MULTIMEDIA ELECTRONIC DICTIONARY

By

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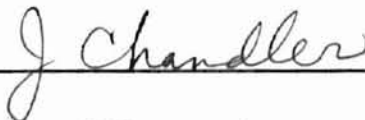People's Republic of China

1983

MULTIMEDIA ELECTRONIC DICTIONARY

Thesis Approved:

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Dean of the Graduate College

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

1.1 The Objectives of the Thesis

The purpose of the thesis is to develop generic dictionary software. This generic dictionary is not restricted to the English language, but it is capable of handling dictionaries for different subjects such as a mathematics dictionary, a chemistry dictionary, an animal dictionary, a biology dictionary, etc. The idea behind the development of this software is to bring the different subjects under one platform to give the end user the flexibility either to create or to use different dictionaries. This dictionary provides the user a friendly and easy-to-use interface by exploring most of the available interface design techniques. It also provides the user multimedia support. The user is able to add sounds, images and animations of their own choices to the dictionary. In this dictionary, Microsoft Data Access Objects (DAO) and ActiveX Data Objects (ADO) was used to provide a database to manipulate the data and the structure of the database.

1.2 Requirements Analysis

- The Need for an Electronic Dictionary

As the popularity of personal computers grows rapidly, more people are able to access to computers. Among this huge group of users, the number of those whose first language is not English is becoming larger. For these English-as-a-second-language

1

users, an English dictionary is necessary to use computers better. A traditional dictionary is unwieldy for this since it is inconvenient, and since it takes time to look up a word from such a dictionary. In such a case an electronic dictionary is just what is needed. It is faster; it is easier to carry (a single disk instead of a big heavy book); and it has a much larger vocabulary.

Another factor that makes an electronic dictionary indispensable is the rapid development of the Internet. The Internet provides a huge amount of information, but it also creates many new words, and this makes a traditional dictionary out of date very rapidly. Thus, it is necessary even for a native speaker to have an up-to-date dictionary. Again, an electronic dictionary is the right choice. Because keeping an electronic dictionary up-to-date is very easy—one just add the new words with their definition to its vocabulary library!

In addition to these, an electronic dictionary also has many features that the traditional dictionary does not have:

a. A User-friendly Interface

An electronic dictionary can provide the user a friendly and easy-to-use interface by exploring most of the available interface design techniques. An electronic dictionary can have its menu, its toolbar, its hypertext online help, and so on; it also can include some common and useful operations, such as print, copy and paste, etc. All of which are familiar to most computer users. With a Graphical User Interface (GUI), using an electronic dictionary should be easy even for a new computer user.

b. More Powerful

An electronic dictionary can be more than a dictionary; it can incorporate many

other useful applications, such as a clock, a calculator, a calendar, etc. An electronic dictionary can be a multi-functional application package. An electronic dictionary also can provide some advanced features such as on-line translation and spelling checking. This

c. Multimedia Support

An electronic dictionary can provide the user multimedia supports, such as audio, animation and video. This further increases its user-friendliness and makes it more powerful.

● The disadvantages of the existing electronic dictionaries

a. Subject Dependent

Almost all the existing electronic dictionaries contain only one subject. It can only be an English dictionary, a technical dictionary, a medical dictionary, or a chemistry dictionary. If one wants to use a dictionary on different subjects, one must have different dictionaries, one for each subject. This is inconvenient.

b. Lack of Multimedia Support

Most of the existing electronic dictionaries support neither animations nor video. Many even do not have sound (audio). These dictionaries usually only provide the users a plain-text description of the words. By introducing multimedia (audio, video, etc.), it should be easier for the users to understand the meaning(s) of a word.

● The features of this multimedia electronic dictionary

a. Subject Independence

This dictionary is not restricted to English, but is able to handle other subjects such as physics, chemistry, mathematics, or whatever the user wishes to create also. Thus, it is an all-in-one dictionary.

b. Multimedia

Sound, images, animations, and video are supported. The user is able to add sound, images, animations and video of his / her own choice to the dictionary. This dictionary has an audio player and a video player.

c. User-friendly

This dictionary runs on Windows operating systems, and the user interface was developed using Visual Basic. It inherits most of the friendliness of the Windows operating systems. All operations on this dictionary are direct and visualized easily.

d. Most of the basic features of an electronic dictionary

The advantages of such a dictionary include the following features:

- Spell check

- Large vocabulary

- Fast

- Convenient to use

1.3 Literature Review

G. E. Hedrick's research "Spelling Correction for Conversational Query Systems" (Hedrick73) defined and discussed the need for spelling correction, gave a spelling correction algorithm, surveyed the different requirements for batch and conversational systems and discussed special considerations for using spelling correction in a query system.

H. L. Berghel's work on "A Logical Framework on the Correction of Spelling Errors in Electronic Documents" (Berghel87) was found from the Internet. In this

research work, he proposed a method for detection and correction of spelling errors found in electronic documents.

A research on the topic "A Study of efficient parsing LZ adaptive dictionary compression" (Ke97) by Lin Ke talks about three commonly known efficient parsing problems of Lempel Ziv (LZ) adaptive dictionary compression schemes. Lempel Ziv is a data compression algorithm that uses an adaptive compression technique. The three commonly known parsing problems he talked about are:

1. The efficiency of finding the longest match between the look-ahead buffer and text window.

2. Coding redundancy.

3. Parsing strategies.

CHAPTER II

PROGRAM DISCUSSION

2.1 USER'S GUIDE

Introduction

The goal of this thesis is to develop generic dictionary software with multimedia support. This dictionary software is not restricted to the English language, but it is capable of handling different subjects and allowing the user to view or play the multimedia related to each word.

When a user runs this software, first comes the splash window. The Splash Window is the introduction to this software. It tells the name, version and the author name for this software. As shown in Figure 1.

Multimedia Dictionary

Version 1.0

Programmed by Xiaohong Zhu
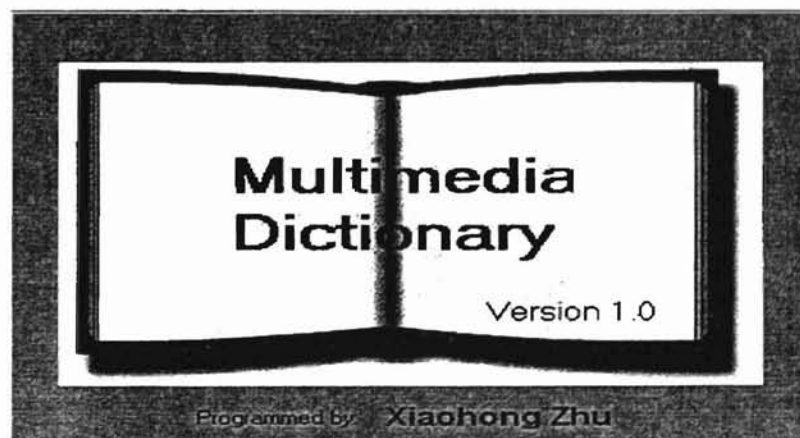
Figure 1. Splash Window

6

After about two minutes, this window disappears. Then comes the main window, which is the Menu Window. As shown in Figure 2.
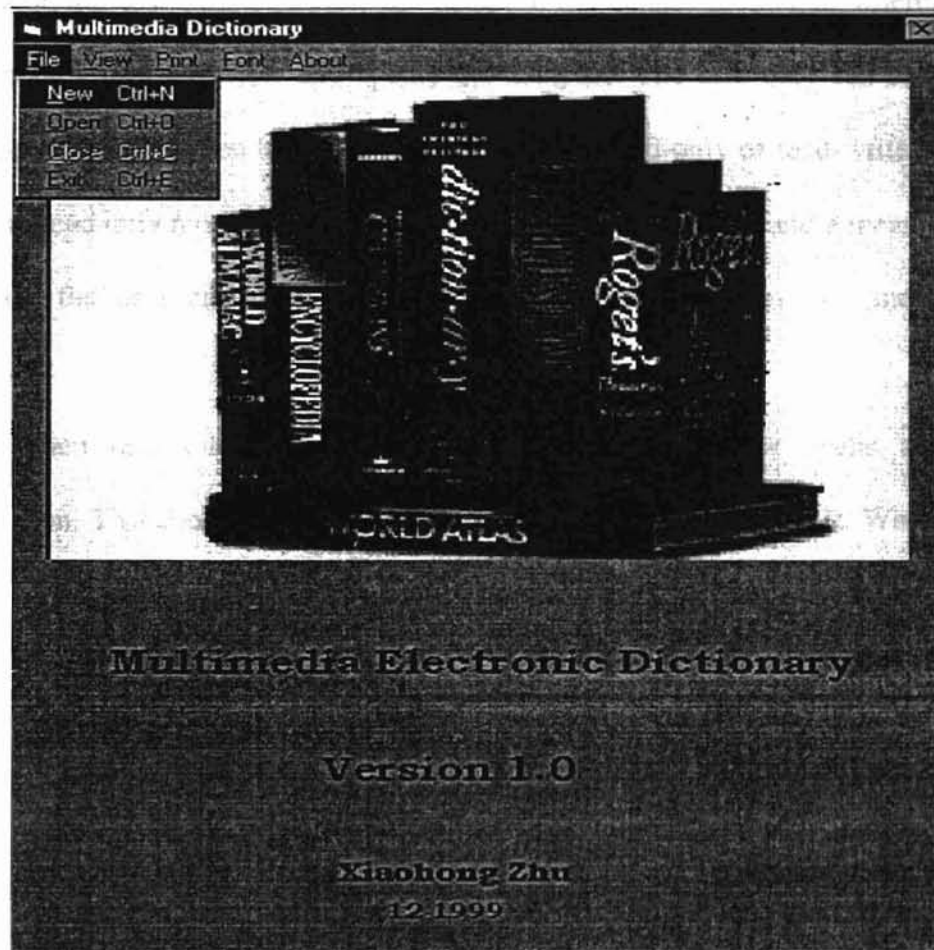
Figure 2. Menu Window

The Menu window is the main window in this software. It plays an important role. The role of this main menu window is to control and to organize other GUIs. In other words this window makes sure to display only those GUIs which user has requested through the menu and it hides the other GUIs which are available on the screen.

In the menu window, the users have only 3 choices (the menu print and menu font are not implemented yet). From the File, the user can either go to create new database

(new mode) or open to view/update (read only/read-write mode) an existing database. In create new mode, a user creates a new database which is completely updateable, in read only mode the user only can view the database but cannot modify it; whereas, in read-write mode a user can view and update the database. The user only can select the item from menu "View" when he/she is already in either read only or read-write mode. If the user is in read only mode, he/she only can open a search window and a meaning window, otherwise the user can open word list window, meaning window, and multimedia window.

When user clicks menu "About," the splash window opens again for an introduction. This time the user must press the "OK" button to hide it. When the splash window disappears, a help window appears on the screen, as shown in Figure 3.
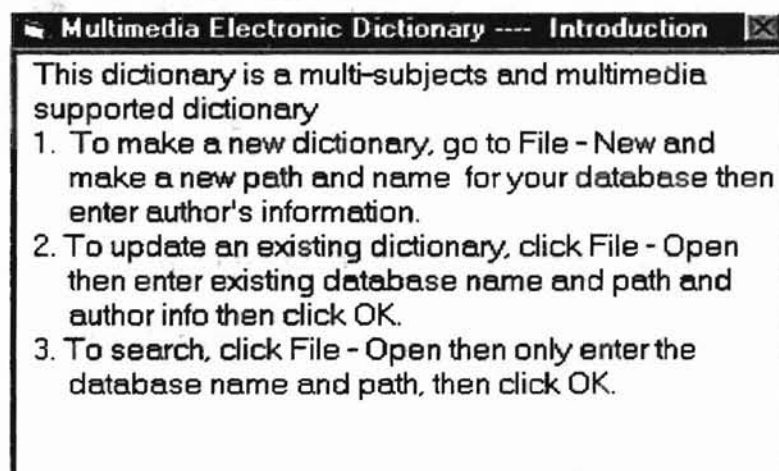
Figure 3. Introduction Window

This window gives a simple explanation for using this software, so that the user does not need to consult the user's manual for the basic operations.

8

Create New Dictionary

To create a new database the user should go to the File menu and select New. A new database window opens as shown in Figure 4.
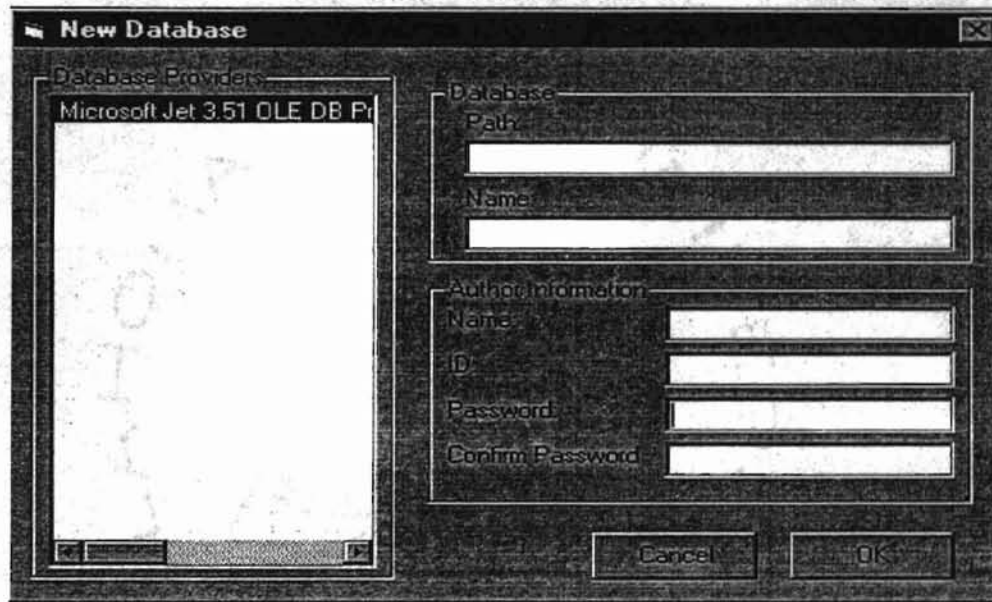
Figure 4. New / Open window

This window is used to get all the information that is needed to open a database. After getting all the information and verifying it, the program instructs another window to create a new database. This window allows this software to handle different subjects. All the user must do is give another name for a new database.

For creating a new dictionary database, the user selects the available OLE-DB provider. This database OLE-DB provider tells the software how to create the database. After selecting the OLE-DB provider, user gives the database path and database name. The database path should include drive's name, for example: "C:\dictionary." Next, the

user enters information (in this case the user is the author of this dictionary) and presses "OK" button. Then, the user gets three windows shown in Figure 5[1].
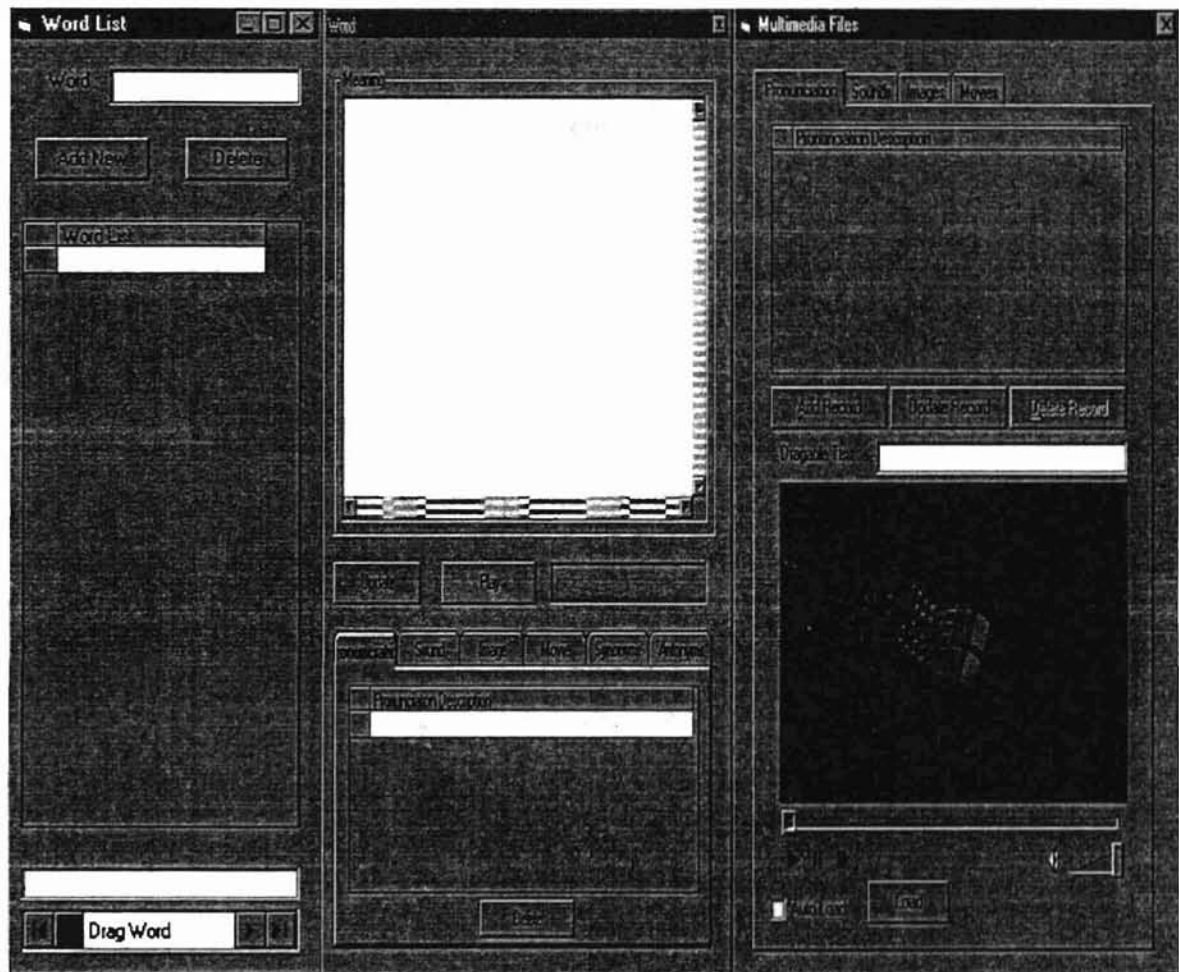
Figure 5. Word List window, Meaning window, and Multimedia window (left to right)

The left window is Word List Window, the middle one is Meaning Window and the right window is Multimedia Window (MMD window). First the user should enter a word in the word list window's text box, There is a label named "Word" for this box.

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[1] The logo in Figure 5 (rightmost) is a trademark from Microsoft. It is appears in Figures 6, 8, and 11.

After the user enters the new word, the user presses button "Add New," then this word is saved to the database. The user can see this word in the list box labeled "Word List." After the user has entered the word in the word list window, the user can go to the Meaning Window to add the meaning for this word. To add the meaning to the meaning window, the user enters the meaning for the word then presses "Update" button. If the user has a list of new words for which he/she wants to add the meaning, then every time after he/she finish entering the meaning for one word, he/she should go to word list to select the next word for which he/she wants to add the meaning, then enters the meaning for this word.

After the user entered all the meaning for the words, then he/she can start to load the multimedia file for their dictionary. The user press the tab key in Multimedia window to select a correct choice, for example, if the user has a sound file for dog, he/she should press tab "Sound," then click button "Add Record." After the user does this, another window opens. From this window, finds his/her sound file and adds it to the multimedia file list. This window is shown in Figure 6.
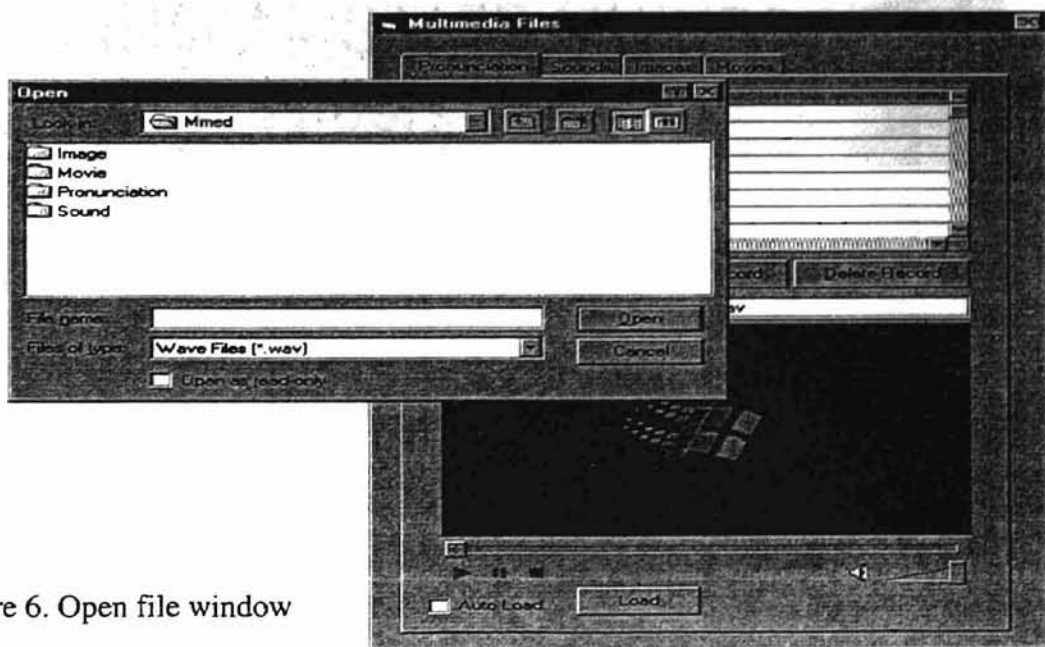
Figure 6. Open file window

Then, the user can press the button "Load" to get the file and to test multimedia file as shown in Figure 7.
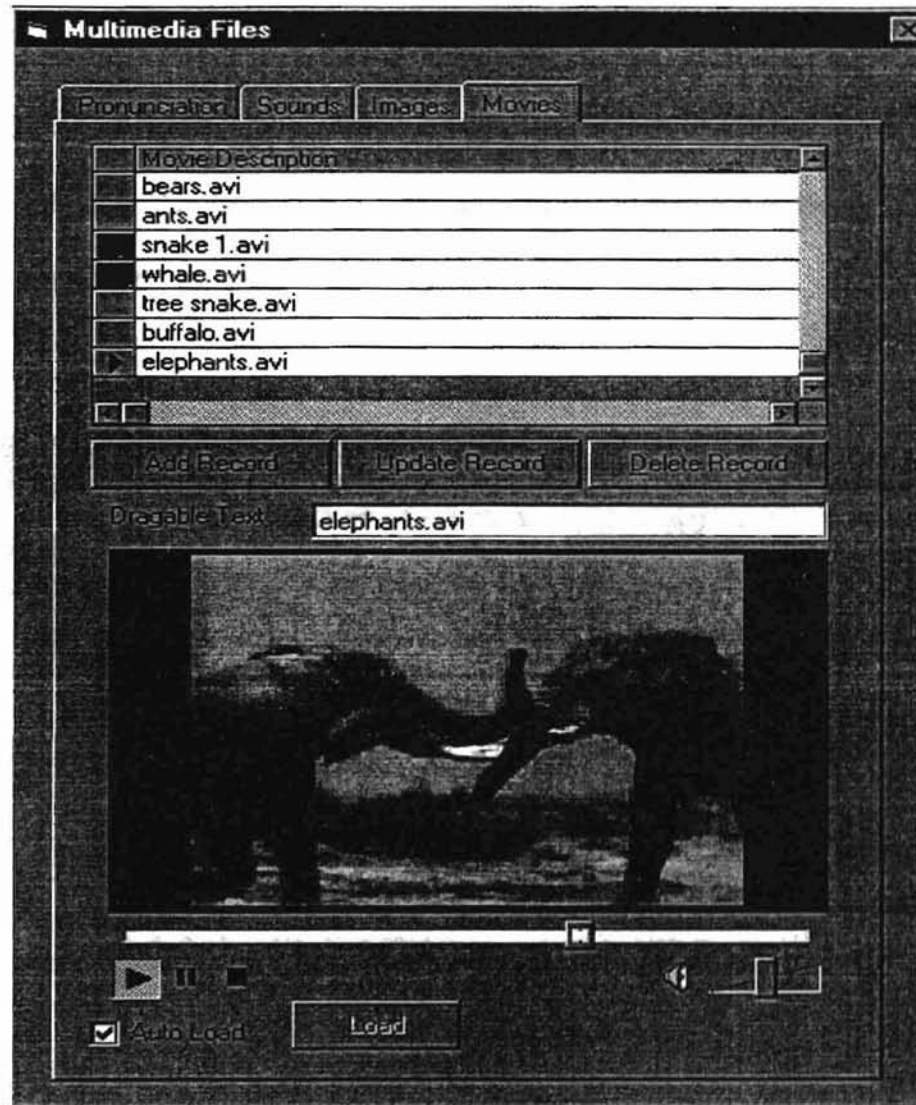
Figure 7. Test multimedia file

In this multimedia window, there is a check box called "Auto load." If the user check this box, whenever the user adds the new record, it automatically loads the file and play or display. If the user leaves this box unchecked, he/she must press button "Load" to

view the multimedia file. After the user inserted all the multimedia files to the database using MMD window, the user can use the "drag and drop" box to add the multimedia files to the meaning window. The user needs go to the drag box, press the mouse left button and keep it pressed. When the user moves the mouse, he/she sees a rectangle. The user should move this rectangle to the meaning window's tab, then release the left mouse button, press button "Update," and the file adds to the meaning window. The drag and drop process is shown in Figure 8.
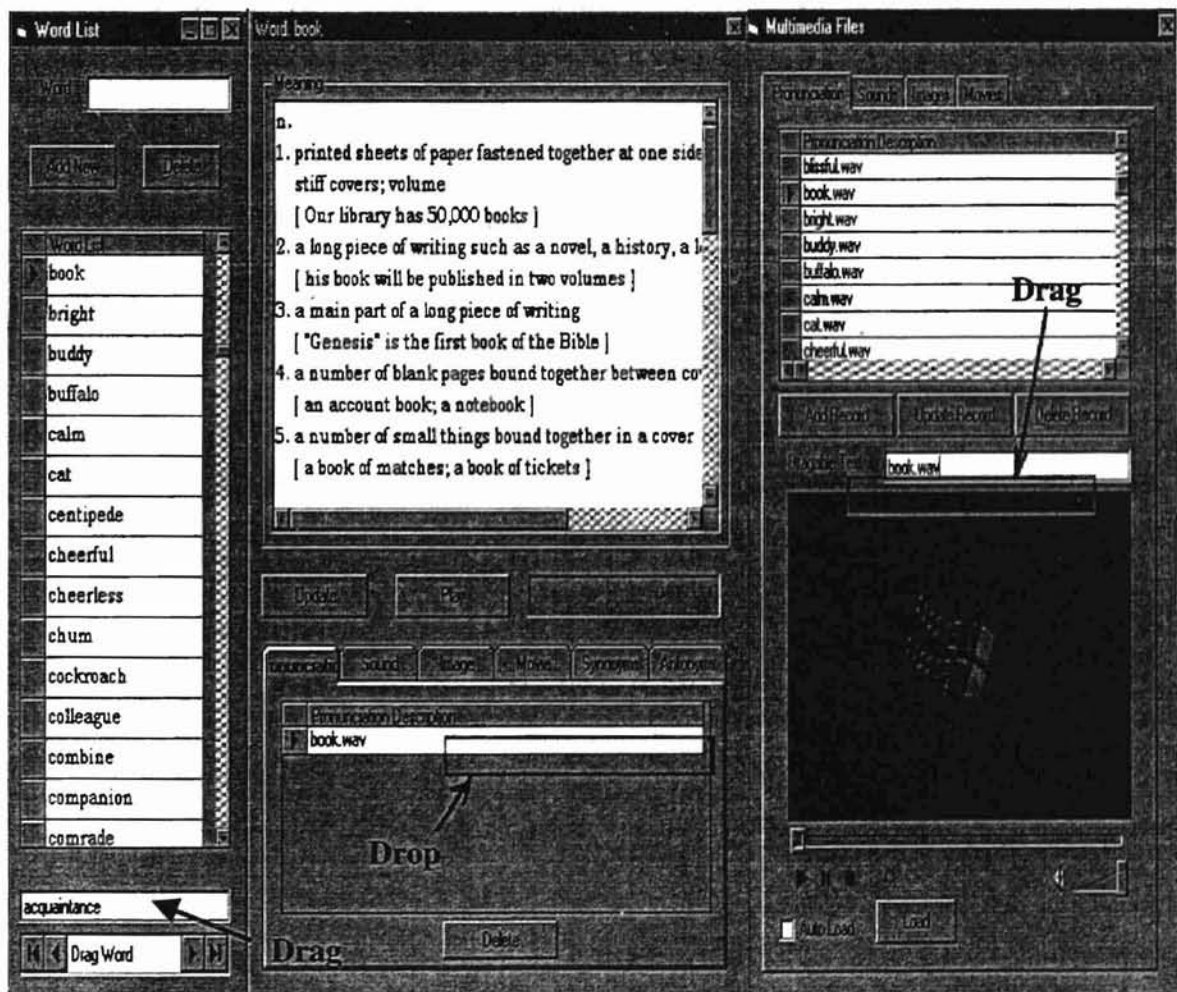
Figure 8. Drag & Drop

In Figure 8, there is a drag box also in the word list window. This drag box is for adding a word synonym or antonym into the meaning window. For example, if the user wants to add the word "buddy" as Synonym for the word "friend," first he/she selects the word "friend" from the word list window. Then he/she selects "buddy" from the "Drag Word" box on the bottom of word list window. Finally he/she needs to select the tab "Synonym" from the meaning window and drag the word "buddy" to the meaning window's drop box to throw the word "buddy" over there.

When the user adds multimedia files to the meaning window, he/she should be very careful. If the user wants to add an image file to movie or a movie file to sound, he/she gets an error message. The user selects a word from the Word List first. All the multimedia files and meanings should match the word from the Word List. While the user adds the multimedia files, he/she also can click button "Play or View" to view the image files or movie files and to check whether they are correct.

Search / Update

When the user only wants to search for a word or to update existing dictionary, he/she should click Menu – File – Open. The user gets the window "New/Open," but the user does not need to enter the author's information. The user only should give the database path, name and select the OLE-DB Provider, click button "OK" then the program goes into search mode. If the user entered all the information that the New/Open window needed, then he/she still gets the same three windows as when he/she is in create new window.

When the user is in Search Mode, he/she gets two windows, one is the Search Window and the other one is the Meaning Window, as shown below in Figure 9.
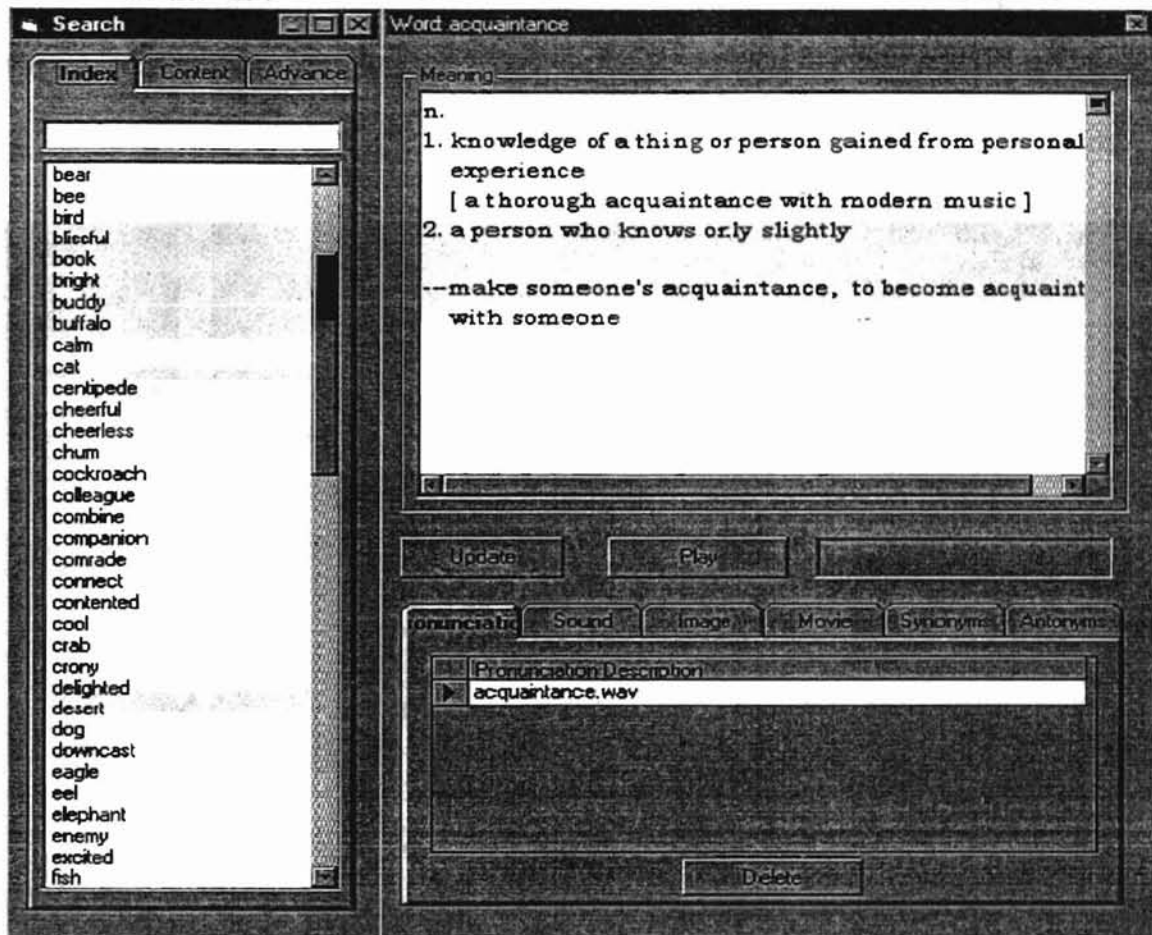
Figure 9. Search Mode

In the search window, the user has three choices: the first one is Index Search, the second one is Content Search and the third one is Advanced Search.

Index Search

In an Index Search, the user can enter a word he/she wants to find the meaning. When he/she enters the word, the highlighted cursor also moves until he/she finishes entering. The user can find the word he/she wants and it is highlighted in the word list box. Then, the user either can press enter key on the keyboard or just click on that word

in the word list. The user gets the meaning for this word from the Meaning Window as shown in Figure 10.
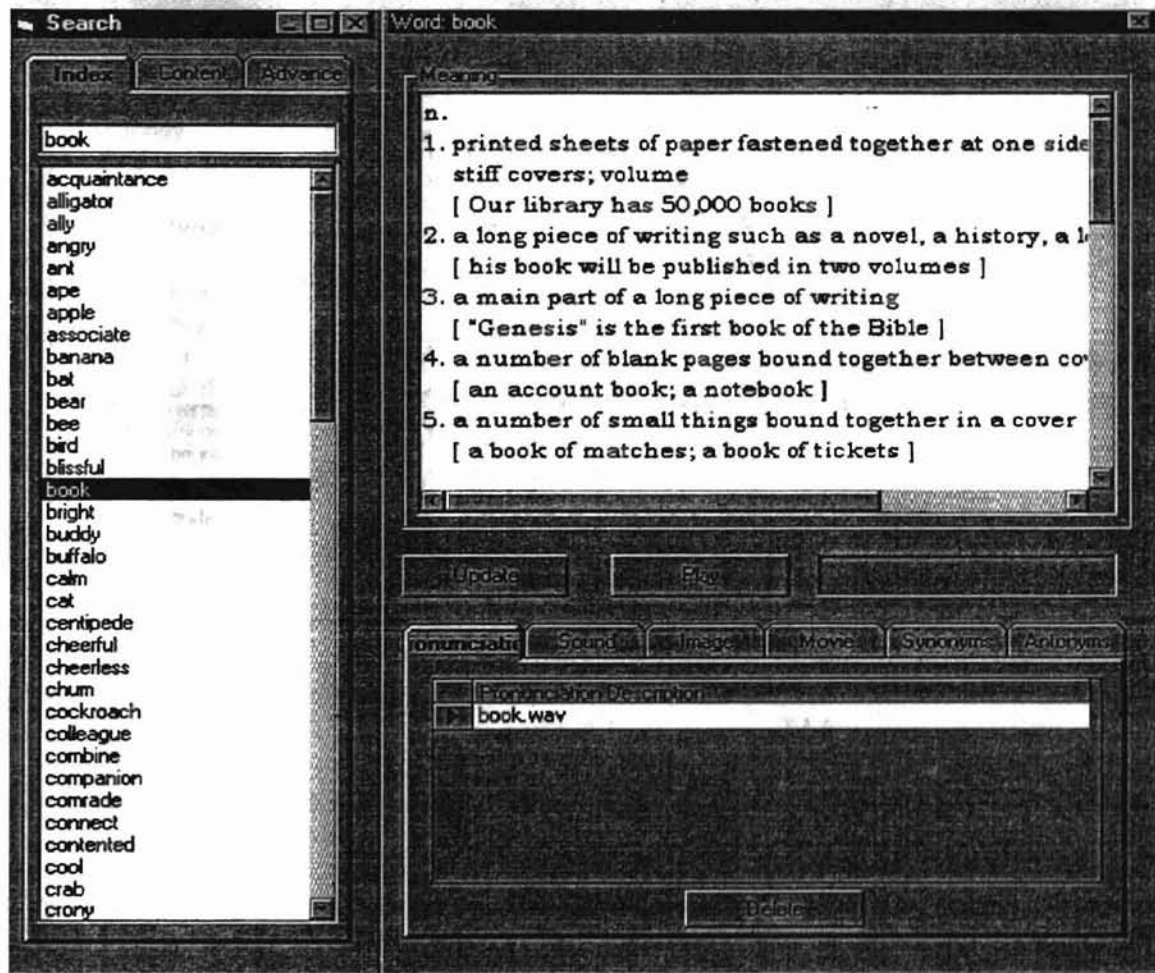
Figure 10. Index Search

Content Search

In Content Search, the cursor stays at the place in the content window that contains the word the user entered. Then, the user clicks on the highlighted content find

the word for which he/she wants to find the meaning. The user just clicks on this word to get the its meaning in the Meaning Window. A content search is showed in Figure 11.
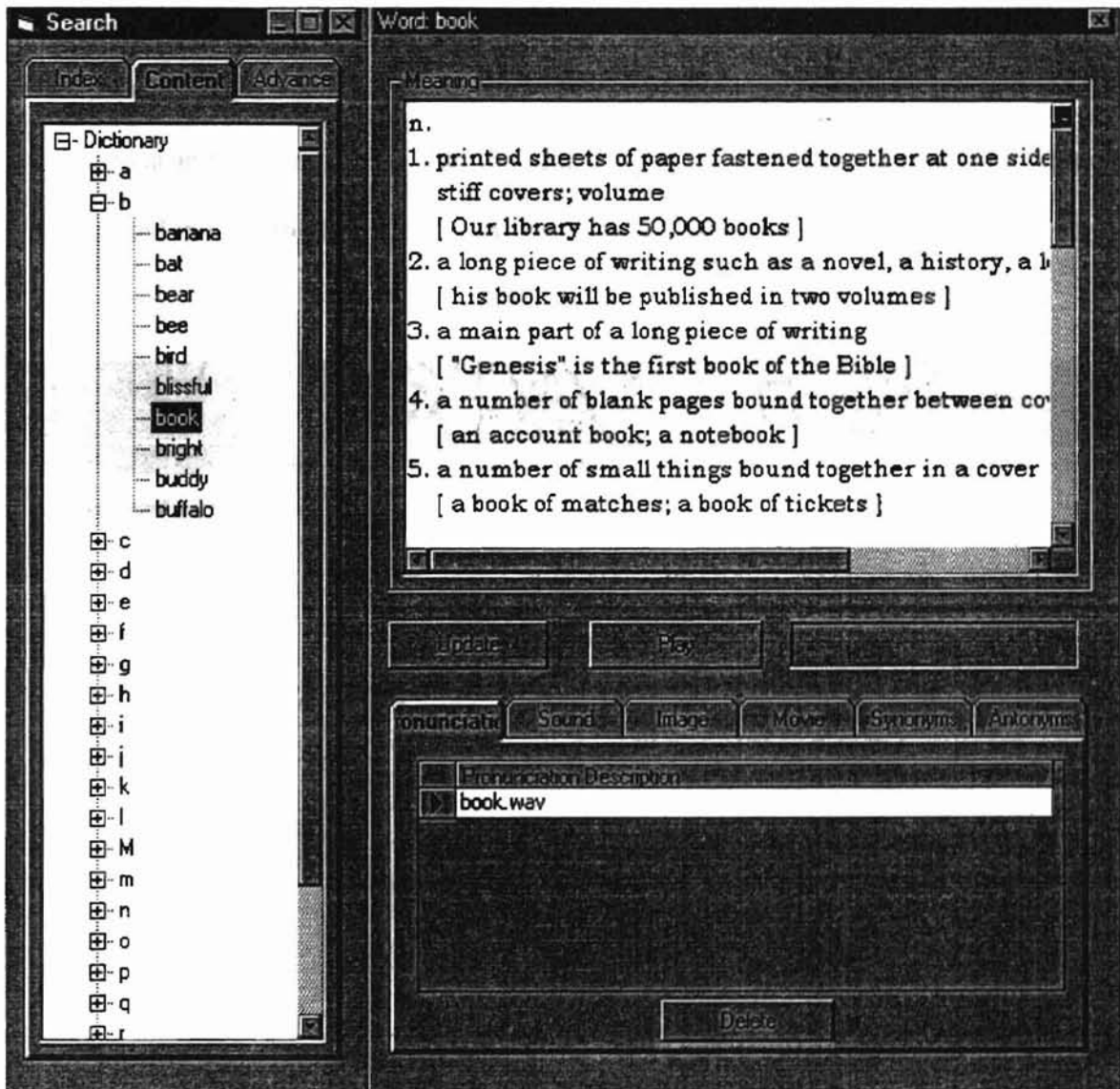
Figure 11.Content search

Advanced Search

In an Advanced search, the user will get not only meaning for this word, but all this word appears in anywhere in entire dictionary. For example, if the user is looking for the word "banana," suppose word "banana" appears in word ape's meaning, "ape likes to eat banana." When the user uses advanced search to find word banana, he/she will get the word banana and ape. In other words, the user will get the word banana appearing both in word list and in meaning box for other word. Figure 12 shows this example.
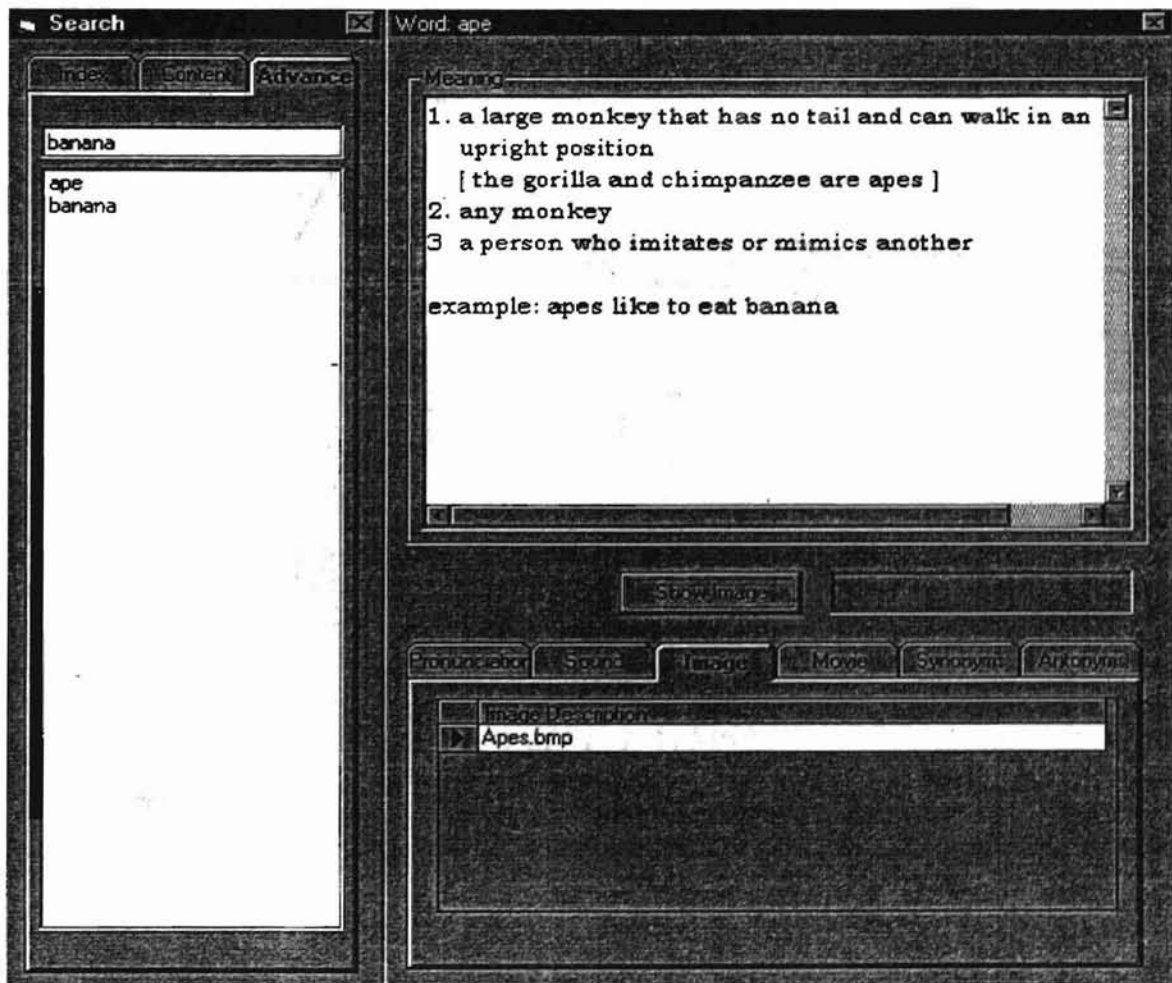
Figure 12. Example of advanced search

If the word found has a multimedia file, then one can click the button "Play or View" to listen the pronunciation and sound for this word, or to view the image or movie. Figures 13, 14 and 15 show the examples to play sound file, movie file and view the image file.
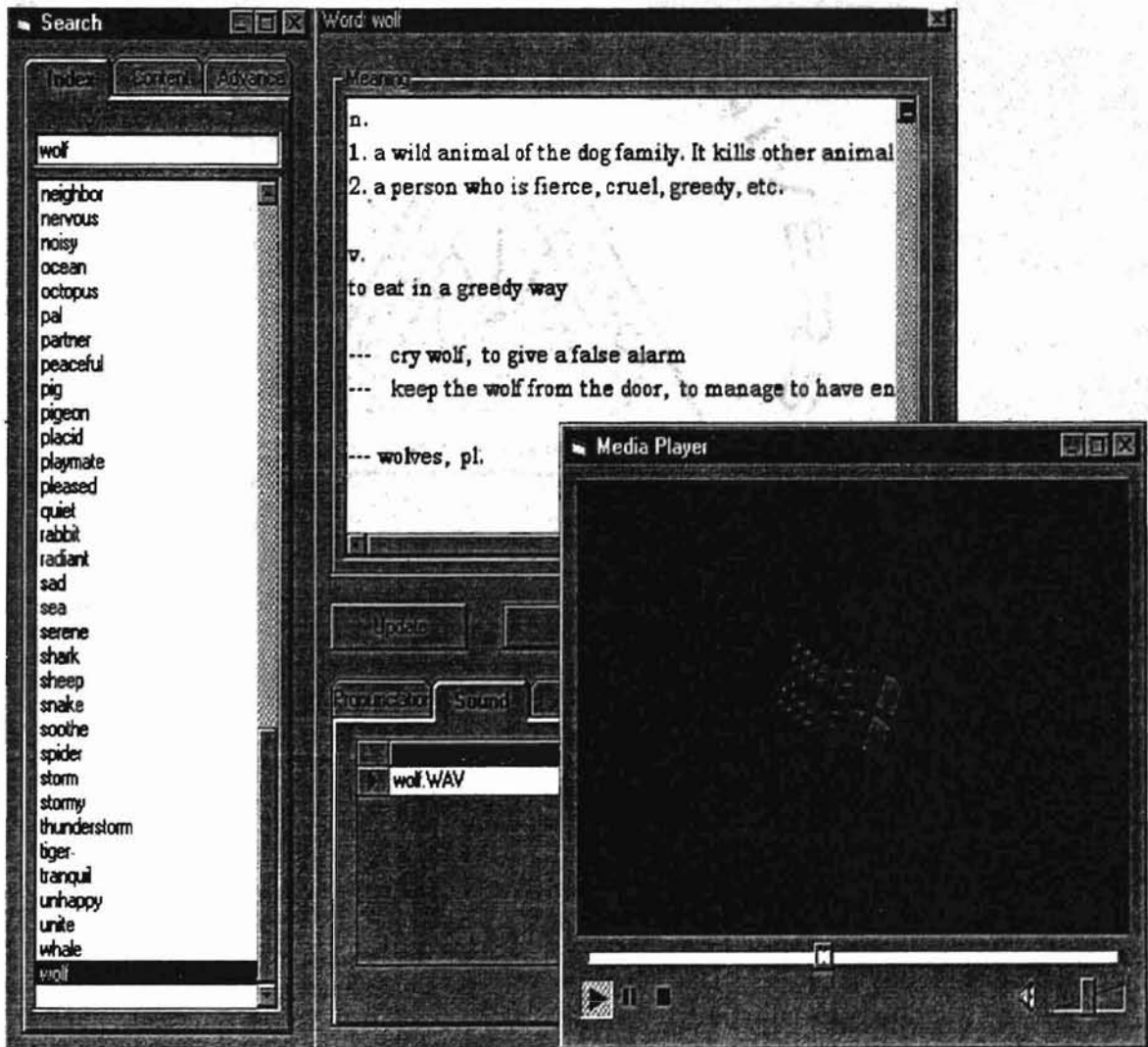
Figure 13. Playing sound file
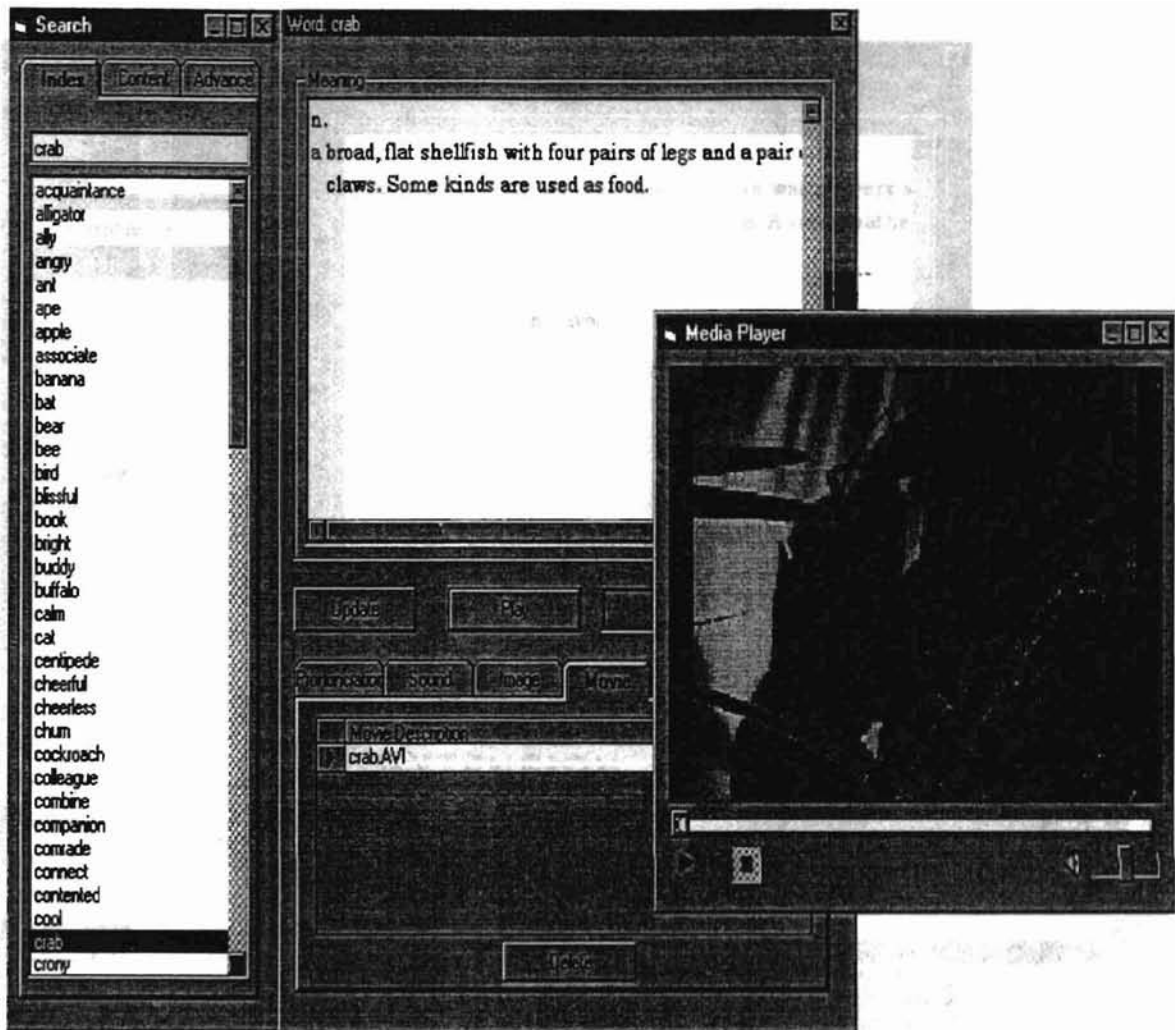
Figure 14. Playing movie file
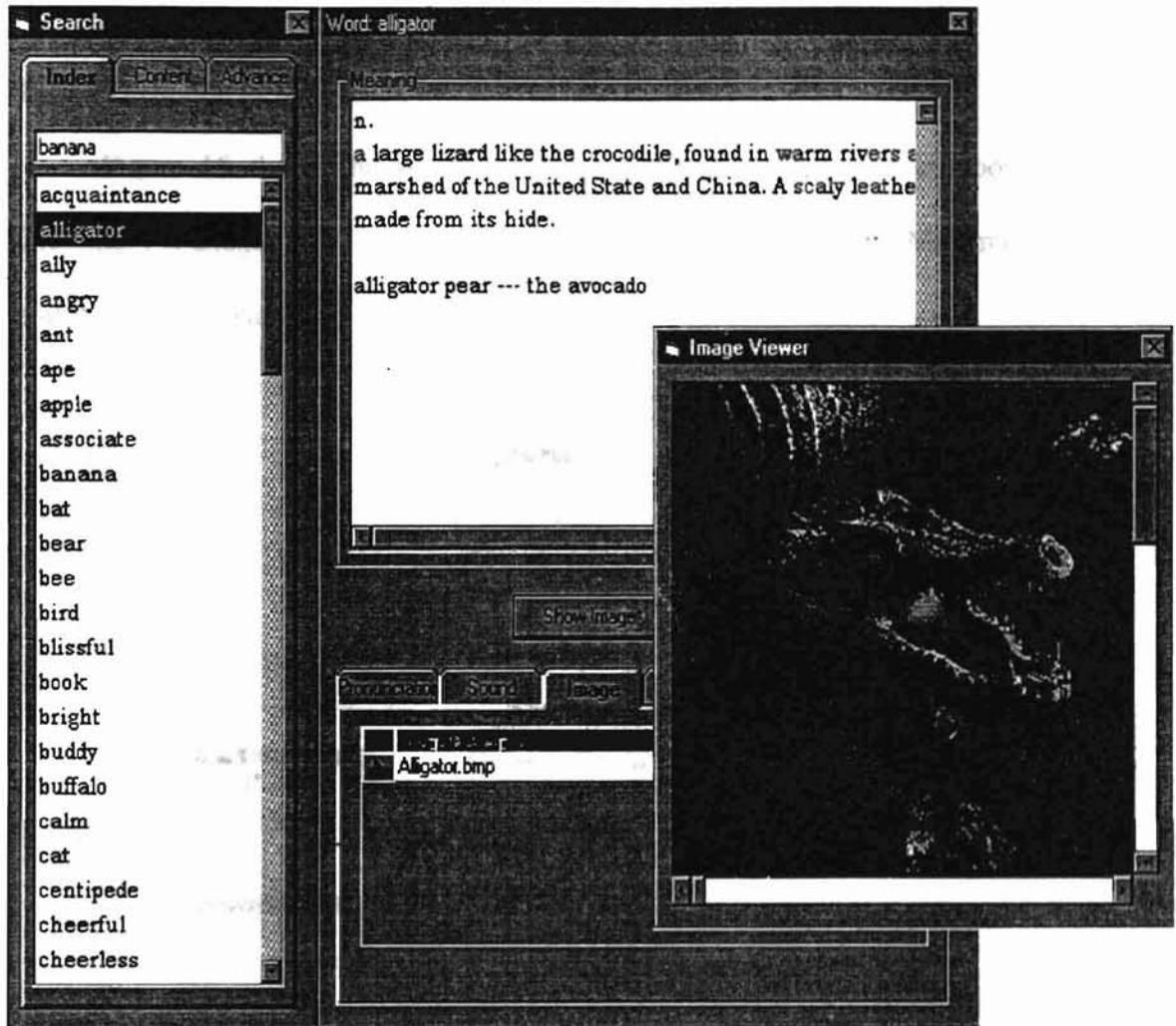
Figure 15. View image file

2.2.1 The Structures of the Dictionary and the Functions of Its Parts

2.2.1.1 Structure of Dictionary

Figure 16 shows the structure of the dictionary. The main components are the Dictionary manager, the GUI manager, the Database manager, the Multimedia manager and the Search manager.
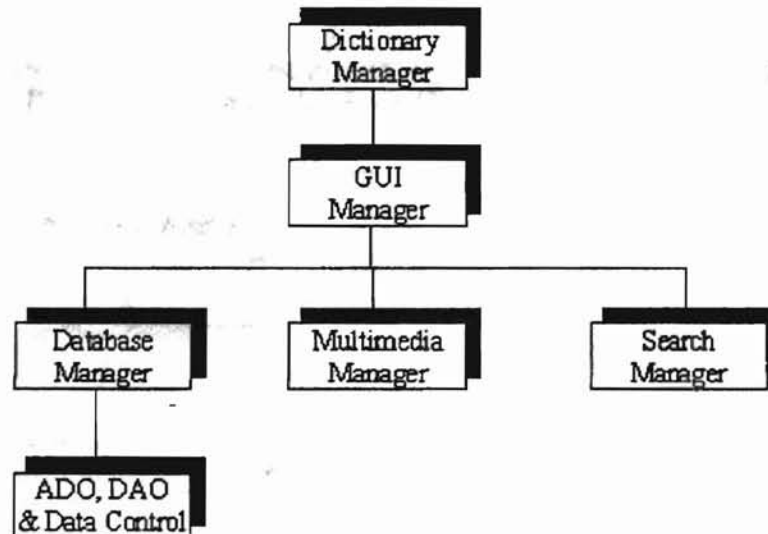
Figure 16. The structure of dictionary

2.2.1.2 Structure of Dictionary Manager

The dictionary manager creates a new dictionary project, opens and views existing dictionary projects. The subject can be English, mathematics, physics, chemistry, etc. The dictionary manager supervises the permanent storage for all subjects, and it provides the interface between the permanent data and the GUIs. The GUIs manipulate the permanent data through the dictionary manager. The dictionary manager is also

22

responsible for checking and the validating of the subjects and the operations performed on them. Figure 17 shows the structure of dictionary manager.
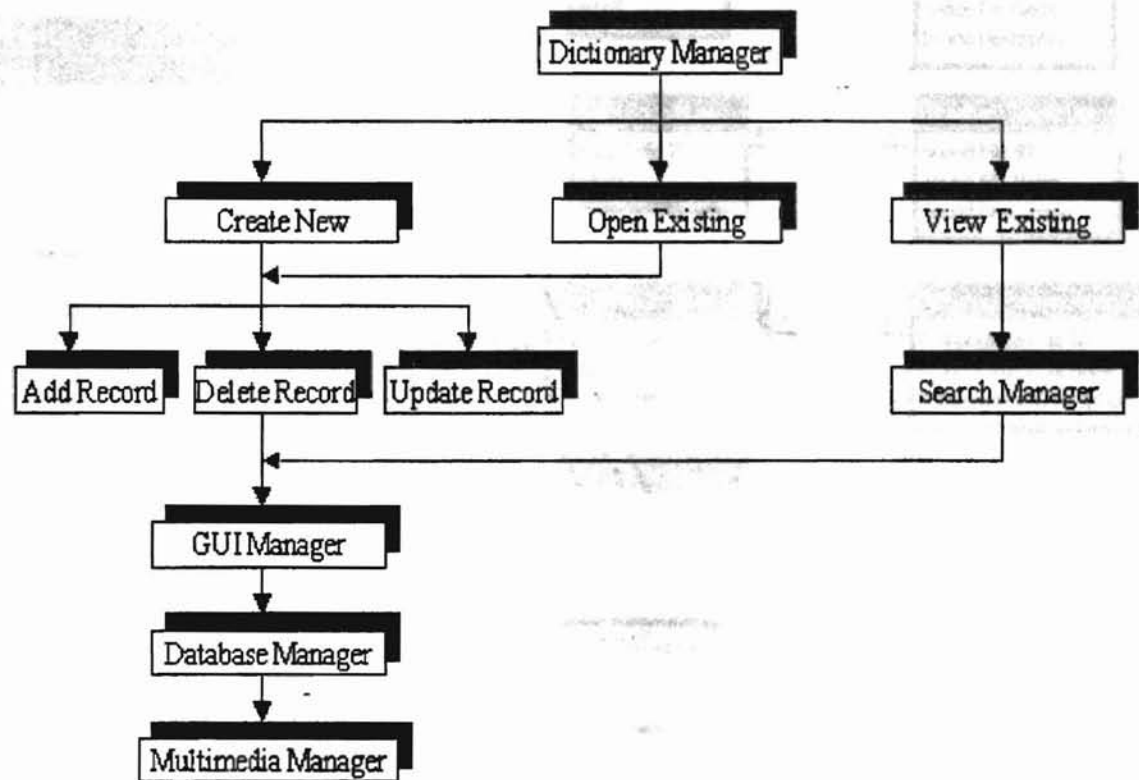
Figure 17. The structure of dictionary manager

2.2.1.3 Structure of Database Manager

The database manager takes data from GUI then saves the data into the database, or it takes the data from the database then sends the data to the GUI, depending on the user's activity (create or view). Figure 18 shows the structure of the Database Manager.
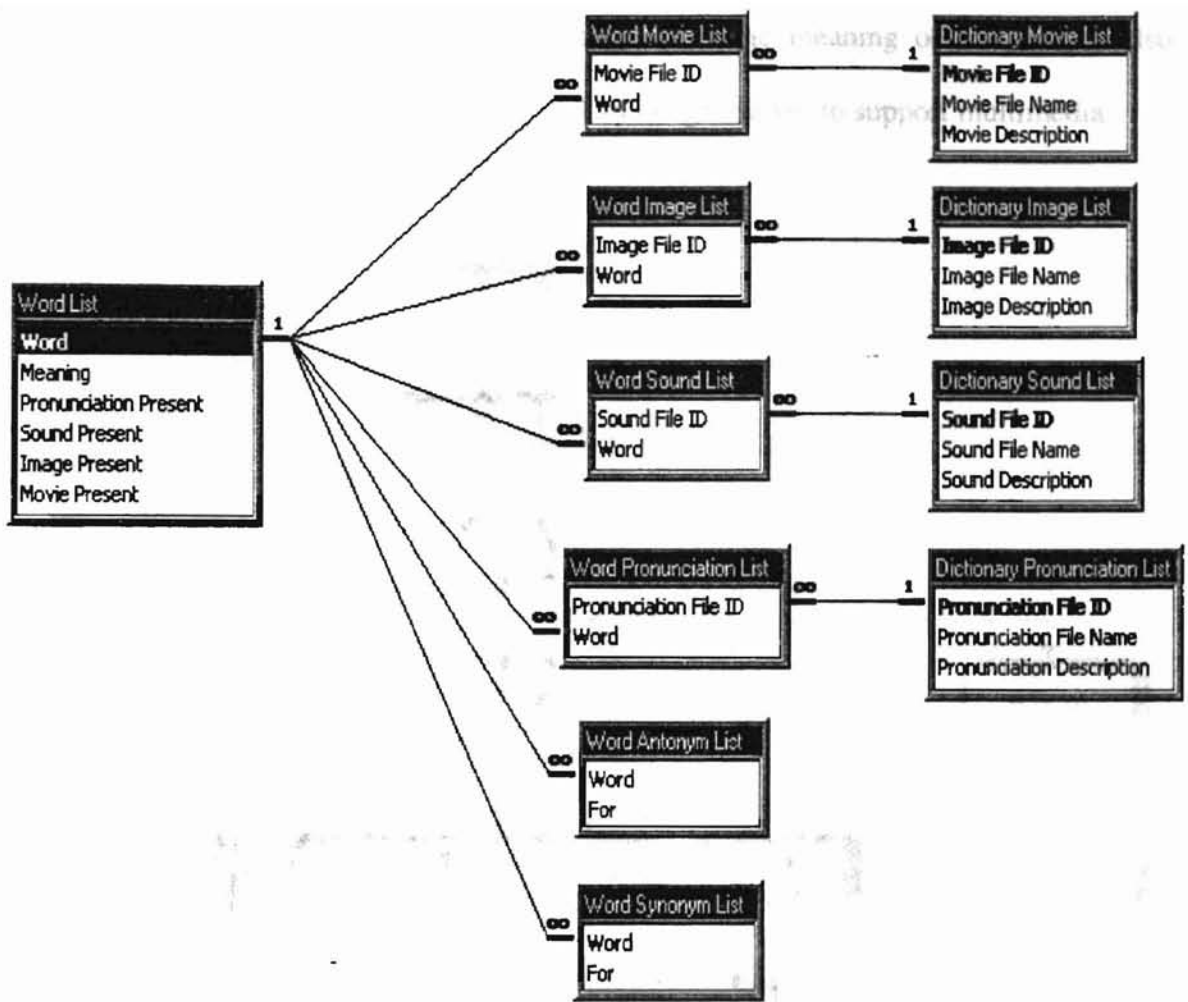
Figure 18. The structure of database manager

2.2.1.4 Structure of GUI Manager

Figure 19 shows the structure of the GUI Manager. The GUI Manager provides the interface between the user and the database of the dictionary. There are six main GUIs between the user and the permanent data of a subject and four additional GUIs. From the GUI Menu, user either can create a new dictionary (read-write only), open an existing dictionary (read-write) or view existing dictionary (read only). They enable the user to manage different subjects and to search for a word. It displays the structure of the

dictionary and the result of the operations (such as the meaning of a word); it also

provides an audio player, a video player, and an image viewer to support multimedia.
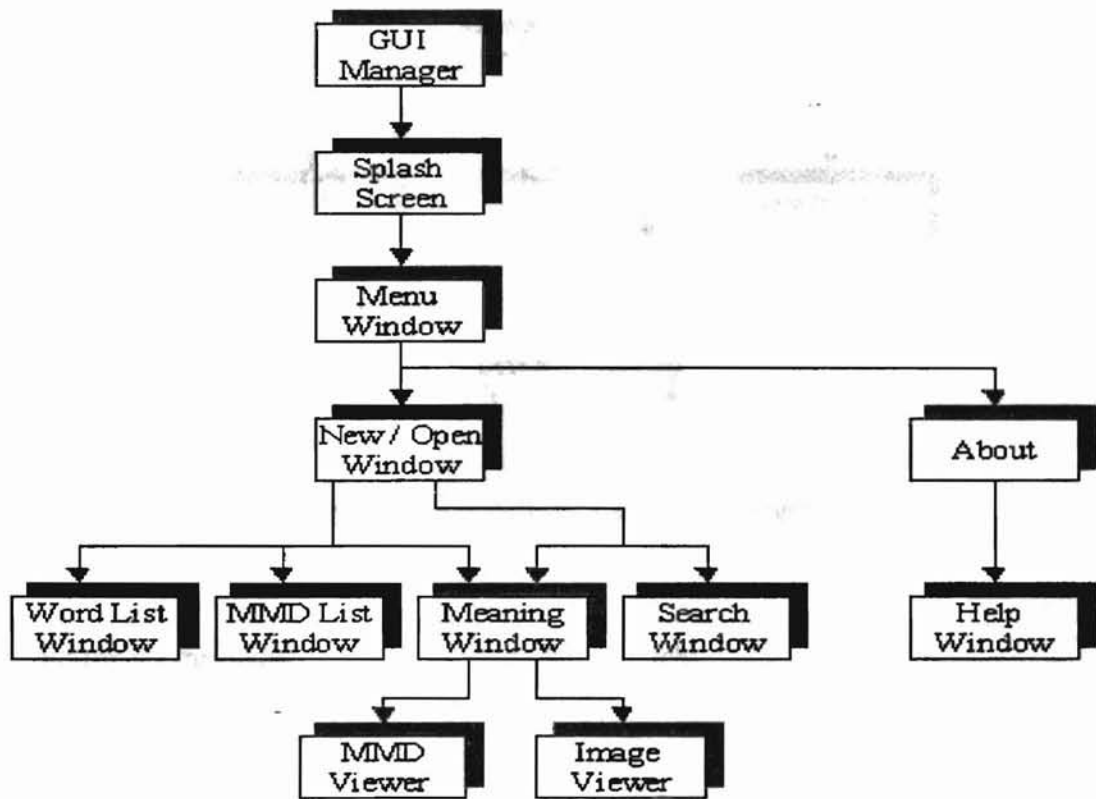
Figure 19. The structure of GUI manager

2.2.1.5 Structure of Search Manager

Three kinds of search were implemented in this software. Figure 20 gives the

structure of search manager.
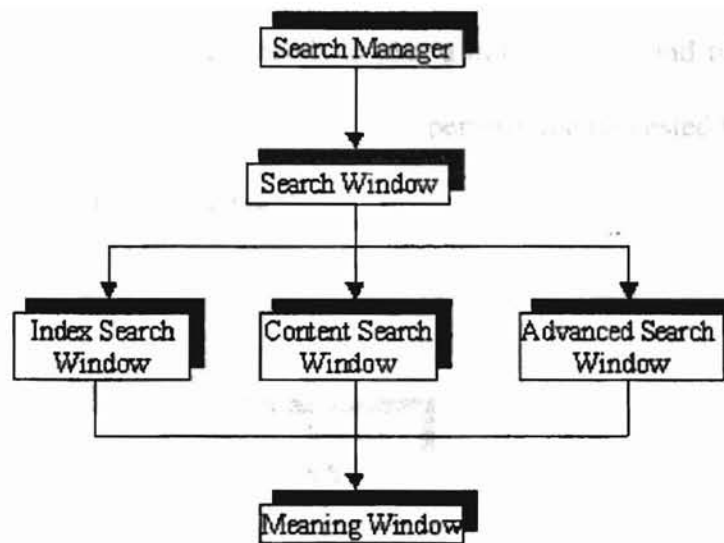
Figure 20. The structure of search manager

In the dictionary manager, there are three kinds of search:

i. Search by index

When one searches the dictionary by index, the dictionary only gives the index that contains this word.

ii. Search by content

When one searches by content, the dictionary gives the content of the dictionary so that the user can find the word under that particular content.

iii. Advanced Search

In advanced search, the dictionary will give this word appearing anywhere in the whole dictionary. Behind the eyes of the user, this search will be parsed and converted to SQL and this SQL code will be executed to produce the search result.

2.2.1.6 Structure of Multimedia Manager

The Multimedia Manager maintains all sound, image and video files, in the entire dictionary. If any part of the software needs to play a movie file, sound file, or wants to view an image file, then this manager is invoked to perform the requested task. Figure 21 shows the structure of multimedia manager.
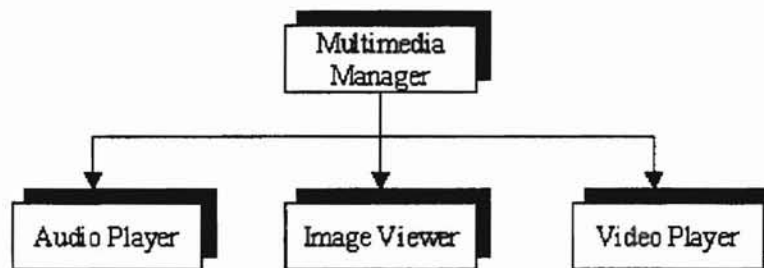
Figure 21. The structure of multimedia manager

2.2.2 Major design and implementation issues

This software consists of 11 forms and two classes.

The forms include:

- Menu
- About
- Word list
- Meaning
- Multimedia (MMD) list

- Meaning

- Multimedia (MMD) list

- Search

- Splash

- Image viewer

- Introduction

- Multimedia (MMD) viewer

- New or Open

The two classes are:

- CDicDatabase

- CConnetionString

The details of two classes and few of the main forms follow.

2.2.2.1 CDicDatabase Class

This class is used to make the database template since the user may want to create new database repeatedly for handling different subjects. The Microsoft Data Access Object (DAO) provides a database to manipulate the data and the structure of the database. DAO is the programming interface for the Microsoft Joint Engine Technology (JET) database engine. A database engine is the component of an application that provides the link between an application and its data. JET was one of the first object-oriented database engines, and as such is a perfect partner for Visual Basic. It is a powerful, application-independent, advanced database engine that can be used with a variety of programs from Microsoft word, Microsoft Excel, Microsoft Visual Basic, Microsoft Visual C++, etc. It avoids the necessity of having Microsoft Access installed

on the users' computer when they run this program, but it provides users the database file

just as Microsoft Access does.

All the 12 tables were constructed using DAO (Figure 22).
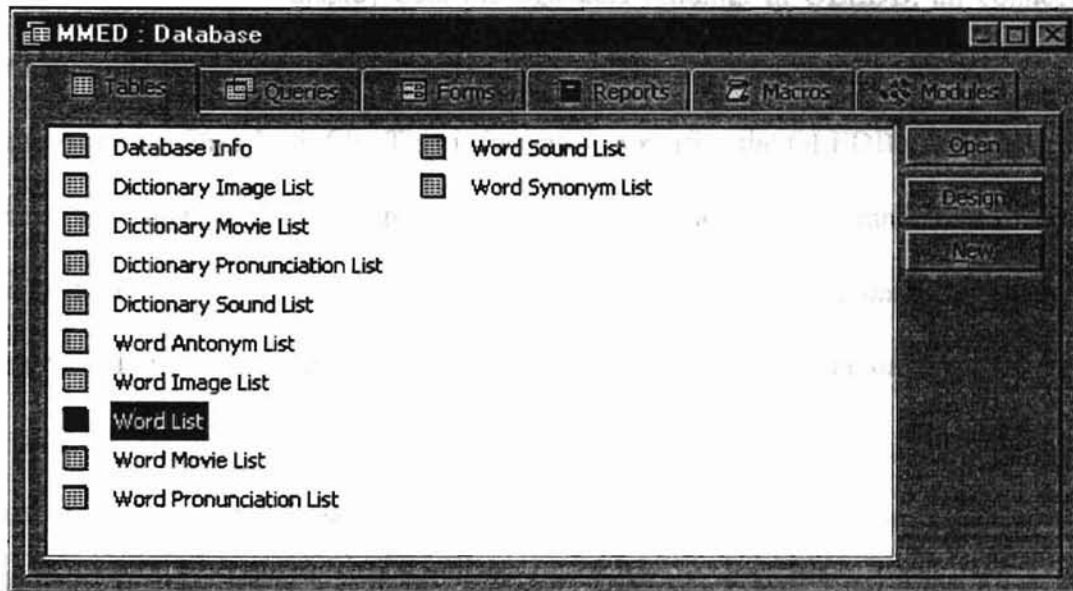
Figure 22. Table List

2.2.2.2 CConnectionString Class

When this thesis just started to write, because lack of knowledge about ActiveX

Data Objects (ADO), the DAO data control was used to create class CdicDatabase and

for Multimedia form. While writing and studying, DAO was found out is technology that

provide the ability to work with many relational databases, however, with the release of

Visual Basic 6.0, Microsoft has provided a new and more powerful tool for accessing

data, know as OLEDB. OLEDB is a specification that defines how data are to be

accessed from both relational database and non-relational data stores. This includes

databases such as Access, Oracle, and SQL Server etc. It also includes non-relational sources such as Excel, Microsoft Index Server, and Microsoft Exchange, etc. ADO data controls were used in the rest of the forms.

As with other data controls, the data control for ADO is designed to return data and to allow controls to display data through data binding. In OLEDB, all connection information is provided as straight text to the ConnectionString property, or it is saved in a file known as a Data Link file. This information specifies the OLEDB provider and the database to connect with. Therefore, one instance of the class CConnectionString was made in the form Menu. After the user enters the database path, the database name, and selects the OLE-DB provider from the window New, ADO knows the database where the user connects to produce a connection string including the OLE-DB provider's name, Data source, and Access mode. The data source includes database path and the database name. Consequently, anywhere in this software, another window's data control can refer to this connection string to connect to the database the connection string specified.

2.2.2.3 Form Menu

The Form Menu is the Dictionary Manager in this software. The role of this main menu is to control and to organize other GUIs. In other words, the dictionary manager makes sure to display only those GUIs, which user has requested through the menu while it hides other GUIs that which are available on the screen.

In form menu, there are three menus and 9 options:

Menu – File

- New

- Open

30

- Close

- Exit

Menu – View:

- Show Word List

- Show Meaning

- Show Multimedia List

Menu – About:

- About – Introduction

From the Menu File – New, the user can create a new dictionary and from Menu File – Open, and the user can either go to search mode or update an existing dictionary. As mentioned in the User's Guide, Menu File – Close is used to close all the windows on the screen except the window menu so that the user can change from search to update, new to open, or vice versa.

From the Menu View, there are three options. The particular option enabled depends upon the user's mode. If the user in Search mode, only the Show Search List Window and Show Meaning Window are enabled. Under this condition the user cannot get the Multimedia List Window so cannot update the multimedia files for an existing dictionary. Whenever the user clicks the Show Word List Window, or the Show Meaning Window, both windows appear or disappear together because Word List Window has the responsibility of opening Meaning Window. The Show Search Window and Show Meaning Window have the same relationship, i.e. for opening the Search Window also has responsibility to open Meaning Window because the user must use the Meaning Window to see the search results.

2.2.2.4 Form New/Open

Form New/Open has responsibility collects and validates the information the user entered in this window. If the user wants to create a new dictionary, the database path and name cannot be duplicated. Otherwise, it gives an error message to user. If the user wants to open an existing dictionary for updating, he/she should enter correct author's information. Otherwise, it also gives an error message. If the user wants to search for a word, he/she should give the correct database path and name. If the user gives a nonexistent database path or name, it gives an error message. If the user entered everything correctly, then the form New/Open disappears. It means the program is ready to create a new dictionary or to open an existing dictionary.

In form new/Open, the Windows Application Programming Interface (API) function calls gets all the database provider names. The Windows API is a collection of C-Language function calls housed in several dynamic-link libraries (DLLs). These libraries provide all the functions associated with the Windows Operating System. When the user goes into open mode, he/she can find all database providers installed in his/her local computer. Although the user is only allowed to select the Microsoft Jet Engine when he/she creates a new dictionary, these database providers can be used for future compatibility.

2.2.2.5 Form Word List

This form adds a new word to or delete a word from Word List table. In this form, ADO data control and a data-aware DBGrid control are used. Data-aware control also called data bound control. It has the ability to connect to a Visual Basic data control to receive database information. Controls can be created to add, edit, update, and delete

from an associated database. DBGrid control was used because tabular information is needed.

Form Word List has responsibility to open the form Meaning. After form Word List load, it calls Load Form Meaning, and before form Word List unload, it calls unload Form Meaning so that it makes sure form Meaning always go with form Word List.

In form Word List, one function was made to check whether the word the user wants to add to the dictionary is a duplicate word. If this word already exists in the database, it gives an error message, and the word will not be added to the dictionary.

2.2.2.6 Form Meaning

Form Meaning adds the meanings and displays them for words in the Word List. It is also capable of showing image files or playing audio or video files. When the user is in Search mode, the user can neither update or delete any data from the database, therefore the buttons "Update" and "Delete" are not visible in search mode to make sure the user cannot modify any information in the dictionary. The text box for meaning also is locked, so that the user cannot modify any meaning from the meaning box.

To add the multimedia file to the meaning form, the user needs to find the multimedia file name from the Multimedia form, hold down left mouse button while moving the mouse pointer to the form Meaning's Grid control where the file should be. Finally, the user releases the mouse button and the file will add to form Meaning.

2.2.2.7 Form Multimedia (MMED)

The Multimedia Form maintains information about the multimedia files for the entire dictionary and saves them in the database. It can add, delete or update the

multimedia file's information. It is also capable of playing audio or video files and showing image files.

2.2.2.8 Form Search

Form Search is shown in figure 16. Similar to form Word List, form Search also opens the form Meaning because the user must use form Meaning to view the search results. It loads the form Meaning after it has been loaded and unloads the form meaning before unloading itself. In form Meaning, the form name appears on the top of the form; it always matches the word in the form Search.

There are three different kinds of searches. They are:

Search by index

When the user searches the dictionary by index, the dictionary only gives the index that contains this word. When the user enters a word for which he/she wants to find the meaning, the highlighted cursor moves until he/she finishes entering. The user can find the word he/she wants highlighted in the word list box. Then, the user either can press enter key on the keyboard or click that word in the word list. The user views the meaning for this word in Meaning Window (Figure 10).

Search by content

When the user searches by content, the dictionary gives the content of the dictionary so that the user can find the word under that particular content. A TreeView is used to implement the content search. The TreeView control, as its name suggests, lets the user build an outline similar to the one used in Windows Explorer. The individual objects are called nodes, and the TreeView control has a Nodes collection that holds information about the nodes in the control. One can expand or contract each item in the

tree by clicking on it. The highest node is given by the Root property. The TreeView is shown in Figure23.
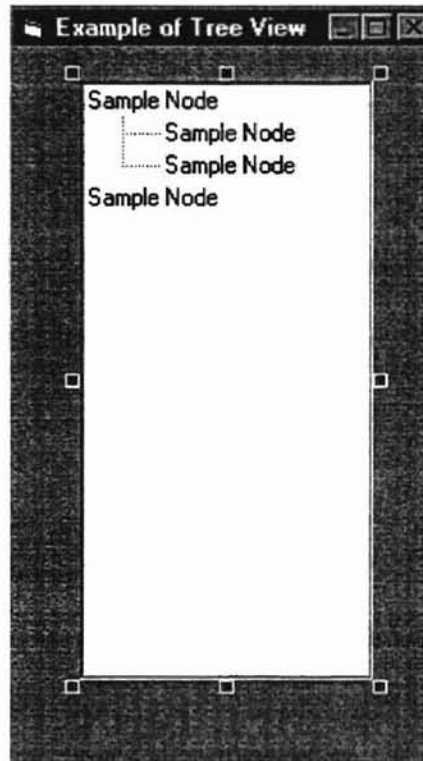
Figure 23. TreeView control

Advanced Search

In advanced search, the dictionary gives word appearing anywhere in the whole dictionary, this search parsed and converted to SQL and this SQL code executed to produce the search result. When user uses Advanced Search, the SQL clause is used to set the RecordSource for Advanced ADO control so that it searches entire database for that word. Then it gives this word appears in Word list and Meaning for search result. The Advanced Search example is in Figure 12.

35

CHAPTER III

SUMMARY, CONCLUSION, AND FUTURE WORK

3.1 Summary and Conclusion

The goal of this thesis is to develop generic dictionary software. It is not restricted to the English language, but it is capable of handling different subjects such as a mathematics dictionary, a chemistry dictionary, an animal dictionary, or computer dictionary, etc. This software also provides the user with multimedia support, such as audio, animation and video. It has a user-friendly interface and provides the user multiple windows and operations to allow the users to make their own dictionary and to use their own data. This further increases its user-friendliness making it more interesting and powerful.

This software was developed on Windows 98 / 2000 / NT and uses Microsoft Visual Basic 6.0 for its programming language. It uses Microsoft Data Access Objects (DAO) version 3.51 and ActiveX Data Object 2.0, as well as Windows Media Player 6.1. It can be run on any PC (Pentium) with minimum of 16-MB memory.

3.2 Future Work

In the future adding spelling check to the software will allow the user to enter the meaning or word into the dictionary, and could check the spelling without using another dictionary. ActiveX control can be used to make it look more attractive and more professional.

The form Menu has two unimplemented menus, one is Print and another one is Font. Implementation of these permits the user print the dictionary and change the font and color in the presentation.

The Internet developed very rapidly. It provides a huge amount of information and also creates many new words. On-line use of this software will be most helpful.

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APPENDICES

APPENDIX A

Acronyms

ADO	ActiveX Data Objects
API	Application Program Interface
DAO	Data Access Objects
DBMS	Database Management System
DLL	Dynamic Link Library
GUI	Graphical User Interface
JET	Joint Engine Technology
LZ	Lempel Ziv
OLE	Object Linking and Embedding
SQL	Structured Query Language

Glossary

ActiveX Control

A software module based on Microsoft's Component Object Model (COM) architecture. It enables a program to add functionality by calling ready-made components that blend in and appear as normal parts of the program.

Active Data Objects (ADO)

ActiveX Data Objects (ADO) enables the user to write an application to access and manipulate data in a database server through an OLEDB provider. ADO's primary benefits are high speed, ease of use, low memory overhead, and a small disk footprint.

Adaptive Compression

A data compression technique that dynamically adjusts the algorithm used based on the content of the data being compressed.

Algorithm

A set of ordered steps for solving a problem, such as a mathematical formula or the instructions in a program.

Compression

Encoding data to take up less storage space.

Data Access Objects (DAO)

It is a component that supports Automation. Any licensed program that can call components that support Automation can access DAO functionality.

Database

1. A set of interrelated files that is created and managed by DBMS.
2. Any electronically stored collection of data.

Database Manager

Database Manager takes its data from the GUI then saves the data into the database, or takes the data from the database then sends the data to the GUI, depending on the users activity (create or view).

Dictionary Manager

The dictionary manager creates a new dictionary project, opens and views existing dictionary projects.

Dynamic Link Library

An executable program module that performs some functions. DLLs are not launched directly by users. When needed, they are called for a running application and loaded to perform a specific function. DLLs are generally written so that their routines are shared by more than one application at the same time.

Graphical User Interface (GUI)

A graphic based user interface that incorporates icons, pull-down menus and a muse. Macintosh, Windows and Motif are examples.

GUI Manager

The GUI Manager provides the interface between the user and the database of the dictionary.

Hypertext

Linking related information. It is the foundation of the World Wild Web. Links embedded within Web pages are addresses to other Web pages stored locally or in a Web server anywhere in the world.

Java

A programming language for Internet and Intranet applications from the Javasoft division of Sun.

Lempel Ziv (LZ)

A data compression algorithm that uses an adaptive compression technique.

Media Control

It is an audio and video player.

Microsoft Access

A Database Management Systems (DBMS) for Windows from Microsoft that directly reads Paradox, dBASE and Btrieve files. Using Open Database Connectivity (ODBC), it can access Microsoft and SYBASE SQL Server and Oracle data.

Microsoft Jet Database Engine

It is the component of an application that provides the link between an application and its data. It is a powerful, application-independent, advanced database engine that can be used with a variety of programs from Microsoft word, Microsoft Excel, Microsoft Visual Basic, Microsoft Visual C++, etc.

Multimedia

Disseminating information in more than one form. Includes the use of text, audio, graphics, animated graphics and full-motion video.

Multimedia Manager

The Multimedia Manager maintains all sound, image and video files for entire dictionary at run time.

Object Linking and Embedding

Windows' compound document protocol that allows one document to be embedded within or linked to another. When an embedded object (document, drawing, etc.) is clicked, the application that created it is launched, and the object can be edited, changes made to the embedded object affect only the document that contains it.

Parse

To analyze a sentence or language statement. Parsing breaks down words into functional units that can be converted into machine language.

PowerBuilder

A high-level application development system for Windows client/server applications from Powersoft Corporation, concord, MA. It uses a programming language called PowerScritpt that is similar to BASIC. PowerBuilder supports SQL and several databases, including DB2 and oracle.

Search Manager

The Search Manager provides three kinds of search. They are:

- Search by content
- Search by index
- Advanced search (see the details on page 16 – 19 and page 27)

Spelling Check Manager

The Spelling Check Manager checks users' spelling by search through the database, giving the user a suggested word list so that the user can select the corrected word to replace the incorrectly spelled word.

Structured Query Language (SQL)

It is a language used to interrogate and process data in a relational database.

Visual Basic

A version of BASIC from Microsoft specialized for Windows a application that has become very popular. User interfaces are developed by dragging objects from the Visual Basic Toolbox onto the application form.

Visual C++

A C and C++ development system for Dos and Windows applications from Microsoft Corporation.

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