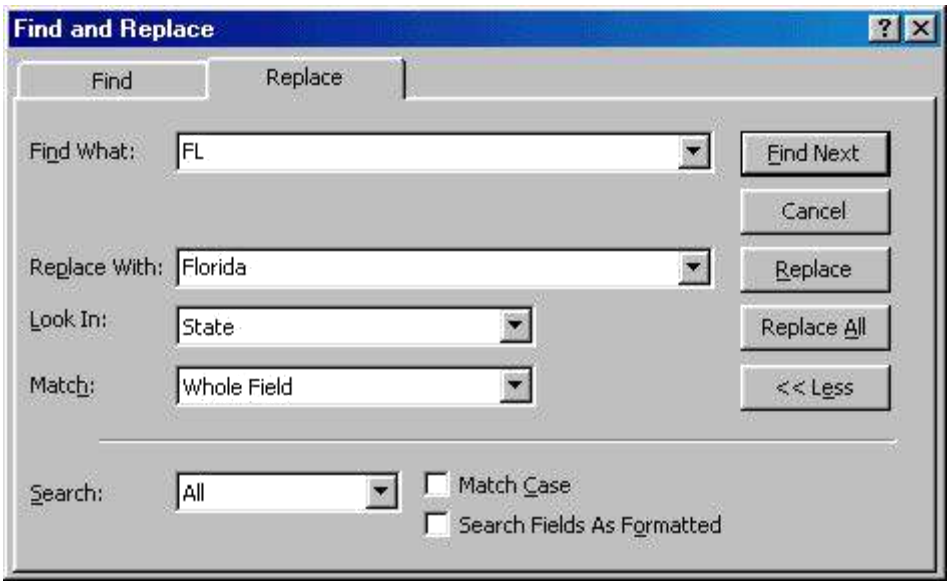
Open the table in datasheet view.
Place the cursor in any record in the field that you want to search and select **Edit|Find...** from the menu bar.
Enter the value criteria in the **Find What:** box.
From the **Look In:** drop-down menu, define the area of the search by selecting the entire table or just the field in the table you placed your cursor in during step 2.
Select the matching criteria from **Match:** to and click the **More >>** button for additional search parameters.
When all of the search criteria is set, click the **Find Next** button. If more than one record meets the criteria, keep clicking **Find Next** until you reach the correct record.



Replace

The replace function allows you to quickly replace a single occurrence of data with a new value or to replace all occurrences in the entire table.

Select **Edit|Replace...** from the menu bar (or click the **Replace** tab if the Find window is already open).
Follow the steps described in the Find procedure for searching for the data that should be replaced and type the new value of the data in the **Replace With:** box.
Click the **Find Next** button to step through occurrences of the data in the table and click the **Replace** button to make single replacements. Click **Replace All** to change all occurrences of the data in one step.



Check Spelling and AutoCorrect

The spell checker can be used to flag spelling errors in text and menu fields in a datasheet. Select **Tools|Spelling** from the menu bar to activate the spell checker and make corrections just as you would using Word or Excel. The AutoCorrect feature can automatically correct common spelling errors such as two INitial CApitals, capitalizing the first letter of the first word of a sentence, and anything you define. Select **Tools|AutoCorrect** to set these features.

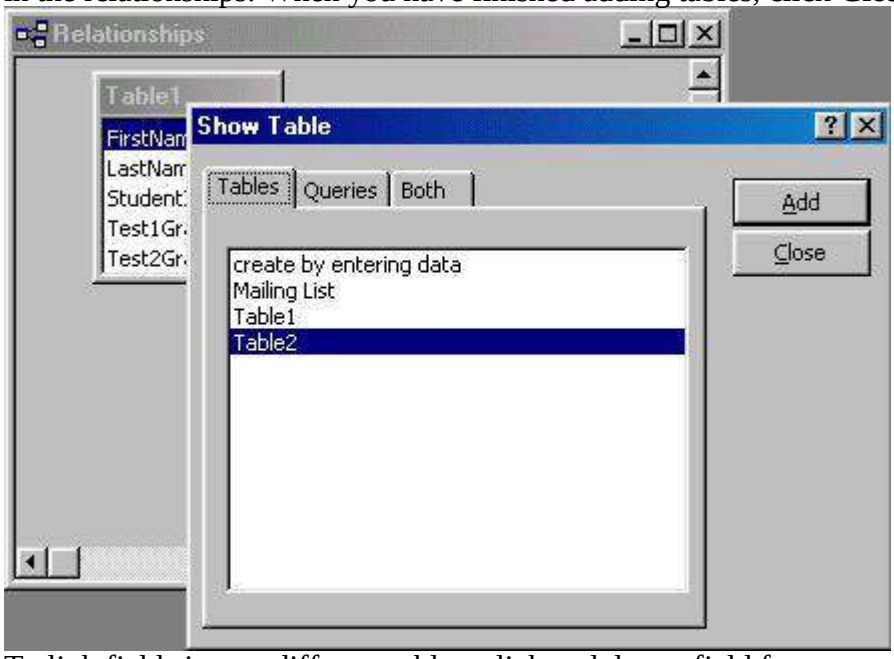
Print a Datasheet

Datasheets can be printed by clicking the **Print** button on the toolbar or select **File|Print** to set more printing options.

1.Table Relationships

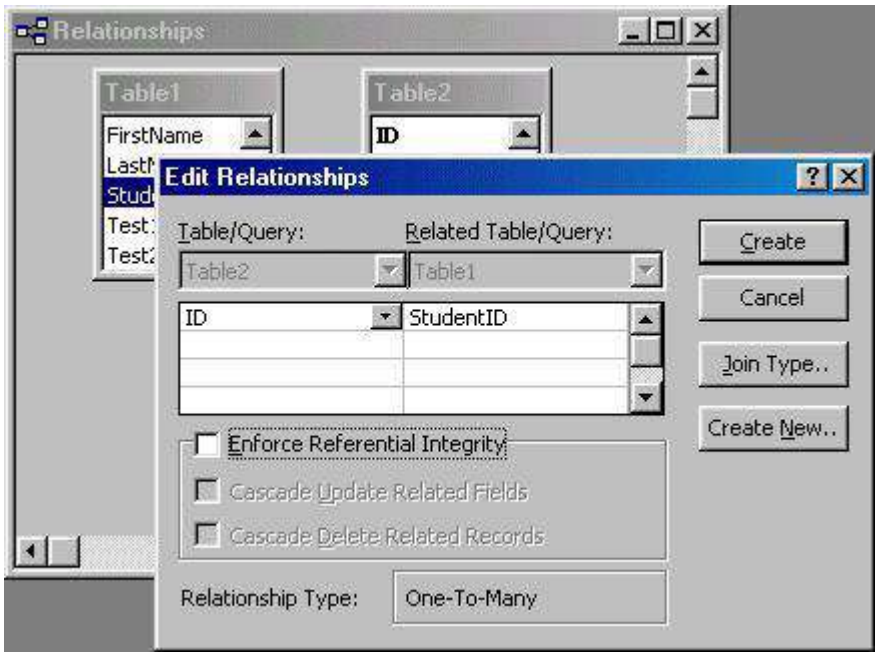
To prevent the duplication of information in a database by repeating fields in more than one table, table relationships can be established to link fields of tables together. Follow the steps below to set up a relational database:

Click the **Relationships** button on the toolbar.
From the **Show Table** window (click the **Show Table** button on the toolbar to make it appear), double click on the names of the tables you would like to include in the relationships. When you have finished adding tables, click **Close**.

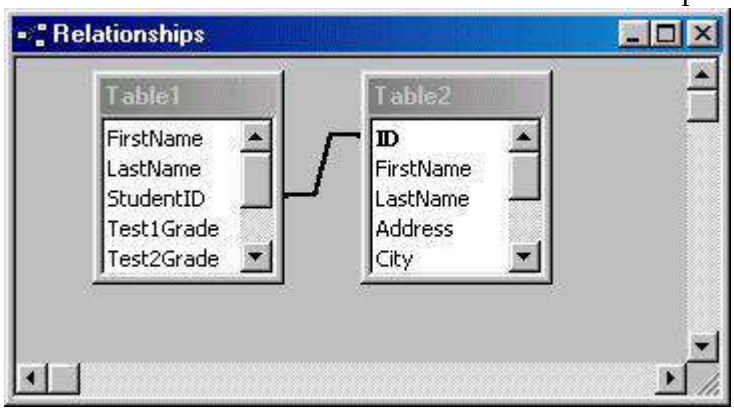


To link fields in two different tables, click and drag a field from one table to the corresponding field on the other table and release the mouse button. The **Edit Relationships** window will appear. From this window, select different fields if necessary and select an option from Enforce Referential Integrity if necessary. These options give Access permission to automatically make changes to referential tables if a key record in one of the tables is deleted. Check the **Enforce Referential Integrity** box to ensure that the relationships are valid and that the data is not accidentally deleted when data is added, edited, or deleted. Click

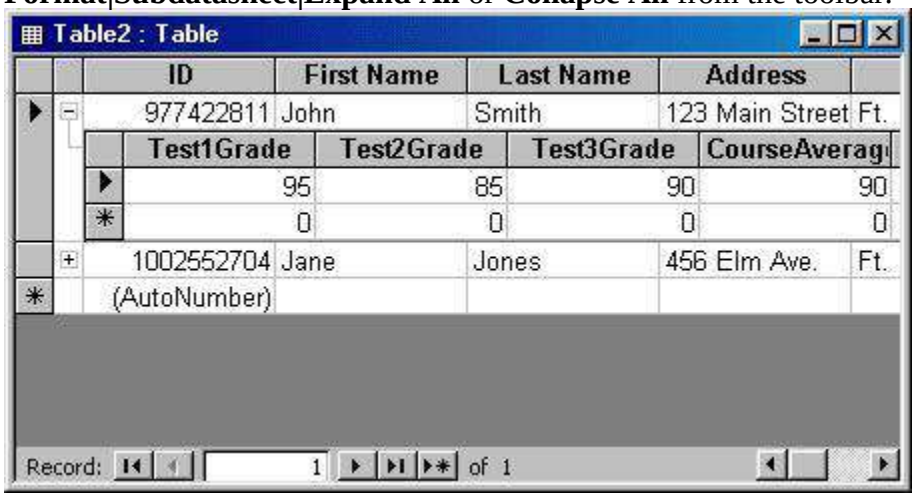
Create to create the link.



A line now connects the two fields in the Relationships window.



The datasheet of a relational table will provide expand and collapse indicators to view sub datasheets containing matching information from the other table. In the example below, the student address database and student grade database were related and the two can be shown simultaneously using the expand feature. To expand or collapse all sub datasheets at once, select **Format|Subdatasheet|Expand All** or **Collapse All** from the toolbar.



2. Sorting and Filtering

Sorting and filtering allow you to view records in a table in a different way either by reordering all of the records in the table or view only those records in a table that meet certain criteria that you specify.

Sorting

You may want to view the records in a table in a different order than they appear such as sorting by a date or in alphabetical order, for example. Follow these steps to execute a simple sort of records in a table based on the values of one field:

> In table view, place the cursor in the column that you want to sort by.
> Select **Records|Sort|Sort Ascending** or **Records|Sort|Sort Descending** from the menu bar or click the **Sort Ascending** or **Sort Descending** buttons on the toolbar.

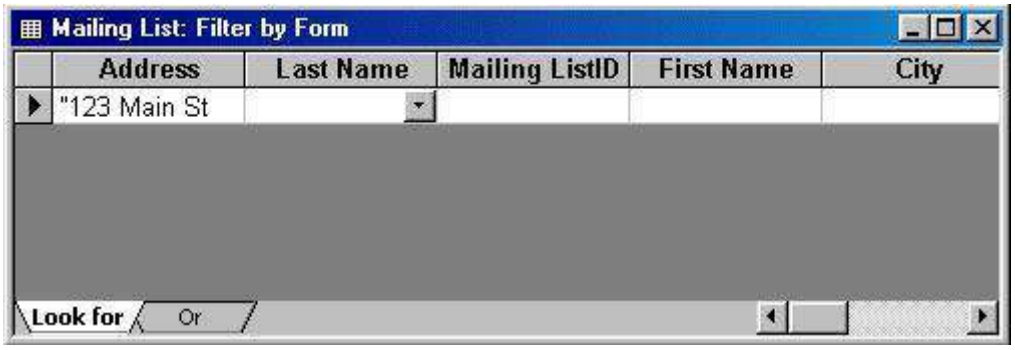
To sort by more than one column (such as sorting by date and then sorting records with the same date alphabetically), highlight the columns by clicking and dragging the mouse over the field labels and select one of the sort methods stated above.

Filter by Selection

This feature will filter records that contain identical data values in a given field such as filtering out all of the records that have the value "Smith" in a name field. To Filter by Selection, place the cursor in the field that you want to filter the other records by and click the **Filter by Selection** button on the toolbar or select **Records|Filter|Filter By Selection** from the menu bar. In the example below, the cursor is placed in the City field of the second record that displays the value "Ft. Myers" so the filtered table will show only the records where the city is Ft. Myers.

Filter by Form

If the table is large, it may be difficult to find the record that contains the value you would like to filter by so using Filter by Form may be advantageous instead. This method creates a blank version of the table with drop-down menus for each field that each contains the values found in the records of that field. Under the default **Look for** tab of the Filter by Form window, click in the field to enter the filter criteria. To specify an alternate criteria if records may contain one of two specified values, click the **Or** tab at the bottom of the window and select another criteria from the drop-down menu. More **Or** tabs will appear after one criteria is set to allow you to add more alternate criteria for the filter. After you have selected all of the criteria you want to filter, click the **Apply Filter** button on the toolbar.

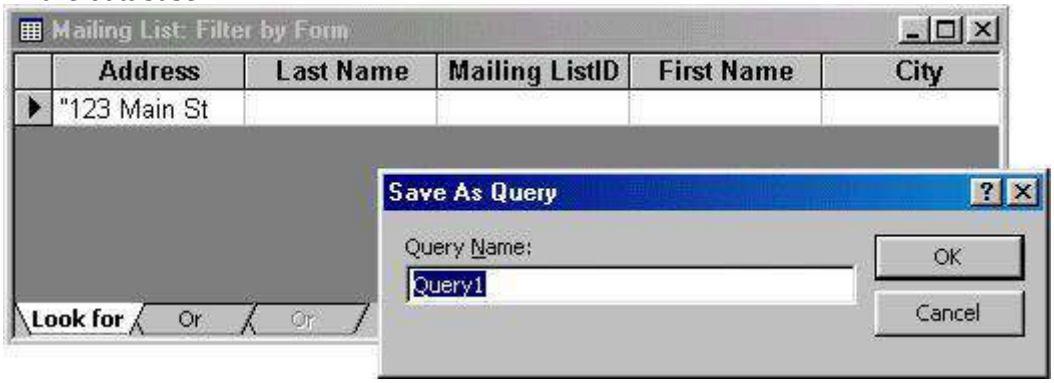


The following methods can be used to select records based on the record selected by that do not have exactly the same value. Type these formats into the field where the drop-down menu appears instead of selecting an absolute value.

Filter by Form	
Format	**Explanation**
Like "*Street"	Selects all records that end with "Street"
<="G"	Selects all records that begin with the letters A through G
>1/1/00	Selects all dates since 1/1/00
<> 0	Selects all records not equal to zero

Saving A Filter

The filtered contents of a table can be saved as a query by selecting **File|Save As Query** from the menu bar. Enter a name for the query and click **OK**. The query is now saved within the database.



Remove a Filter 

To view all records in a table again, click the depressed **Apply Filter** toggle button on the toolbar.

Queries

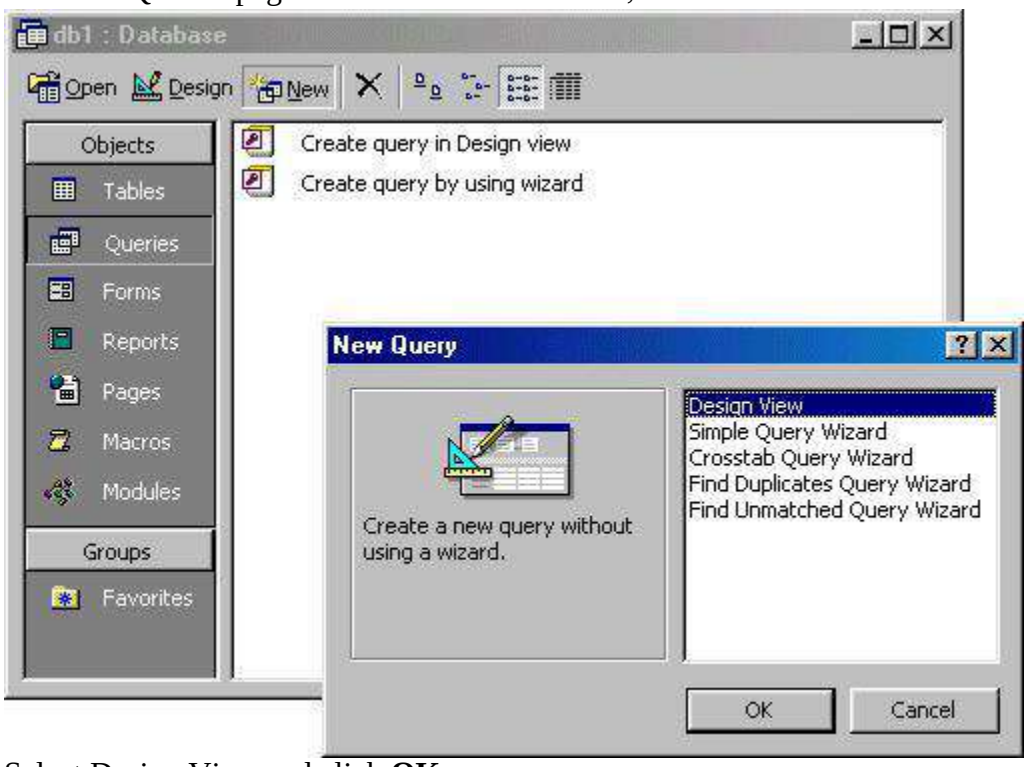
Introduction to Queries

Queries select records from one or more tables in a database so they can be viewed, analyzed, and sorted on a common datasheet. The resulting collection of records, called a **dynaset** (short for dynamic subset), is saved as a database object and can therefore be easily used in the future. The query will be updated whenever the original tables are updated. Types of queries are ***select queries*** that extract data from tables based on specified values, ***find duplicate*** queries that display records with duplicate values for one or more of the specified fields, and ***find unmatched*** queries display records from one table that do not have corresponding values in a second table.

Create a Query in Design View

Follow these steps to create a new query in Design View:

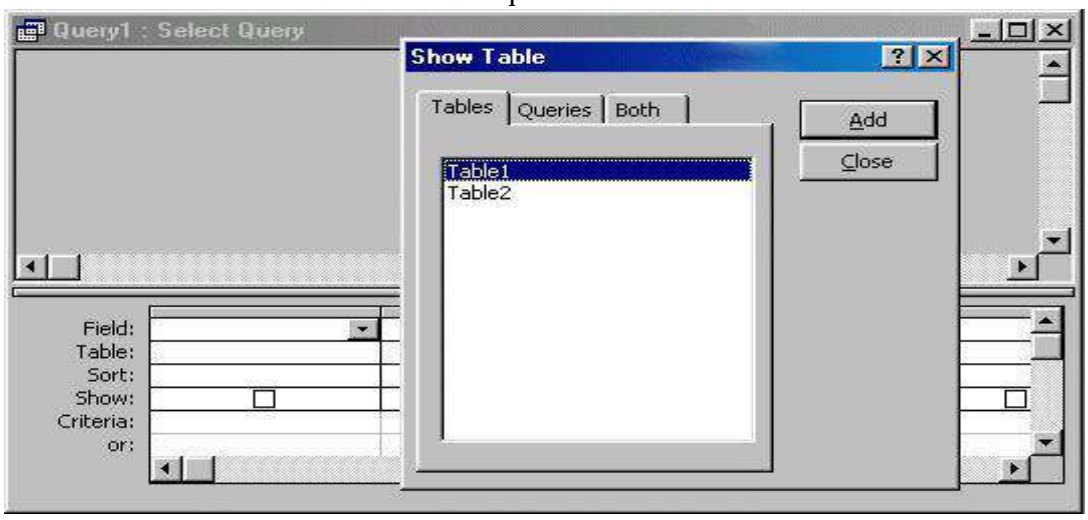
From the Queries page on the Database Window, click the **New** button.



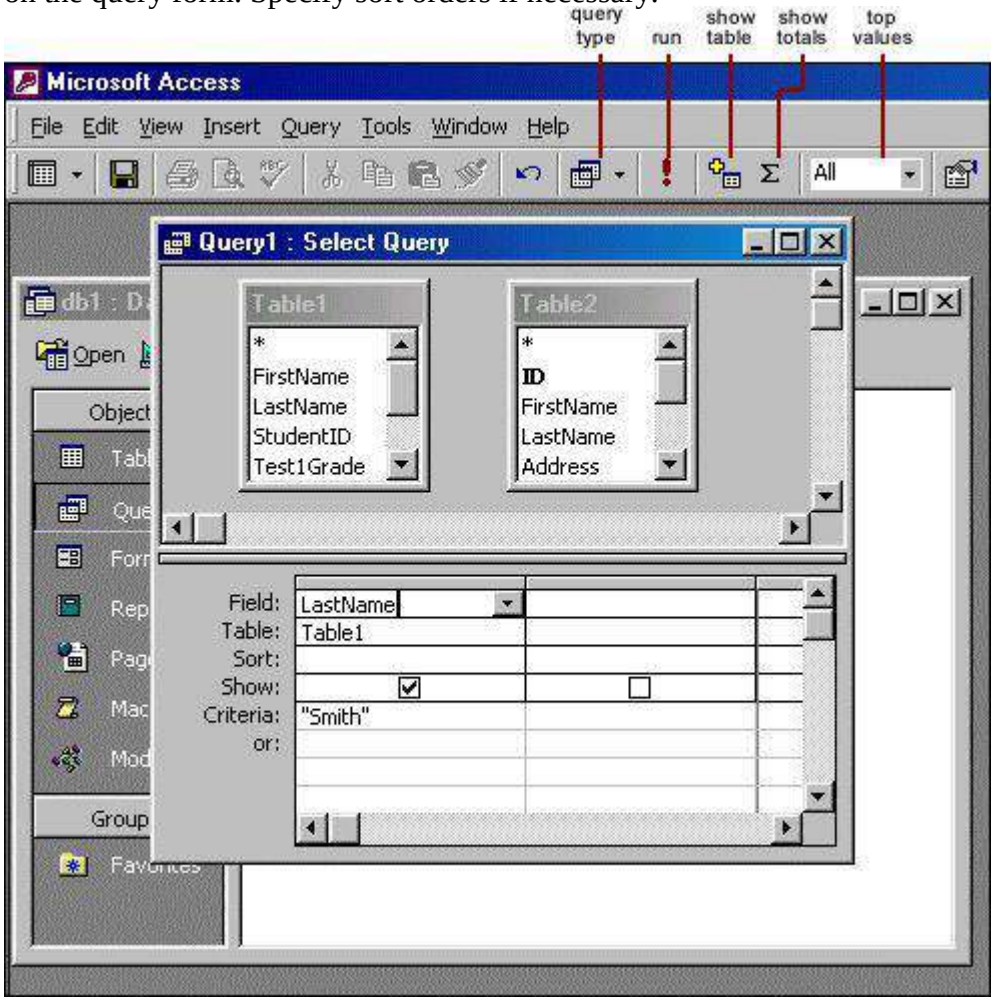
Select Design View and click **OK**.

Select tables and existing queries from the **Tables** and **Queries** tabs and click the **Add** button to add each one to the new query.

Click **Close** when all of the tables and queries have been selected.



Add fields from the tables to the new query by double-clicking the field name in the table boxes or selecting the field from the **Field:** and **Table:** drop down menus on the query form. Specify sort orders if necessary.



Enter the criteria for the query in the **Criteria:** field. The following table provides examples for some of the wildcard symbols and arithmetic operators that may be

used. The **Expression Builder**  can also be used to assist in writing the expressions.

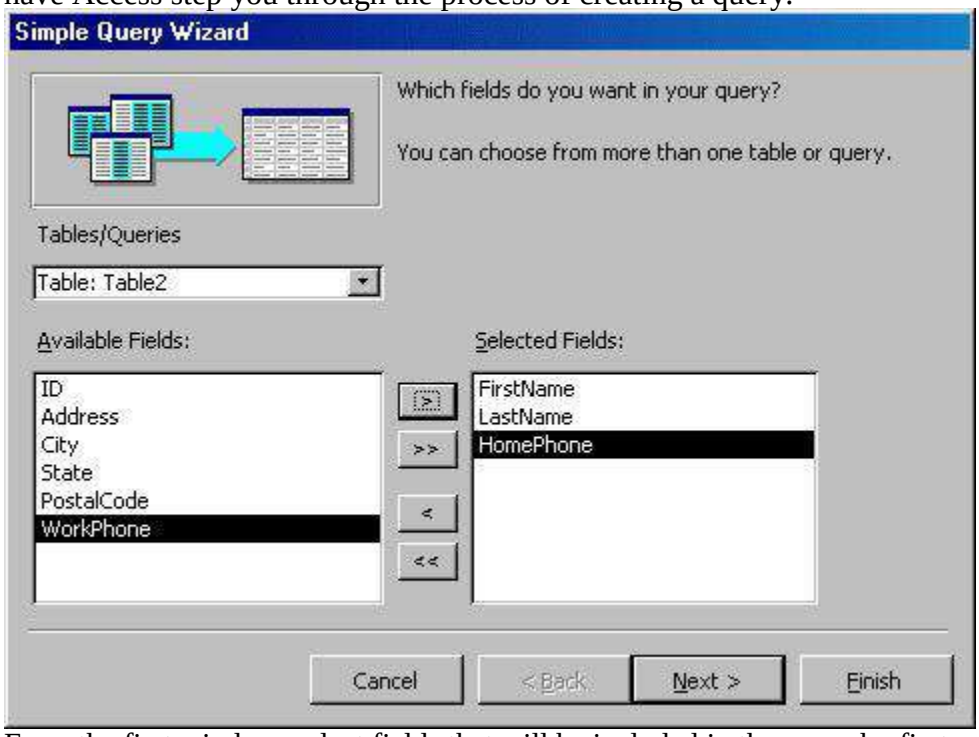
Query Wildcards and Expression Operators	
Wildcard / Operator	**Explanation**
? Street	The question mark is a wildcard that takes the place of a single letter.
43th *	The asterisk is the wildcard that represents a number of characters.
<100	Value less than 100
>=1	Value greater than or equal to 1
<>"FL"	Not equal to (all states besides Florida)
Between 1 and 10	Numbers between 1 and 10
Is Null **Is Not Null**	Finds records with no value or all records that have a value
Like "a*"	All words beginning with "a"
>0 And <=10	All numbers greater than 0 and less than 10
"Bob" Or "Jane"	Values are Bob or Jane

After you have selected all of the fields and tables, click the **Run** button on the toolbar.
Save the query by clicking the **Save** button.

Query Wizard

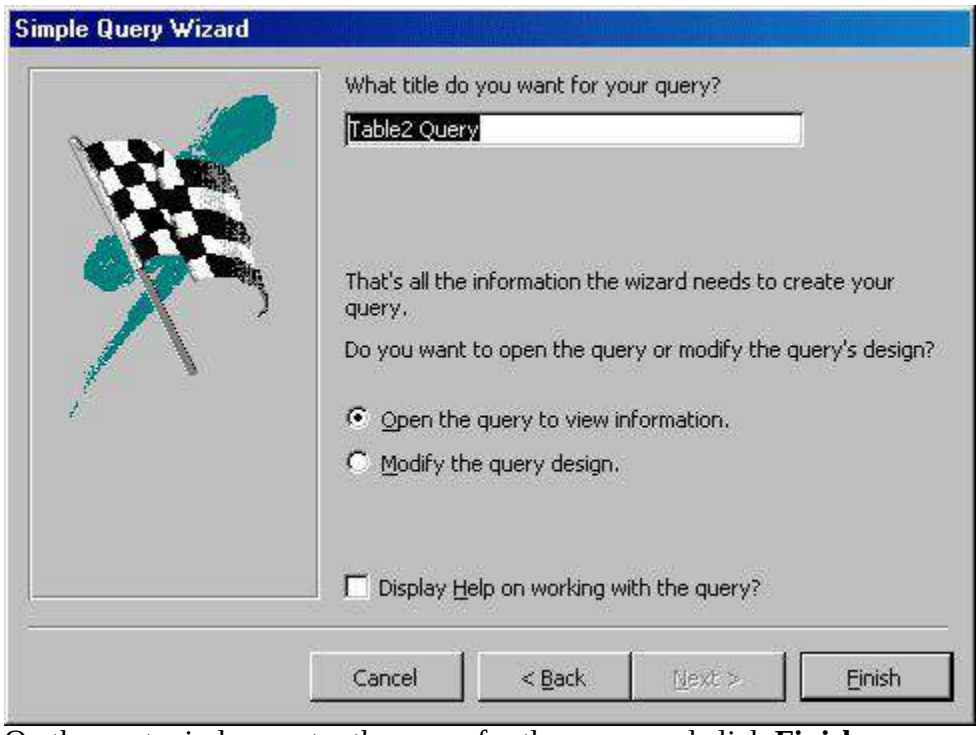
Access' Query Wizard will easily assist you to begin creating a select query.

Click the **Create query by using wizard** icon in the database window to have Access step you through the process of creating a query.



From the first window, select fields that will be included in the query by first selecting the table from the drop- down **Tables/Queries** menu. Select the fields by clicking the > button to move the field from the Available Fields list to Selected Fields. Click the double arrow button >> to move all of the fields to Selected Fields. Select another table or query to choose from more fields and repeat the process of moving them to the Selected Fields box. Click **Next>** when all of the

fields have been selected.

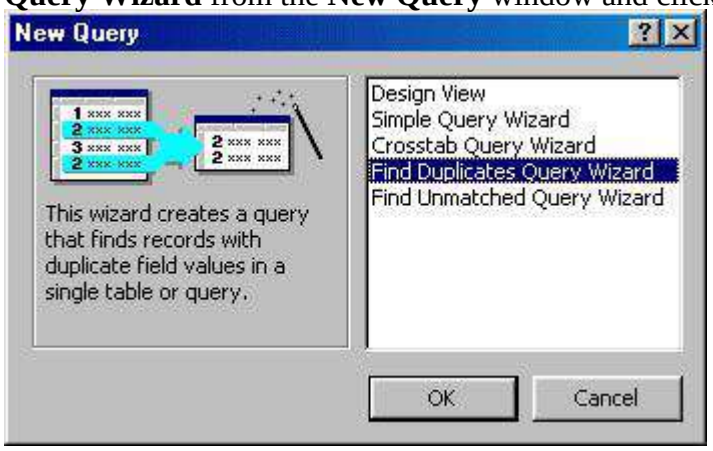


On the next window, enter the name for the query and click **Finish**.

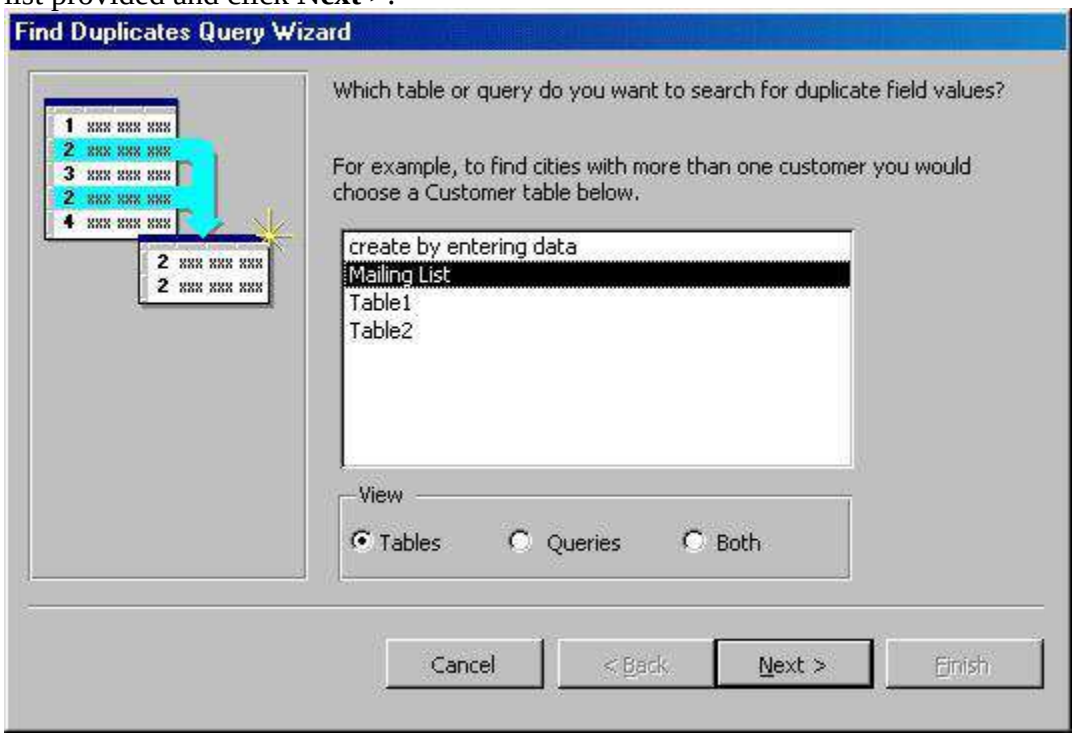
Find Duplicates Query

This query will filter out records in a single table that contain duplicate values in a field.

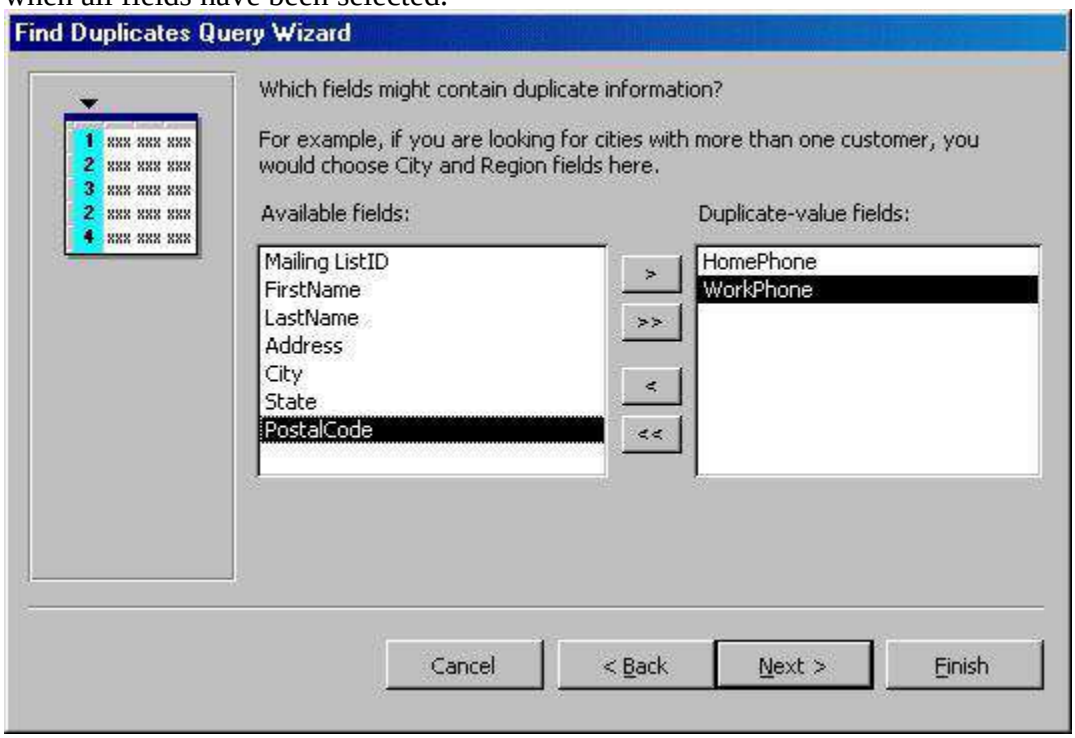
Click the **New** button on the Queries database window, select **Find Duplicates Query Wizard** from the **New Query** window and click **OK**.



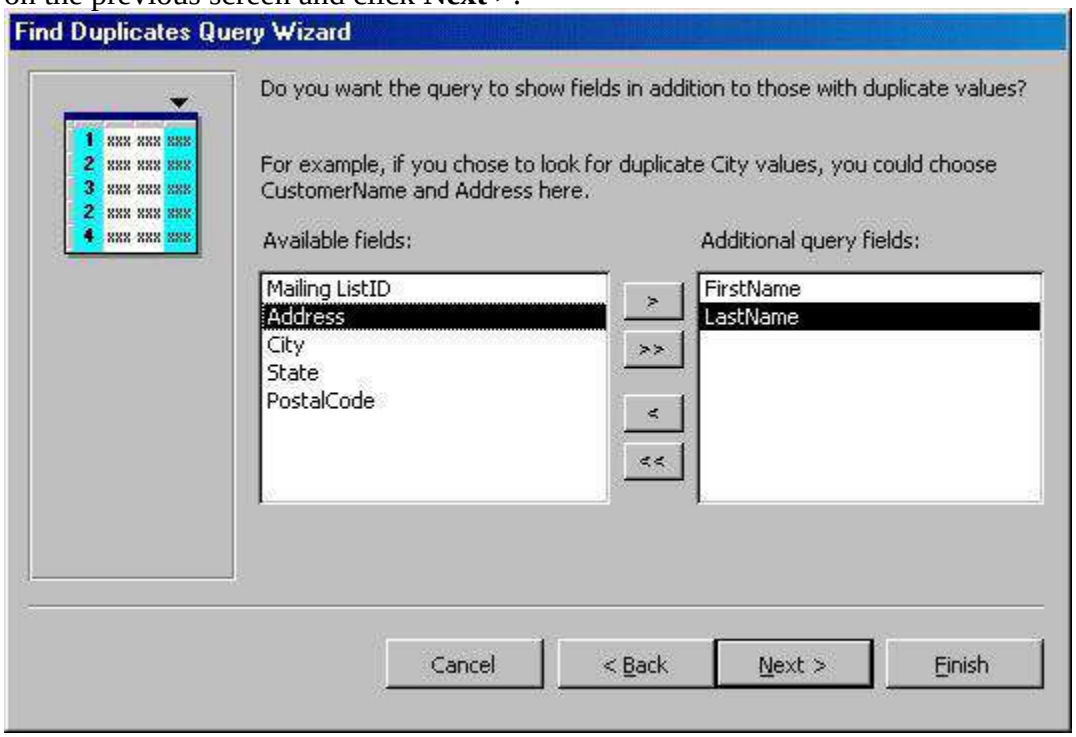
Select the table or query that the find duplicates query will be applied to from the list provided and click **Next >**.



Select the fields that may contain duplicate values by highlighting the names in the Available fields list and clicking the > button to individually move the fields to the Duplicate-value fields list or >> to move all of the fields. Click **Next >** when all fields have been selected.



Select the fields that should appear in the new query along with the fields selected on the previous screen and click **Next >**.



Name the new query and click **Finish**.

Delete a Query

To delete a table from the query, click the table's title bar and press the **Delete** key on the keyboard.

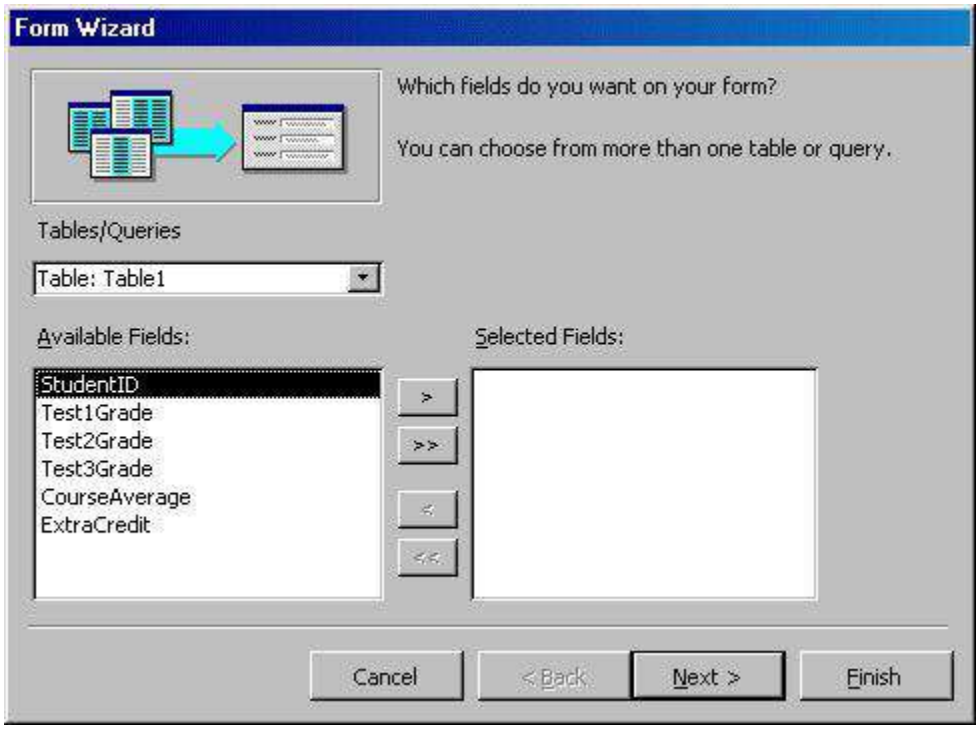
1. Forms

Forms are used as an alternative way to enter data into a database table.

Create Form by Using Wizard

To create a form using the assistance of the wizard, follow these steps:

Click the **Create form by using wizard** option on the database window. From the **Tables/Queries** drop- down menu, select the table or query whose datasheet the form will modify. Then, select the fields that will be included on the form by highlighting each one the **Available Fields** window and clicking the single right arrow button > to move the field to the **Selected Fields** window. To move all of the fields to Select Fields, click the double right arrow button >>. If you make a mistake and would like to remove a field or all of the fields from the Selected Fields window, click the left arrow < or left double arrow << buttons. After the proper fields have been selected, click the **Next** > button to move on to the next screen.



On the second screen, select the layout of the form.

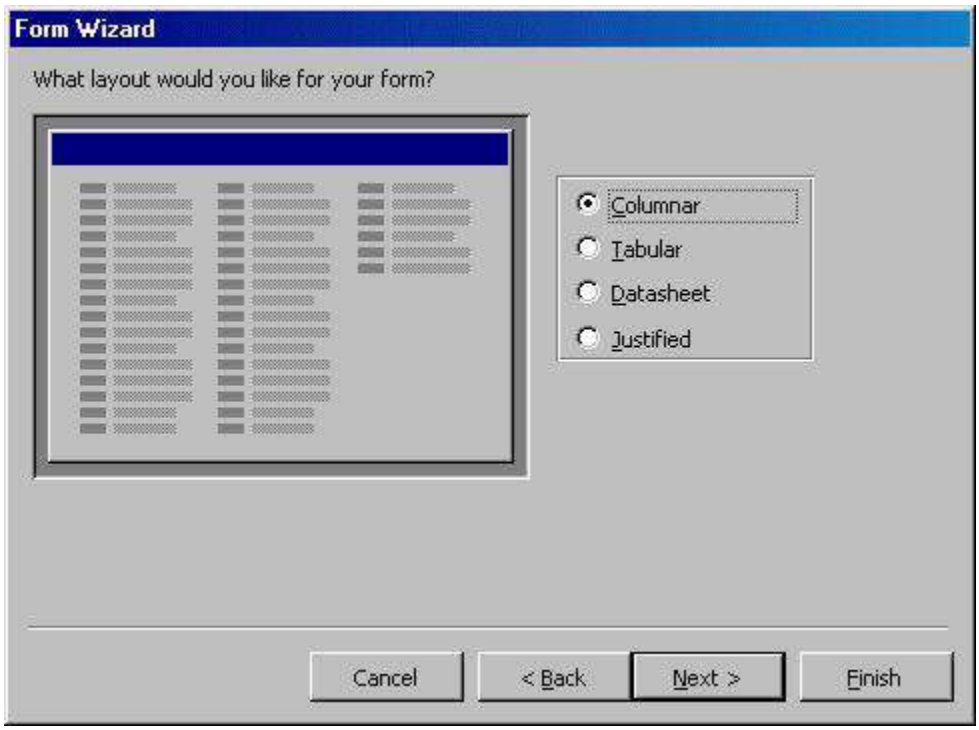
Columnar - A single record is displayed at one time with labels and form fields listed side-by-side in columns

Justified - A single record is displayed with labels and form fields are listed across the screen

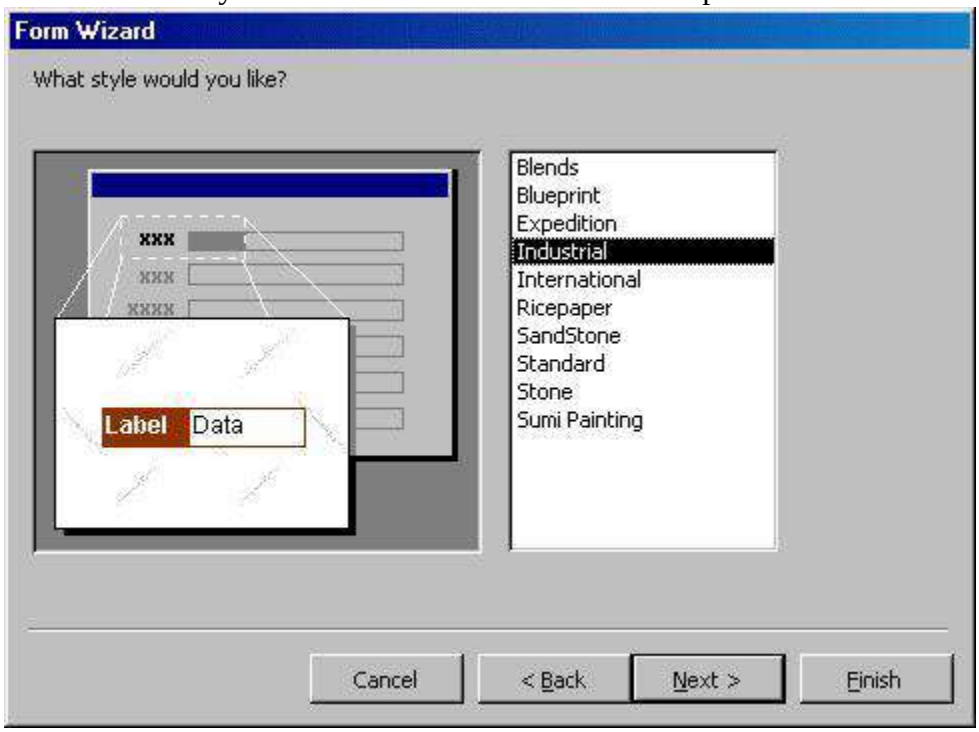
Tabular - Multiple records are listed on the page at a time with fields in columns and records in rows

Datasheet - Multiple records are displayed in Datasheet View

Click the **Next >** button to move on to the next screen.

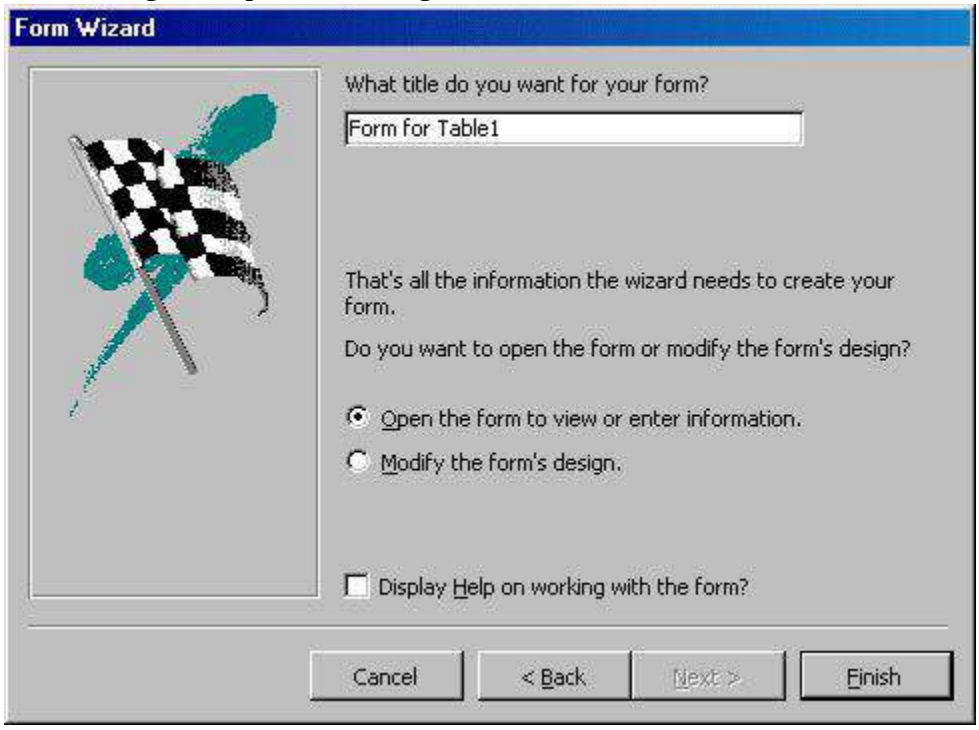


Select a visual style for the form from the next set of options and click **Next>**.



On the final screen, name the form in the space provided. Select "Open the form to view or enter information" to open the form in Form View or "Modify the

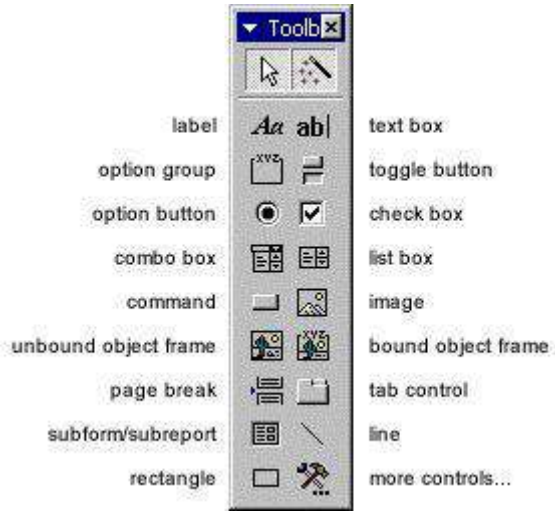
form's design" to open it in Design View. Click **Finish** to create the form.



Create Form in Design View

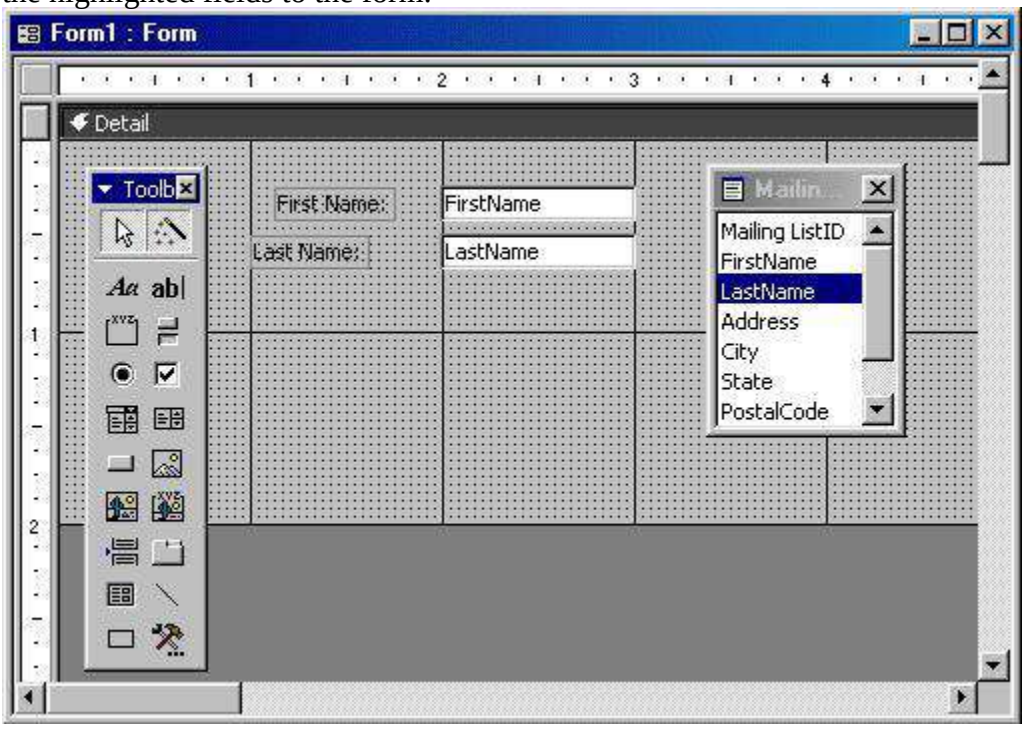
To create a form from scratch without the wizard, follow these steps:

Click the **New** button on the form database window.
Select "Design View" and choose the table or query the form will be associated with the form from the drop-down menu.
Select **View**|**Toolbox** from the menu bar to view the floating toolbar with additional options.



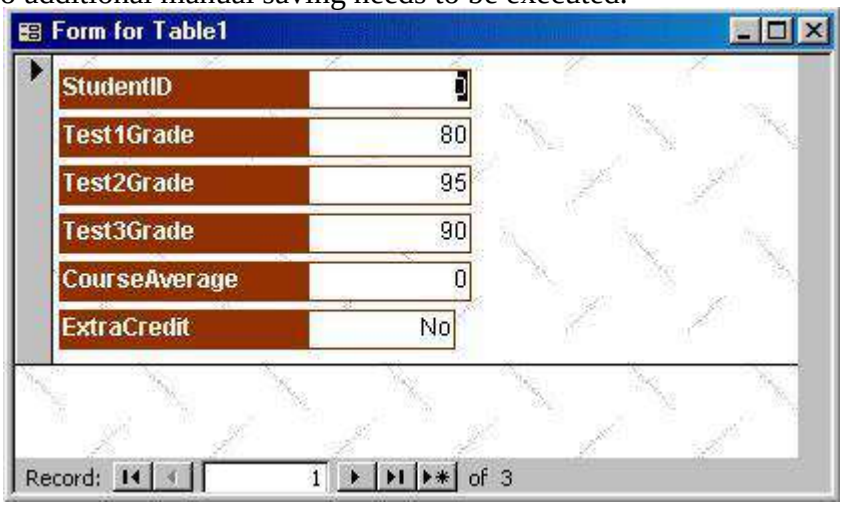
Add controls to the form by clicking and dragging the field names from the Field List floating window. Access creates a text box for the value and label for the

field name when this action is accomplished. To add controls for all of the fields in the Field List, double -click the Field List window's title bar and drag all of the highlighted fields to the form.



Adding Records Using A Form

Input data into the table by filling out the fields of the form. Press the **Tab** key to move from field to field and create a new record by clicking **Tab** after the last field of the last record. A new record can also be created at any time by clicking the **New Record** button at the bottom of the form window. Records are automatically saved as they are entered so no additional manual saving needs to be executed.



Editing Forms

The follow points may be helpful when modifying forms in Design View.

Grid lines - By default, a series of lines and dots underlay the form in Design View so form elements can be easily aligned. To toggle this feature on and off select **View|Grid** from the menu bar.

Snap to Grid - Select **Format|Snap to Grid** to align form objects with the grid to allow easy alignment of form objects or uncheck this feature to allow objects to float freely between the grid lines and dots.

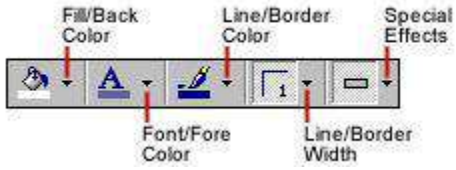
Resizing Objects - Form objects can be resized by clicking and dragging the handles on the edges and corners of the element with the mouse.

Change form object type - To easily change the type of form object without having to create a new one, right click on the object with the mouse and select **Change To** and select an available object type from the list.

Label/object alignment - Each form object and its corresponding label are bounded and will move together when either one is moved with the mouse. However, to change the position of the object and label in relation to each other (to move the label closer to a text box, for example), click and drag the large handle at the top, left corner of the object or label.

Tab order - Alter the tab order of the objects on the form by selecting **View|Tab Order...** from the menu bar. Click the gray box before the row you would like to change in the tab order, drag it to a new location, and release the mouse button.

Form Appearance - Change the background color of the form by clicking the **Fill/Back Color** button on the formatting toolbar and click one of the color swatches on the palette. Change the color of individual form objects by highlighting one and selecting a color from the **Font/Fore Color** palette on the formatting toolbar. The font and size, font effect, font alignment, border around each object, the border width, and a special effect can also be modified using the formatting toolbar:



Page Header and Footer - Headers and footers added to a form will only appear when it is printed. Access these sections by selecting **View|Page Header/Footer** on the menu bar. Page numbers can also be added to these sections by selecting **Insert|Page Numbers**. A date and time can be added from **Insert|Date and Time...**. Select **View|Page Header/Footer** again to hide these sections from view in Design View.

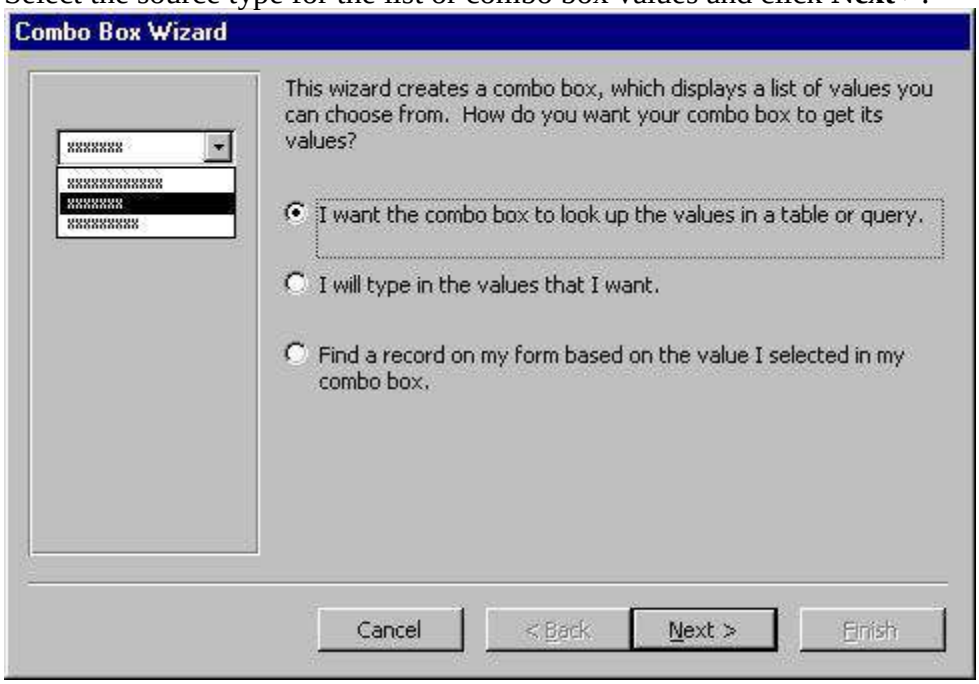
2.Form Controls

List and Combo Boxes

If there are small, finite number of values for a certain field on a form, using combo or list boxes may be a quicker and easier way of entering data. These two control types differ in the number of values they display. List values are all displayed while the combo box values are not displayed until the arrow button is clicked to open it as shown in these examples:

By using a combo or list box, the name of the academic building does not need to be typed for every record. Instead, it simply needs to be selected from the list. Follow these steps to add a list or combo box to a form:

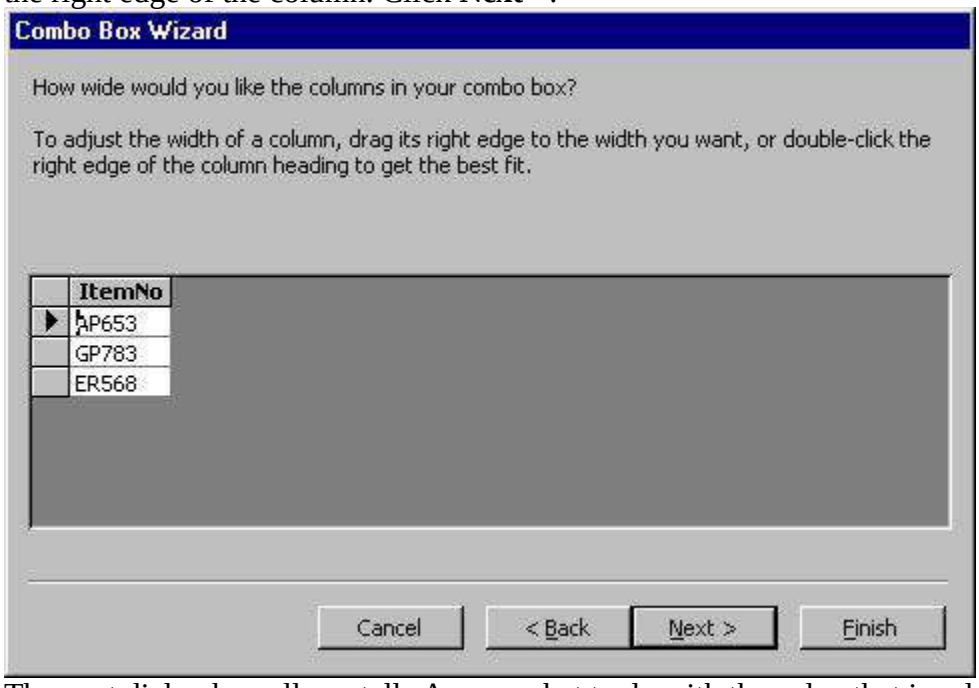
Open the form in **Design View**.
Select **View**|**Toolbox** to view the toolbox and make sure the "Control Wizards" button is pressed in.
Click the list or combo box tool button and draw the outline on the form. The combo box wizard dialog box will appear.
Select the source type for the list or combo box values and click **Next >**.



Depending on your choice in the first dialog box, the next options will vary. If you chose to look up values from a table or query, the following box will be displayed. Select the table or query from which the values of the combo box will come from. Click **Next >** and choose fields from the table or query that was

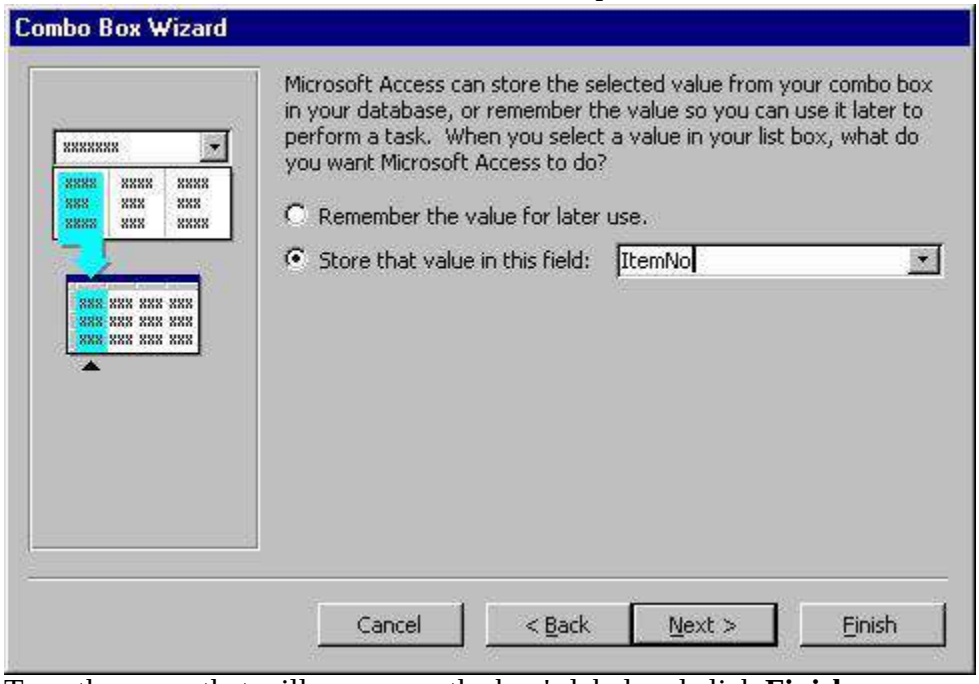
selected. Click **Next >** to proceed.

On the next dialog box, set the width of the combo box by clicking and dragging the right edge of the column. Click **Next >**.



The next dialog box allows tells Access what to do with the value that is selected. Choose "Remember the value for later use" to use the value in a macro or procedure (the value is discarded when the form is closed), or select the field that

the value should be stored in. Click **Next >** to proceed to the final screen.



Type the name that will appear on the box's label and click **Finish**.

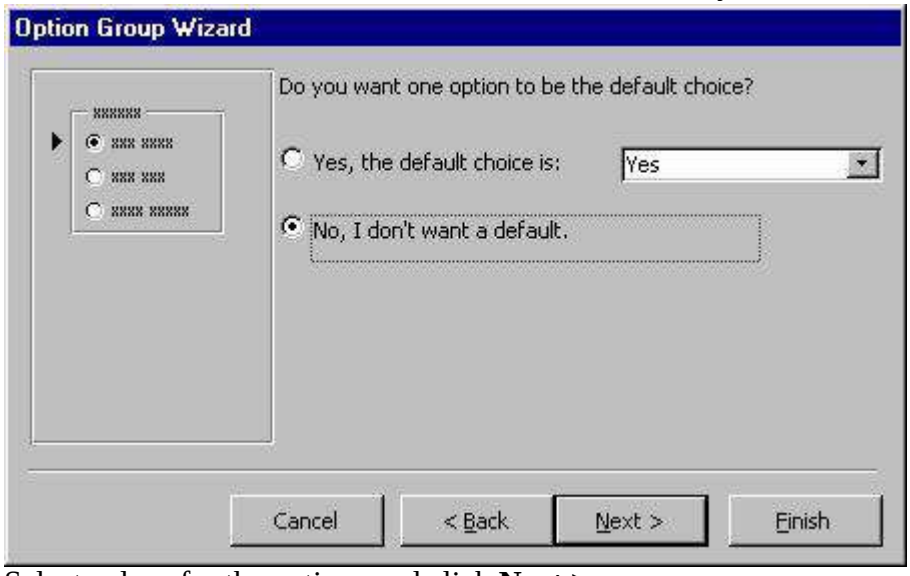
Check Boxes and Option Buttons

Use check boxes and option buttons to display yes/no, true/false, or on/off values. Only one value from a group of option buttons can be selected while any or all values from a check box group can be chosen. Typically, these controls should be used when five or less options are available. Combo boxes or lists should be used for long lists of options. To add a checkbox or option group:

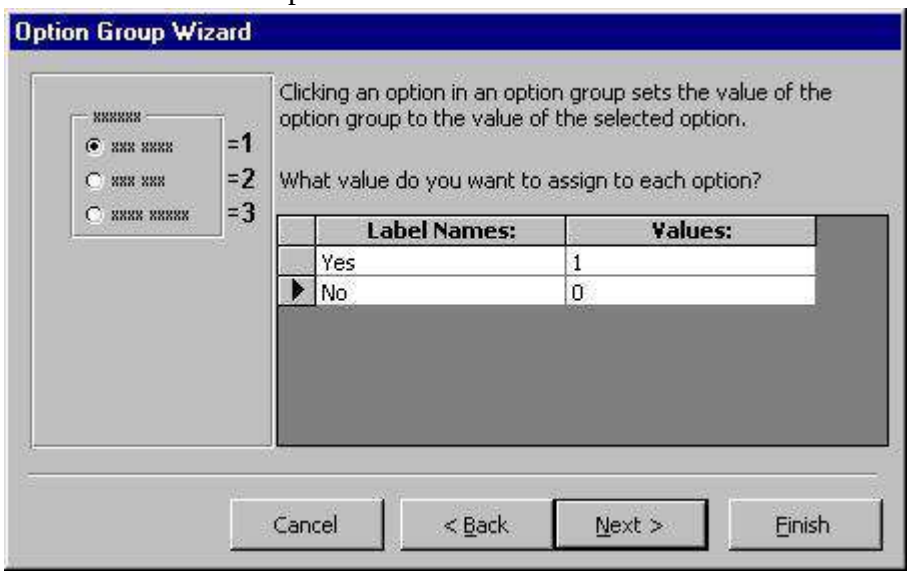
> Click the **Option Group** tool on the toolbox and draw the area where the group will be placed on the form with the mouse. The option group wizard dialog box will appear.

On the first window, enter labels for the options and click the tab key to enter additional labels. Click **Next >** when finished typing labels.

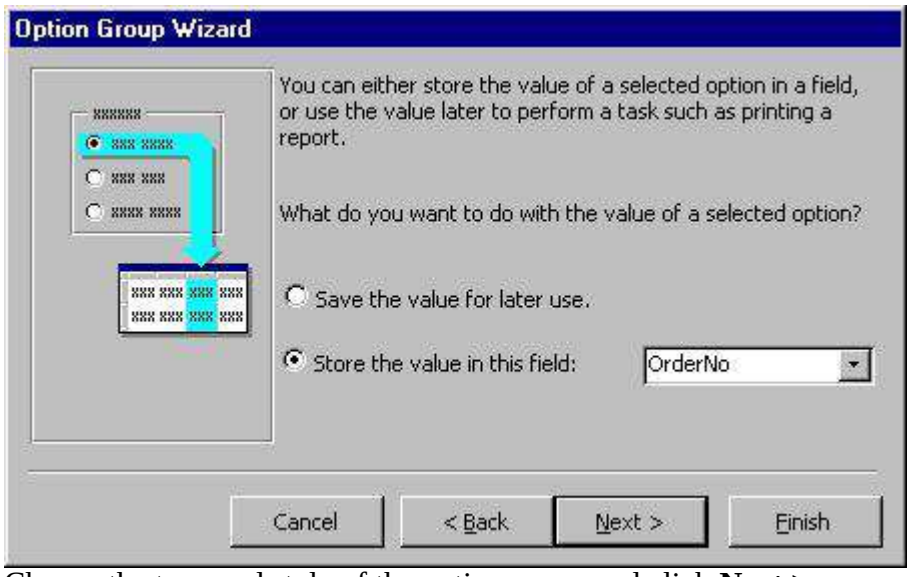
On the next window, select a default value if there is any and click **Next >**.



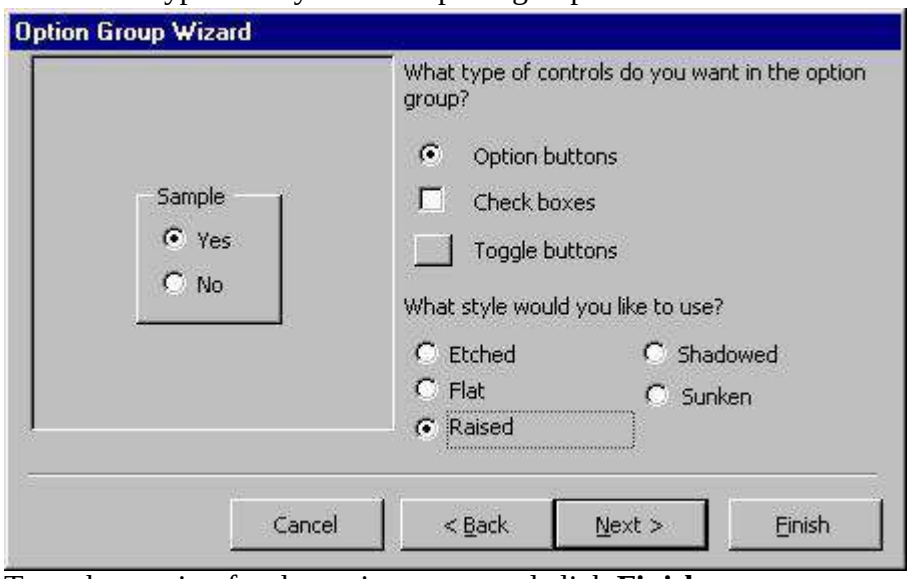
Select values for the options and click **Next >**.



Choose what should be done with the value and click **Next >**.



Choose the type and style of the option group and click **Next >**.



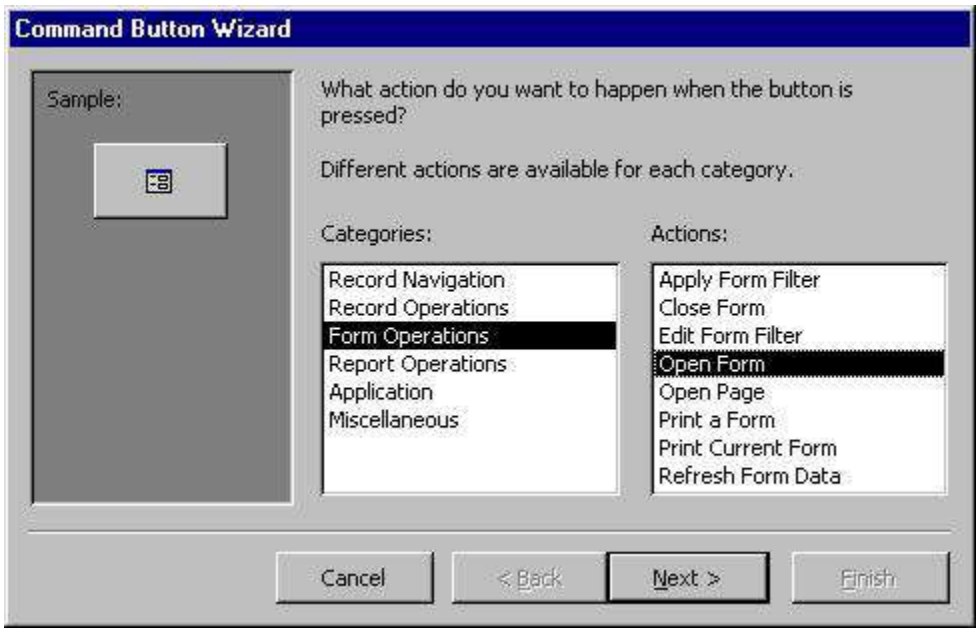
Type the caption for the option group and click **Finish**.

Command Buttons

In this example, a command button beside each record is used to open another form.

Open the form in Design View and ensure that the Control Wizard button on the toolbox is pressed in.
Click the command button icon on the toolbox and draw the button on the form. The Command Button Wizard will then appear.
On the first dialog window, action categories are displayed in the left list while the right list displays the actions in each category. Select an action for the

command button and click **Next >**.



The next few pages of options will vary based on the action you selected. Continue selecting options for the command button.

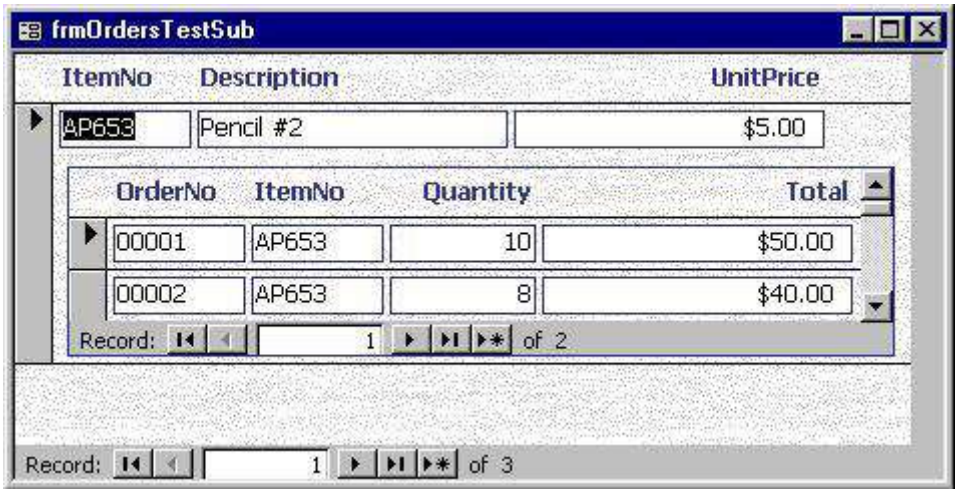
Choose the appearance of the button by entering caption text or selecting a picture. Check the **Show All Pictures** box to view the full list of available images. Click **Next >**.

Enter a name for the command button and click **Finish** to create the button.

3. Sub Forms

What Is A Subform?

A subform is a form that is placed in a parent form, called the main form. Subforms are particularly useful to display data from tables and queries that have one -to-many relationships. For example, in the sample below, data on the main form is drawn from an item information table while the subform contains all of the orders for that item. The item record is the "one" part of this one- to-many relationship while the orders are the "many" side of the relationship since many orders can be placed for the one item.



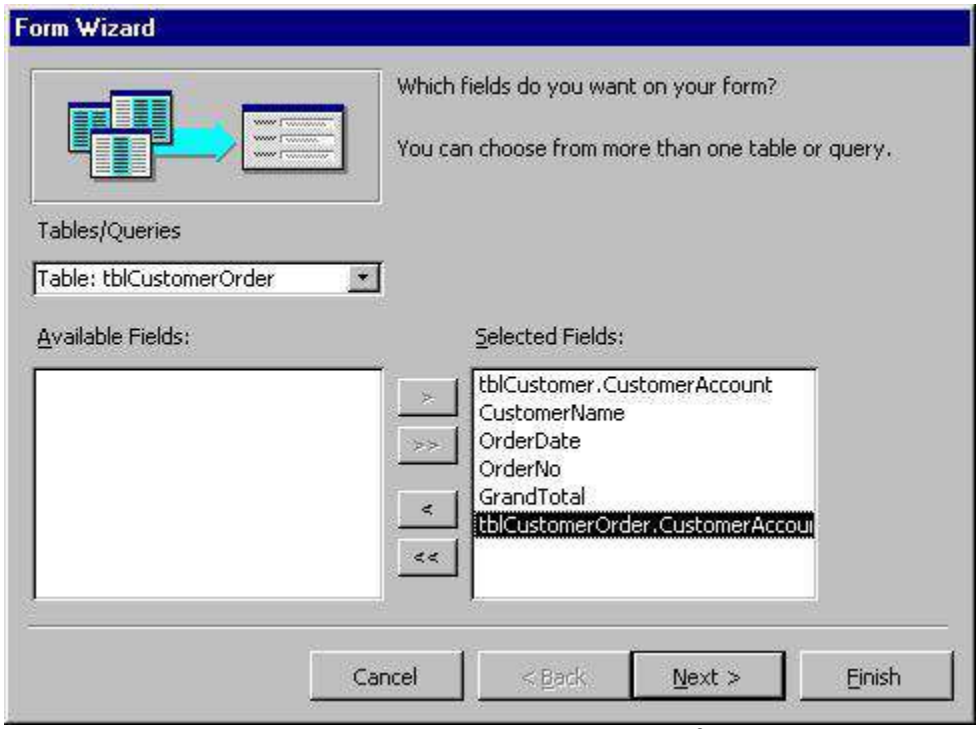
The remainder of this page explains three methods for creating subforms and they assume that the data tables and/or queries have already been created.

Create a Form and Subform at Once

Use this method if neither form has already been created. A main form and subform can be created automatically using the form wizard if **table relationships** are set properly or if a query involving multiple tables is selected. For example, a relationship can be set between a table containing customer information and one listing customer orders so the orders for each customer are displayed together using a main form and subform. Follow these steps to create a subform within a form:

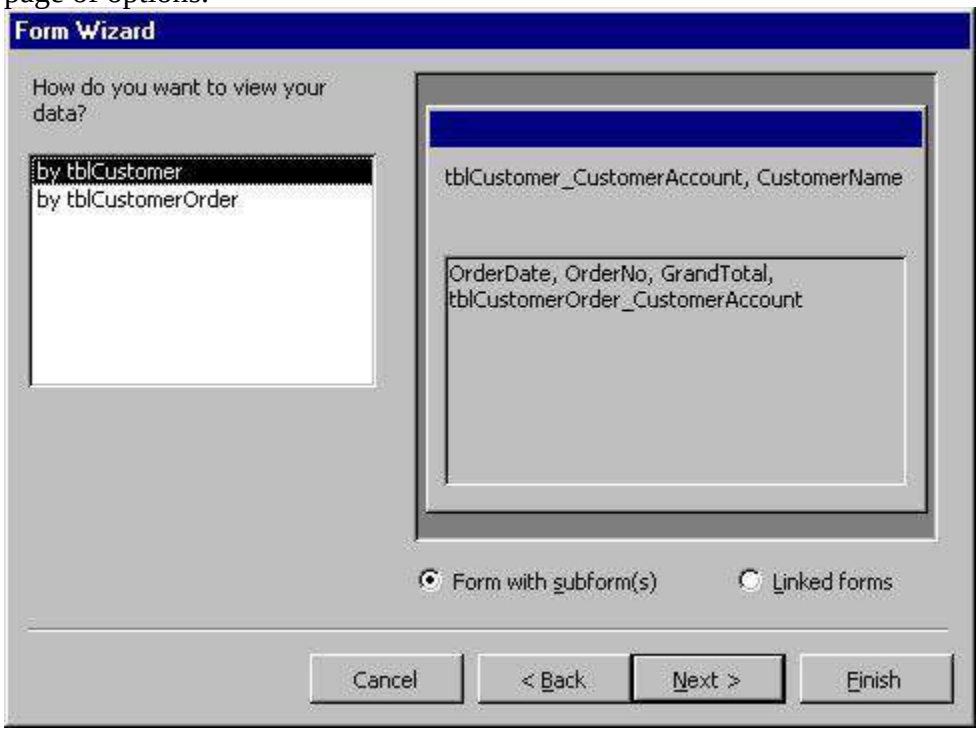
> Double-click **Create form by using wizard** on the database window.
> From the **Tables/Queries** drop-down menu, select the first table or query from which the main form will display its data. Select the fields that should appear on the form by highlighting the field names in the **Available Fields** list on the left and clicking the single arrow > button or click the double arrows >> to choose all

of the fields.

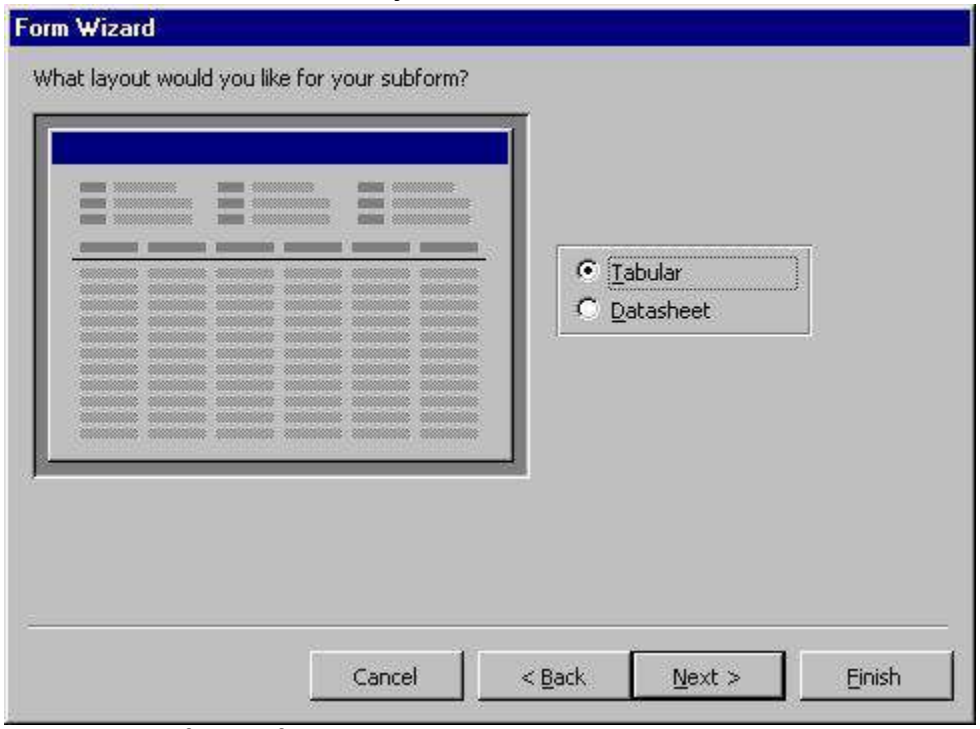


From the same window, select another table or query from the **Tables/Queries** drop-down menu and choose the fields that should appear on the form. Click **Next** to continue after all fields have been selected.

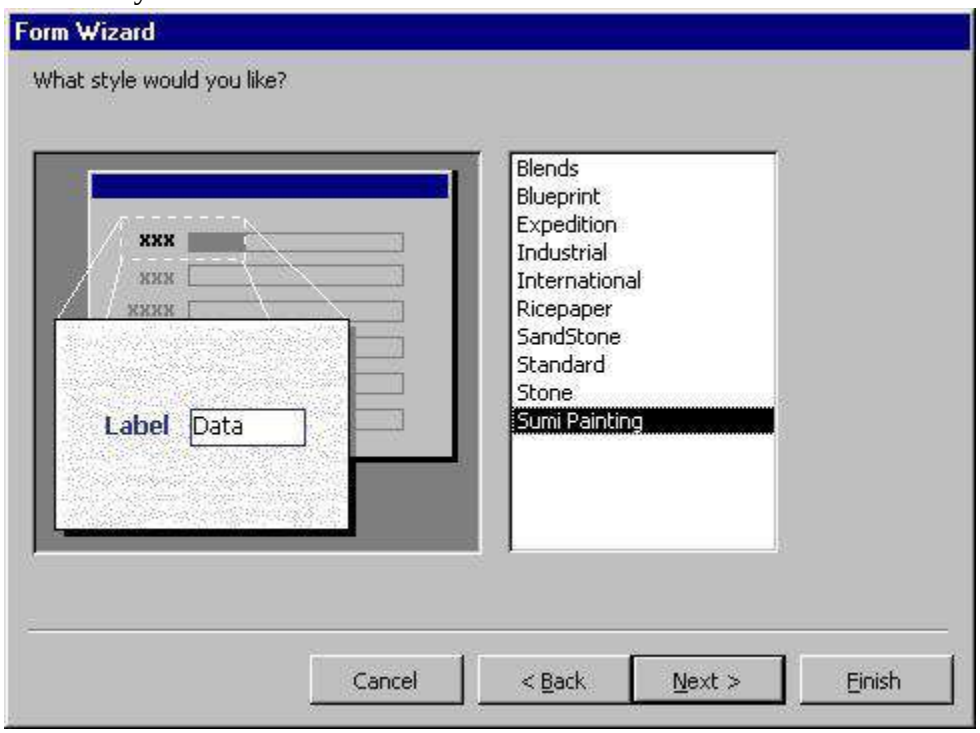
Choose an arrangement for the forms by selecting **form with subform(s)** if the forms should appear on the same page or **Linked forms** if there are many controls on the main form and a subform will not fit. Click **Next** to proceed to the next page of options.



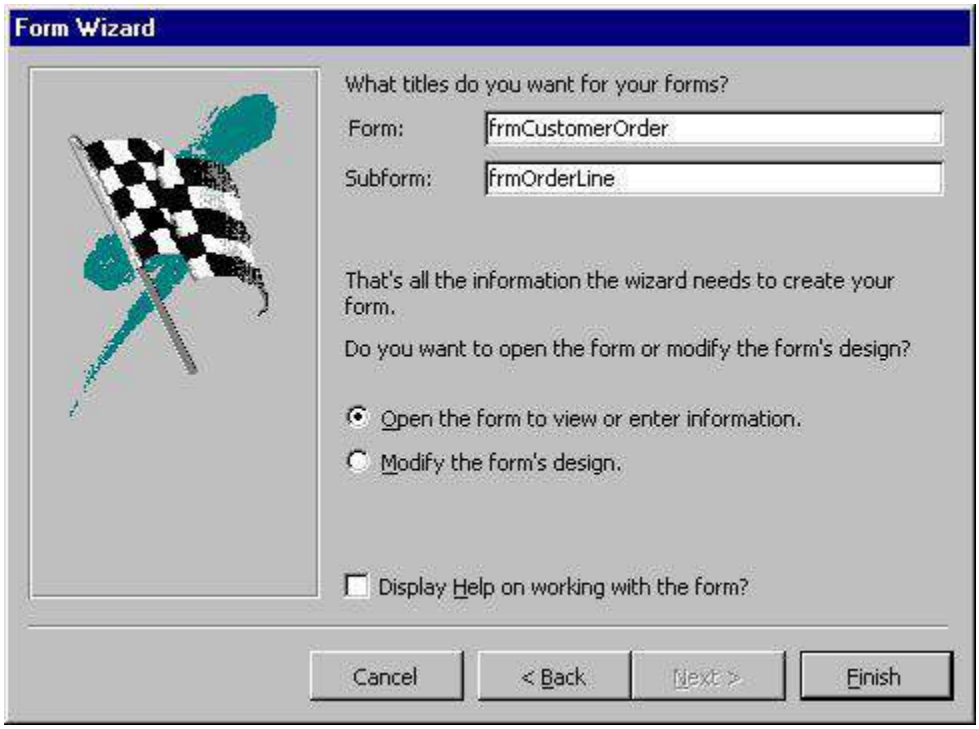
Select a tabular or datasheet layout for the form and click **Next**.



Select a style for the form and click **Next**.



Enter the names for the main form and subform. Click **Finish** to create the forms.



New records can be added to both tables or queries at once by using the new combination form.

Subform Wizard

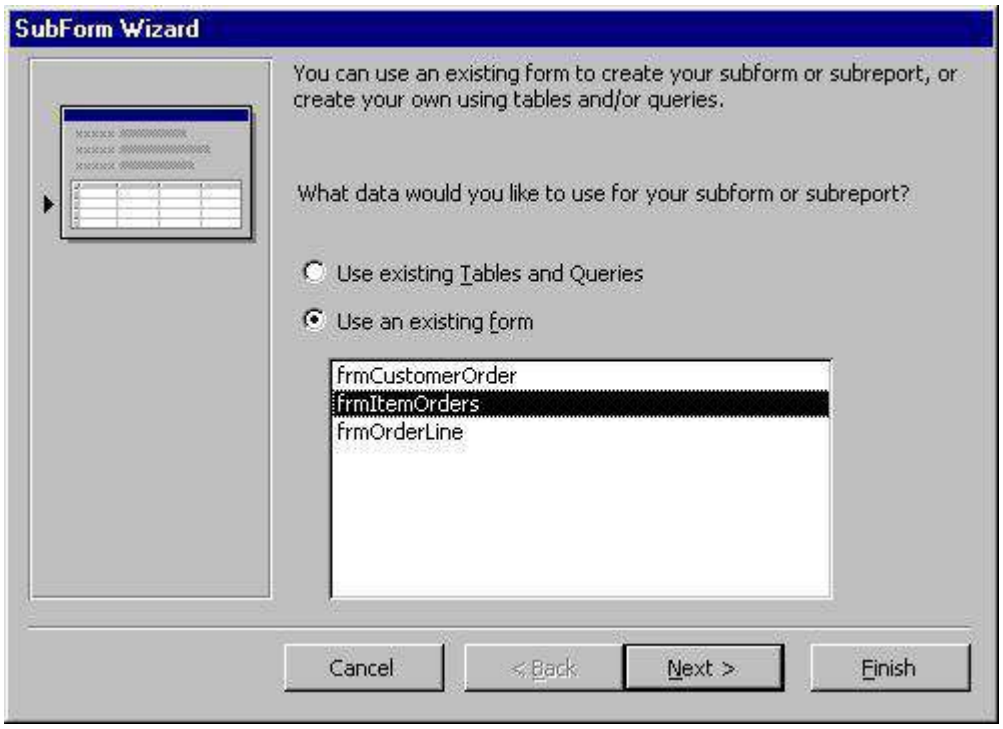
If the main form or both forms already exist, the Subform Wizard can be used to combine the forms. Follow these steps to use the Subform Wizard:

Open the main form in **Design View** and make sure the **Control Wizard** button on the toolbox is pressed in.

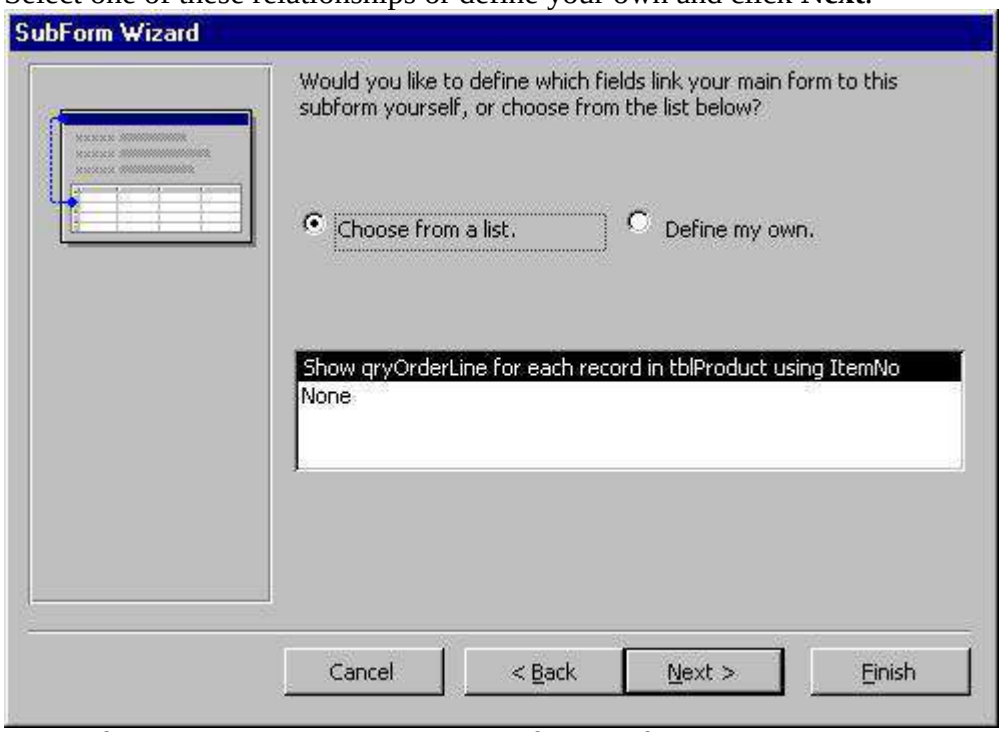
Click the **Subform/Subreport** icon on the toolbox and draw the outline of the subform on the main form. The Subform Wizard dialog box will appear when the mouse button is released.

If the subform has not been created yet, select "Use existing Tables and Queries". Otherwise, select the existing form that will become the subform. Click **Next** to

continue.



The next dialog window will display table relationships assumed by Access. Select one of these relationships or define your own and click **Next**.

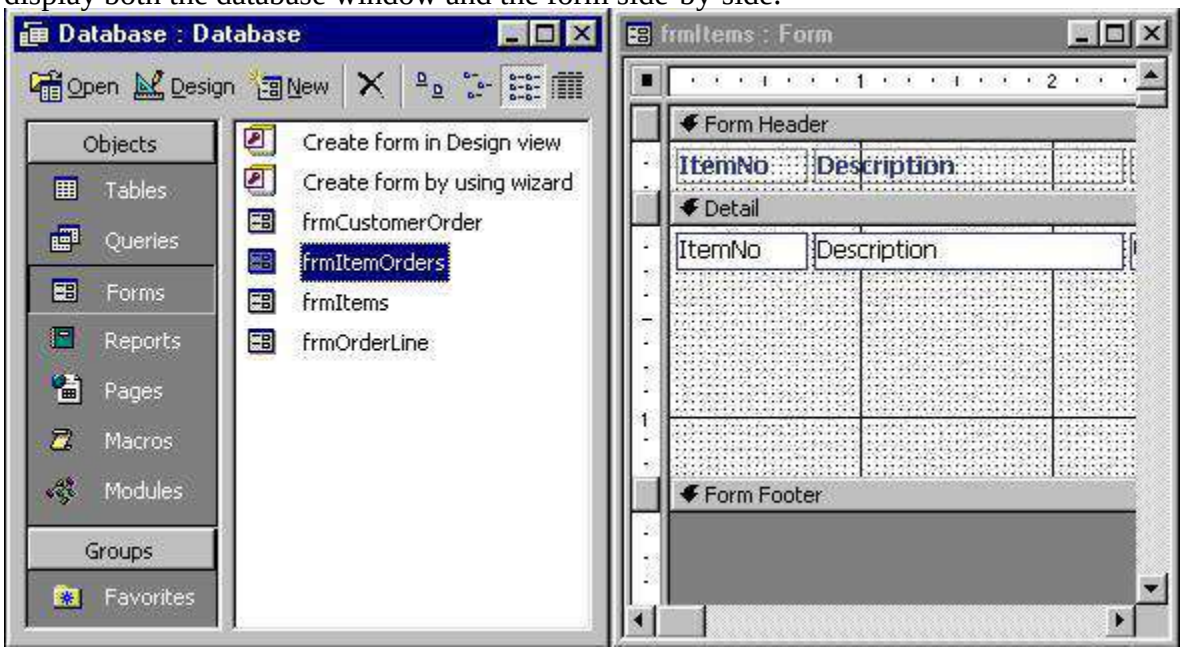


On the final dialog box, enter the name of the subform and click **Finish**.

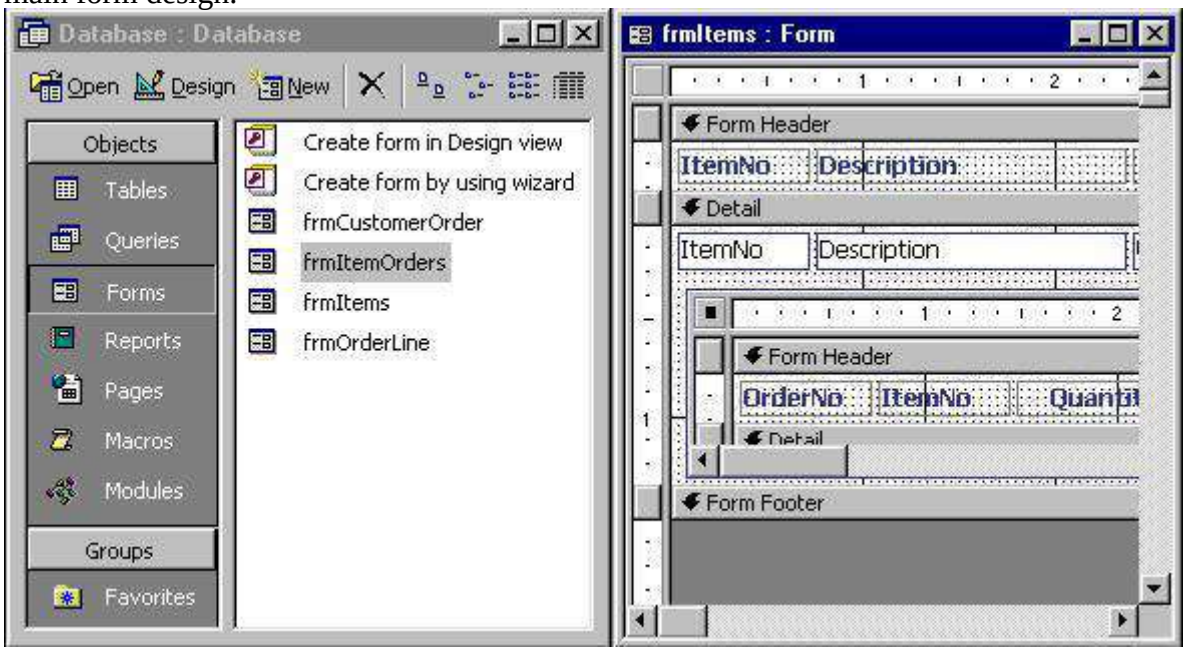
Drag-and-Drop Method

Use this method to create subforms from two forms that already exist. Make sure that the table relationships have already been set before proceeding with these steps.

Open the main form in **Design View** and select **Window|Tile Vertically** to display both the database window and the form side-by-side.



Drag the form icon beside the name of the subform onto the detail section of the main form design.

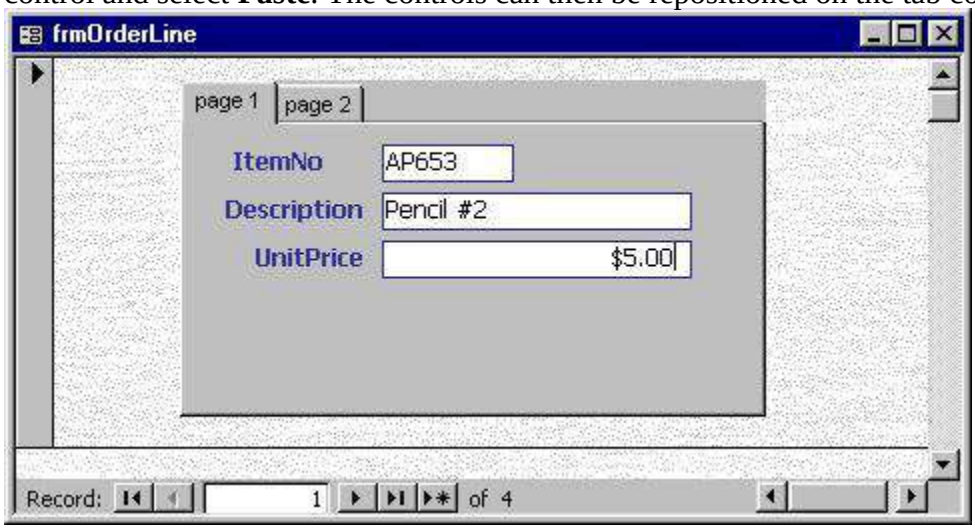


4. More On Forms

Multiple-Page Forms Using Tabs

Tab controls allow you to easily create multi-page forms. Create a tab control by following these steps:

Click the **Tab Control** icon on the toolbox and draw the control on the form. Add new controls to each tab page the same way that controls are added to regular form pages and click the tabs to change pages. Existing form controls cannot be added to the tab page by dragging and dropping. Instead, right- click on the control and select **Cut** from the shortcut menu. Then right- click on the tab control and select **Paste**. The controls can then be repositioned on the tab control.



Add new tabs or delete tabs by right- clicking in the tab area and choosing **Insert Page** or **Delete Page** from the shortcut menu.
Reorder the tabs by right-clicking on the tab control and selecting **Page Order**.
Rename tabs by double-clicking on a tab and changing the **Name** property under the **Other** tab.

Conditional Formatting

Special formatting that depends on the control's value can be added to text boxes, lists, and combo boxes. A default value can set along with up to three conditional formats. To add conditional formatting to a control element, follow these steps:

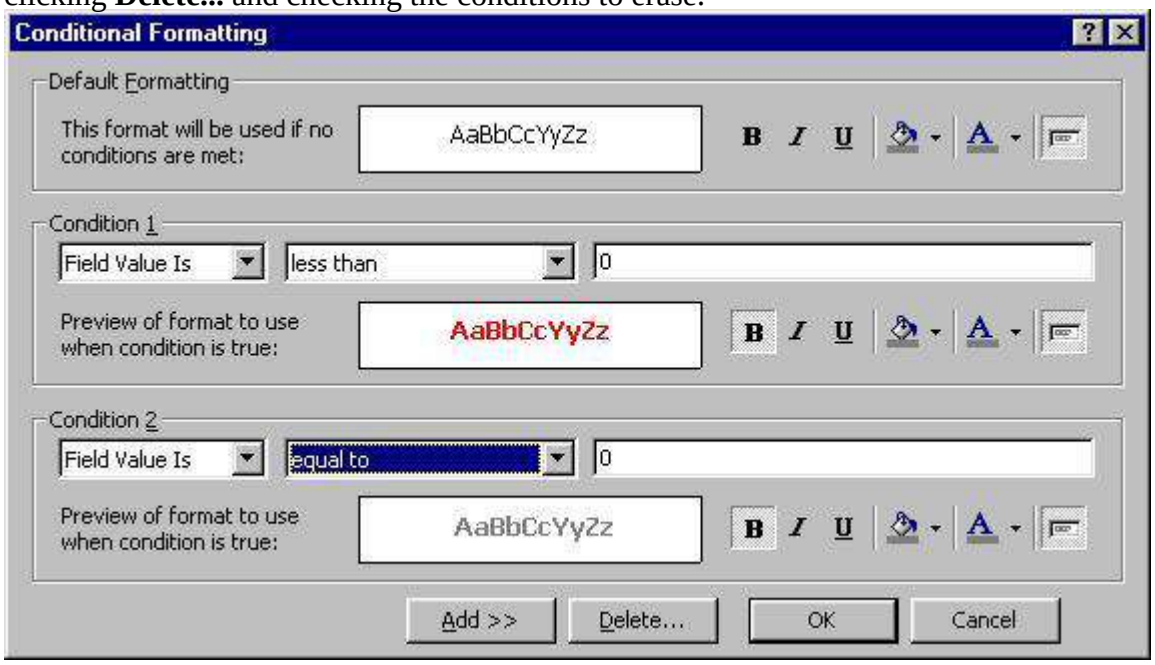
Select the control that the formatting should be applied to and select **Format|Conditional Formatting** from the menu bar.
Under **Condition 1**, select one of the following condition types:

Field Value Is applies formatting based upon the value of the control. Select a comparison type from the second drop-down menu and enter a value in the final text box.

Expression Is applies formatting if the expression is true. Enter a value in the text box and the formatting will be added if the value matches the expression.

Field Has Focus will apply the formatting as soon as the field has focus.

Add additional conditions by clicking the **Add >>** button and delete conditions by clicking **Delete...** and checking the conditions to erase.



Password Text Fields

To modify a text box so each character appears as an asterisk as the user types in the information, select the text field in Design View and click **Properties**. Under the **Data** tab, click in the **Input Mask** field and then click the button **[...]** that appears. Choose "Password" from the list of input masks and click **Finish**. Although the user will only see asterisks for each character that is typed, the actual characters will be saved in the database.

Change Control Type

If you decide the type of a control needs to be changed, this can be done without deleting the existing control and creating a new one although not every control type can be converted and those that can have a limited number of types they can be converted to. To change the control type, select the control on the form in Design View and choose **Format|Change To** from the menu bar. Select one of the control types that is not grayed out.

Multiple Primary Keys

To select two fields for the composite primary key, move the mouse over the gray column next to the field names and note that it becomes an arrow. Click the mouse, hold it down, and drag it over all fields that should be primary keys and release the button. With the multiple fields highlighted, click the primary key button.

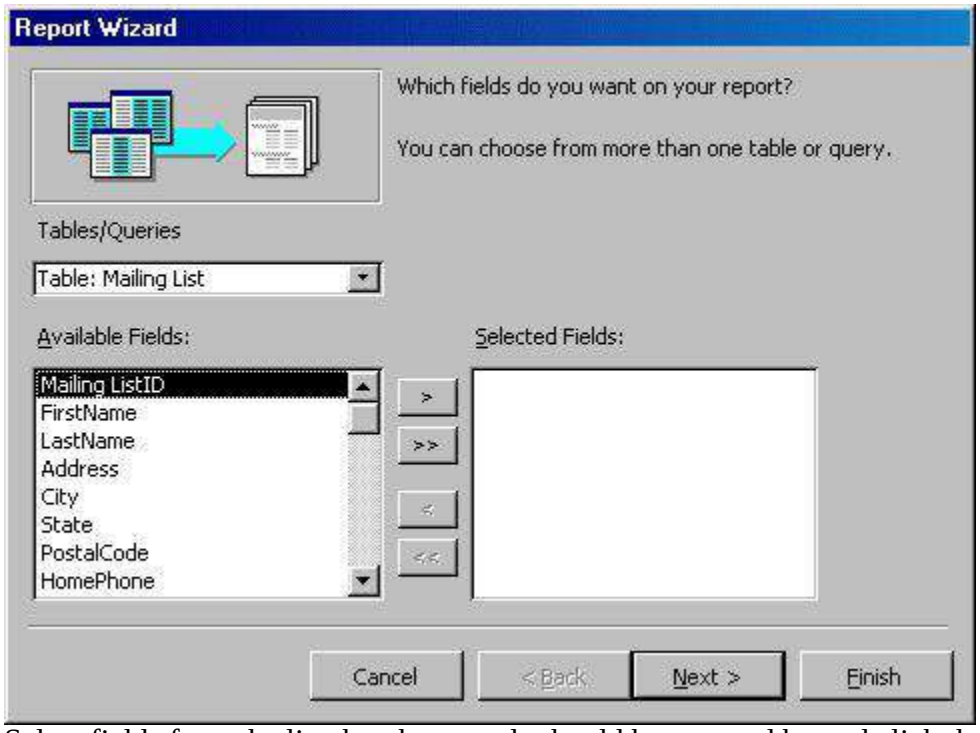
1. Reports

Reports will organize and group the information in a table or query and provide a way to print the data in a database.

Using the Wizard

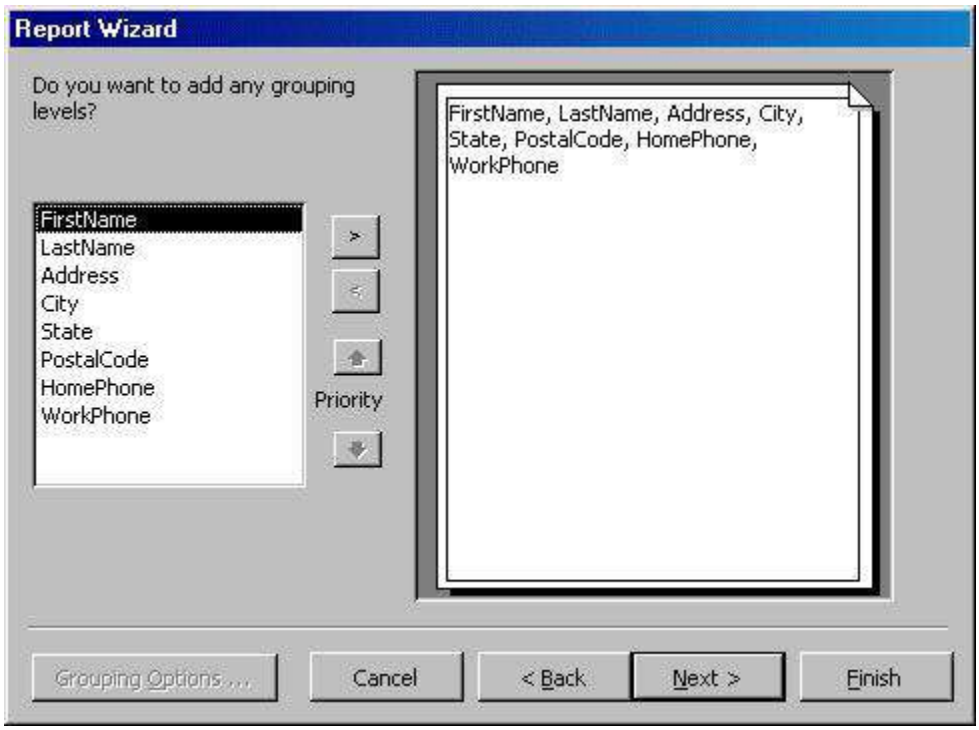
Create a report using Access' wizard by following these steps:

Double-click the "Create report by using wizard" option on the Reports Database Window.
Select the information source for the report by selecting a table or query from the **Tables/Queries** drop-down menu. Then, select the fields that should be displayed in the report by transferring them from the **Available Fields** menu to the **Selected Fields** window using the single right arrow button > to move fields one at a time or the double arrow button >> to move all of the fields at once. Click the **Next >** button to move to the next screen.

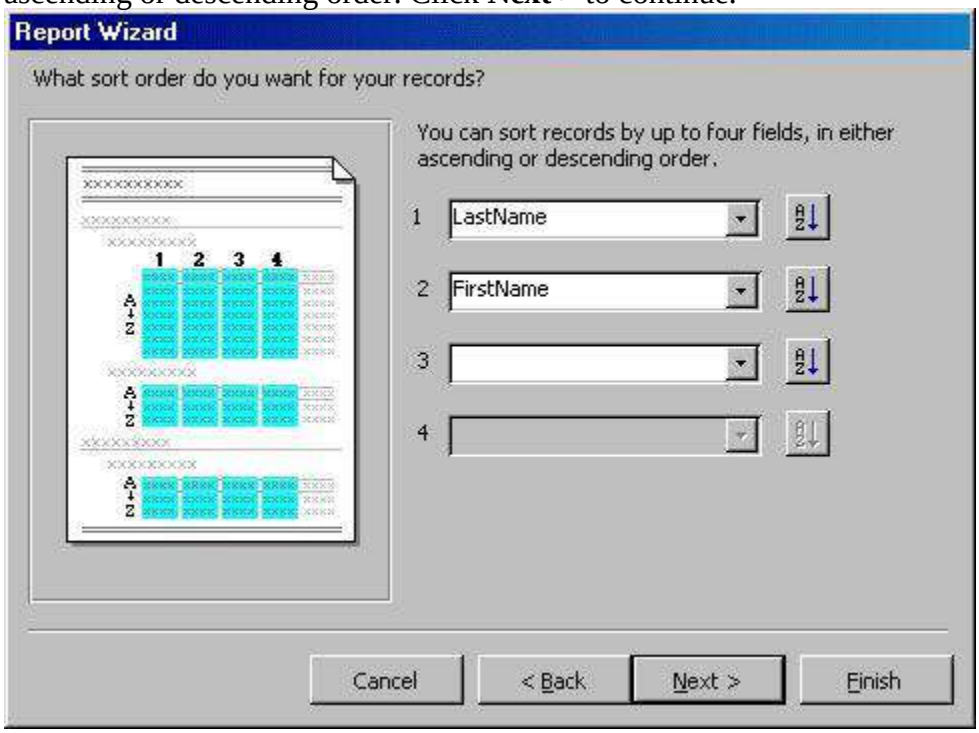


Select fields from the list that the records should be grouped by and click the right arrow button > to add those fields to the diagram. Use the **Priority** buttons to change the order of the grouped fields if more than one field is selected. Click

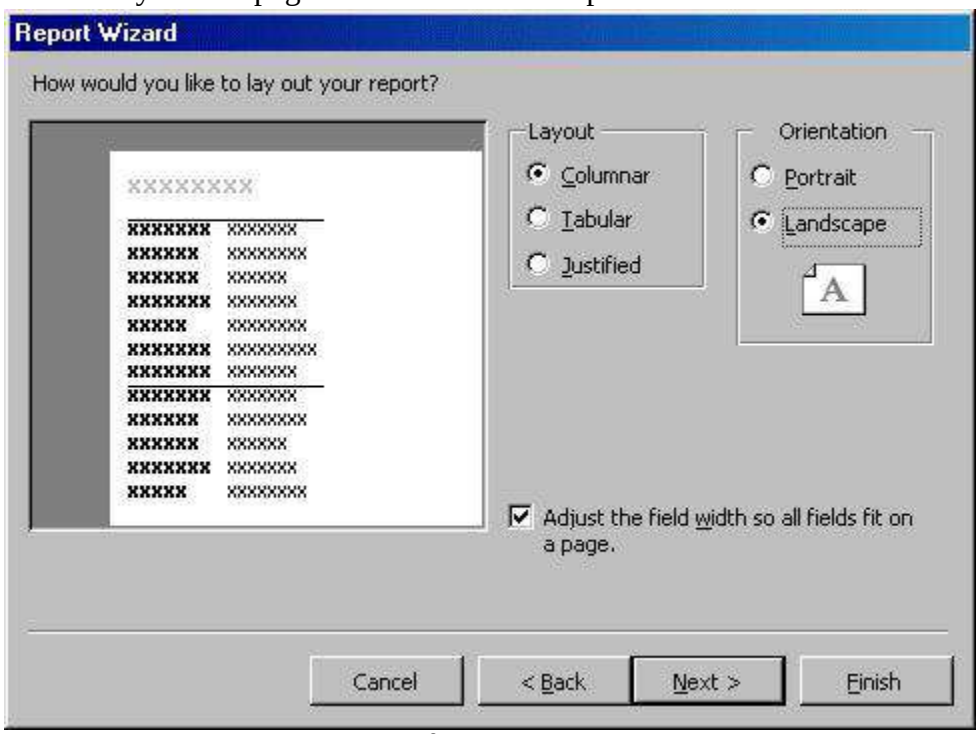
Next > to continue.



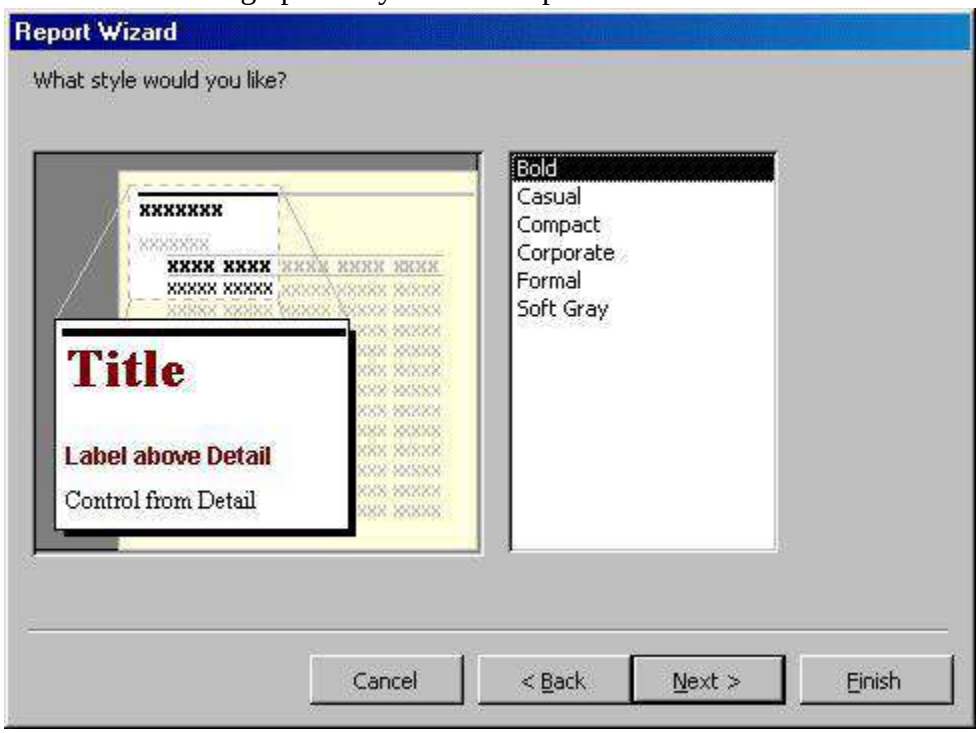
If the records should be sorted, identify a sort order here. Select the first field that records should be sorted by and click the A -Z sort button to choose from ascending or descending order. Click **Next >** to continue.



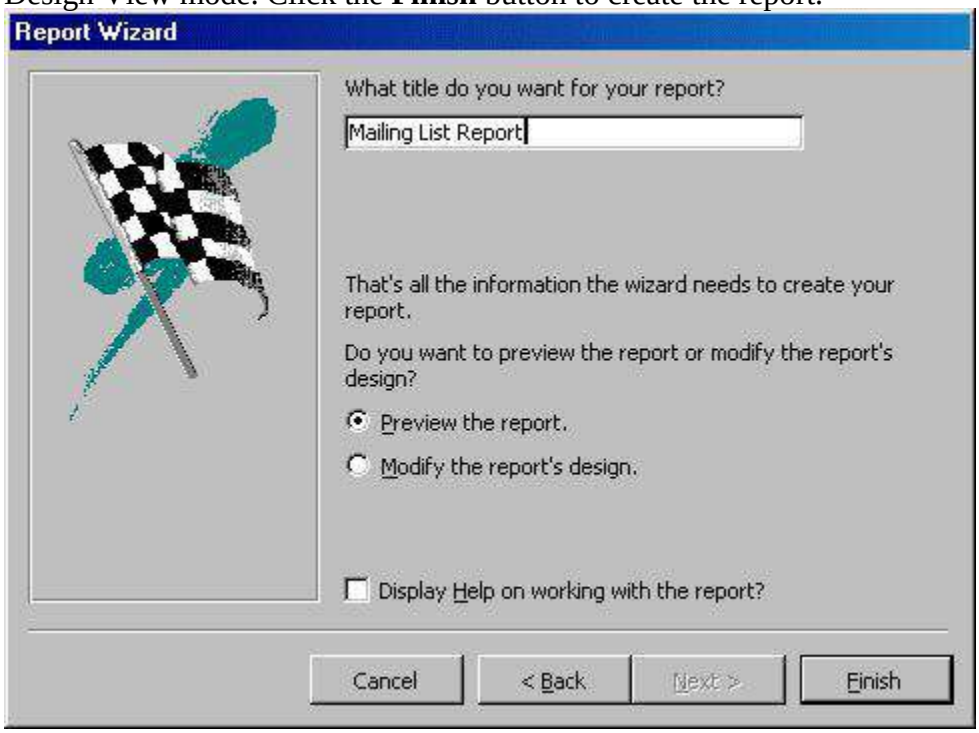
Select a layout and page orientation for the report and click **Next >**.



Select a color and graphics style for the report and click **Next >**.



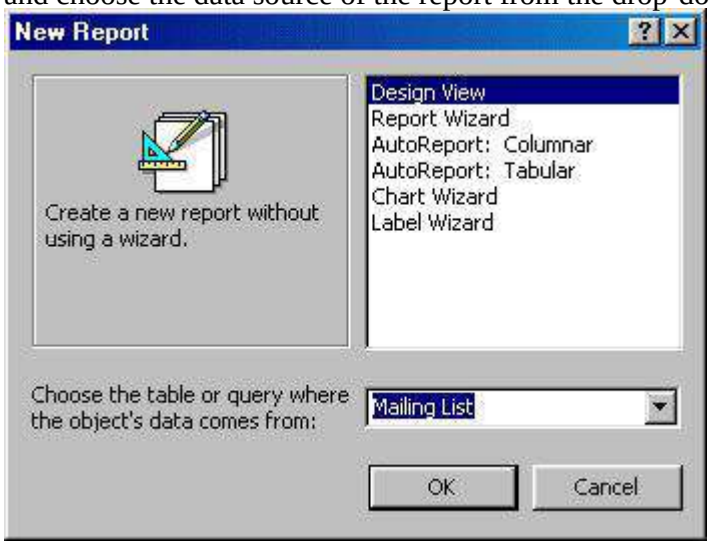
On the final screen, name the report and select to open it in either Print Preview or Design View mode. Click the **Finish** button to create the report.



Create in Design View

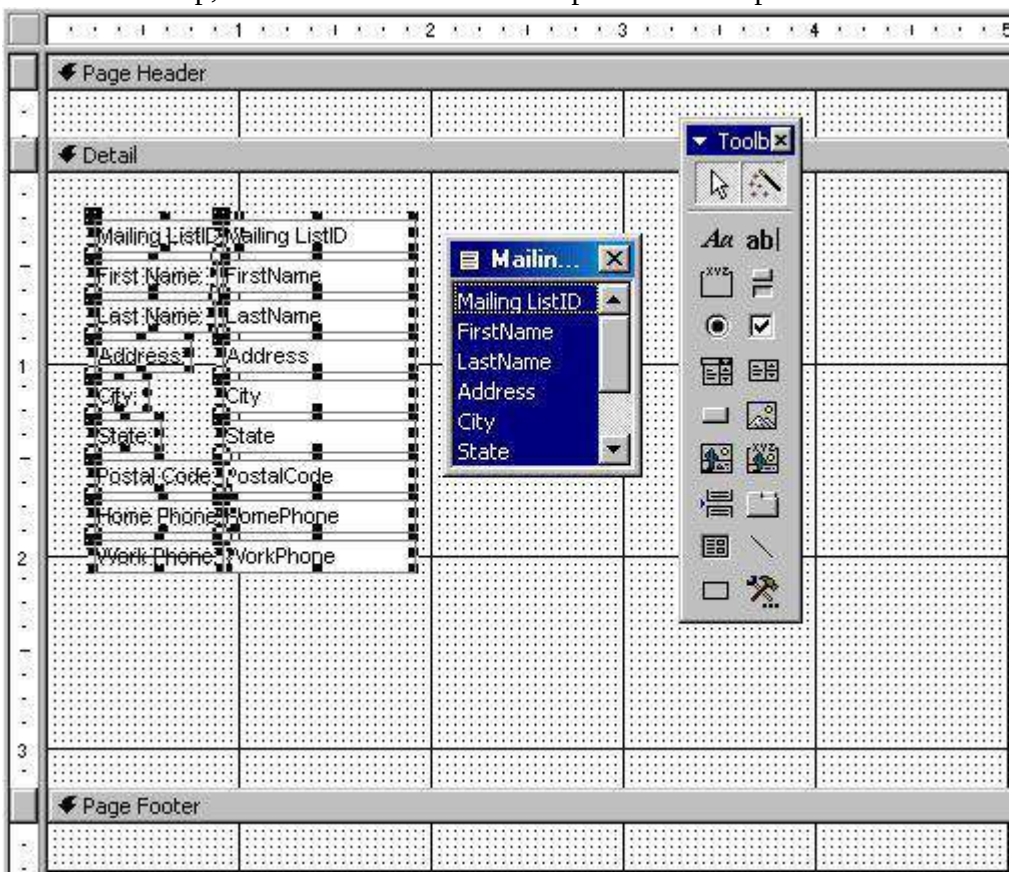
To create a report from scratch, select Design View from the Reports Database Window.

Click the **New** button on the Reports Database Window. Highlight "Design View" and choose the data source of the report from the drop-down menu and click **OK**.



You will be presented with a blank grid with a Field Box and form element toolbar that looks similar to the Design View for forms. Design the report in much the same way you would create a form. For example, double-click the title bar of the Field Box to add all of the fields to the report at once. Then, use the handles on the elements to resize them, move them to different locations, and modify the look of the report by using options on the formatting toolbar. Click the Print View

button at the top, left corner of the screen to preview the report.



Printing Reports

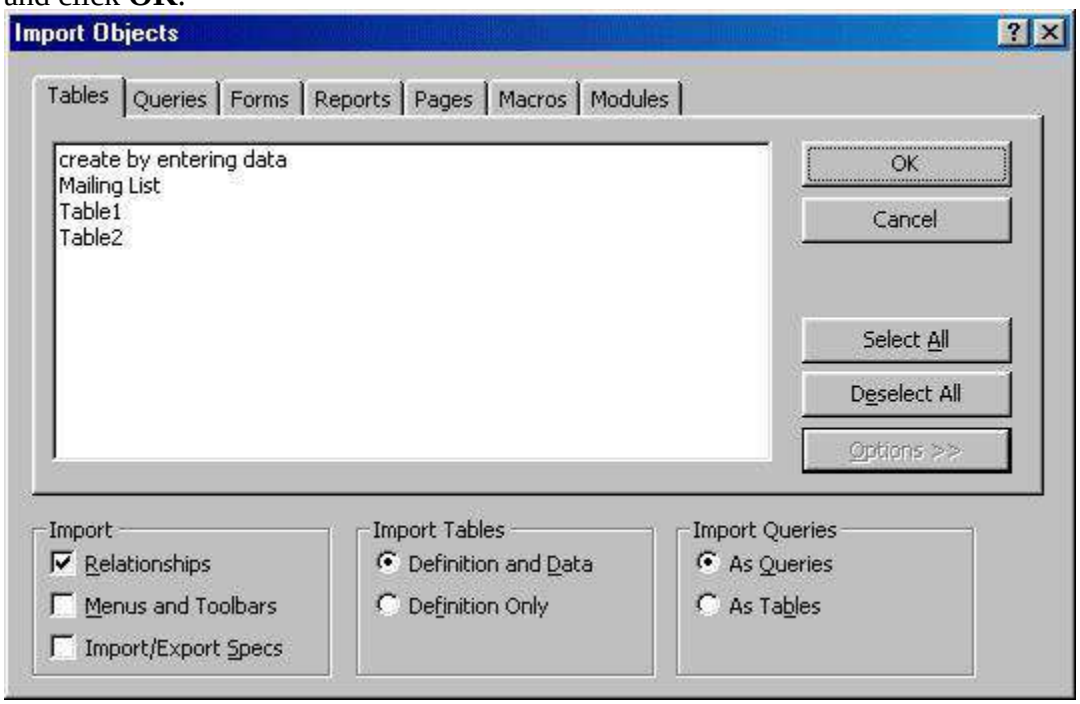
Select **File|Page Setup** to modify the page margins, size, orientation, and column setup. After all changes have been made, print the report by selecting **File|Print** from the menu bar or click the **Print** button on the toolbar.

1. Importing, Exporting, Linking

Importing

Importing objects from another database will create a complete copy of a table, query, or any other database object that you select. Import a database object by following these steps:

Open the destination database.
Select **File|Get External|Import** from the menu bar.
Choose the database the object is located in a click the **Import** button.
From the **Import Objects** window, click on the object tabs to find the object you want to import into the database. Click the **Options >>** button to view more options. Under **Import Tables**, select "Definition and Data" if the entire table should be copied or "Definition Only" if the table structure should be copied but not the data. Under **Import Queries**, select "As Tables" if the queries should appear as regular tables in the destination database. Highlight the object name, and click **OK**.



The new object will now appear with the existing objects in the database.

Exporting

The effect of importing can also be achieved using the opposite method of exporting.

Open the database containing an object that will be copied (exported) to another database.
Find the object in the Database Window and highlight it. Then, select **File|Export...** from the menu bar.
Select the destination database from the window and click **Save**.
You will be prompted to name the new object and may also be given other options, such as whether to copy the structure or data and structure of a table.
Click **OK** to complete the export procedure.

Linking

Unlike importing, linking objects from another database will create a link to an object in another database while not copying the table to the current database. Create a link by following these steps:

Open the destination database.
Select **File|Get External|Link Tables...** from the menu bar.
Choose the database that the table is located in and click the **Link** button.
A window listing the tables in the database will then appear.
Highlight the table or tables that should be linked and click **OK** .
A link to the table will appear in the Database Window as a small table icon preceded by a small right arrow.