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An Income Tax Planning Application Utilizing Lotus 1-2-3

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An Income Tax Planning Application
Utilizing Lotus 1-2-3

by

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I chose to write an honors thesis because I believe such a project substantiates the knowledges and skills I obtained from all the courses I completed during four years of higher education—from classes in English, Philosophy, and Calculus to courses in Accounting, Taxation, and Computer Science. When I explored topic areas, I thought areas pertaining to research which furthered academic knowledge sounded interesting. I am, however, a pragmatist, and I was anxious to apply academic knowledge and theory to the real world.

Selecting the part of the real world I wanted to tackle was not difficult—what part of the real world can be more complex and confusing than the area of federal taxation? Thus, my thesis has resulted in the development of an application template utilizing the computer as a tool for doing income tax planning for individuals.

I found the computer to be a vast improvement over traditional accountants' tools: pad, pencil and calculator. It is my hope that use of this application template will lessen trepidations on the part of users who might be reluctant to take advantage of computer technology and/or electronic spreadsheets.

I have just scratched the surface by exploring what electronic spreadsheets do best—effecting a change and
calculating a new set of computations through changing a set of assumptions. I hope that this thesis will provide a basis for bigger, more complex applications.

INTRODUCTION

After I selected the topic "An Income Tax Planning Application Utilizing Lotus 1-2-3," it became apparent that the majority of my work would be in designing the application template and in getting it to work error-free. Many of the results were achieved through hands-on experimentation. For this reason, the primary thrust of this report will be in explaining the decisions I made to attain the results I desired.

User friendliness and internal documentation were two areas I felt to be particularly important. The template would not serve the purpose I envisioned if users found it difficult to operate. Updates for subsequent tax years would be difficult to input if the application was poorly organized and/or poorly documented. Another area which required careful planning was protecting the worksheet from users. These and many other topics are discussed in detail in this report.

The bulk of this narrative will explain the design and development of the application template and cover the resolution of major problems. In the interests of clarity,
I have supplemented written explanations with actual text from the application template.

Included in the appendices are explanations of the specific functions and techniques used to write the spreadsheet. Appendix A is made up of the Cookbook, a step-by-step explanation for users. Appendices B through F include the spreadsheet map, explanations of macros and menus, tables utilized in the application, and listings and coordinates of cell formulas, cell names, and range names. Appendix G contains an example of the data input area; Appendix H contains an example of a finished (printed) report. Appendix I includes listings and printouts of test data for eight cases—varying by tax year and filing status. In addition to the test data is an independent calculation of taxes so that the computation process of the application template can be proven. Appendix J is comprised of detailed instructions for updating the tax tables.

Throughout this report I use some terms that may be confusing. The use of "application template," "application," and "template" are used interchangeably to refer to the customized worksheet I have developed. The use of the words "spreadsheet" and "worksheet" are terms used by the developers of Lotus. In this report, I use "spreadsheet" or "worksheet" in the context of an unstructured, noncus-
tomized worksheet, as compared to the worksheet I have structured.

OBJECTIVES OF THE PROJECT

My objectives in choosing this topic for my honors thesis were: 1) to design a tax planning application for use by individuals who do not have a great deal of knowledge in the areas of computers, Lotus 1-2-3, or federal income tax laws, and 2) to provide myself with an opportunity to gain beyond-the-basics experience with current federal income tax computations and the Lotus 1-2-3 software package.

PLANNING THE SPREADSHEET

Hardware/Software Requirements

My first step was to explore the possibility of writing the application in Lotus 1-2-3 as compared to writing it in Microsoft Excel. Microsoft Excel seemed to be an excellent package but was only available at the computer lab on the MacIntosh (while the computer I had easiest access to was an IBM-compatible). Microsoft also appeared to be used less frequently in Montana. Because Lotus 1-2-3 is used by the State of Montana (a frequent employer of Carroll graduates) and is commonly used in the
business world, I selected that software package. The particular version of Lotus that I used was Release 2.

Lotus 1-2-3 is a graphics, data management, and spreadsheet software package. The spreadsheet—the process utilized by the tax planning application—is designed as a replacement for the accountant's columnar pad, pencil, and calculator. The typical electronic spreadsheet resembles the columnar pad, filling the screen with columns and rows. The intersections of columns and rows are called cells. Data typed into the spreadsheet can be moved, copied, or deleted by accessing a menu at the top of the screen.

As well as addition, subtraction, multiplication, and division capabilities, Lotus 1-2-3 allows users to write complex formulas. Perhaps the most valuable function of the spreadsheet—in view of the application template I had in mind—is the ability to explore "what if" scenarios. After a set of mathematical relationships has been built into a worksheet, the worksheet can be recalculated quickly, using different sets of assumptions. Major functions of Lotus which I utilized were macros, menus, tables, and variables. These are discussed in detail in the section of this report entitled "Lotus Techniques Utilized."

My next step was to establish that the application template (written in Lotus 1-2-3 on my home computer) would be compatible with hardware in the computer lab at Carroll
College. I also confirmed that computers in the lab had sufficient storage on hard disks\(^1\) in the event that this application was made available to students as a class project.

Organization, Design of the Template

Purpose

This application template is designed for use as a tax planning tool; it is not designed for the purpose of determining the amount of tax owed or to be refunded in a previous tax year. The time when this application can be most helpful is \textit{before} the end of a tax year so that decisions can be made to help lessen the burden of federal income taxes. Once the tax year is complete, the taxpayer does not have the ability to adjust income or increase or decrease itemized deductions.

Potential Users

The application template was designed for use by individuals who wish to do their own tax planning; these individuals will not necessarily have a great deal of knowledge in the areas of computers, Lotus 1-2-3, or

\(^1\)It was later determined that the best procedure for users to access the application template was by loading it into the computer from a master floppy disk available for check out at the main desk of the computer lab.
federal personal income tax laws. Perhaps also gaining benefit from the application will be students taking the accounting course, Federal Taxation. Such students will probably already understand the premises behind calculations of federal income taxes; this application should demonstrate what a valuable tool the computer can be in assisting such a process.

Planning

I began planning the spreadsheet long before I began writing it. I felt that it was important for the application to be well-designed and well-documented, not only for the production of my thesis, but also because the application requires updated tax tables if it is to be useful beyond 1988.

Simplicity of design (through the creation of only two major sections) and the inclusion of a directory at the beginning of the spreadsheet were two methods I used to make such an update easier. I have also written step-by-step instructions for the update (included in Appendix J).

Protecting the Worksheet

Part of the planning process included organization of the spreadsheet such that insertion or deletion of rows or columns (by users or by other macros) would not damage the functioning of the application. One such method of
protection was in the design of the spreadsheet. The user area is placed diagonally to the work area so that neither area has rows or columns in common.

I also used a combination of "Range Protect" and "Range Unprotect" commands so that users can only access those cells in which they needed to make entries. Thus, the formulas are protected from users. I have listed major formulas in Appendix F of this report.

The data entry process will take users to information in the work area of the application but will also bring them back to the user area. This process will manage to confine most users to the area in which data is to be entered, resulting in further protection of the worksheet. Creative users, however, will be able to thwart that process.

Organization of Final Product

In order to make the insertion of data flow logically from the viewpoint of users, I organized income and deduction categories in the same order in which they appear on the 1040 form. So as to make the application straightforward, I did not provide for the depth of details which would be included in all the supplementary schedules to the 1040 form. (I excluded such items as calculations on active/passive losses, detailed calculations on short- and long-term capital gains, and computation of alternative
minimum tax. A warning is designed to appear when income reaches a level such that users should consider the implications of alternative minimum tax.)

My goal was to provide for the most commonly used categories, rather than to try covering every conceivable possibility. However, I did include in each major section an "Other" or "Miscellaneous" line in which data for individuals with more complex tax situations could be summarized.

WRITING THE APPLICATION TEMPLATE

Lotus Techniques Utilized

Once the basic planning of the application was done, it was time to begin structuring the spreadsheet. In addition to the simple formulas placed in pertinent cells, I wrote twenty-seven macros, six customized menus, and thirteen tables in the process of getting the application to work.

Two types of macros are included in the application. The first type is a simple macro in which instructions are listed in the cells of one column. These macros are accessed by previous macros through the instruction (branch
MACRO.NAME). The second type of macro is a customized menu. Both are explained in detail below.

Simple Macros

A macro is a series of cell entries typed into one or more cells in a single column. These cell entries (which comprise a short program) are instructions which automate worksheet tasks so that users do not have to initiate each step. The application template is entirely macro-driven. It is difficult for users to get out of the macros, since one leads to another. In the event that users do exit the macro process, I instruct them to "Control/Break" and then "Alt-T" which brings up the main menu (discussed below) and allows them to enter the macros at any point they wish.

An example of a simple macro which I have incorporated into the application appears in Figure 1 which is located on the following page. The purpose of this particular macro is to provide information on the data entry process, to input a predefined range and to allow users to input

2The use of MACRO.NAME is meant to illustrate the format of the names I have given to my macros. It is not meant to illustrate a particular name of a macro.

Please note that the macro is presented in both upper case and lower case lettering. While writing the macros, I made a deliberate distinction between functions (which appear in the macros in lower case) and named ranges and cells (which are all in upper case lettering). Although, I made the same differentiation in formulas, I found that Lotus prints all formulas in upper case. See Appendices C and F.
The macro itself is in the column on the right. The two words connected by a period in the left column (Data.Entry) are the name of the macro.

**FIGURE 1**

```plaintext
Data.Entry {goto}ENTER.DATA~{?}
{goto}AE200~
{goto}NUMBERS.ONE~
/riBIG SCREEN~
{menubranch MAIN.MENU}
```

Naming of cells or macros does not require the word-period-word format. Single words can also be used to name cells. I found two words to be more descriptive; since the name must be connected and is limited to fifteen digits, I separated the two words by a period.

The naming of cells or macros is not required except for purposes of documentation. The cell in which 
"{goto}ENTER.DATA~{?}" appears is the only cell of this macro which has a name, and it is that cell which is named Data.Entry. Data.Entry in the first cell on the left is simply a reference or documentational tool.

**Menus**

The second type of macro utilized in the application sets up a customized menu (shown in Figure 2) with choices I have defined for the users. A menu utilizes the cells across a row as well as down a column. These macros are accessed through the command (menubranch MACRO.NAME).

<table>
<thead>
<tr>
<th>44</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Year.Menu</td>
<td>1987</td>
<td>1988</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Allows foAllows for calculations based on 1988 tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>{branch} {branch SECOND.YEAR}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Menus are more difficult to read because information contained in one cell may be partially covered by the contents of the next cell. Positioning of the cell pointer on any command allows the full contents of that cell to be displayed across the top of the screen. In this instance, the cell pointer was located at "N48"; the full contents of that cell appear at the top of this figure.

The presentation of the menu is quite different, not by virtue of its being a menu, but because in this instance, I have printed the screen, rather than a range. The contents of cell "N48" would only be partially visible otherwise.

I customized six menus in the development of this application. The menu which is used most frequently is the main menu (illustrated in Figure 3).

FIGURE 3

Main.Menu Enter DaCalculatNew OptiPrint Other Begin AgQuit
Enters dCalculatPreparesPrints oTo get IClears tTo quit.
{branch} {branch} {branch} {branch} {branch} {menubra}{branch} {branch}
From the main menu, all other functions of the application can be accessed. That is not to say that all options are listed on the main menu. In an effort to keep the data entry process as simple as possible, I made a determination of which functions would be used most frequently. Those functions—specifically 1) enter data, 2) calculate tax, 3) choose a new option, 4) print the report, 5) begin again, and 6) quit—were listed on the main menu.

Other functions (such as change filing status, retrieve instructions, and save the worksheet) I deemed to be less pertinent to the ordinary workings of the template. These functions are incorporated into a menu which is a subsidiary of the main menu and is accessible through the "Other" option on the main menu. Since instruction screens appear at different points throughout the application, there are several available to users who choose "Retrieve Instructions" on the subsidiary menu. Therefore, a third menu is accessed, allowing users a choice of five instruction screens.

The other three customized menus (including Year.Menu in Figure 2) can be grouped together. They offer options to users in the process of filling in filing status

4Although Save is usually considered an important function, saving is not strongly recommended for users because they will not be able to access two of the three options that are to be saved. The template was designed so that the end product is a printed document.
information. Since many of the tables depend on exact words and numbers in the filing block, these menus lessen the possibility of errors.

One area of concern when writing a menu is making sure that the first character of each option is different. Users have a choice of typing the first letter to select an option or highlighting the option with the cursor and pressing Enter.

The twenty-seven individual macros and the six menus used in the application template are described in detail in Appendix C.

Tables and Variables

The creation of tables was a means by which some of the problems relating to complex formulas were resolved. Discussion of specific problems and their resolution is included in the next section. This section merely includes a summary of the techniques Lotus offers in developing applications.

In addition to the eight tax tables (four filing statuses times two tax years), the following tables were created:
### TABLE 1 List of Specific Tables

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDUCTION TABLE</td>
<td>To determine the amount of standard deductions (amount varies each year)</td>
</tr>
<tr>
<td>EXEMPTION TABLE</td>
<td>To determine the amount to multiply by the number of exemptions (amount varies each year)</td>
</tr>
<tr>
<td>PERSONAL INTEREST TABLE</td>
<td>To determine percent of personal interest allowed (percentage decreases until eliminated in 1990)</td>
</tr>
<tr>
<td>NAME TABLE</td>
<td>To determine which tax table to access for calculating taxes (8 tax tables available, depending on filing year and status)</td>
</tr>
<tr>
<td>ALTERNATIVE MINIMUM TAX LIMITS</td>
<td>To warn users when taxable income is high enough to consider consequences of alternative minimum taxes</td>
</tr>
</tbody>
</table>

Tables are most commonly accessed by use of a horizontal or vertical lookup function. One such function in the application is `@hlookup(CODE, AMT.TABLE, 1)`. The `@hlookup` tells Lotus the specific function being used; `CODE` is a numerical variable which is determined by the filing status keyed in by users; `AMT.TABLE` is the range which includes the alternative minimum tax limits table; and `1` is a specified row number. From `AMT.TABLE`, the program retrieves the contents in the cell one row number under the cell which matches the `CODE`. The vertical lookup function operates similarly, except that instead of accessing by
rows, the function accesses by columns. Five lookup functions are utilized in this application to access thirteen tables.

As demonstrated above, variables are used to access the tables. Variables are also fed into holding cells so that one number can be compared to another. Figure 4 is a combination of variables, their cell contents or formulas, and the tables they refer to.

**FIGURE 4**

<table>
<thead>
<tr>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMT.MEASURE @hlookup(CODE,AMT.TABLE,1)</td>
</tr>
<tr>
<td>CODE</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>AMT.TABLE</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
<tr>
<td>112500 112500 150000 75000</td>
</tr>
</tbody>
</table>

If the code equals "3", as it does in this case, the amount of 150000 is fed into the AMT.MEASURE variable, ready to be viewed when the Calc.Tax macro gets to this line:

```plaintext
{if TAX.INC>AMT.MEASURE}{branch WARNING}.
```

**Major Problems and Their Resolution**

The addition of certain elements in the application caused unique problems in the development of formulas for calculating taxes. Some of these problems could be solved by creating similar, but parallel paths for each filing option. However, that method was not efficient or practical. I searched for the most streamlined, efficient method of solving the programming problems. Included in
this section is a discussion of the unique problems related
to inclusion of multiple tax years and multiple filing
statuses, application of standard deductions compared to
itemized deductions, deduction of medical and dental
expenses, allowance of variable personal interest percen-
tag es, and insertion of instructions into the data entry
area.

Creating an application template that was user
friendly created unique problems in itself; the following
section is devoted to that topic.

Inclusion of Multiple Tax Years and Filing Status Options

The application would have been easier to write if I
had limited users to calculations of taxes for only one
year. I preferred to make more than one year available so
that comparisons could be based on years as well as
different filing statuses. Allowing for multiple years
required the use of eight tax tables instead of four.

One of the more difficult problems had to do with
accessing those tables. To solve the problem, I could have
written four separate and very lengthy paths to guide
selection of the right table. Another, cleaner option—the
option I chose—was the creation of a table of table names.
I created a variable called TABLE.NAME and used the lookup
function @vlookup(YEAR,NAME.TABLE,CODE). CODE is the same
code input through recording of filing status as explained
in Figure 4. The difficulty came in getting the lookup to read the range referenced by the name in the cell of the variable, not in the cell itself as the range. The Lotus function @@(TABLE.NAME)\textsuperscript{5} solved this problem by referencing the range named in TABLE.NAME, and not the particular cell named TABLE.NAME.

**Application of Standard Deductions Compared to Itemized Deductions**

Itemized deductions should be input by users unless the users are positive these figures are less than the standard deduction. The application template is set up to add itemized deductions (at appropriate percentages) and to compare the itemized total to the standard deduction. The greater of the two figures is then subtracted from adjusted gross income.

Two variables and one formula are necessary to accomplish this process. One variable is the standard deduction; it is fed into a cell by the use of the lookup function explained earlier. The second variable, in a holding cell called DEDUCT.AMT, contains the formula:

\[ \texttt{@if(}\texttt{IT.DEDUCT>STAN.DEDUCT, IT.DEDUCT, STAN.DEDUCT)} \]

The formula puts the value of the itemized deduction total into that holding cell if the itemized deduction is larger.

\textsuperscript{5}TABLE.NAME in this instance refers to the exact cell address referenced.
If not, the value of the standard deduction is read in. DEDUCT.AMT is used in the formula which calculates the tax.

**Deduction of Medical and Dental Expenses**

I found the topic of medical and dental expenses complicated because these expenses are only allowed if they are over 7.5% of adjusted gross income (for years after 1986). I created formulas and holding cells in the same way described in resolving the itemized deduction problem, but the formula was more complex:

@if(M&D.AMT>0.075*AGI,M&D.AMT-0.075*AGI,0)

M&D.AMT, standing for medical and dental expenses, will be typed in by users. The asterisk in the formula is the multiplication symbol. This formula requires that users input into that cell (which is named M&D.DEDUCT) the amount of the medical and dental deduction minus 7.5% of adjusted gross income, unless that amount is less than zero. If it is less, zero is to be placed in that cell. M&D.DEDUCT is the only amount considered when calculating total itemized deductions.

**Allowance of Variable Personal Interest Percentages**

Because the amount of personal interest which is allowed for itemizing deductions varies depending on the tax year, I created a table and accessed it through the use
of a variable. In this case, the variable is connected to a lookup function. The lookup reads a certain percentage from a table based on the year; in the total calculation of itemized deductions, this percentage is multiplied by the amount users type into the personal interest category.

**Insertion of Instructions into the Data Entry Area**

Several problems evolved when I decided to insert lines of instructional text into the data input area (a decision discussed in more detail below). The premise behind addition of the text was to have instructions available when users needed them. This text was presumed to be unnecessary once users had worked through one option. The problem was in determining at which point to eliminate the text.

Although the best point of elimination was during the calculation of tax, major problems resulted when the Begin Again option was selected prior to the calculation of tax. This was a possibility because users might be dissatisfied with what they had typed in and choose to begin again with a clean slate before they complete an entire option. Begin.Again is a precise macro which goes to specific cells (only those unprotected cells) and replaces their contents with zeros. When the text is positioned in the data entry area, those cells are at different locations. Thus when
Begin Again is initiated before the text is erased, formulas are erased and strange cells end up with zeros.

Another problem was that although it was recommended that users Calculate Tax immediately after inputting data, nothing requires them to do so. (The Calculate Tax option is basically a re-calculation since Lotus calculates as it goes along. Thus, numbers appear to change on the screen, and users might deem this function superfluous.) As a result, users could select New Option or Print before the lines of text have been deleted. When these macros are run with the extra lines of text still in place, they do not operate properly.

It was logical to create a separate Delete.Text macro which could be accessed by any of these four selections on the main menu: Calculate Tax, New Option, Print, and Begin Again. Routing the Delete.Text macro back to the macro—one of any of these four—which had accessed it was a problem. To solve this problem, in each of the four macros I named the cell that I wanted the Delete.Text macro to return to, calling that cell ROUTE. I then instructed the application to {branch ROUTE} at the end of the Delete.Text macro so it would return to the right macro. Renaming occurs any time one of the four macros runs; since a counter is activated at the end of the first run of Delete.Text, this macro is not reaccessed, and no problems result from the renaming.
User Friendliness

One of the most important aspects of making any kind of structured worksheet a useful tool is achieving user friendliness. I tested the user friendliness of this application template on a number of occasions by asking people who had no earlier exposure to the template to use it and give feedback. These comments led to the inclusion of instruction screens and the addition of more customized menus. The extensive incorporation of macros into the application saves users numerous steps. Based on user feedback, I inserted a line for AMOUNT WITHHELD (on the W4 withholding form) and a calculation for the DIFFERENCE between the amount withheld and income taxes.

Providing Instructions

Five instruction screens are interspersed throughout the application. Writing instructions that are easily understood and concise enough to fit on one screen (20 lines) was quite a challenge. Figure 5 contains an example of the data input instruction screen.
FIGURE 5

INSTRUCTIONS FOR ENTERING DATA

1. You will only be allowed access to certain cells; you do not need to make entries in all accessible cells. (On some screens, these will be the green cells.)

2. All accessible cells need either numbers or zeros (not letter O).

3. Access the cells by using up and down arrows.

4. For each category, type the number and "arrow down." Too many ENTER's brings up the main menu—something you don't want to do until you have finished entering amounts.

5. If this application template is not working right, hold down CTRL while pressing BREAK and then hold down ALT while striking the letter T. This should return you to the main menu.

6. Press ENTER to begin.

One of the problems with the instruction screens was the fact that after users hit one key, the instructions disappeared. The instructions could be accessed through the main menu or could be printed for users, but neither of these processes provided specific information at the point users needed it. As a solution, I incorporated a combination of instruction screens, prompts at the top of some screens, specific comments in the data entry area, and detailed information in the Cookbook. This combination makes specific instructions available to users at the point they need them.

When I designed the area in which users were to insert tax data, I had two choices. The first choice involved the process of taking users to each individual cell where they have to make some sort of entry (a number or a zero) before...

---

6Using the Print Screen instructions detailed in the Cookbook.
they can proceed to the next category. The second alternative involved letting users have the freedom to move up and down the unprotected areas at will and to skip 1040 categories if entries were not required.

I chose the latter method—allowing users the freedom to move up and down the screen—to lessen frustration on the part of users. If users make errors in entering data under this method, they can arrow up or down to make changes and do not have to go through all other categories to reaccess the one that needs changing. In choosing this method, I gave up the ability of being able to insert instructions into each step or beside each category. To compensate for this lack, I inserted information between major category headings in the data input area as a supplement to the instruction screens. These instructions were erased after users had completed the first option.

Documentation

Although documentation can be an element of user friendliness, I felt that any internal (and most external\textsuperscript{7}) documentation should be included for use by the person(s) who would update tax tables, not for use by ordinary users. I envisioned ordinary users being able to input data and create a polished final product without having to read a lot of documentation or instructions.

\textsuperscript{7}The exception being the Cookbook
I have devoted a significant portion of the work area of the application to internal documentation. The section arrived at by hitting Home is shown in Figure 6. The directory should be of assistance to anyone updating the tax tables. (The spreadsheet map in Appendix B is a visual representation of the directory.)

FIGURE 6

```
A1: [W72]  READY

1   * * * * * * * * * * * * * * * *
2   * Tax Planning Application *
3   * Created by Wanda Fleming *
4   * * * * * * * * * * * * *

A

1   Written Justification      A22 and below
2   Variables                 B1 to B20
3   Cell & Range Names & Coordinates B21 and below
4   Simple Tables             G1 and below
5   Complex Tables            L5 to L25
6   Menus                     L33 and below
7   Simple Macros             V1 & below, G92 & below
8   Instruction Screens       AA1 and below
9   Copy of Text in Data Entry Area AE200 and below
10  User Area                 AB20 and below
11  File Block                AB1 to AD13
12  19-Mar-88 11:24 PM       CAPS

Utilizing Lotus 1-2-3 Release 2

A list of all range names and coordinates appears in Appendix E as well as in the work area of the spreadsheet.

The naming of cells and ranges provides an trail for following program logic; a specific name gives a better description for the function of the macro, menu, or cell than the alpha-numeric combination assigned to each cell. In addition to an internal directory and the naming of cells, macros were documented. To the right of each series of commands on a line is an explanation for the function of that particular line. The macro presented in Figure 2
appears in Figure 7, this time with descriptive text for the series of commands on each line.

FIGURE 7

Data.Entry  {goto}ENTER.DATA"{?}       Pulls up instructions; waits
{goto}AE200"               Pulls up data entry area
{goto}NUMBERS.ONE"       Positions cell pointer
/riBIG.SCREEN"            Inputs data range; USER ENTERS INFO; returns to main menu
{menubranch MAIN.MENU}

I have included test data (listed in Appendix I) as a means of quality control. Check figures—listed as total taxes—are an important part of the test data; they are to be used as a comparison with the amounts calculated by the application template to assure that the template is working properly.

I also utilized "windowsoff" and "windowson" functions in the macros to eliminate the sense of unease users might get if they viewed massive changes on the whole screen. These two functions are self-explanatory; "windowsoff" turns the screen off and "windowson" turns it back on so that users might view the changes that have occurred.

I had the option of turning off the top of the screen as well, since viewers will still see part of the macros in action. I elected not to. Although users might be alarmed to see the whole screen react to their command, I felt allowing them to view movement of a small portion of the screen might indicate to them that the application was responding to their commands.
SUMMARY

One of most enjoyable aspects of doing this honors thesis was the project concept. I was fully responsible for all phases of the project, and I received a great deal of satisfaction from watching all the pieces fall into place. Most computer programmers probably have the same feelings of elation when the program (or in this case application) finally works.

I was surprised to discover that the project actually started, not ended after the program worked. It was at that point that I got to be really creative, where I began to stretch beyond the original concept and mold the final result into something I could be satisfied with—something that could be truly useful to others. This meant paying attention to time-consuming details of user friendliness and internal and external documentation, but it paid off in the final result.

Throughout the project, my interest never flagged. I never ceased to be eager to make the application bigger and better. Prior to writing this thesis, I had no experience with simple functions in Lotus, let alone writing complex macros and menus. As I dug in and began learning Lotus, however, I was amazed with what I could get it to do. I found it difficult to limit the template to the original purpose and to keep within the time limitations. I was
anxious to add enhancements and create even more complex applications.

It was at this point I began to approach the project in the same manner that many projects in the working world are evaluated: how to get the best product considering the limited resources. In this case, the time element was the limited resource. I think, however, that having to work and create results knowing that such limitations exist is a very practical experience.

I was, and still am, impressed with the potential of software packages to be molded into practical problem-solving applications by anyone who takes the time to explore what they can do. It makes me wonder how accountants got along before spreadsheets. More amazing still is the fact that my project just scratched the surface in terms of what can be done in the area of tax applications. I hope my project will provide inspiration for others to do bigger and better things both in the area of federal income taxes and customized software applications.
APPENDIX A

Cookbook
To the User:

The following is a cookbook approach on using the tax planning application written by Wanda Fleming, Spring 1988. This application can be loaded onto the computer from a master floppy disk available in the Computer Lab.

Please note that information to be typed in is set off in the quotation marks; do not type the quotation marks themselves.

SECTION A: Accessing Lotus 1-2-3 on the IBM-PC:

Step 1. Turn on machine by flipping on toggle switch. Either enter the date in the form mm-dd-yyyy or bypass it by pressing <Enter>. Then enter the time or press <Enter>.

Step 2. Type "cd\123" <Enter> to change to Lotus directory.

Step 3. Type "123" <Enter> after the C:\123> prompt.

SECTION B: Loading the Application Template:

Step 1. Insert master floppy disk.

Step 2. Type "/fr" to access file retrieval from the Lotus menu.

Step 3. Move the cursor to highlight TAX-PLAN.WK1. Press <Enter>.

Step 4. Return master disk to the main desk.

SECTION C: Entering Tax Data on the Worksheet:

Instructions will be interspersed throughout the application. If the instructions on the screen are unclear, you should be able to find answers to your questions in the italicized paragraphs of this cookbook. If you have no questions, skip the italicized sections.

Step 1. Beginning

The first screen (shown in Figure 1) provides general information. Press <Enter> to continue.
If the application template does not appear to be working as it should, hold down Ctrl while pressing Break and then hold down Alt while striking the letter T. This should return you to the main menu. You can do this at any point in the application, simply re-enter by choosing the correct selection on the main menu.

Step 2. Entering Filing Status Information

The application takes you first to the filing block (shown in Figure 2) so that you can fill in filing status information.

The three menus allow you to make selections. Typing will be required for the purpose of recording the name of the client, and if the number of exemptions is greater than six. Select from the menus by using the arrow key until the cursor highlights your selection and press <Enter> or by typing in the first letter of the selection.
You do not have to use the same filing status for each option. You can change the options by accessing the Other selection on the main menu. Selecting Other brings you to another menu which contains among other options Change Filing Status. If you make an error in entering this information, you may change it also through the Other selection.

Step 3. Entering the Data Entry Area

The next step is to enter tax information into the data entry area. To do this, select Enter Data on the main menu. The instruction screen shown in Figure 3 comes up.

If you would like to have the instructions in full sized print, do a Print Screen. Make sure the printer is on. Print Screen is a keyboard function which is generally includes pressing the Shift and Print Screen keys at the same time. NOTE: You will need to realign the paper afterwards.

FIGURE 3

Step 4. Entering Data

When you press <Enter> after each reading of the instructions, the cell pointer will be located in the first cell in which you enter tax information. The screen looks like Figure 4.
It is best to enter the data and press the Down Arrow rather than <Enter>. Skip the cells in which you do not need to make entries. Press <Enter> when you wish to return to the main menu.

If you have several numbers which go into one category, use the "+" function. Begin with a "+" and type all the numbers to be added with plus symbols between them (no spaces). Then press the Down Arrow.

The application takes you to the cells which need entries. (On some computers, these unprotected cells will be green.) You will not be allowed to make entries in any cells where totals are required or formulas are inserted.

If you can access these protected cells, do not make entries or you will erase vital formulas. Simply press Alt and the letter T simultaneously to bring up the main menu. Select Enter Data to continue.

If you think you might have erased a formula, you will need to begin again. If you need to refer to figures you have typed in once (which will be erased when you begin again), you can copy them using the Print Screen function discussed in Step 1 of this section. To begin again, press Alt and the letter T simultaneously to bring up the main menu and select Quit. Then begin again by re-retrieving the application template from the hard disk (as described in the Section B of this Cookbook).

Although you are confined to column AF, you can go up the screen as well as down. The last entry you can make is in the cell beside AMOUNT WITHHELD. Then the application takes you to WAGES at the top of the data entry area again. You may want to review your information before proceeding to the next step.
Step 5. Calculating the Tax

Once you have entered the figures and double-checked them, you should calculate the tax. To do so, press <Enter> to bring up the main menu. Then select Calculate Tax. (You should always calculate the tax before you have the information moved to the next column.)

The application will allow you to view the amount calculated (see row entitled TOTAL TAXES in Figure 5). Press <Enter> to return to the main menu.

FIGURE 5

```
   AE237: [W27] "AMOUNT OF TAX:
Press the ENTER key to continue.

   AE  AF  AG  AN
200  Tax Planning Application
201  In Lotus 1-2-3
202  For:  EXAMPLE
203  
204  1040 CATEGORIES  Option 1
205  
206  227 AMOUNT OF TAX:  $2,229
228  235 CHILD CARE CREDITS:  $0
240  OTHER CREDITS:  $0
241  OTHER TAXES:  $0
242  TOTAL TAXES:  $2,229
243  AMOUNT WITHHELD:  $0
245  DIFFERENCE:  $2,229
246  
247  Tax Year 1987
248  Filing Status: Single
250  Number of Exempt:  1
19-Mar-88  11:16 PM  CMD  CAPS
```

Step 6. Beginning a New Option

At this point, you will probably wish to make changes in the first option so that you can make comparisons. To create a new option, select New Option on the main menu. You will be taken to the information screen which appears in Figure 6.

FIGURE 6

```
   AA55: [W72] -

50  INFORMATION ON DEVELOPING ANOTHER OPTION
51  
52  NOTE:  Once you have moved your figures to the right, you CANNOT make changes.
53  
54  Be sure you have thought of everything before you proceed.
55  
56  This process simply copies the numbers into the next column.  The original figures remain in place.  It is not necessary to retype the amounts that will not change.  Simply make adjustments in the categories you wish to modify.
57  
58  You can create up to three options.  If you would like more, print the options, save the information if you wish, and begin again by selecting that option on the main menu.
59  
60  Press ENTER to continue.
19-Mar-88  11:16 PM  CMD  CAPS
```
Press <Enter> to get rid of the instruction screen. You must now decide whether to continue with the new option or make changes on the previous one. Amounts which have been moved to the right can not be changed.

If you choose not to continue, type "N" in answer to the question "Is the information correct (Y or N)?" and <Enter>. Then select Enter Data on the main menu and make any adjustments to the amounts you have already typed in. If you are sure your amounts are correct, type "Y", <Enter>. Figure 7 gives you a general idea how the screen should look.

FIGURE 7

<table>
<thead>
<tr>
<th>AE200</th>
<th>[W27]</th>
<th>MEN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter Data</td>
<td>Calculate Tax</td>
<td>New Option</td>
</tr>
<tr>
<td>Enters data into 1040 categories.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AE</td>
<td>AP</td>
<td>AG</td>
</tr>
<tr>
<td>200</td>
<td>Tax Planning Application</td>
<td>In Lotus 1-2-3</td>
</tr>
<tr>
<td>201</td>
<td>For:</td>
<td>EXAMPLE</td>
</tr>
<tr>
<td>202</td>
<td>1040 CATEGORIES</td>
<td>Option 2</td>
</tr>
<tr>
<td>203</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 205 | INCOME: |
| 207 | Wages, Salaries $20,000 | $20,000 |
| 208 | Interest Income $250 | $250 |
| 209 | Dividend Income $30 | $30 |
| 210 | Capital Gains/Losses $0 | $0 |
| 211 | Other $0 | $0 |
| 212 | TOTAL INCOME: $20,350 | $20,380 |
| 213 | | | |
| 214 | ADJUSTMENTS TO INCOME: |
| 215 | IRA $500 | $500 |
| 216 | Other $0 | $0 |
| 217 | TOTAL ADJUSTMENTS: $500 | $500 |
| 218 | | | |
| 219 | ADJUSTED GROSS INCOME: $19,780 | $19,780 |
| 18-Mar-88 | 11:12 PM | CMU |

After you type "Y" in answer to the question about being ready to begin a new option, you will note that instructions or comments inserted into the data entry area have disappeared after you choose this option. Do not be alarmed; this is what is supposed to happen. The assumption is that once you have worked through an option, you will no longer need those prompts. The same logic used in the first option is repeated for all others.

Step 7. Changing Amounts in the New Option

Select Enter Data to make the changes. At this point, information screens begin to be repeated. Type <Enter> to proceed.

You do not need to retype amounts that do not change on subsequent options, but make sure you change those that need changing.
Step 8. Calculating Subsequent Options

As with the first option, you must calculate the tax on this and all other options after you have made changes. Repeat steps 6 through 8 until you have a maximum of three options on the screen.

Step 9. Printing the Information

Once the page is filled with options, you will probably want to print it. Make sure the printer is on. The application is designed to be printed on standard 8 1/2 by 11 paper. Select Print on the main menu.

You may print the information at any time (after first, second or third options are complete). It is important to remember that the end result of this application is a printed product. Saving the information on a floppy disk is not highly recommended because you could only revise one of the three options of the worksheet.

Step 10. Creating Four or More Options

If you have created three options, but would like to continue for the same client, or make computations for another client, you can do so by simply choosing Begin Again on the main menu. This returns you to Step 1 in Section C of this cookbook.

WARNING: Make sure you have printed previous information. It will be erased by the Begin Again selection.

Step 11. Quitting

The purpose of this application is to present a series of three printed options. Once you have those printed, you will probably want to quit. Select Quit on the main menu. The screen in Figure 8 will appear. Type "Y", <Enter> to quit, and then "E" for exit.
NOTE: As stated before, saving the information on a floppy disk is not highly recommended because you could only revise one of the three options of the worksheet. The Save option is available, through the Other selection on main menu.

OTHER FUNCTIONS AVAILABLE ON THE APPLICATION TEMPLATE

Other functions (that are not mentioned in earlier discussion) that might be useful in the course of using this application are:

Accessing Instructions

To pull up various instructions, select Other on the main menu and then Instructions on that menu. You will be given a third menu, listing all the instruction screens available. Select the one you wish to read.

Changing Filing Status

As discussed before, you can correct errors in filing status or make changes for different options by selecting Other on the main menu, and Change Filing Status on the other menu.

Saving Information

This function can be accessed through the Other option on the main menu and Save on the subsidiary menu. An instruction screen will appear. The presumption is that you will want to save to the A disk drive; you just name the file.
APPENDIX B

Spreadsheet Map
APPENDIX C

Specific Macros and Menus
These macros are presented in the order in which they can be accessed. Macro steps appear in column W. Explanations to the steps are listed in column Y. In some cases, not all of the step appears on the screen. Accessing unclear cells with the cell pointer will allow the full description to appear at the top of the screen.

Auto.execute  
{goto}INSTRUCTIONS{(?}  Pulls up instructions & pauses
/S {branch FILING.DATA1}  Goes to next branch

Filing.Data1  
{goto}AB1{(windowsoff){goto}AB12  Brings up filing block
"{goto}AB1{(goto)AB12"  Goes to blank space
To make a selection, use arrow and ENTEnters instructions
{windowsoff}  Turns screen off
{menubranch YEAR.MENU}  Goes to menu to choose year

First.Year  
{goto}TAX.YEAR"1987"  Enters year into cell
/cTAX.YEAR"YEAR"  Copies to section which prints
{goto}AB1{(windowson}  Brings up filing block
{goto}STATUS"  Prepares for next entry
{menubranch STATUS.MENU}  Goes to menu to choose status

Second.Year  
{goto}TAX.YEAR"1988"  Enters year into cell
/cTAX.YEAR"YEAR"  Copies to section which prints
{goto}AB1{(windowson}  Brings up filing block
{goto}STATUS"  Prepares for next entry
{menubranch STATUS.MENU}  Goes to menu to choose status

Single  
"Single"{windowsoff}  Enters status & turns off screen
{goto}CODE"1"  Enters code for stand.deduct
/cSTATUS"FILING.STATUS"  Copies area which prints
{goto}AB1{(goto)NUMBER"  Brings up filing block
(windowson}  Turns screen on
{menubranch EXEMPT.MENU}  Routes for exemption entry

House.Head  
"H. Household"{windowsoff}  Enters status & turns off screen
{goto}CODE"2"  Enters code for stand.deduct
/cSTATUS"FILING.STATUS"  Copies area which prints
{goto}AB1{(goto)NUMBER"  Brings up filing block
(windowson}  Turns screen on
{menubranch EXEMPT.MENU}  Routes for exemption entry
Married.Joint  "Married, Jnt."{windowsoff}  
{goto}CODE"3"  
/cSTATUS"FILING.STATUS"  
{goto}AB1"{goto}NUMBER"  
{menubranch EXEMPT.MENU}  
Enters status & turns off screen  
Enters code for stan. deduct  
Copies area which prints  
Brings up filing block  
Turns screen on  
Routes for exemption entry

Married.Separat"Married, Sepr."{windowsoff}  
{goto}CODE"4"  
/cSTATUS"FILING.STATUS"  
{goto}AB1"{goto}NUMBER"  
{menubranch EXEMPT.MENU}  
Enters status & turns off screen  
Enters code for stan. deduct  
Copies to area which prints  
Brings up filing block  
Turns screen on  
Routes for exemption entry

Filing.Data2  {goto}AB12" "  
{goto}NUMBER"  
{getnumber "Enter number of exemptions:"  
{branch ENTER.EXEMPT}  
Clears earlier instructions  
Goes to call in filing block  
Instructions; waits for response  
Goes to next branch

Enter.Exempt /cNUMBER"EXEMPTIONS"  
{goto}CLIENT"{windowsoff}  
{getlabel "Enter name of client: ",CLIENT}  
{windowsoff}  
/cCLIENT.NAME"CLIENT"  
{goto}CLIENT.NAME"  
{edit}{home}{del}" For: "  
{goto}AB1"{goto}CLIENT"  
{edit}{home}{del}""  
{goto}AB12"  
You will probably want to enter  
{goto}CLIENT"{windowsoff}  
{menubranch MAIN.MENU}  
Copies to area which prints  
Turns screen on  
Turns screen off  
Copies to filing block  
Goes to data area  
Edits info in data area  
Brings filing block back  
Edits filing block  
Goes to blank area  
Positions cell pointer  
Branches to main menu

Data.Entry  {goto}ENTER.DATA"{?}  
{goto}AE200"{goto}NUMBERS.ONE"  
/rBIG.SCREEN"  
{menubranch MAIN.MENU}  
Pulls up instructions; waits  
Pulls up data area  
Inputs data range; USER ENTERS INFO; returns to main menu

Calc.Tax  {goto}AE206"/wth  
{calc}{windowsoff}  
/rnROUTE"W101"  
{if INSERT.COUNT=0}{branch DELETE.TEXT}  
{goto}AE237"{windowsoff}  
{getlabel "Press the ENTER key to continue"}  
/wtc{goto}AE200"  
{if TAX.INC>ANT.MEASURE}{branch WARNING}  
{menubranch MAIN.MENU}  
Freezes titles  
Calculates tax  
Prepares for deletion of text  
Routes to delete text  
Positions screen; calculates  
Clears titles  
Returns to main menu
Delete.Text

{let INSERT.COUNT, INSERT.COUNT+1}
{goto}AE205
/wdr"/wdrr"/wdrr"/wdrr" {goto}AE221
/wdr"/wdrr"/wdrr"/wdrr" {goto}AE239
/wdr"/wdrr" {goto}AE246
{branch ROUTE}

Warning

{goto}AMT.WARNING"(?)
{goto}AE200
{menubranch MAIN.MENU}

Move.Command

{if OPTION.COUNT>1}{branch w121}
{goto}INSTRU.OPTIONS"(?)
{goto}AE200
{getlabel "Is the information correct? Y or N"}
(if C0NtINUE="Y"){branch DATA.ENTRY}{esc}
{let OPTION.COUNT, OPTION.COUNT+1}
{if OPTION.COUNT=1}{branch MOVE.RIGHT1}
{if OPTION.COUNT=2}{branch MOVE.RIGHT2}
{setlabel "All options filled; print & begin forms"}
{menubranch MAIN.MENU}

Move.Right1

{goto}AF204"(windowsoff)
/rv. (down 58)"(right). (down 58)"
/rncROUTE"W141"
{if INSERT.COUNT=0}{branch DELETE.TEXT}
{goto}AF204""Option 2"
{goto}AE200"(windowson)
{menubranch MAIN.MENU}

Move.Right2

{goto}AG204"(windowsoff)
/rv. (down 48)"(right). (down 48)"
{goto}AF204"(windowson)
/rv. (down 48)"(right). (down 48)"
{goto}AF204""Option 3"
{windowson}
{menubranch MAIN.MENU}

Activates counter
Goes to inserted instructions
Deletes instructions
Deletes instructions
Deletes instructions
Goes to inserted instructions
Deletes instructions
Goes to inserted instructions
Goes to inserted instructions
Activates counter
Goes to inserted instructions
Deletes instructions
Goes to inserted instructions
Deletes instructions
Routes to cell named earlier
Pulls up warning screen
Positions cell pointer & screen
Returns to main menu
Routes to branch based
Goes to instructions; waits
Returns to data area
Returns to data area
Activates counter
Routes to branch based
on counter
Returns to main menu
Sets pointer; Turns off screen
Copies AF column to AG
Prepares for deletion of text
Routes to delete text
Changes headings
Returns to data screen
Turns screen on
Returns to main menu
Positions pointer
Copies values
to next column
Prepares for next move
Copies values in AF to AG column
Changes column headings
Turns screen on
Returns to main menu
Print.Option
{getlabel "Is the printer on; paper lined

(Print.Option)

{if CONTINUE<>"Y"}{branch MAIN.MENU}{esc}

Print.Range

/rncROUTE"wi63"{getlabel "Turns screen off

{if INSERT.COUNT=0}{branch DELETE.TEXT}{esc}{goto}AE203"{getlabel "Prepares for deletion of text

/wir"/wir"/wir"/wir"{getlabel "Routes to delete text

(goto)AE204"{getlabel "Goes to area above column headings

/0PRINT.BLOCK"{getlabel "Inserts five rows

/ppcaom18"mr82"mt4"q{getlabel "Goes back up

rPRINT.RANGE"{getlabel "Copies filing info

agpq{getlabel "Resets margins

(goto)AE203"{getlabel "Programs printing instructions

/wdr"/wdr"/wdr"/wdr"{getlabel "Initiates printing

(windowson){getlabel "Returns to data area

{menubranch MAIN.MENU}{getlabel "Deletes five rows

Instruct.One
{getlabel "Returns to main menu

{goto}INSTRUCTIONS"(?)

{menubranch MAIN.MENU}{getlabel "Pulls up instructions; waits

Enter.Instruct
{getlabel "Returns to main menu

{goto}ENTER.DATA"(?)

{menubranch MAIN.MENU}{getlabel "Pulls up instructions; waits

Option.Instruct{getlabel "Returns to main menu

{goto}INSTRU.OPTIONS"(?)

{menubranch MAIN.MENU}{getlabel "Pulls up instructions; waits

Quit.Branch
{getlabel "Returns to main menu

{goto}QUIT.INSTR"(?)

{menubranch MAIN.MENU}{getlabel "Pulls up instructions; waits

Save.Branch
{getlabel "Returns to main menu

{goto}SAVE.INSTR"(?)

{menubranch MAIN.MENU}{getlabel "Pulls up instructions; waits

\\T{getlabel "Available in case of problems

{menubranch MAIN.MENU}{getlabel "

Quit
{getlabel "You have printed your data and Allows exit from macro

Puts up instructions

goto}{getlabel "Initiates exit

QUIT.INSTR"{getlabel "Initiates exit

/0qe{getlabel "Initiates exit

Save
{getlabel "Changes to A directory; waits

{goto}SAVE.INSTR"(?){getlabel "Pulls up instructions

/fs{getlabel "Initiates exit

{esc}{getlabel "Initiates exit

/qye{getlabel "Initiates exit

/qye
Begin.Again
{getlabel 'You are ready to erase the in Allows exit from macro
{if CONTINUE<>"Y"}{menu branch MAIN.MENU}
{window off}
/rnc ROUTE "H97"
{if INSERT.COUNT=0}{branch DELETE.TEXT}
{esc}{esc}
{goto}AF207 "0/c"{(down 4)}
{goto}AF215 "0"{(down)}
{goto}AF222 "0/c"{(down 9)}
{goto}AF239 "0"{(down 0}{(down)0}
{goto}AF244 "0"
{goto}AG204 "re.{down 46}{(right)}
{goto}AD4 "re.{down 3}"
{goto}AF204 "Option 1"
{goto}OPTION.COUNT "0"
{window on}
{branch \s}

Turns screen off
Prepares for deletion of text
Routes to delete text
Cancels previous instructions

Puts zeros in 1040 categories
Erases columns AG & AH
Clears filing block
Changes AF column heading
Resets counter
Turns screen on
Initiates autoexecute
Menus are more difficult to follow than simple macros, primarily because it is difficult to provide sufficient space for each option to read clearly. Put the cell pointer on the function or option you would like more fully explained, and the full contents of that cell will appear at the top of the screen.

This menu allows users a choice between tax years.

Year.Menu 1987 1988
Allows for calculation Allows for calculations based on 1988 tax rates.
{branch FIRST.YEAR} {branch SECOND.YEAR}

This menu allows users to choose between filing status options.

Status.Menu Single Head of Joint, Married, Separate
Records single taxpayer Records Records Records married, filing separate tax return status.
{branch SINGLE} {branch} {branch MARRIED.SEPARATE}

This menu allows users to choose number of personal exemptions.

Exempt.Menu 1 2 3 4 5 6 More than 6
Records one exemption. Records Records Records Records Allows for entering more than
{let NUMBER=1} {let NUM{1}let NUM{1}let NUM{1}let NUM{branch FILING.DATA2}
{branch ENTER.EXEMPT} {branch} {branch} {branch ENTER.EXEMPT}

This menu is the primary menu. The user will be able to access all template functions through use of this menu.

Main.Menu Enter Data CalculatNew OptiPrint Other Begin AgQuit
Enters data into 1040 CalculatPreparesPrints oRetrievesClears tQuits.
{branch DATA.ENTRY} {branch} {branch} {branch ENTER.EXEMPT}

This menu provides options which will be used less frequently.

Other.Menu Change filing status Instruct Save Return
Changes tax filing status Accesses saves returns to main menu.
{branch FILING.DATA1} {branch} MAIN.MENU

This menu provides access to all instruction screens.

Instr.Menu Instructions EnteringNew OptiQuittingSaving Return
Retrieves opening instruction screen Provides explains explains returns to main menu.
{branch INSTRUCT.ONE} {branch} {branch} MAIN.MENU
APPENDIX D

Tables Utilized in the Application Template
<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Income</th>
<th>Tax Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987.S</td>
<td>Single</td>
<td>0 + TAX.INC*0.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1800</td>
<td>198+0.15*(TAX.INC-1800)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16800</td>
<td>2448+0.28*(TAX.INC-16800)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>27000</td>
<td>5304+0.35*(TAX.INC-27000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54000</td>
<td>14754+0.385*(TAX.INC-54000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500000</td>
<td>14754+0.385*(TAX.INC-54000)</td>
</tr>
<tr>
<td><strong>1988</strong>.S</td>
<td>Single</td>
<td>0 + TAX.INC*0.15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17850</td>
<td>2677.5+0.28*(TAX.INC-17850)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500000</td>
<td>2677.5+0.28*(TAX.INC-17850)</td>
</tr>
<tr>
<td>1987.H</td>
<td>Head of Household</td>
<td>0 + TAX.INC*0.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2500</td>
<td>275+0.15*(TAX.INC-2500)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23000</td>
<td>3350+0.28*(TAX.INC-23000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38000</td>
<td>7550+0.35*(TAX.INC-38000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60000</td>
<td>22250+0.385*(TAX.INC-60000)</td>
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<tr>
<td></td>
<td></td>
<td>500000</td>
<td>22250+0.385*(TAX.INC-60000)</td>
</tr>
<tr>
<td><strong>1988</strong>.H</td>
<td>Single</td>
<td>0 + TAX.INC*0.15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>23900</td>
<td>3585+0.28*(TAX.INC-23900)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500000</td>
<td>3585+0.28*(TAX.INC-23900)</td>
</tr>
</tbody>
</table>

This tax table provides formulas for the calculation of taxes for SINGLE individuals in the 1987 tax year.

This tax table provides formulas for the calculation of taxes for people filing as HEAD OF HOUSEHOLD for the 1987 tax year.

This tax table provides formulas for the calculation of taxes for MARRIED couples filing JOINT returns in 1987.

This tax table provides formulas for the calculation of taxes for MARRIED couples filing SEPARATE returns in 1987.

This tax table provides formulas for the calculation of taxes for SINGLE individuals in the 1988 tax year.

This tax table provides formulas for the calculation of taxes for people filing as HEAD OF HOUSEHOLD for the 1988 tax year.
1988 JM INCOME TAX.FORMULA
0 +TAX.INC*0.15
29750 4462.5+0.28*(TAX.INC-29750)
500000 4462.5+0.28*(TAX.INC-29750)

This tax table provides formulas for the calculation of taxes for MARRIED couples filing JOINT returns in 1988.

1988 MS INCOME TAX.FORMULA
0 +TAX.INC*0.15
14875 2231.25+0.28*(TAX.INC-14875)
500000 2231.25+0.28*(TAX.INC-14875)

This tax table provides formulas for the calculation of taxes for MARRIED couples filing SEPARATE returns in 1988.

EXEMPT YEAR AMT TABLE
1987 1900
1988 1950
1989 2000

This table provides the amount for personal exemptions for each of the tax years listed.

PERCENT YEAR Amt. Allow. TABLE
1987 1
1988 0
1989 0

This table provides the percentage of personal interest allowed in each of these tax years.

NAME.TA8LE
1987 S.87 H.87 JM.87 MS.87
1988 S.88 H.88 JM.88 MS.88
1989 S.89 H.89 JM.89 MS.89

This table determines the amount of the standard deduction.

DEDUCTION.BLOCK
1987 2540 2540 3760 1880
1988 3000 4400 5000 2500
1989 0 0 0 0

This table determines at which point to warn of alternative minimum tax considerations.

AMT.TA8LE
112500 112500 150000 75000

This table determines the amount of the standard deduction.
APPENDIX E

Listing of Cell Names, Range Names & Coordinates
CELL NAMES, RANGE NAMES AND THEIR COORDINATES

ADJ AF221
AGI AF223
ALL.INSTRUCT M84
AMT.MEASURE D18
AMT.TABLE O28..R29
AMT.TAX AF245
AMT.WARNING AA124..AA143
AMT.WITH AF254
BEGIN.AGAIN H92
BIG.SCREEN AE200..AF258
BLANK D17
CALC.EXEMPT AF243
CALC.TAX W97
CC.CREDITS AF249
CLIENT AD7
CLIENT.NAME AF202
CODE D11
CONTINUE D5
DATA.ENTRY W91
DEDUCT.AMT D9
DEDUCTION.BLOCK N21..R23
DELETE.TEXT W108
DELETE.TEXT1 W108
DELETE.TEXT2 P123
ENTER.DATAA AA34..AA35
ENTER.EXEMPT W76
ENTER.INSTRUCT W179
EXEMPT.AMT D6
EXEMPT.MENU M61
EXEMPT.TABLE H76..I78
EXEMPTIONS AF262
FILING.BLOCK AC1..AD8
FILING.DATA1 W17
FILING.DATA2 W70
FILING.STATUS AF261
FIRST.YEAR W24
FORMULA D8
H.87 H23..I28
H.88 H56..I58
HOUSE.HEAD W46
INSERT.COUNT D19
INSTR.MENU M84
INSTRU.OPTIONS AA59..AA77
INSTRUCT.ONE W175
INSTRUCTIONS AA11..AA30
IT.DEDUCT AF240
JM.87 H32..I37
APPENDIX F

Listing of Cell Formulas
This is the group of variables as they appear in the program.

Continue    y
Exempt.Amt   ERR
Table.Name   ERR
Formula      ERR
Deduct.Amt   ERR
Option.Count 0
Code         1
Personal Int. Percentage ERR
Medical Deduct. 0
Misc.Deduct 0
Misc.Calc 0
Blank       
AMT.Measure 112500
Insert.Count 1

The following is the same group of variables, after the Range-Format-Text function has been used to display the formulas.

Continue    y
Exempt.Amt   @VLOOKUP(YEAR,EXEMPT.TABLE,1)
Table.Name   @VLOOKUP(YEAR,NAME.TABLE,CODE)
Formula      @VLOOKUP(TAX.INC,@@(TABLE.NAME),1)
Deduct.Amt   @IF(IT.DEDUCT>STAN.DEDUCT,IT.DEDUCT,STAN.DEDU)
Option.Count 0
Code         1
Personal Int. Percentage @VLOOKUP(YEAR,PERCENT.TABLE,1)
Medical Deduct. @IF(M&D.AMT>0.075*AGI,M&D.AMT-0.075*AGI,0)
Misc.Deduct  @IF(MISC.CALC>0,MISC.CALC,0)
Misc.Calc    +MISCELL-AGI*0.02
Blank       
AMT.Measure  @HLOOKUP(CODE,AMT.TABLE,1)
Insert.Count 1
# 1040 CATEGORIES

**INCOME:**
- Wages, Salaries: 0
- Interest Income: 0
- Dividend Income: 0
- Capital Gains/Losses: 0
- Other: 0
- **TOTAL INCOME:** \[@\text{SUM}(AF207..AF211)\]

**ADJUSTMENTS TO INCOME:**
- IRA: 0
- Other: 0
- **TOTAL ADJUSTMENTS:** \[@\text{SUM}(AF215..AF216)\]

**ADJUSTED GROSS INCOME:** +TOTAL.INC-ADJ

**ITEMIZED DEDUCTIONS:**
- Medical & Dental: 0
- State Income Taxes: 0
- Real Estate Taxes: 0
- Other Taxes: 0
- Home Mortgage Interest: 0
- Personal Interest: 0
- Contributions: 0
- Casualty Losses: 0
- Moving Expenses: 0
- Misc. Deductions: 0
- **TOTAL IT. DEDUCTIONS:** +M&D.DEDUCT+AF223+AF224+AF225+AF226 \(*\)

**STANDARD DEDUCTIONS:** \[@\text{VLOOKUP}(\text{YEAR},\text{DEDUCTION.BLOCK},\text{CODE})\]

**EXEMPTIONS:** +EXEMPTIONS*EXEMPT.AMT

**TAXABLE INCOME:** +AGI-DEDUCT.AMT-CALC.EXEMPT

**AMOUNT OF TAX:** +FORMULA

**CHILD CARE CREDITS:** 0

**OTHER CREDITS:** 0

**OTHER TAXES:** 0

**TOTAL TAXES:** +AMT.TAX+OTHER.TAX-OTHER.CRED-CC.CREDITS

**AMOUNT WITHHELD:** $0

**DIFFERENCE:** +TOTAL.TAX-AMT.WITH

* Formula in its entirety: 
+M&D.DEDUCT+AF223+AF224+AF225+AF226+PERCENT*PERS.INT+AF228+AF229 +MISC.DEDUCT
APPENDIX G

Example of Data Input Area
Tax Planning Application
In Lotus 1-2-3
For:

1040 CATEGORIES          Option 1

Let the computer work for you. If you have a group of numbers that need to be totalled for one category, use the + function (see Cookbook).

INCOME:
Wages, Salaries $0
Interest Income $0
Dividend Income $0
Capital Gains/Losses $0
Other $0
TOTAL INCOME: $0

ADJUSTMENTS TO INCOME:
IRA $0
Other $0
TOTAL ADJUSTMENTS: $0

ADJUSTED GROSS INCOME: $0

Enter all itemized deductions at full amounts. Percentages will be calculated where necessary. The application will subtract the greater of itemized or standard deductions.

ITEMIZED DEDUCTIONS:
Medical & Dental $0
State Income Taxes $0
Real Estate Taxes $0
Other Taxes $0
Home Mortgage Interest $0
Personal Interest $0
Contributions $0
Casualty Losses $0
Moving Expenses $0
Misc. Deductions $0
TOTAL IT. DEDUCTIONS ERR

STANDARD DEDUCTIONS: ERR

EXEMPTIONS: ERR

TAXABLE INCOME: ERR

AMOUNT OF TAX: ERR

Enter the following credits & other taxes at NET amounts.

CHILD CARE CREDITS: $0
OTHER CREDITS: $0
OTHER TAXES: $0
TOTAL TAXES: ERR

AMOUNT WITHHELD: $0
DIFFERENCE: ERR
APPENDIX H

Example of Final Product
<table>
<thead>
<tr>
<th>Tax Planning Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Lotus 1-2-3</td>
</tr>
<tr>
<td>For: EXAMPLE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>1988</th>
<th>1987</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filing Status</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
</tr>
<tr>
<td>Number of Exempt.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**1040 CATEGORIES**

<table>
<thead>
<tr>
<th></th>
<th>Option 3</th>
<th>Option 2</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCOME:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wages, Salaries</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Interest Income</td>
<td>$250</td>
<td>$250</td>
<td>$250</td>
</tr>
<tr>
<td>Dividend Income</td>
<td>$30</td>
<td>$30</td>
<td>$30</td>
</tr>
<tr>
<td>Capital Gains/Losses</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL INCOME:</strong></td>
<td>$25,280</td>
<td>$25,280</td>
<td>$20,280</td>
</tr>
</tbody>
</table>

| ADJUSTMENTS TO INCOME: | | | |
| IRA | $500 | $500 | $500 |
| Other | $0 | $0 | $0 |
| **TOTAL ADJUSTMENTS:** | $500 | $500 | $500 |

| **ADJUSTED GROSS INCOME:** | $24,780 | $24,780 | $19,780 |

| ITEMIZED DEDUCTIONS: | | | |
| Medical & Dental | $200 | $200 | $200 |
| State Income Taxes | $500 | $500 | $500 |
| Real Estate Taxes | $0 | $0 | $0 |
| Other Taxes | $0 | $0 | $0 |
| Home Mortgage Interest | $0 | $0 | $0 |
| Personal Interest | $50 | $50 | $50 |
| Contributions | $300 | $300 | $300 |
| Casualty Losses | $0 | $0 | $0 |
| Moving Expenses | $0 | $0 | $0 |
| Misc. Deductions | $0 | $0 | $0 |
| **TOTAL IT. DEDUCTIONS** | $820 | $833 | $833 |

| STANDARD DEDUCTIONS: | | | |
| EXEMPTIONS: | | | |
| TAXABLE INCOME: | $19,830 | $20,340 | $15,340 |
| AMOUNT OF TAX: | $3,232 | $3,439 | $2,229 |
| CHILD CARE CREDITS: | $0 | $0 | $0 |
| OTHER CREDITS: | $0 | $0 | $0 |
| OTHER TAXES: | $0 | $0 | $0 |
| **TOTAL TAXES:** | $3,232 | $3,439 | $2,229 |
| AMOUNT WITHHELD: | $0 | $0 | $0 |
| **DIFFERENCE:** | $3,232 | $3,439 | $2,229 |
APPENDIX I

Test Data
TEST DATA

The following test data has been provided to assure that the application template is working correctly. In all cases, the general information which will need to be typed in is located in the left-hand column. The figures with which you compare the results (after choosing the calculation option on the main menu) are located in the column on the right.

For the 1987 and 1988 tax years, the same information will be repeated, but the amount of total taxes will differ.

The same test data is presented in a different format on the following pages.

Test Cases 1 and 2: Single Person, 1 Exemption

General information:
Wages: $20,000
Interest Income: 250
No itemized deductions, no IRA, and no credits or other taxes

Case 1: Total Taxes 1987 $2,300
Case 2: Total Taxes 1988 $2,295

Test Cases 3 and 4: Head of Household Filing Status, 2 Exemptions

General information:
Wages: $25,000
Interest Income: 500
IRA: 1,000
Med. Deduct.: 200
State Taxes: 800
Personal Int.: 480
Contributions: 300
No credits or other taxes

Case 3: Total Taxes 1987 $2,624
Case 4: Total Taxes 1988 $2,430

Test Cases 5 and 6: Married, Joint Return, 4 Exemptions

General Information:
Wages: $45,000
Interest: 1,500
IRA: 1,000
Med. Deduct: 400
State Taxes: 1,700
Mortgage: 3,600
Personal Int.: 500
Contributions: 1,000
Child Care Credit: 200

Case 5: Total Taxes 1987 $4,797
Case 6: Total Taxes 1988 $4,669
Test Cases 7 and 8: Married, Separate Return, 2 Exemptions

General Information:
Wages: $30,000
Interest: 750
No itemized deductions, no IRA, and no credits or other taxes

Case 7: Total Taxes 1987
$5,320

Case 8: Total Taxes 1988
$4,884
## Tax Planning Application

### In Lotus 1-2-3

**For:** Test SINGLE

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>1988</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filing Status</td>
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<td>Single</td>
</tr>
<tr>
<td>Number of Exempt.</td>
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<td>1</td>
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### 1040 CATEGORIES

<table>
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<tr>
<th>Option</th>
<th>2</th>
<th>1</th>
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</table>

### INCOME:

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<th>1988</th>
<th>1987</th>
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</thead>
<tbody>
<tr>
<td>Wages, Salaries</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Interest Income</td>
<td>$250</td>
<td>$250</td>
</tr>
<tr>
<td>Dividend Income</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Capital Gains/Losses</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL INCOME:</strong></td>
<td><strong>$20,250</strong></td>
<td><strong>$20,250</strong></td>
</tr>
</tbody>
</table>

### ADJUSTMENTS TO INCOME:

<table>
<thead>
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<th>Category</th>
<th>1988</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRA</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL ADJUSTMENTS:</strong></td>
<td><strong>$0</strong></td>
<td><strong>$0</strong></td>
</tr>
</tbody>
</table>

### ADJUSTED GROSS INCOME:

- **$20,250**

### ITEMIZED DEDUCTIONS:

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<tr>
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<th>1988</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical &amp; Dental</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>State Income Taxes</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Real Estate Taxes</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other Taxes</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Home Mortgage Interest</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Personal Interest</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Contributions</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Casualty Losses</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Moving Expenses</td>
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<td>$0</td>
</tr>
<tr>
<td>Misc. Deductions</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL IT. DEDUCTIONS:</strong></td>
<td><strong>$3,000</strong></td>
<td><strong>$2,540</strong></td>
</tr>
</tbody>
</table>

### STANDARD DEDUCTIONS:

- **$1,950**

### TAXABLE INCOME:

- **$15,300**

### AMOUNT OF TAX:

- **$2,295**

### CHILD CARE CREDITS:

- **$0**

### OTHER CREDITS:

- **$0**

### OTHER TAXES:

- **$0**

### TOTAL TAXES:

- **$2,295**

### AMOUNT WITHHELD:

- **$0**

### DIFFERENCE:

- **$2,295**
**Tax Planning Application**  
**In Lotus 1-2-3**  
**For: Test HOUSEHOLD**

**Tax Year:** 1988  
**Filing Status:** H. Household  
**Number of Exempt:** 2

<table>
<thead>
<tr>
<th><strong>1040 CATEGORIES</strong></th>
<th><strong>Option 2</strong></th>
<th><strong>Option 1</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INCOME:</strong></td>
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<td></td>
</tr>
<tr>
<td>Wages, Salaries</td>
<td>$25,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>Interest Income</td>
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</tr>
<tr>
<td>Dividend Income</td>
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<td>$0</td>
</tr>
<tr>
<td>Capital Gains/Losses</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Other</td>
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<td>$0</td>
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<td><strong>ADJUSTMENTS TO INCOME:</strong></td>
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<td></td>
</tr>
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<td>IRA</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Other</td>
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<td>$0</td>
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<td><strong>TOTAL ADJUSTMENTS:</strong></td>
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<td>$1,000</td>
</tr>
<tr>
<td><strong>ADJUSTED GROSS INCOME:</strong></td>
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<td>$24,500</td>
</tr>
<tr>
<td><strong>ITEMIZED DEDUCTIONS:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical &amp; Dental</td>
<td>$200</td>
<td>$200</td>
</tr>
<tr>
<td>State Income Taxes</td>
<td>$800</td>
<td>$800</td>
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<tr>
<td>Real Estate Taxes</td>
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<tr>
<td>Other Taxes</td>
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<tr>
<td>Home Mortgage Interest</td>
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<td>$300</td>
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<tr>
<td>Moving Expenses</td>
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<td>$0</td>
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<tr>
<td>Misc. Deductions</td>
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<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL IT. DEDUCTIONS</strong></td>
<td>$1,292</td>
<td>$1,412</td>
</tr>
<tr>
<td><strong>STANDARD DEDUCTIONS:</strong></td>
<td>$4,400</td>
<td>$2,540</td>
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<td><strong>EXEMPTIONS:</strong></td>
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<td>$3,800</td>
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<td><strong>TAXABLE INCOME:</strong></td>
<td>$16,200</td>
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<td><strong>AMOUNT OF TAX:</strong></td>
<td>$2,430</td>
<td>$2,624</td>
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<td><strong>CHILD CARE CREDITS:</strong></td>
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</tr>
<tr>
<td><strong>OTHER CREDITS:</strong></td>
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<tr>
<td><strong>OTHER TAXES:</strong></td>
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</tr>
<tr>
<td><strong>TOTAL TAXES:</strong></td>
<td>$2,430</td>
<td>$2,624</td>
</tr>
<tr>
<td><strong>AMOUNT WITHHELD:</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>DIFFERENCE:</strong></td>
<td>$2,430</td>
<td>$2,624</td>
</tr>
</tbody>
</table>
**Tax Planning Application**  
*In Lotus 1-2-3*  
For:  Test JOINT

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>1988</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filing Status</td>
<td>Married, Jnt.</td>
<td>Married, Jnt.</td>
</tr>
<tr>
<td>Number of Exempt.</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

**1040 CATEGORIES**  
*Option 2*  
*Option 1*

**INCOME:**
- **Wages, Salaries**  
  - 1988: $45,000  
  - 1987: $45,000
- **Interest Income**  
  - 1988: $1,500  
  - 1987: $1,500
- **Dividend Income**  
  - 1988: $0  
  - 1987: $0
- **Capital Gains/Losses**  
  - 1988: $0  
  - 1987: $0
- **Other**  
  - 1988: $0  
  - 1987: $0

**TOTAL INCOME:**  
- 1988: $46,500  
- 1987: $46,500

**ADJUSTMENTS TO INCOME:**
- **IRA**  
  - 1988: $1,000  
  - 1987: $1,000
- **Other**  
  - 1988: $0  
  - 1987: $0

**TOTAL ADJUSTMENTS:**  
- 1988: $1,000  
- 1987: $1,000

**ADJUSTED GROSS INCOME:**  
- 1988: $45,500  
- 1987: $45,500

**ITEMIZED DEDUCTIONS:**
- **Medical & Dental**  
  - 1988: $400  
  - 1987: $400
- **State Income Taxes**  
  - 1988: $1,700  
  - 1987: $1,700
- **Real Estate Taxes**  
  - 1988: $0  
  - 1987: $0
- **Other Taxes**  
  - 1988: $0  
  - 1987: $0
- **Home Mortgage Interest**  
  - 1988: $3,600  
  - 1987: $3,600
- **Personal Interest**  
  - 1988: $500  
  - 1987: $500
- **Contributions**  
  - 1988: $1,000  
  - 1987: $1,000
- **Casualty Losses**  
  - 1988: $0  
  - 1987: $0
- **Moving Expenses**  
  - 1988: $0  
  - 1987: $0
- **Misc. Deductions**  
  - 1988: $0  
  - 1987: $0

**TOTAL IT. DEDUCTIONS**  
- 1988: $6,500  
- 1987: $6,625

**STANDARD DEDUCTIONS:**  
- 1988: $5,000  
- 1987: $3,760

**EXEMPTIONS:**  
- 1988: $7,800  
- 1987: $7,600

**TAXABLE INCOME:**  
- 1988: $31,200  
- 1987: $31,275

**AMOUNT OF TAX:**  
- 1988: $4,869  
- 1987: $4,997

**CHILD CARE CREDITS:**  
- 1988: $200  
- 1987: $200

**OTHER CREDITS:**  
- 1988: $0  
- 1987: $0

**OTHER TAXES:**  
- 1988: $0  
- 1987: $0

**TOTAL TAXES:**  
- 1988: $4,669  
- 1987: $4,797

**AMOUNT WITHHELD:**  
- 1988: $0  
- 1987: $0

**DIFFERENCE:**  
- 1988: $4,669  
- 1987: $4,797
### Tax Planning Application

**In Lotus 1-2-3**

**For:** Test SEPERATE

<table>
<thead>
<tr>
<th>Income</th>
<th>Option 2</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wages, Salaries</strong></td>
<td>$30,000</td>
<td>$30,000</td>
</tr>
<tr>
<td><strong>Interest Income</strong></td>
<td>$750</td>
<td>$750</td>
</tr>
<tr>
<td><strong>Dividend Income</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Capital Gains/Losses</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL INCOME:</strong></td>
<td>$30,750</td>
<td>$30,750</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adjustments to Income</th>
<th>Option 2</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRA</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL ADJUSTMENTS:</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

| Adjusted Gross Income | $30,750 | $30,750 |

<table>
<thead>
<tr>
<th>Itemized Deductions</th>
<th>Option 2</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medical &amp; Dental</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>State Income Taxes</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Real Estate Taxes</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Other Taxes</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Home Mortgage Interest</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Personal Interest</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Contributions</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Casualty Losses</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Moving Expenses</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Misc. Deductions</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL IT. DEDUCTIONS</strong></td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

**STANDARD DEDUCTIONS:**

| Exemptions | $3,900 | $3,800 |

**TAXABLE INCOME:**

| Amount of Tax | $24,350 | $25,070 |

**Child Care Credits:**

| Amount Withheld | $0 | $0 |

**Total Taxes:**

| Difference | $4,884 | $5,320 |
APPENDIX J

Updating the Tax Tables
UPDATING THE TAX TABLES (for 1989)

The steps listed below affect changes in the variables (amount of exemptions, deductions, tax formulas, and the percentage for calculating personal interest) which are dependent on tax year.

CAUTION: The internal mechanics of changing table names (such as S.87, H.87, etc.) or changing the names of defined ranges will not be necessary, and should not be attempted.

Step 1. Accessing the Template

Enter the template application following Cookbook instructions (Sections A and B). Leave the macro-guided data entry process by holding down CTRL while pressing BREAK, and then press ESC. You are now out of the macros. Press HOME to confirm this and to view the directory.

Step 2. Making the Changes

A. Using the F5 (goto) key, go to YEAR.MENU. (You do not have to look up the exact coordinates; just type in the name of the cell, including the period, and ENTER.) In cell M47, change 1987 to 1989 using the F2 (edit) key.

B. Using F5, go to FIRST.YEAR. In cell W24, change 1987 to 1989 using the F2 (edit) key.

C. Using F5, go to DEDUCTION.BLOCK; add 1989 figures.

D. Using F5, go to the following tables, and change the limits and formulas from 1987 amounts to 1989 amounts:
   S.87 - table for single filing status
   H.87 - table for head of household status
   JM.87 - table for married, joint status
   MS.87 - table for married, separate status

Step 3. Saving the Update

After the changes have been made, you will need to save them. To do so, type the following characters:
   / - to pull up the Lotus menu
   f - to select File
   s - to select Save
   TAX-PLAN <Enter> - TAX-PLAN.WK1 will appear on the screen
   R - to replace

Step 4. Exiting the Template

   / - to pull up the Lotus menu
   q - to Quit
   Y - to confirm
   e - to exit