COMPUTER APPLICATION SOFTWARE

Application Software

An **application** is another word for a program running on the computer. Whether or not it is a good application depends on how well it performs the tasks it is designed to do and how easy it is for the user to use, which involves the **user interface**- the way the user tells the software what to do and how the computer displays information and options to the user.

Word processing

Word processing is the application that is used most often and most widely. We will start with it to learn about the terms and features that are common to most applications, as well as some that are specific to word processing. Then we will look at other major applications and what they do.

Major word processors include Microsoft Word, WordPerfect, and Lotus WordPro.

Word processing is the *most used computer application*! It has replaced the typewriter as the main way words are put on paper. Documents can be revised and corrected before they are ever printed. An existing document can be used as a **template**, or pattern, for a new one. So the user doesn't have to recreate standard documents from scratch each time. This is a major time-saver and helps keep things consistent.

Purpose: To produce documents

Main advantage: Can easily change what has been done

Steps to produce a document

- Create
- Edit
- Format
- Print
- Save *(often!!)*

Let's look at the terms involved in these steps more closely. Most of these terms also apply to the other standard applications, so we will not redefine them for all.

Create

You **create** a document when you enter text.   Features of a word processing application include:

wrap –	automatically wrapping the text to the next line so it all fits within the screen's width
Cursor –	symbol for where text will appear like: I
Enter text–	type new text
Scrolling –	moving document around within window
Select –	Highlight text, usually by dragging. Commands and keystroke combinations will apply to the selected material.
Edit –	make changes
Cut –	remove selection from document and store temporarily on the **Clipboard**, which is a section of computer memory. The Clipboard can hold only one thing at a time.
Copy –	duplicate selection onto Clipboard
Paste –	place Clipboard contents at cursor location
Undo –	reverses whatever change you just made *Some programs will only "undo" the last change.* *Others keep a list and can undo more, depending on how many* *changes you have chosen to track.*
Insert –	add text at location without overwriting existing text
Delete –	remove text (not saved anywhere)
Search –	look for specific word(s) or character(s)
Replace –	can replace specific word(s) or character(s) with stated text
Template –	a document that serves as a pattern for a new document
Thesaurus –	looks for synonyms for selected word
Spelling check –	looks for spelling errors
Grammar check –	looks for grammar/style errors (of limited help)

Format

Once a document has been created, or during the process, you arrange how it will look by selecting the kind of letters and their sizes and colors, how much space is left and where, how things line up. This is **formatting** the document. Features of a word processing application include:

Typeface - set of characters of similar design like:

Braggadocio

Dragonwick

Renfrew

Point size - one point = $1/72$ of an inch like:

12 pt 18 pt 24 pt 36 pt

Font - combo of typeface & point size, includes **styles** such as **BOLD**, *italics*, underline

Margins -

space at the page borders
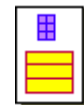
Justification - left center right full

Spacing -

space between letters and lines

Borders/shading - lines around table/page; background color

Headers/footers –
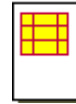
info to repeat on each page

Style sheets –   saved sets of formats to reuse

Columns –

columns of text side by side as in a newspaper

Tables –

items listed in rows and columns

Graphics –   pictures and charts

Print

When a document is finished, it may be printed onto paper. Features of a word processing application include:

Choose **number of copies/pages** to print

Choose **Orientation:**

Portrait   *Landscape*

Print Preview   shows you how it will look in print

Desktop Publishing (DTP)

High-end word processors can do much of what a desktop publishing program does. The difference between them has become a bit blurred.

For professional publications a desktop publishing programs gives the precise control needed and also advanced capacities such as preparing four-color separations for printing.

Purpose:	To prepare documents with graphics with precise control of the layout
Major Advantages:	Ability to place text and graphics precisely on page Ability to chain sections together like newspaper columns Advanced tools for professional work

Features/Terms:

Layout –	arranging text and graphics
Clip art –	pre-drawn pictures to add to page
WYSIWYG –	What You See Is What You Get pronounced "***wiz-e-wig***" how page displays on screen is the same as how it prints
separations–	For full color in high quality printing, the paper goes through the printing press 4 times, once for each of the colors **c**yan, **m**agenta, **y**ellow, and blac**k** (CMYK color system). The print shop must create separate versions of your document, called separations, for each color.

Spreadsheet

A **spreadsheet** is the application of choice for most documents that organize numbers, like budgets, financial statements, grade sheets, and sales records. A spreadsheet can perform simple or complex calculations on the numbers you enter in rows and columns.

Some popular spreadsheets include MS Excel, Lotus 1-2-3, and Quattro Pro.
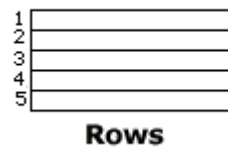

Purpose: Organizing numbers

Major Advantages: Can calculate for you using formulas
                    Auto-update of related numbers when data changes
                    Can display data in graphs and charts

Features/Terms:

rows & columns Creates a grid

cell   Intersection of row and column. Can contain text or numbers.

formula   Calculates value to put in cell, like a total, an average, interest, etc.

=SUM(C21:C45)
=Average(B3:W394)
=.095*LoanTotal

chart   Graphical representation of the data

Database

A **database** is a collection of data that you want to manage, rearrange, and add to later. It is a good program to use to manage lists that are not entirely numbers, such as addresses and phone numbers, inventories, and membership rosters. With a database you could sort the data by name or city or postal code or by any individual item of information recorded. You can create forms to enter or update or just display the data. You can create reports that show just the data you are interested in, like members who owe dues.

Both spreadsheets and databases can be used to handle much the same information, but each is optimized to handle a different type most efficiently. The larger the number of records, the more important the differences are.

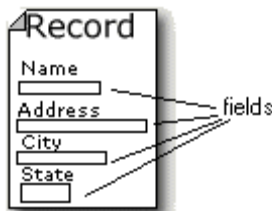Some popular databases include MS Access, dBase, FoxPro, Paradox, Approach, and Oracle.

Purpose: Managing data

Major Advantages: Can change way data is sorted and displayed

Features/Terms:

A **flat database** contains **files** which contain **records** which contain **fields**

A **relational database** contains **tables** which are linked together. Each table contains **records** which contain **fields**.

A **query** can filter your records to show just the ones that meet certain criteria or to arrange them in a particular order.

Types of databases
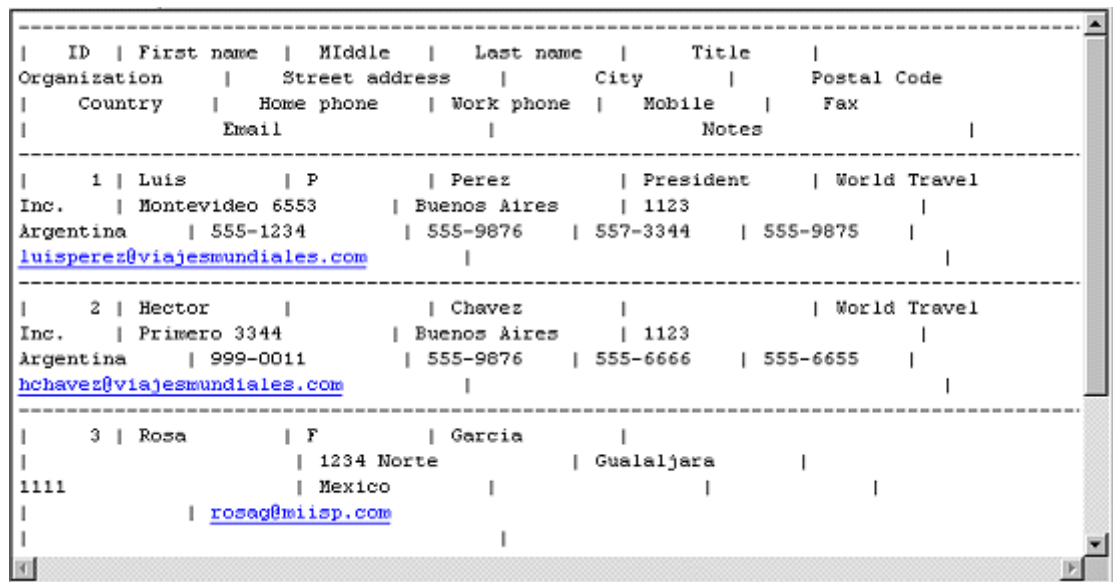
Flat database:
The earliest and simplest databases are **flat databases**. A flat database may still be all you need for your purpose.

Advantages: Easy to set up
                 Easy to understand

Disadvantages: May require entering the same information in many records.
                 A text database is hard to read.
                 A single record in a spreadsheet database may not fit across the screen.

A **text database** is a plain text file where the fields are separated by a particular character like a vertical bar | or a comma , or a semi-colon ; . The example below puts a vertical bar between each field. The first record shows the names of the fields.
A text database is hard to read in this raw form. A database program can show each record separately in a more readable display. It is hard to create a report that contains just the parts you want to see.

```
-------------------------------------------------------------------------------
|   ID | First name |   MIddle   |   Last name   |      Title    |
Organization    |     Street address    |     City     |     Postal Code
|   Country   |   Home phone   | Work phone |   Mobile   |   Fax         |
|            Email              |              Notes                   |
-------------------------------------------------------------------------------
|     1 | Luis       | P         | Perez        | President    | World Travel
Inc.   | Montevideo 6553       | Buenos Aires  | 1123          |
Argentina    | 555-1234       | 555-9876   | 557-3344   | 555-9875   |
luisperez@viajesmundiales.com          |                              |
-------------------------------------------------------------------------------
|     2 | Hector     |           | Chavez       |              | World Travel
Inc.   | Primero 3344          | Buenos Aires  | 1123          |
Argentina    | 999-0011       | 555-9876   | 555-6666   | 555-6655   |
hchavez@viajesmundiales.com            |                              |
-------------------------------------------------------------------------------
|     3 | Rosa       | F         | Garcia       |              |
|                     | 1234 Norte           | Gualaljara    |
1111                 | Mexico        |              |              |
|             | rosag@miisp.com      |                              |
|                                     |                              |
```

A **spreadsheet** can work as a flat database. Each field is in a separate column and each row is a single record. The example below shows how quickly a record gets wider than the screen. You cannot use two rows for one record.

Relational database:
Microsoft Access and Oracle and other **relational databases** are more advanced and more efficient. This kind of database uses a set of tables which are linked together. Using a well-designed relational database can greatly reduce the amount of data you must enter each time you add a record. For large numbers of records, a relational database can search through the records faster.

Advantages: Reduces the duplication in data entry.
                  Faster searches.
                  Can create forms and reports that display only the data you want to see.
                  Can create queries to answer questions that are hard or impossible to answer in flat databases.

Disadvantages: Can be complex to set up, using many tables.
                  It is harder to understand how all the parts relate to each other.

Below is an illustration of the tables in a small database that records information about insurance agents and policy holders. This particular insurance office works with several different insurance companies. There are 7 tables in the database. The lines show which fields in each table are the same. These link the tables together.
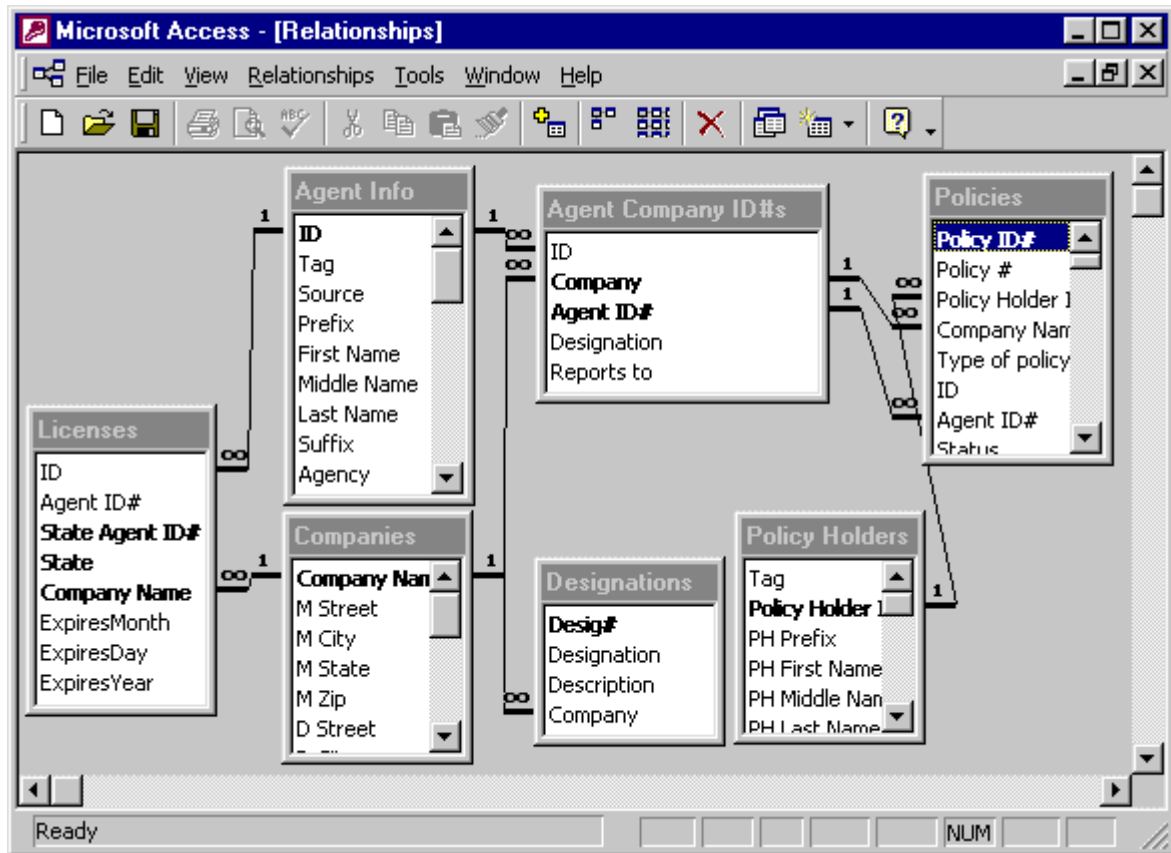
Each agent can be licensed with several different companies and in several different states. In a *flat* database you would have to have a record for each agent for every company and state he is licensed with, repeating the agent info for each record. Argh! Too much typing!!

You can design a form so that you can do this all in one spot! This is much easier than repeating so much information for each record as you would do in a flat database. The images below show the two screens for the Agent Info Form. This form can be used for entering new agents as well as for displaying the current ones.

Queries

You often want to look at just part of the data in a database. You can reorder or filter your data using **Structural Query Language** (**SQL**). You might want a list of people who have a particular postal code, for example. Happily there are visual methods you can use to create your query, like the example below from MS Access. You can drag the fields from the list at the top and drop them in the columns at the bottom. You can add sorting orders or criteria, like picking a particular postal code. The query below brings together the fields from the Agent Info table that are needed for mailing labels.
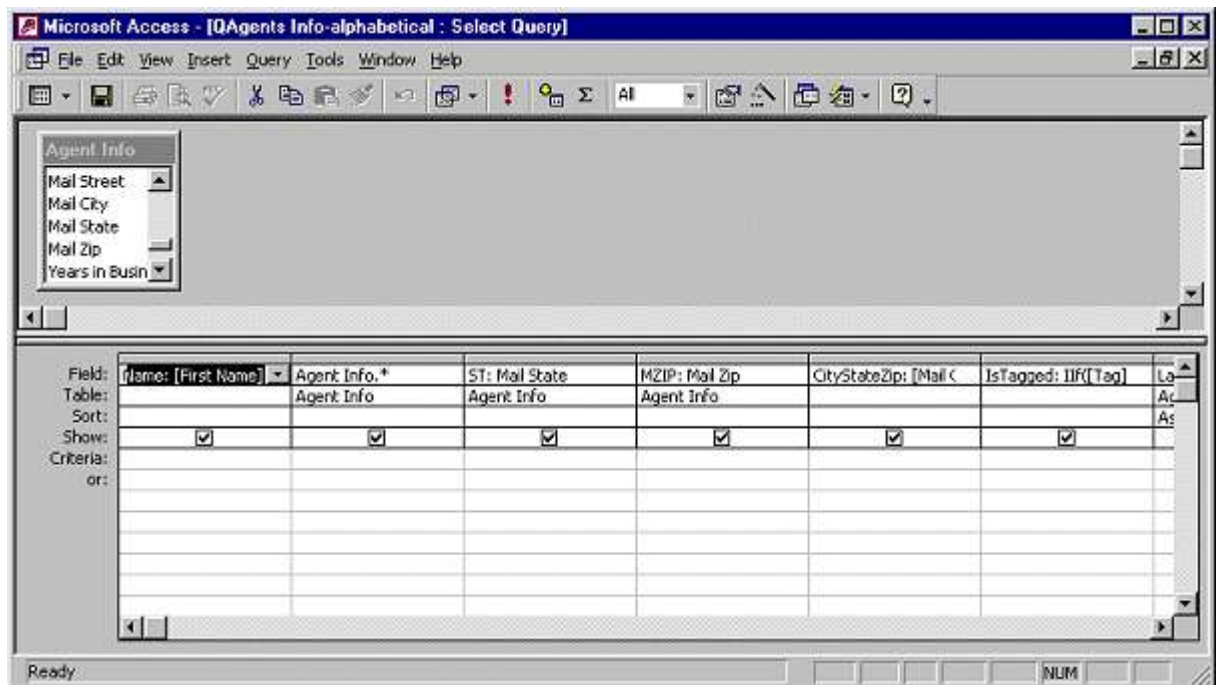
The actual SQL code for this query looks a lot different from the Design view above! No wonder a drag-and-drop method was created!

```
Microsoft Access - [QAgents Info-alphabetical : Select Query]

File   Edit   View   Insert   Query   Tools   Window   Help

SELECT DISTINCTROW [First Name] & " " & [Middle Name] & " " & [Last Name] AS Name, [Agent
Info].*, [Agent Info].[Mail State] AS ST, [Agent Info].[Mail Zip] AS MZIP, [Mail City] & " " & [ST] &
"  " & [MZip] AS CityStateZip, IIf([Tag]=Yes,1) AS IsTagged
FROM [Agent Info]
ORDER BY [Agent Info].[Last Name], [Agent Info].[First Name], [Agent Info].[Middle Name]
WITH OWNERACCESS OPTION;

Ready                                                                    NUM
```

Graphics and Presentation Software

Graphics

Graphics programs deal with pictures, either static or moving, flat or 3D. There are an amazing number of different formats for images in the world and no one program can handle them all.

Purpose: To create and edit images

Paint programs work with pictures on a pixel-by-pixel basis, where a pixel is the smallest dot on the screen. Such programs handle photographs and most clipart. MS Paint is this type of program.
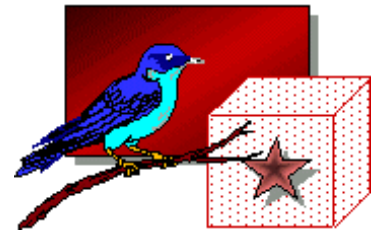
Advantages:	Control over each dot in the picture
Disadvantages:	Angled lines are jagged stair steps, especially if enlarged.

Drawing programs, on the other hand, define images in terms of **vectors**, that is, equations that describe geometric shapes. Fortunately, the user doesn't have to do the math! Drawing objects in MS Office are vector images.

Advantages:	Does not get as fuzzy or jagged when the size is changed. The file size is smaller.
Disadvantages:	Can't change the color of a dot in the middle of a shape.

Animation and **video** programs put a set of still pictures into a sequence. When the sequence of images is run, the change from one picture to the next fools the eye into seeing motion. This is how movies and television work. An individual image in an animation is called a **cel**. (Yes, there is just one l in that word!)

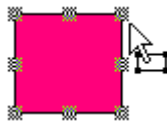|	
bitmap image	a picture defined as a series of dots
vector image	a picture defined as a set of geometric shapes, using equations
animation	a sequence of images that are shown rapidly in succession, causing an impression of movement
pixel	a single picture element, the smallest dot on the screen
palette	a set of colors
brush	a tool for drawing lines. May give the effect of using a pencil, a paint brush, an airbrush spray, chalk, charcoal, felt-tip marker...
handles	shapes on a selected object that allow you to change the shape by dragging the handle
fill	colors an enclosed area with one color or pattern
cel	a single image in an animation sequence

Presentation

This kind of program links together a sequence of slides containing text and graphics, for example for a sales presentation or training. It includes a number of tools for creating graphics that are quite useful.
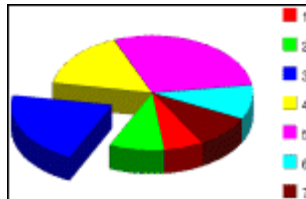

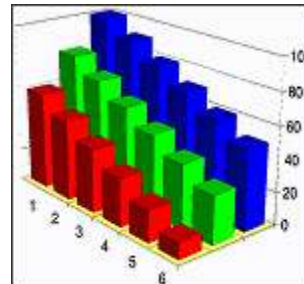|	
Purpose:	Turning information into visual form
Major Advantage:	Pictures convey info faster than tables of numbers

Features/Terms:

charts	**analytical graphics**	**slides**

Communications

These programs temporarily connect computers to each other to exchange information. They may use telephone lines or dedicated cables for the connection. This allows you, for example, to work at home on the weekend and transfer all you've done to your computer at work before you leave home.

These are not the same as networking programs where computers are actually linked together all the time.

Most communications programs now include many different communication functions in one interface.

|	
Purpose:	Transmitting data and messages between computers
Major Advantage:	Speed

A communications program includes one or more of the following actions:

- sending and receiving files: FTP (File Transfer Protocol)
- exchanging messages in a group: chat programs
- private messages: instant messaging
- voice messages
- video conferencing
- phone calls over the Internet

FTP (File Transfer Protocol)

An **FTP** program manages the moving of files between computers. When you download a file over the Internet, you are using an FTP program. Programs like word processors and HTML editors that can upload files to web sites include this ability without having to use another program.

The image below is for the program WS_FTP, which is a fairly typical FTP program. It shows the folder tree for both the source and destination. You can copy in either direction.
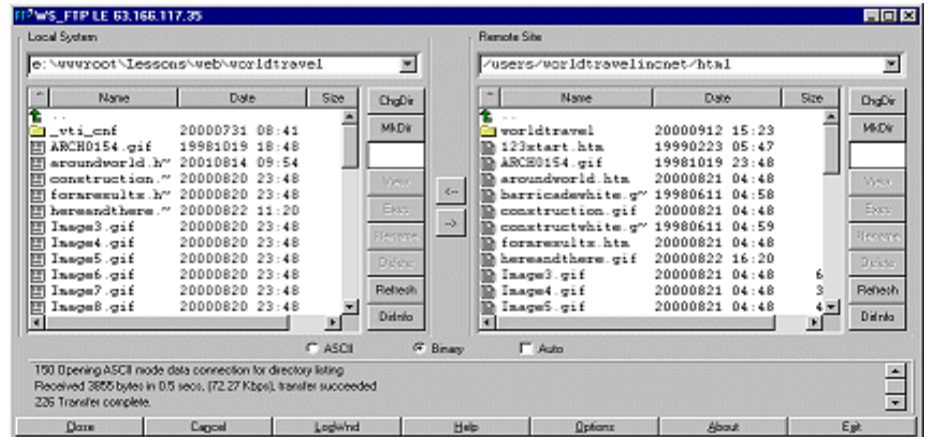
WS_FTP - a program for transferring files

Chat

In a **chat** program you join a **chat room**. You write messages that appear in a window that shows all the messages being sent in this chat room. Everyone who is logged in to this room can read your messages.

The image below is for the program mIRC. Each person listed on the right is "in" the room and can write messages and all the others can read them. Recent chat programs let users format their text with color and even with different fonts. People in chat rooms tend to use a lot of abbreviations and smiley faces.
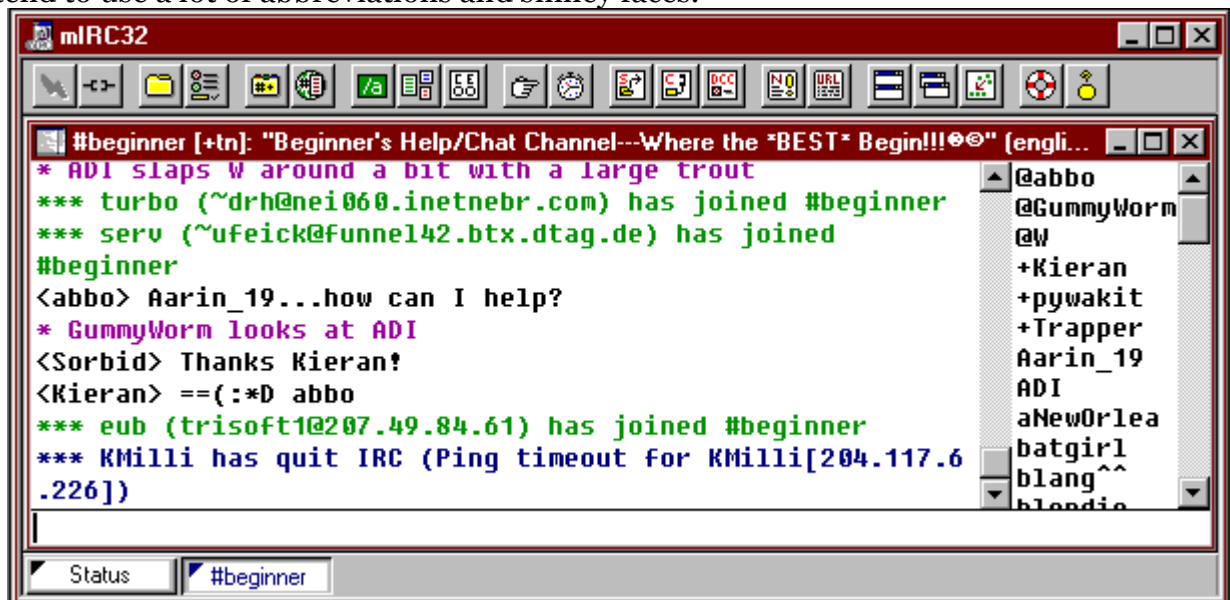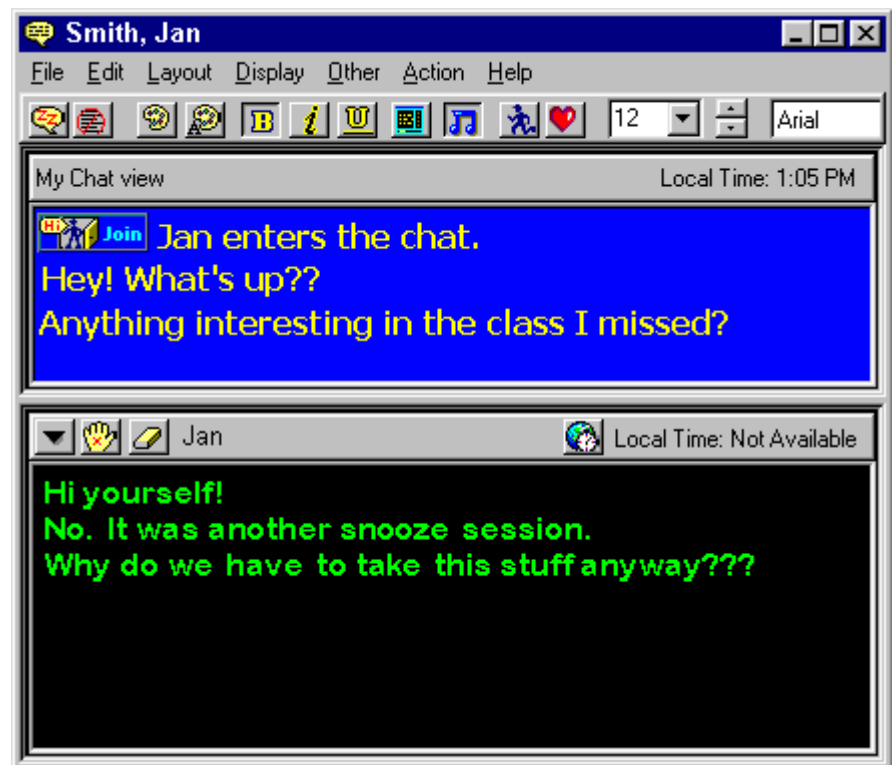

mIRC - a chat program

For more on how to use mIRC: Prometheus Project tutorial on IRC➡.

Instant Messaging

An **instant messaging** program notifies you when your friends are online. Then you can send them messages, which they see immediately. Only the one you send the message to can see it and only you can see the messages that are sent to you, unless you choose to change to a multiple-user mode. Recent versions of instant messaging include the ability to use video conferencing, to play games together with your friends, and even to make phone calls over the Internet. Examples of instant messaging programs are ICQ, AOL Instant Messenger, and MSN Messenger Service.

The image below what ICQ messages look like, when there are just a few people messaging. You customize the look of the messages, of course.

ICQ - an instant messaging program