PerfectShot Trap and Skeet League Manager

By

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Dedication

I would like to dedicate this project and paper to Pamela Bowman. The time I spent on this project had to come from some other part of my life and her patience and understanding in my absences fill me with a sense of wonder and awe, not to mention guilt. I also want to thank her for her advice on algorithm building and her insights into code structures, without her help this project would never have been completed.

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Abstract

The competitive nature of team sports requires the collection and tracking of game statistics in order to provide not only comparisons of scores to determine the winner of a game, but also to compare individual team member performance. Football, baseball, hockey, bowling, and many other games generate statistics that had been tracked and calculated by hand. With the widespread availability of computers, software programs have been created to track and calculate team and individual statistics for league and tournament play for different sports. This document reviews the design and creation of a software package to track and calculate team and individual statistics for the sport of trap and skeet shooting. It addresses the need for such a package, requirements of the software, cost analysis of design and programming, the structure of the program, and how the program objectives were met.

PerfectShot: Trap and Skeet League Manager

1. Problem Statement

Before the computers, performance statistics had been tracked and calculated by hand. With the widespread availability of computers, a market for software that would do the calculations and keep track of statistics was opened. Several software packages are available for a number of team or individual sports. *WinBowl Tenpin League Manager* for bowling leagues, *Golf-IT* for small golf leagues, *Baseball StatWiz 2000* for baseball teams, *Tennis Captain* for tennis leagues, *Golden Goal* for soccer leagues, and *SNAPSHOT! Hockey Statistics Manager* for hockey leagues are only a few of the programs available to aid the league manager in tracking a teams' and individual's performance throughout a league season. (2)

Research shows that there are few specific programs available for the sport of trap and skeet shooting. Using the World Wide Web and most of the available search engines (Go, Yahoo, WebCrawler, Lycos, AltaVista, MSN Search) to search for commercially available software for this sport ended in zero results. Using the keywords of SKEET, TRAP, LEAGUE, and SOFTWARE produces results that include games, league software for other sports, Web sites for skeet shooting clubs and the celebrity Skeet Ulrich.

However, a search on Google.com resulted in four Web site matches for skeet software that was not game oriented. One site apparently belonged to a University of North Carolina student who did a similar project. Unfortunately, this site and one other were no longer available. The other two Web sites eventually led to the same web site through a chain of links. This Web site, http://www.skeetsoftware.com, belongs to

Michael Valerio who has written a software package specifically for tracking skeet tournament results, including the calculation of prize money won by each team and shooter. This program was written using Visual Basic 6.0 as a front-end interface for a Visual Fox-Pro application. (8) Although this program incorporated the goals capabilities planned for this project, it was written specifically for tournament play not league play and, therefore, does not meet the needs of a user organizing a league.

Interviews with local, state, and national skeet shooting organizations have shown that such a software package is not in general or widespread use. According to Don Snyder of the National Skeet Shooting Association, most league managers use personally created spreadsheet programs to record and track league statistics. (7) While this may be sufficient for some people, other people may not know how to create spreadsheets or program macros to calculate the required statistics. Thomas Niner, who runs a skeet league at a small trap and skeet range in northern Ohio, states that he has created a Lotus spreadsheet for his league, but it causes memory resource problems with his computer as the size or number of leagues increase. (6) As an accepted Olympic level sport, skeet shooting is gaining in popularity throughout the United States. In 1999, surveys by the National Skeet Shooting Association and the Amateur Trapshooting Association showed that they were 2 million skeet shooters and 3 million trap shooters in the United States and Canada. (7) With skeet leagues being formed at all times of the year, the need for a user friendly program to aid the league manager in tracking league and match results seems apparent.

2. Proposed Solution

To solve this problem I designed and created a software package to fulfill the needs of the average league manager in tracking league match results and calculating statistics such as handicaps and league leaders. Users targeted by such a program are trap and skeet range managers, league organizers, league managers, league record keepers, and shooters wishing to track league results on their own. This program required specific guidelines and goals. Thomas Niner provided a list of requirements that such a program should meet and which I used as the basis of my program design.

According to Mr. Niner, the program must:

- Provide capability to store individual scores
- Provide capability to store team scores
- Provide team and individual relationship
- Provide capability to calculate handicaps where required
- Provide capability to schedule league matches throughout the league season
- Allow individuals to belong to more than one league
- Provide capability to print league schedules, match results, and league standings
- Provide capability to store individual contact information. (6)

To meet these requirements, the program was constructed as an interface for a Microsoft Access database. The database provides an organizational format and storage capability for league data. The interface, through use of the ADO commands, interacts and manipulates the database, which enables the user to enter, edit, and display data as needed. Use of the database satisfies the need to store individual contact information, individual scores, team scores, individual and team relationships, league schedules, and handicaps.

The interface was written using Microsoft Visual Basic 6.0 and provides the ability, via ADO commands, to enter individual data and team data into the database. It

also provides the capability to recall, display, and print data as requested by the user (league standings, individual scores, team scores, average scores, team members, etc.). In addition, the interface provides the calculation function for handicaps, shooter statistics, league leaders, and the league schedule.

2.1 User Profile

The intended target audience for this software package is the three million trap and skeet shooters in North America. This program is intended for use by those who manage or perform statistician's duties (such as league secretaries) for local trap and skeet shooting leagues. The level of computer literacy the targeted users possess should, at a minimum, be the ability to install, understand, and work with graphical user interface programs. In many cases, the users' proficiency levels may exceed this minimum requirement, but the focus is to provide to targeted users who use desktop computing systems a software package that is intuitive and simple to use.

2.2 Design Protocols

2.2.1 Interface

The software package is designed around a standard user interface found in most Windows-compatible programs. By using command buttons and drop-down menus on the displayed forms, the user is able to navigate to other forms that display data, generate programmed responses, apply calculating criteria, manipulate data, and store any changes made to the data. Execution of this project was on a Microsoft Windows 2000 Professional platform using Microsoft Access 2000 and Microsoft Visual Basic 6.0 Enterprise Edition. Hardware consists of an AMD Duron 700 MHz computer with 128 MB RAM. The hardware and software platform were chosen for speed, cost, availability,

and reliability. The programming environment and database program were chosen for familiarity, availability and ease of use.

2.2.2 Graphical Symbols

The use of graphical symbols as key points of interaction is minimized within this product with the following exceptions:

1) <<, <, >, >>: These symbols are used as shooter record navigation icons within the Shooter Information module of the program, allowing the user to move forward or backward through the records or jump to the first or last record as needed.

2) <<, <, >, >>: Within the Edit Team, Create Team, Edit League, and Create League modules, these symbols provide shooter or team assignment capabilities by moving selected shooters or teams from one list to another or by moving all list members from one list to another

3) Toolbar Icons: Standard toolbar icons (such as Print, New File, and Open File) are used and retain the same meaning and function as found in most Windows-compatible programs.

2.2.3 Color Scheme

A standard Windows color scheme is used. Form foreground and background colors are black and light gray, respectively. Highlighting and title bar colors are determined by the user's desktop setting.

2.2.4 Help System

A help system (available through the "Help" drop-down menu on the main form) is provided to aid new users in creating leagues, teams, players, generating match schedules, entering scores, editing scores, applying handicaps, displaying shooter, team, league, scoring, and scheduling data.

2.2.5 Program Organization

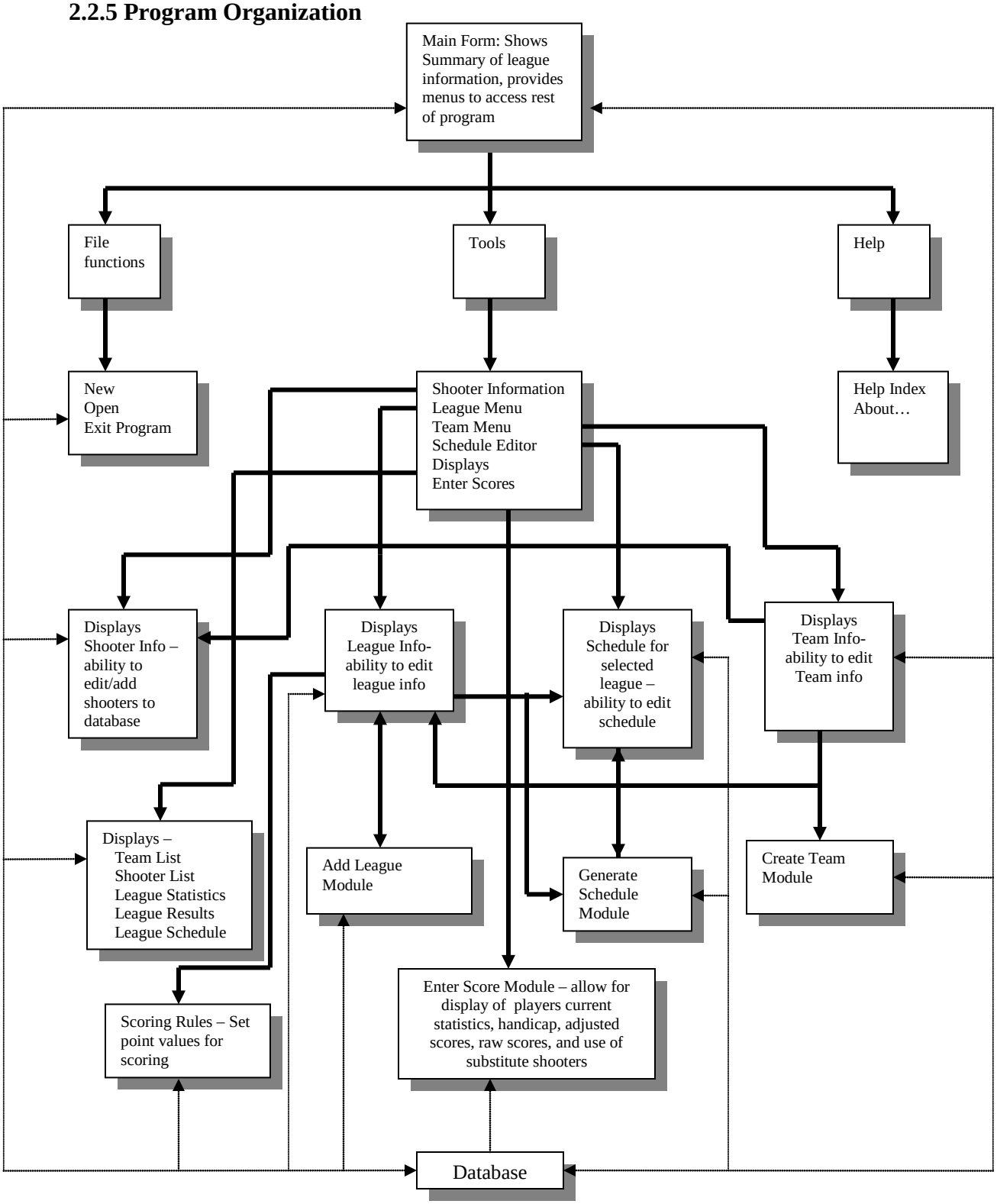


Figure 1. Program Organization

3. Deliverables

Using Mr. Niner's recommendations as a guideline, the final product meets or exceeds the following criteria and functionalities:

1. Possesses full access to custom designed database containing the following the tables and data
    a. ShooterData Table
        1. Shooter ID (Primary Key)
        2. First Name
        3. Last name
        4. Street Address
        5. City
        6. State
        7. ZIP Code
        8. Phone Number
        9. Email Address
        10. Emergency Contact Name
        11. Emergency Contact Phone Number
    b. LeagueData Table
        1. League ID (Primary Key)
        2. League Name
        3. Skeet (Yes/No)
        4. Trap (Yes/No)
        5. League Duration
        6. Total Number of Matches
        7. Handicap Variable
        8. Number of Targets
        9. Maximum Handicapped Score
        10. Trap Points
        11. Skeet Points
        12. Birds Points
        13. Bye Points
        14. Tie Points
    c. TeamData Table
        1. Team ID (Primary Key)
        2. Team Name
        3. League ID (Foreign Key for associative purposes)
        4. Total Points
        5. Total Birds
    d. ShooterTeamData (Correlates a Shooter with a Team)
        1. Shooter ID
        2. Team ID
        3. Current Handicap
        4. Average
        5. Total Birds

e. ScheduleData Table
    1. League ID
    2. Team1 ID
    3. Team2 ID
    4. Week Number
    5. Date ID
f. ScoreData Table
    1. League ID
    2. Team ID
    3. Shooter ID
    4. Trap Score
    5. Skeet Score
    6. Handicapped Trap Score
    7. Handicapped Skeet Score
    8. Date ID
g. DateData Table
    1. Date ID (Primary Key)
    2. Date
    3. League ID
h. TeamTotal Table
    1. Team ID
    2. Date ID
    3. Trap Total
    4. Skeet Total

2. Provides a visual interface built using Visual Basic 6.0 that has the following functionality:
    a. Summary Screen
        1. Provides a quick summary of league name, handicap, type, and duration (should be league selectable)
        2. Provides a quick list of Teams associated with each League, Shooters associated with each Team, and address of Shooter when League, Team, and Shooter are selected respectively
        3. Provides drop-down menus to provide access to more functionality modules: Edit/Create League, Edit/Create Team, Shooter Information, Enter/Edit Scores, and Edit/Display Schedule
    b. Edit/Create League Module allows user to:
        1. Create a new League by providing functionality to add new league name, type, duration, matches, and handicap to database
        2. Access Edit Teams module to allow for assignment of teams to new league or to change existing leagues' team composition
        3. Edit existing league information (league name, type, duration, handicap, and total matches) and save those changes to the database
        4. Provide access to Schedule Generator and Edit/Display Schedule Modules

c. Edit/Create Team Module allows user to:
    1. Edit team name and shooter composition (including adding and/or removing shooters) and save these changes to the database
    2. Add a new team to the database and associate shooters to that team within the database
    3. Select league and view teams and shooters associated with that league
d. Shooter Information allows the user to:
    1. Browse through the database collection of shooters and view all personal information associated with that shooter (name, address, phone number, emergency contact information) except for league/team/score information to allow for the possibility that shooters may members of more than one team or league
    2. Edit shooter information and save changes to the database
    3. Add new shooters to the database (including all required information)
e. Schedule Editor Module allows the user to:
    1. Adjust the selected league's schedule by changing match dates
    2. Adjust the selected league's schedule by changing team match ups
    3. Save any changes to the database
    4. Display the selected league's schedule
f. Enter/Edit Score Module allows the user to:
    1. Enter scores for matches by selecting league, team, shooter and match date
    2. View entered scores as Raw score and as adjusted by Handicap
    3. Change Handicap variable
    4. Display shooter scores for current league
g. Display Module allows the user to:
    1. View the schedule for a selected league
    2. View team and shooter standings and statistics for a selected league (team rankings, best scores, best/worst team score, average team score, last match shooter performance)
    3. View score history for entire league ordered by teams and shooters (placement determined by current standing within the league)
    4. Select a time frame for these views
    5. Print these views
    6. Save these views to a text file

4. Design and Development

This program was developed using Microsoft Visual Basic 6.0 as the code base for the interface and Microsoft Access 2000 for the database design. The interface forms and controls are totally unbound and the database is accessed using ADO command code.

This design was implemented to allow the prospective user to store the database in any location, either another directory or a floppy disk. This allows the user to install the program on different systems and to move the database between both platforms if desired. Appendix A. presents budget considerations for this program. Appendix B. lists the scheduled followed in the development of this program. Appendices C. and D. present the software and hardware used for development respectively.

5. Proof of Design

5.1 Database

The database created with Microsoft Access 2000 consists of the tables, fields, and relationships shown in Figure 2.

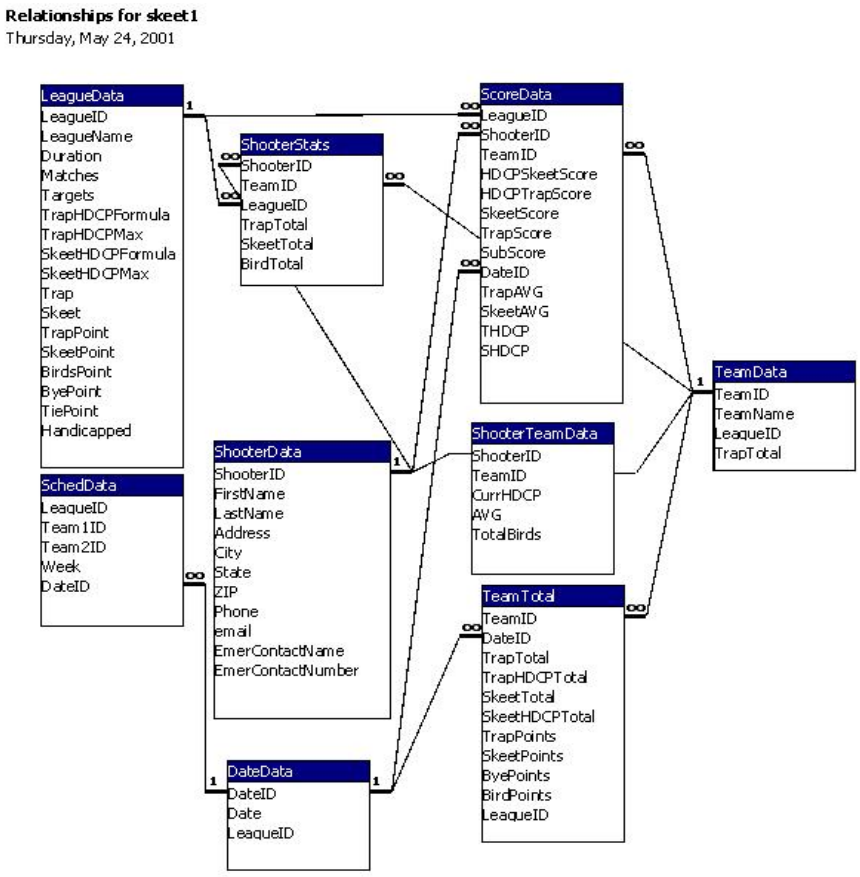


Figure 2. Database Structure and Relationships

5.2 Interface

5.2.1 The Main Form

The main form acts as a container for all other forms (Figure 3.)

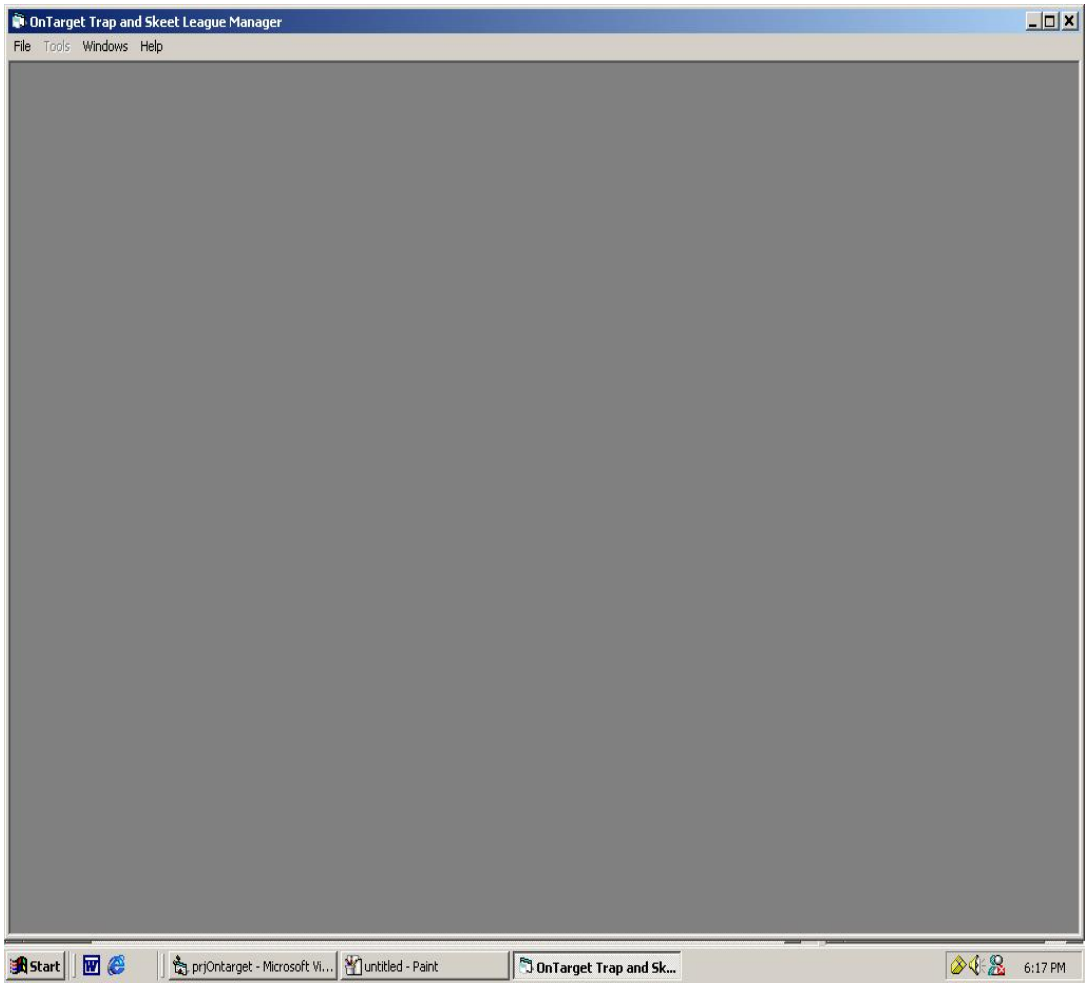


Figure 3. Main Form

Through use of the drop-down menus, the user can: open a new file, open an existing file, use the tools menu to open other parts of the program, arrange open windows, and access the about form and the Help system (Figures 4. and 5.).

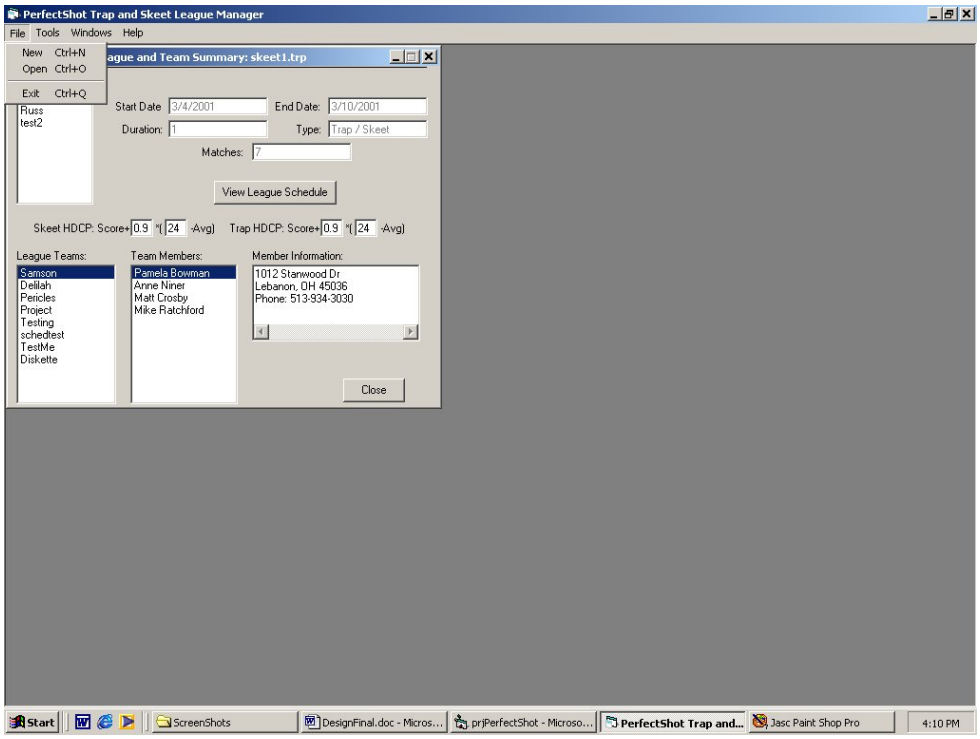


Figure 4. File Menu

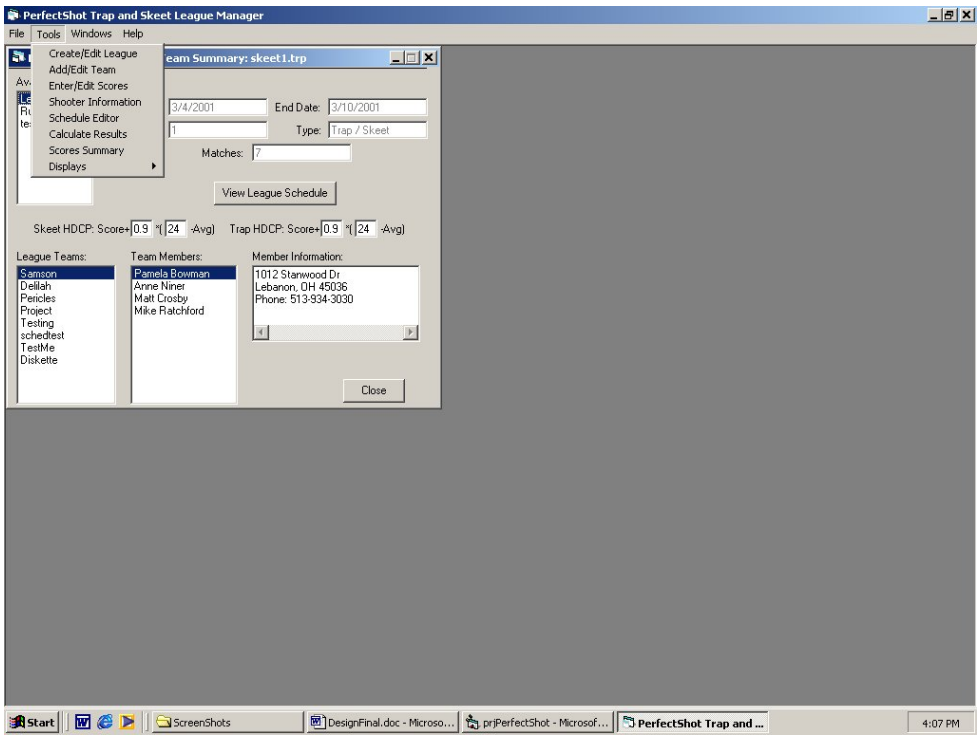


Figure 5. Primary Tools Menu

5.2.2 The Summary Window

The Summary Window provides a quick summary of league name, handicap, type, duration (in weeks), and the dates the league runs. It also provides a quick list of Teams associated with each League, Shooters associated with each Team, and address of Shooter when League, Team, and Shooter are selected from the respective list. A command button is included on the form that will show the currently selected leagues schedule when clicked. The text boxes are loaded by ADO command calls to the database.

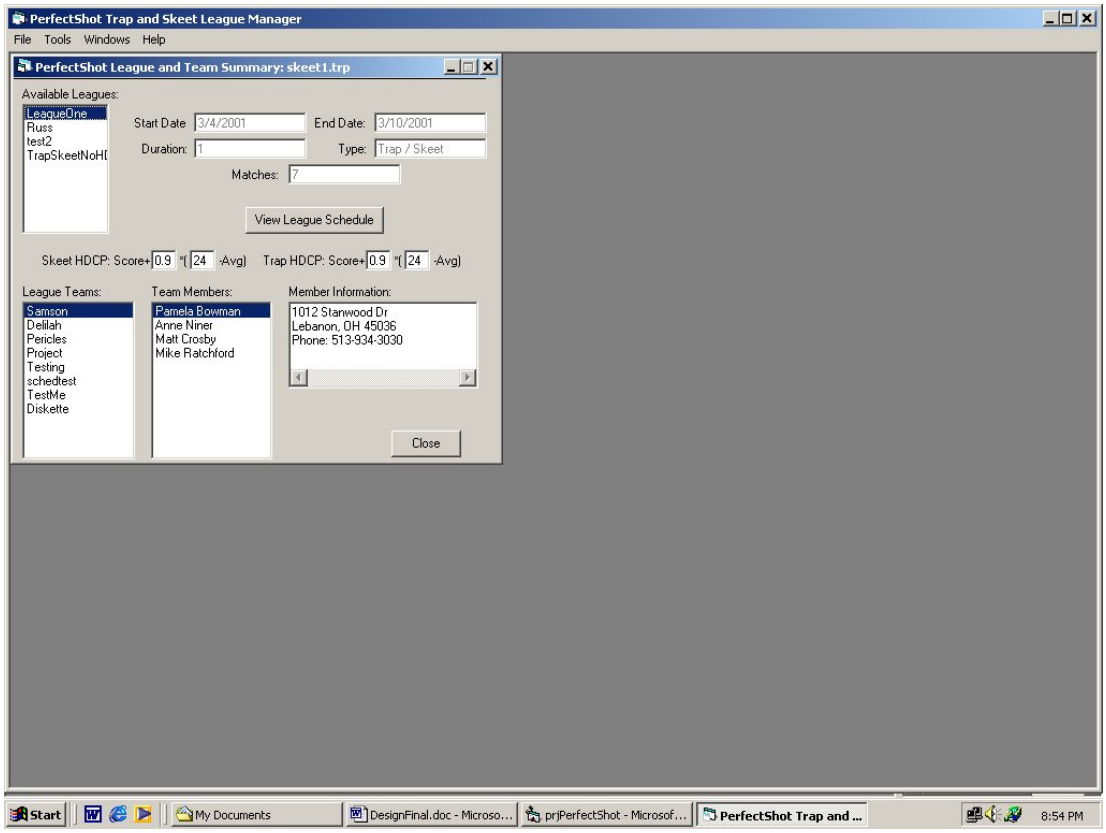


Figure 6. Summary Window

5.2.3 League Administrator Window

By using the Tools Menu, the user can access all other forms in the program aside from the About and Help forms. The League Administrator Window allows the user to

add a new league to the database by clicking the Add League button. All text boxes on the form are then cleared and the user enters the appropriate data in the text boxes. When done, the user clicks the Save button and the information on the form is written to the database as a new record via ADO commands.

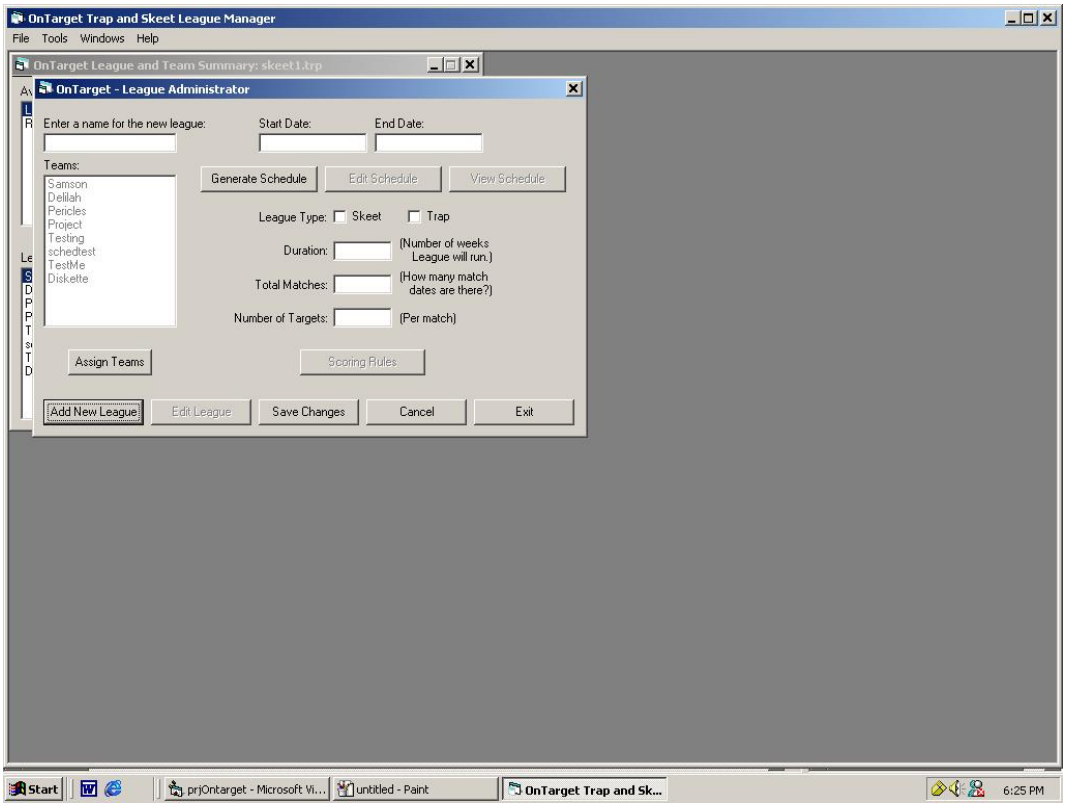


Figure 7. League Administrator Window – adding a new league

Once the league is saved to the database, the user can then edit the league, generate a schedule, view a schedule, edit a schedule, assign teams, or set the scoring rules by clicking the proper button on the League Administrator.

5.2.4 Scoring Rules

The Scoring Rules Window allows the user to set the point values for a win in Skeet competition, Trap competition, highest total birds shot, in case of ties, and in case

of byes. These values are then saved top the database and associated with this league only. The values are used to calculate results of competition. (Figure 8.)

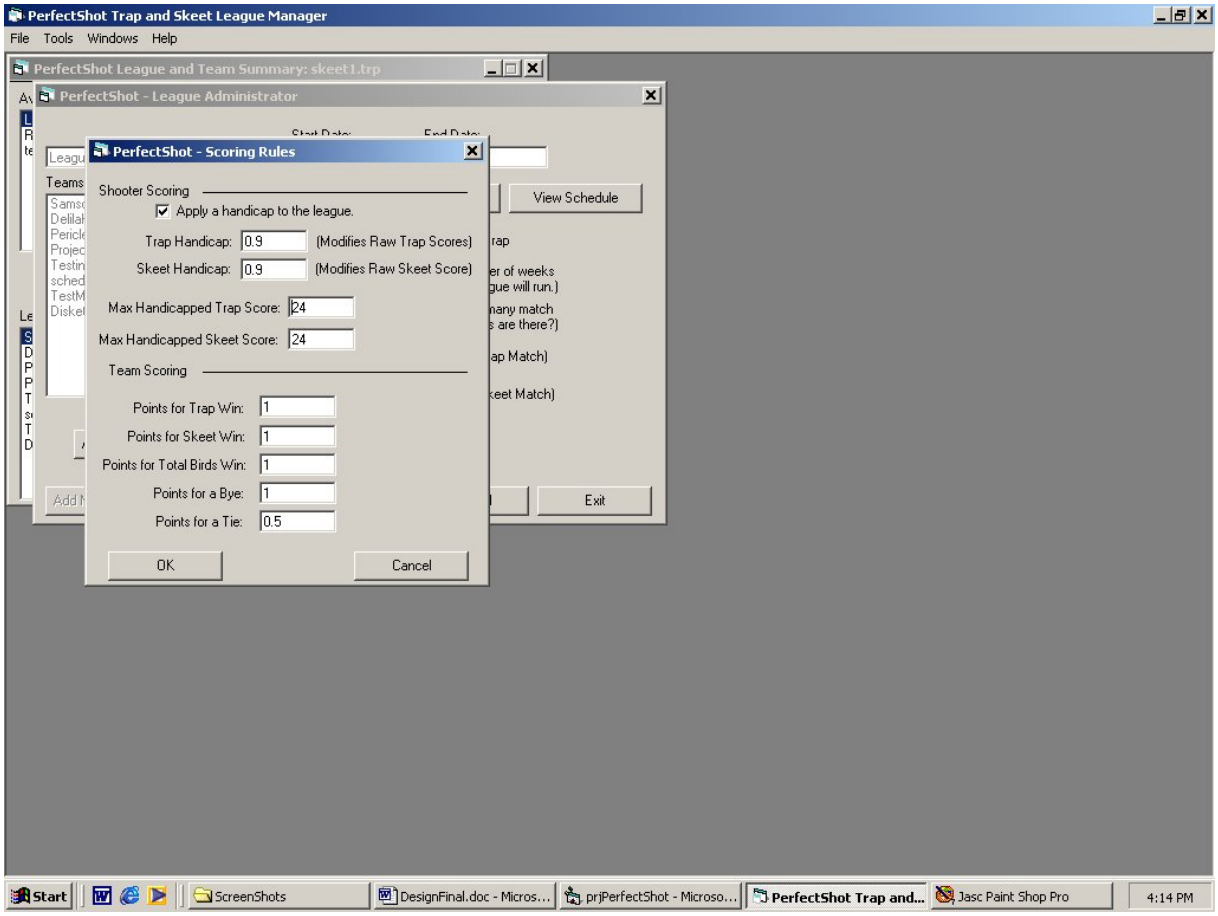


Figure 8. Scoring Rules

5.2.5 Assign Teams

After setting the initial league parameters, teams must be created and assigned to compete within the new league. See 5.2.8 for more information.

5.2.6 Schedule Generator

Once at least two teams have been assigned to compete in the league, the user can then generate a schedule for the competition by clicking on Generate Schedule. This action brings up the Date Selection Window. The user selects competition dates from the

calendar on the form and then clicks Generate Schedule. The schedule is then automatically generated and the Edit Schedule Window opens.

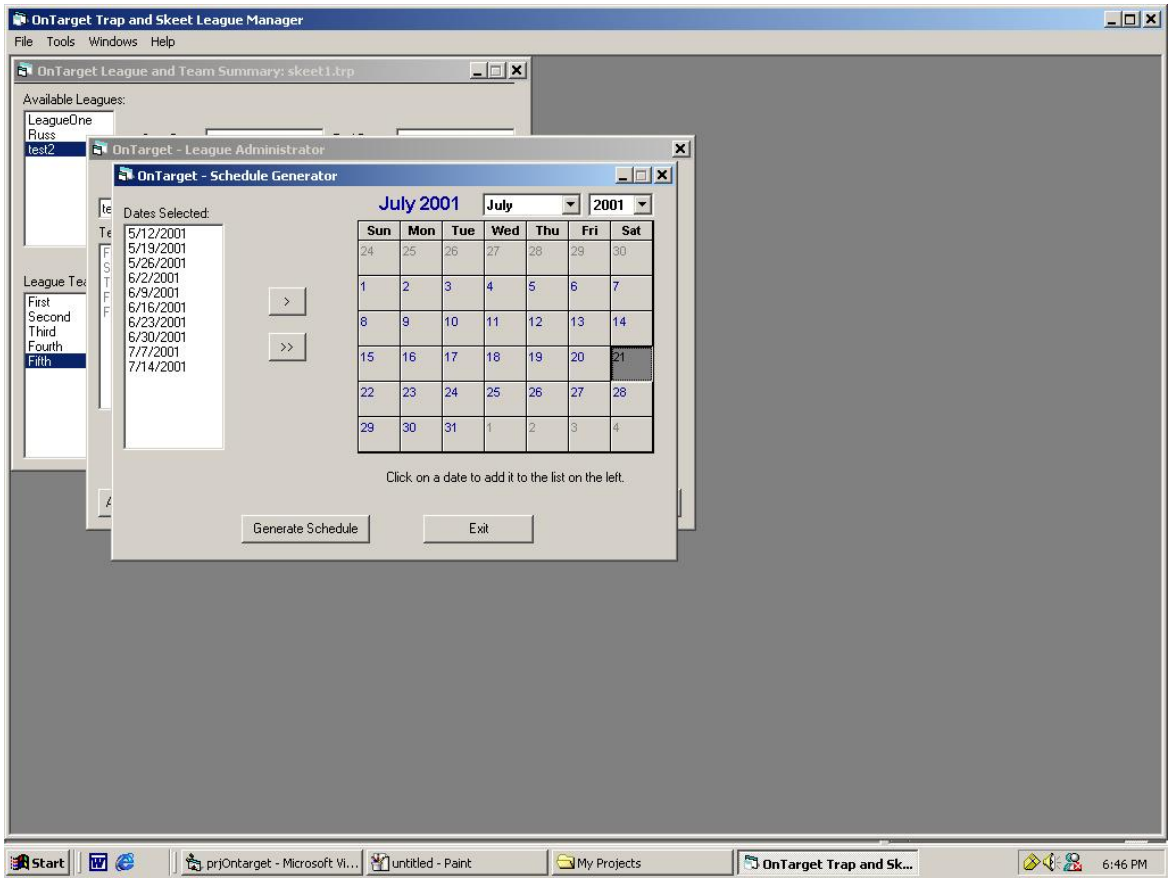


Figure 9. Schedule Generator

5.2.7 Schedule Editor

The Edit Schedule Window allows the user to view the generated schedule and make changes to the schedule. The user can change the dates of competition or the composition of the matches themselves. Editing is accomplished by selecting a cell and typing the change wanted. Double-clicking the cell will also open the cell for editing. Clicking the Save Changes button will save all changes to the database. See Figure. 10.

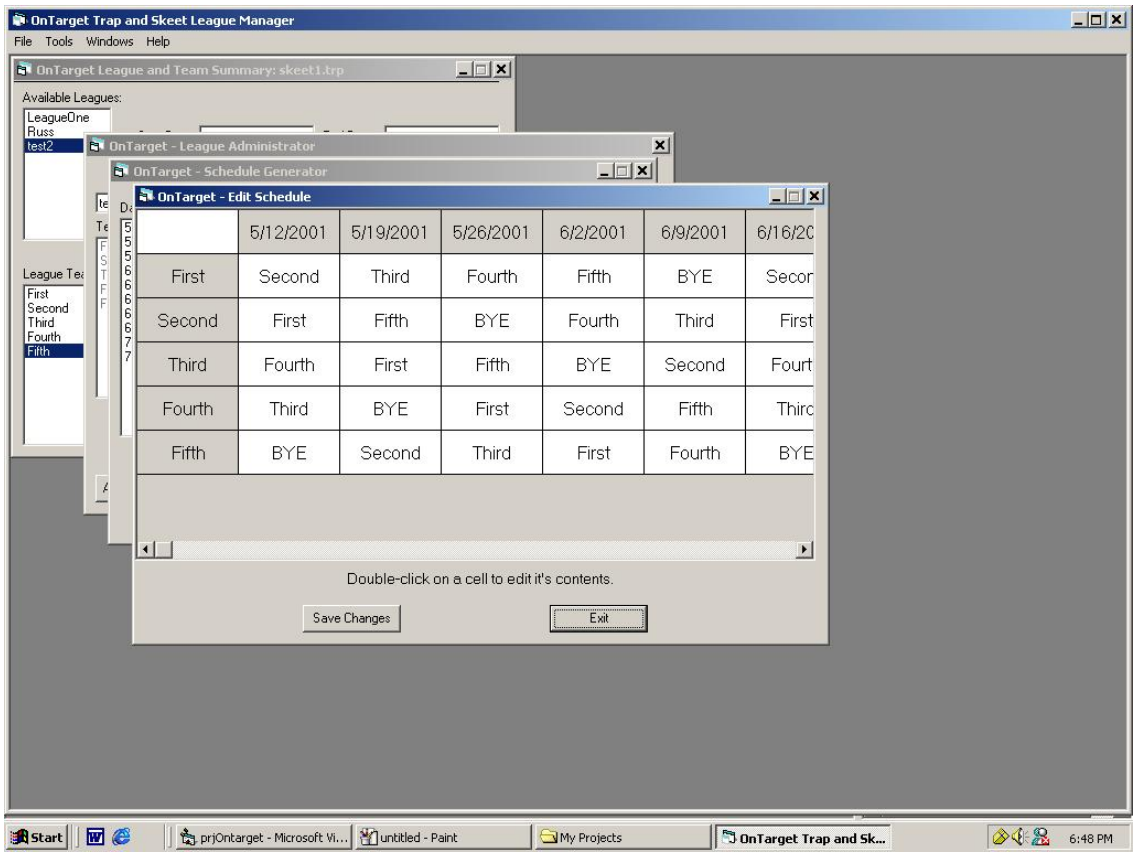


Figure 10. Edit Schedule Window

5.2.8 Team Manager

Access to the Team Manager Window is either by the Tools Menu or by clicking Assign Teams when in the League Administrator Window. In this window, the user can add or remove members form existing teams by using the <, <<, >>, or > buttons. In the case of < or >, only the currently selected shooter will be added or removed respectively. Using << or >> will add or remove all shooters in the list. Once changes to the current team are completed, the user clicks the Save button to save the changes.

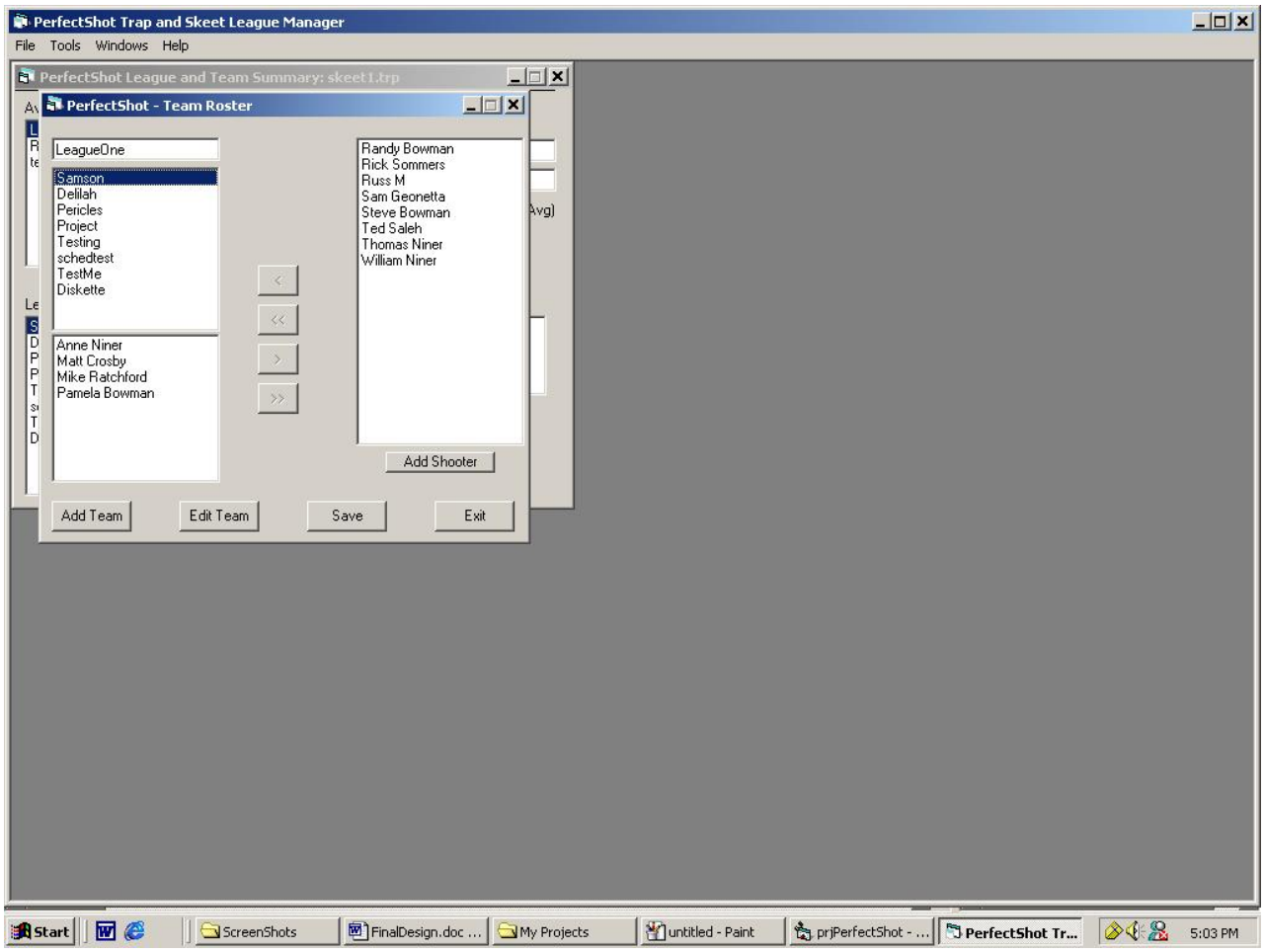


Figure 11. Team Manager Window

5.2.9 Team Builder

Clicking the Add Team button on the Team Manager accesses the Team Builder Window. On this screen, the user can create a new team in the selected league and assign shooters to that team. The operation of the screen is similar to the Team Manager but includes a textbox to enter the new teams name. Once the user clicks Save Team, the team and its members are saved to the database. The user can also access the Shooter Information Screen in order to add shooters to the database while building a team.

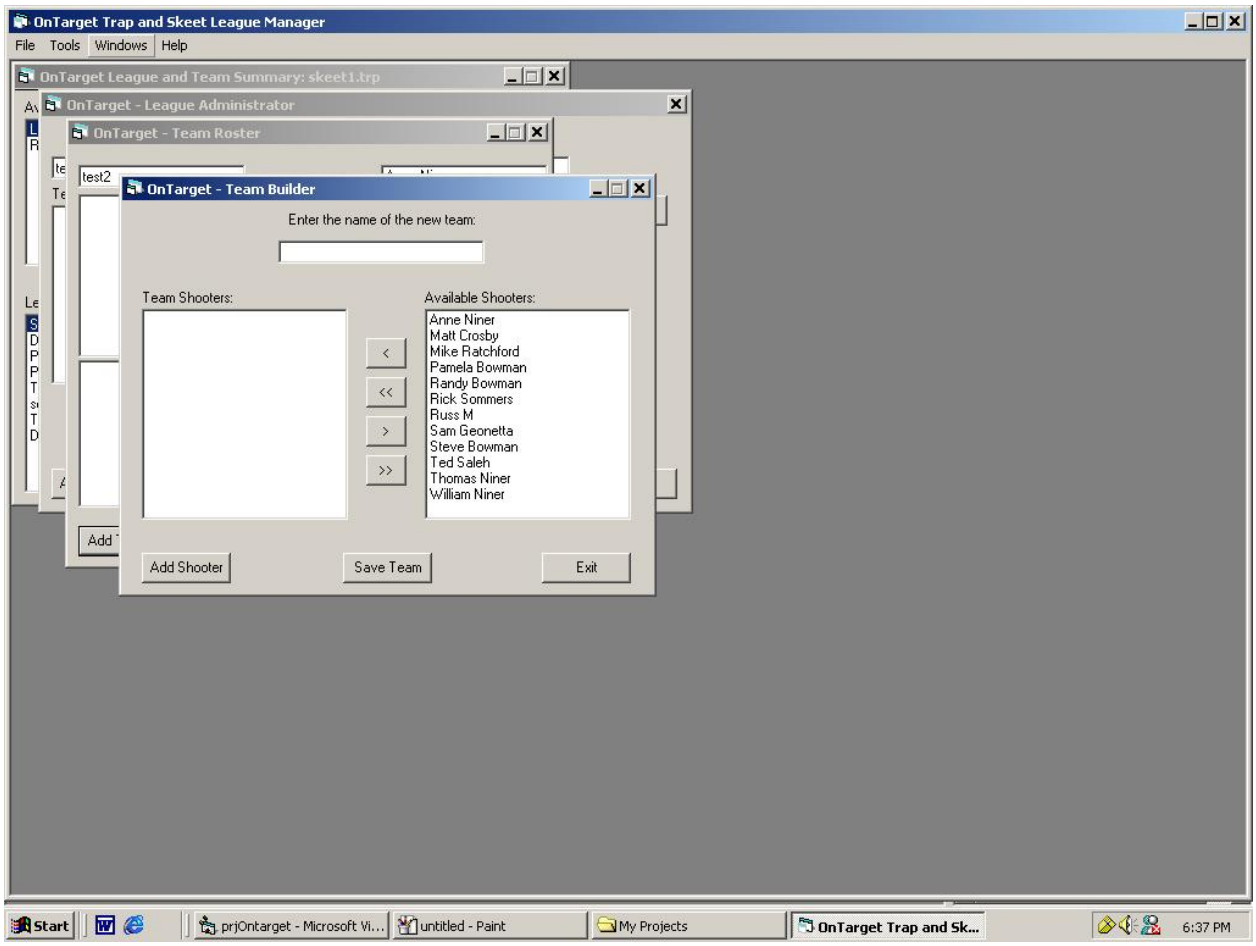


Figure 12. Team Builder

5.2.10 Shooter Information Screen

Accessible by either the Tool menu or the Team Builder Window, the Shooter Information Screen allows the user to move forwards or backwards through the ShooterData table in the database. All information for each shooter record is presented and the user, if they so desire can edit the information shown. The user can also add new shooters to the database.

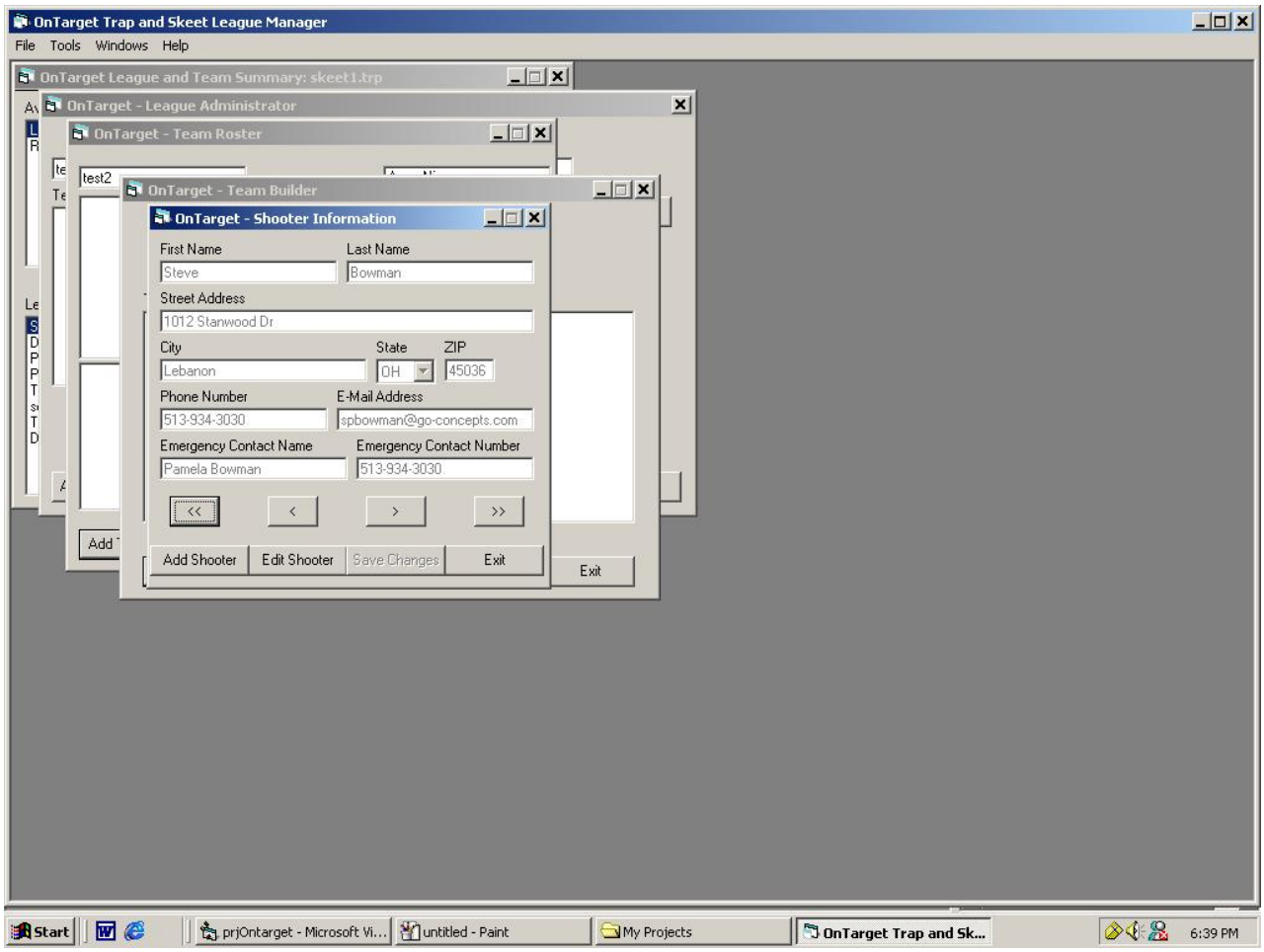


Figure 13. Shooter Information Window

5.2.11 Scoresheet Screen

Available through the Tools menu, this screen allows the user to enter or edit the scores shooters obtained during competition. The input screen is designed around an MS FlexGrid. This presents the team members and dates of competition when a team name is selected from the list. The user can then enter or edit the scores on the grid as necessary. Clicking the Save button saves all data to the database. The user can also select whether to view the scores as raw scores or handicap adjusted scores by using the option button provided. The user can also adjust the handicap variable.

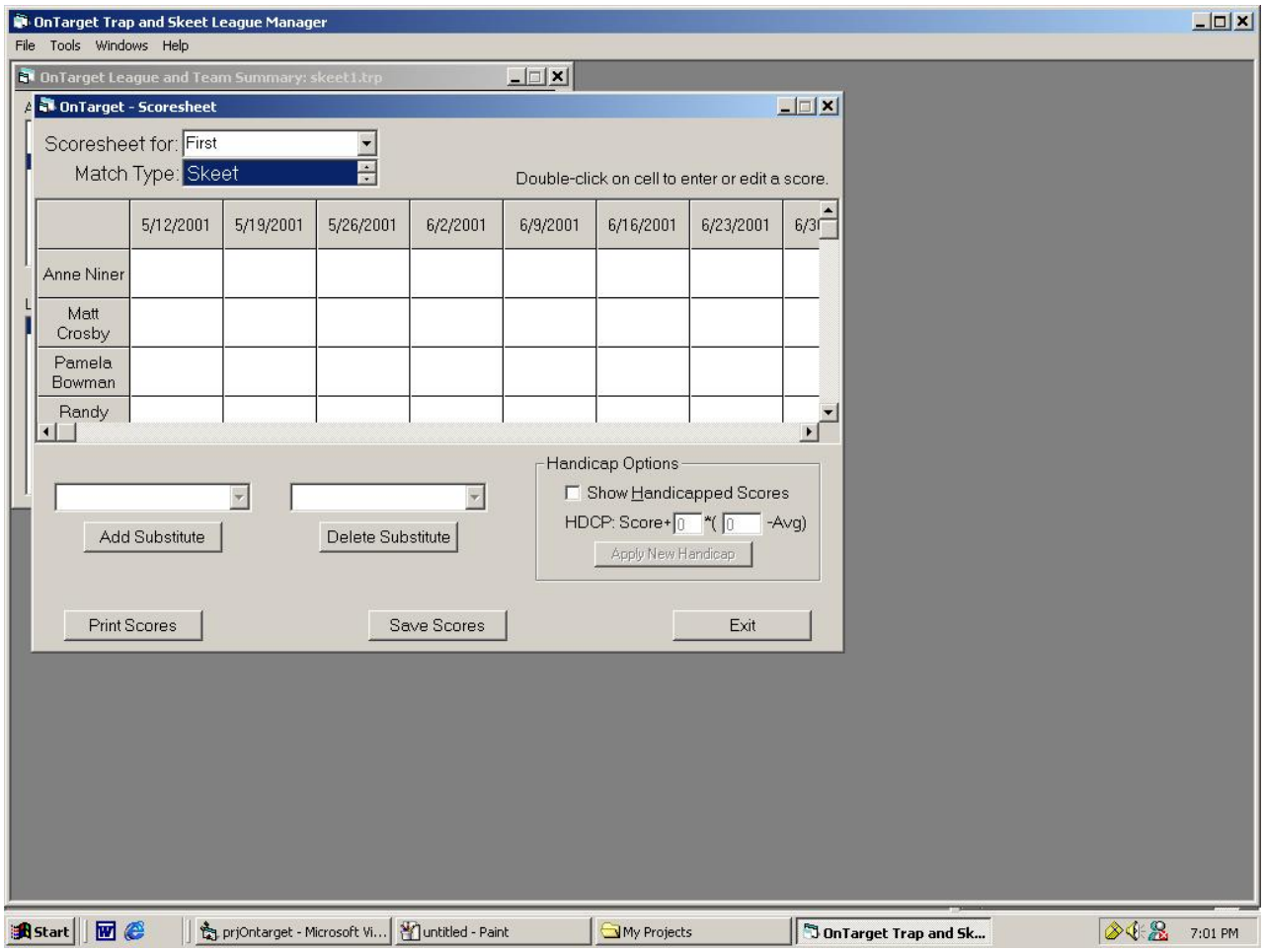


Figure 14. Scoresheet

The user can also assign substitute shooters to the selected team at this time. The substitute and their scores are associated only with the selected team on that date. The substitute, if a member of another team, can still shoot for his own team and the scores will not affect each other (See Figure 14).

5.2.12 Displays

The Displays item under the Tools menu provides a sub-menu with several choices for the user. The user can see a static view of teams, shooters, schedules,

statistics, shooter standings, team standings, and a score summary. The desired information appears on a form consisting of only a textbox. The text box contains the

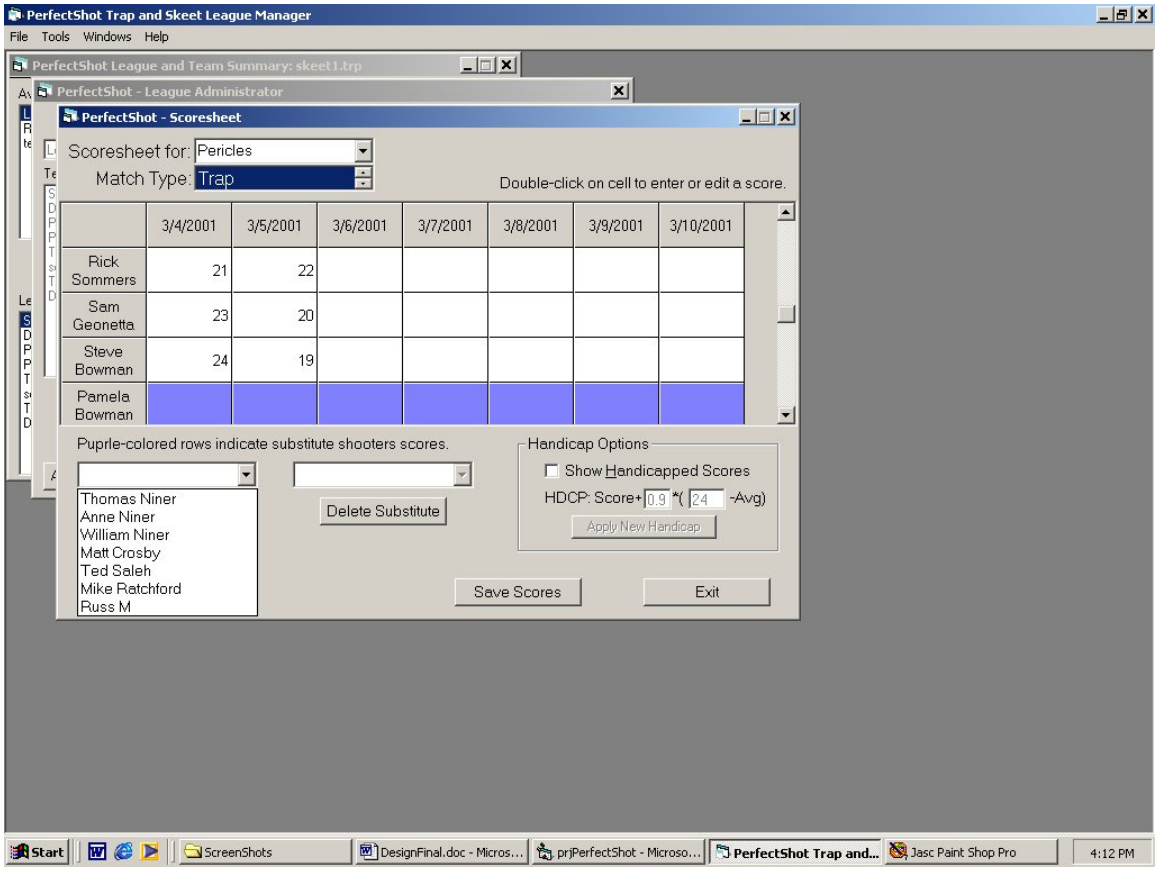


Figure 15. Scoresheet – add substitute

requested information. The textbox is scrollable, so the user can see all parts of the text, and it is editable, allowing the user to format the text as needed. A new File menu appears when this window opens. This menu allows the user to save a display as a file, open a previously saved display, a printer set-up option, and the print 0ption. The print option prints the display as it appears on the screen. Samples of displays available can be seen in Figures 15. – 19.

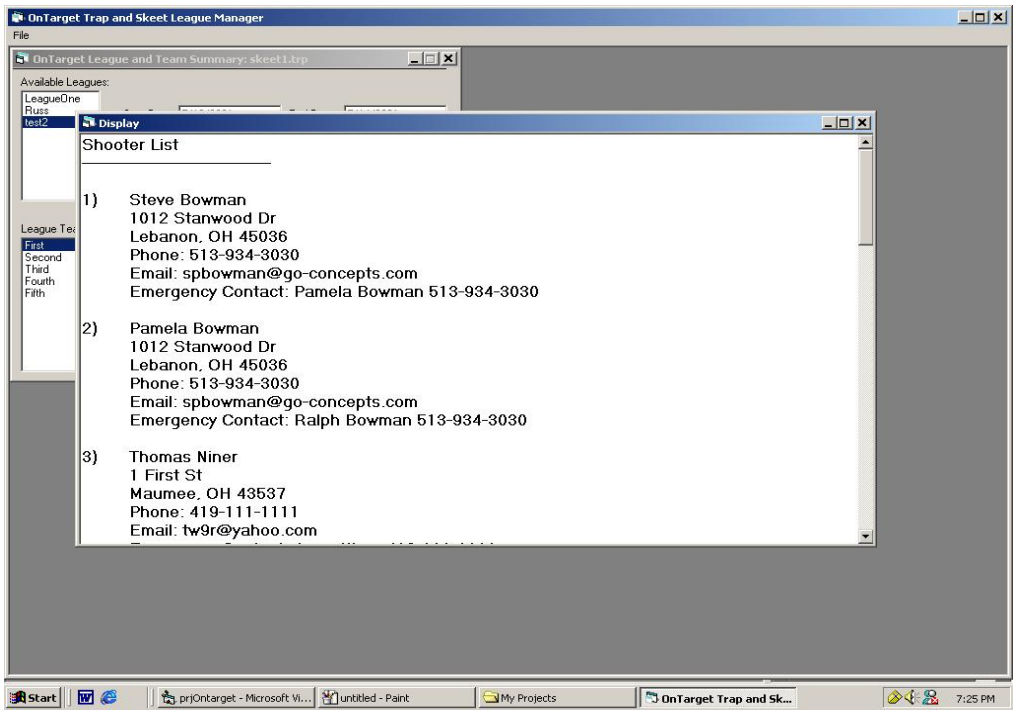


Figure 16. Display – Shooter List

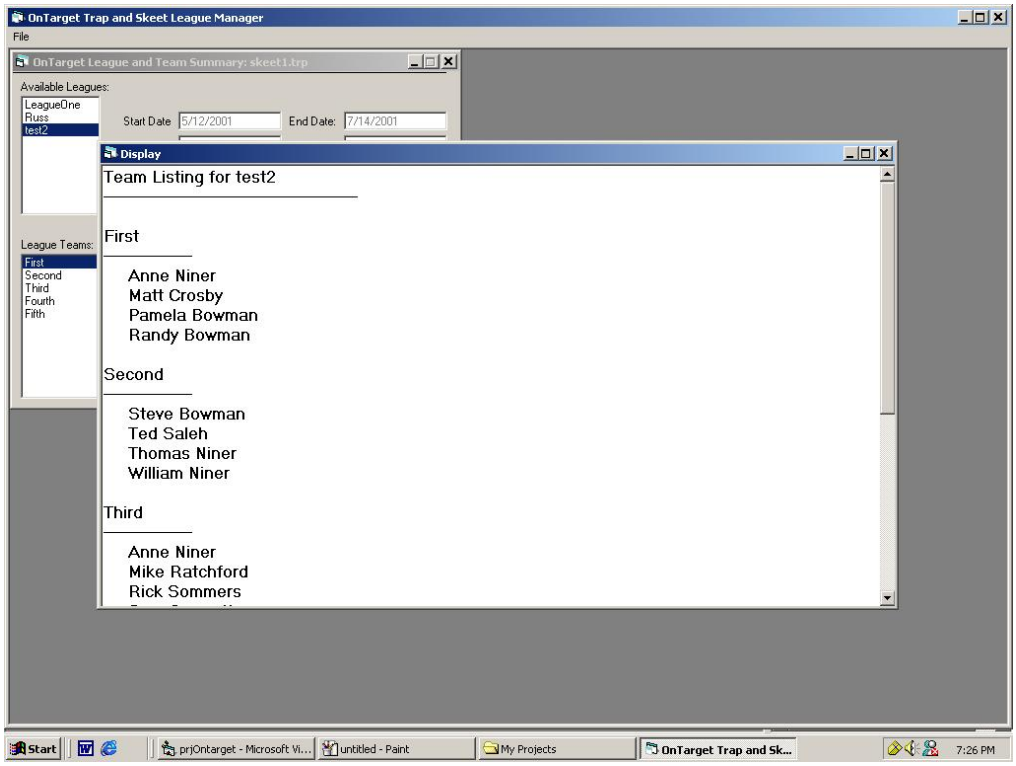


Figure 17. Display – Team List

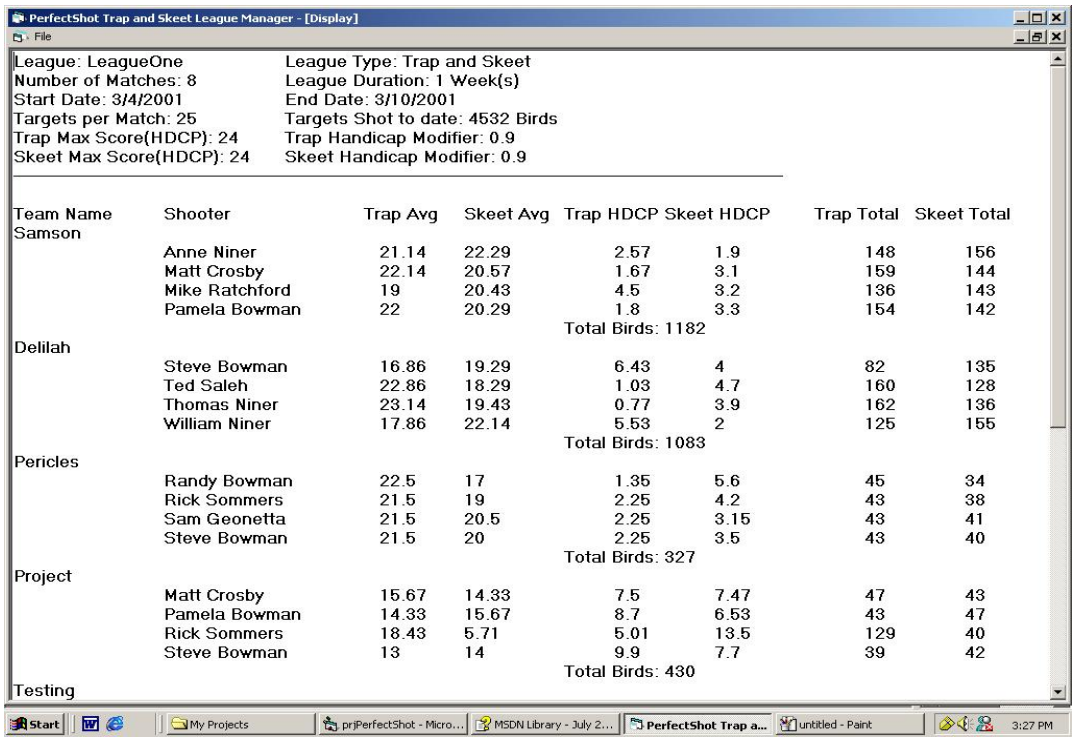


Figure 18. Display - League Statistics

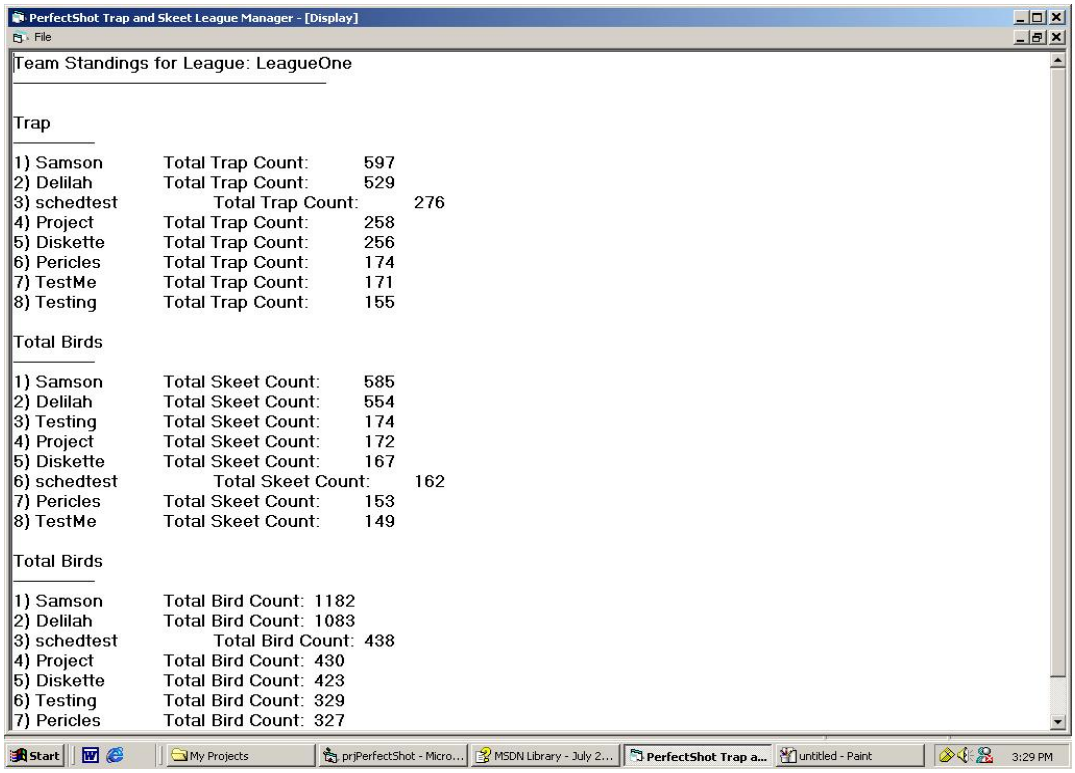


Figure 19. Display - Team Standings

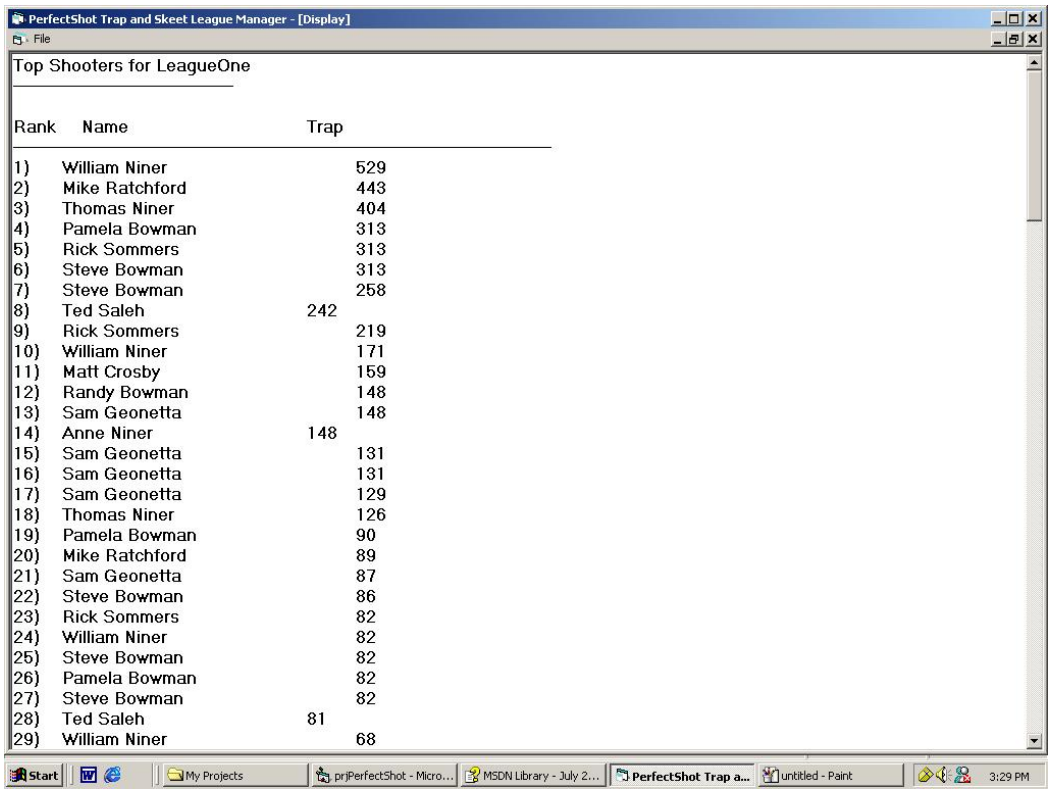


Figure 20. Display - Shooter Standings

5.2.13 League Results Screen

The League Results Screen (Figure 20) displays the scores, handicaps, and averages of shooters by week, as chosen by the user. It also shows the total trap, skeet, and bird counts each team acquired. These totals are used to determine the winner of each match that week. The display is arranged by matches and the results are posted by each teams' listing at the right edge of the screen. If a skeet and trap league has been formed, the winners of each individual competition (trap or skeet), as well as the total bird winner, are displayed next to the team that had the highest total in each category for each match. The display is scrollable to ensure that all parts can be seen and a Print Preview button is provided to allow the use to see the results as it would be printed and to format the display as need.

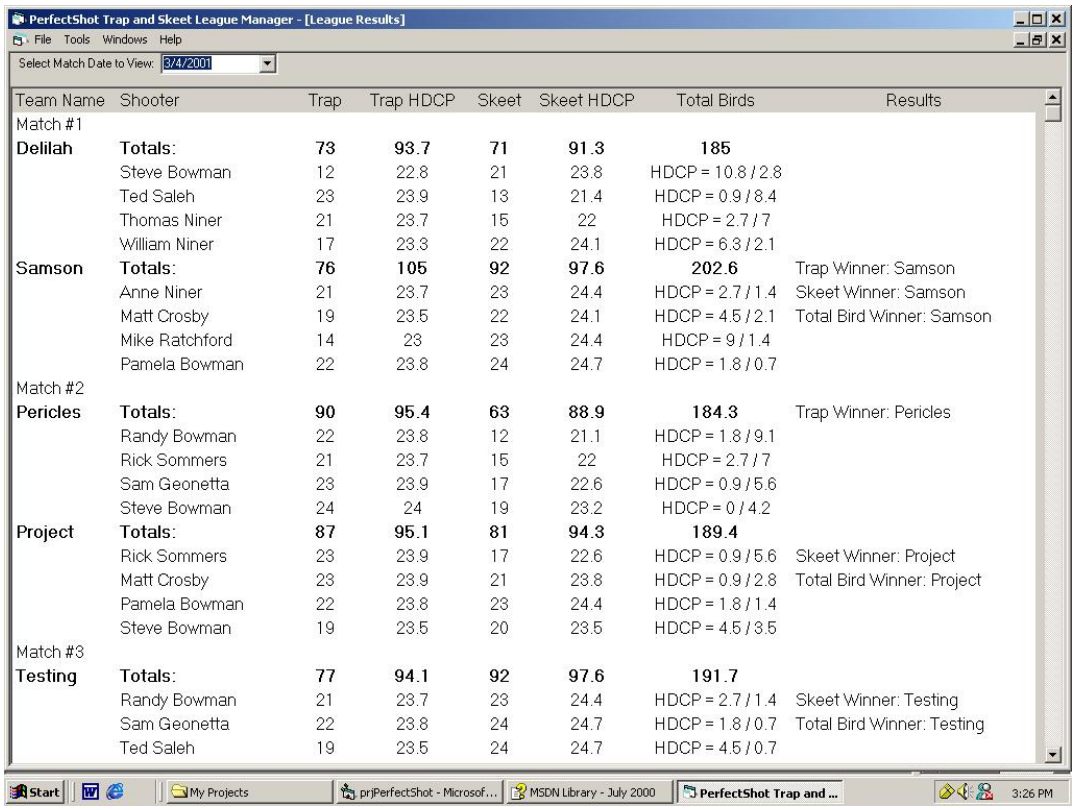
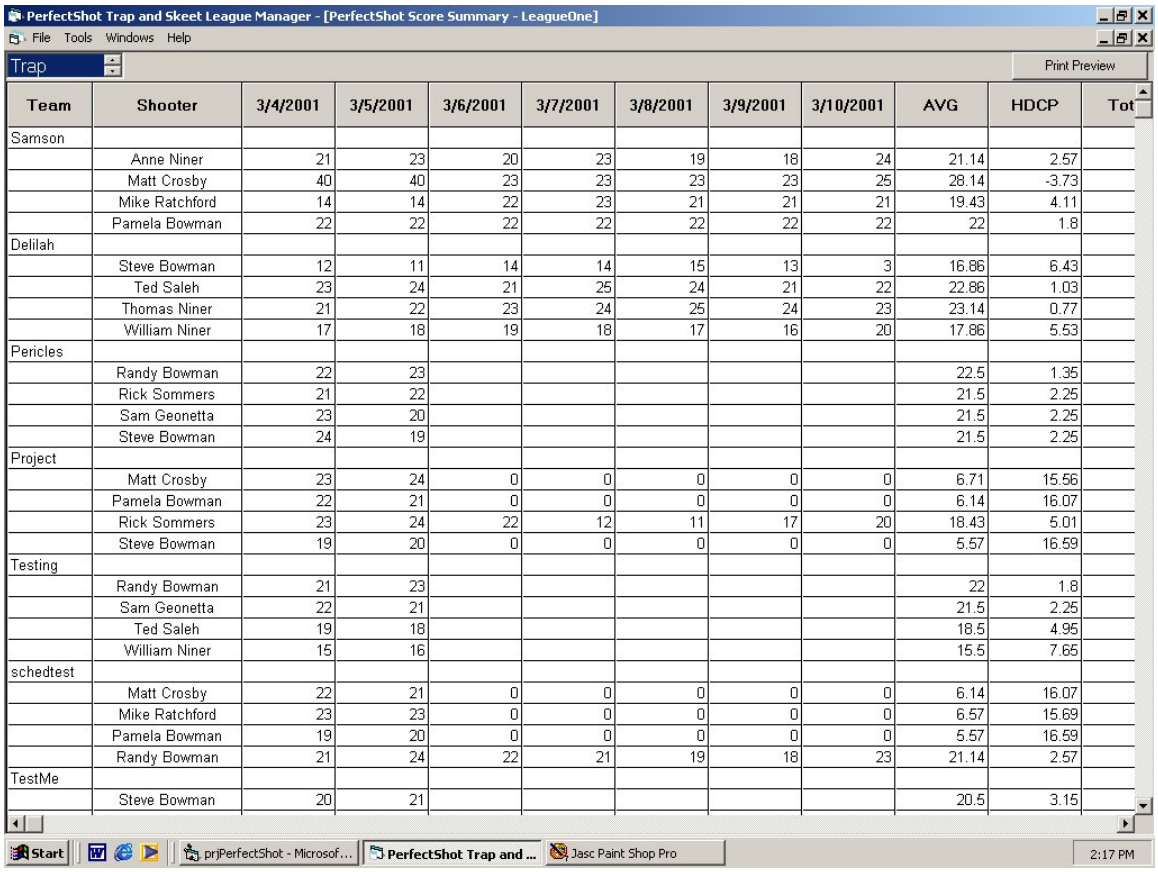


Figure 21. League Results

5.2.14 Score Summary

The Score Summary screen presents all the scores shot by each competitor, listed by teams. The average, handicap, and total birds broke are provided in the last three columns. The user cannot edit this screen, but a Print Preview button is provided allowing the user to format the display for printing. The screen can only show one type of competition at a time, either skeet or trap, but not both simultaneously. A scrollable list box is provided and lists the types of competition for the league. When the user selects another type of competition, the display will then display the scores, averages, handicaps, and total birds broke for that type of competition. (See Figure 22.)



Team	Shooter	3/4/2001	3/5/2001	3/6/2001	3/7/2001	3/8/2001	3/9/2001	3/10/2001	AVG	HDCP	Tot
Samson											
	Anne Niner	21	23	20	23	19	18	24	21.14	2.57	
	Matt Crosby	40	40	23	23	23	23	25	28.14	-3.73	
	Mike Ratchford	14	14	22	23	21	21	21	19.43	4.11	
	Pamela Bowman	22	22	22	22	22	22	22	22	1.8	
Delilah											
	Steve Bowman	12	11	14	14	15	13	3	16.86	6.43	
	Ted Saleh	23	24	21	25	24	21	22	22.86	1.03	
	Thomas Niner	21	22	23	24	25	24	23	23.14	0.77	
	William Niner	17	18	19	18	17	16	20	17.86	5.53	
Pericles											
	Randy Bowman	22	23						22.5	1.35	
	Rick Sommers	21	22						21.5	2.25	
	Sam Geonetta	23	20						21.5	2.25	
	Steve Bowman	24	19						21.5	2.25	
Project											
	Matt Crosby	23	24	0	0	0	0	0	6.71	15.56	
	Pamela Bowman	22	21	0	0	0	0	0	6.14	16.07	
	Rick Sommers	23	24	22	12	11	17	20	18.43	5.01	
	Steve Bowman	19	20	0	0	0	0	0	5.57	16.59	
Testing											
	Randy Bowman	21	23						22	1.8	
	Sam Geonetta	22	21						21.5	2.25	
	Ted Saleh	19	18						18.5	4.95	
	William Niner	15	16						15.5	7.65	
schedtest											
	Matt Crosby	22	21	0	0	0	0	0	6.14	16.07	
	Mike Ratchford	23	23	0	0	0	0	0	6.57	15.69	
	Pamela Bowman	19	20	0	0	0	0	0	5.57	16.59	
	Randy Bowman	21	24	22	21	19	18	23	21.14	2.57	
TestMe											
	Steve Bowman	20	21						20.5	3.15	

Figure 22. Score Summary

5.3 Help File

A help file is provided to aid the user in the use of this program. The Help file is accessible through the Help dropdown menu. The Help file was created using Help Workshop included with Microsoft Visual Basic 6.0, Enterprise edition. It uses the WinHelp32.exe engine to display the help file in the familiar Microsoft Windows Help File format. Contents, indexing, and searching are enabled. See Figure 23. and Figure 24.

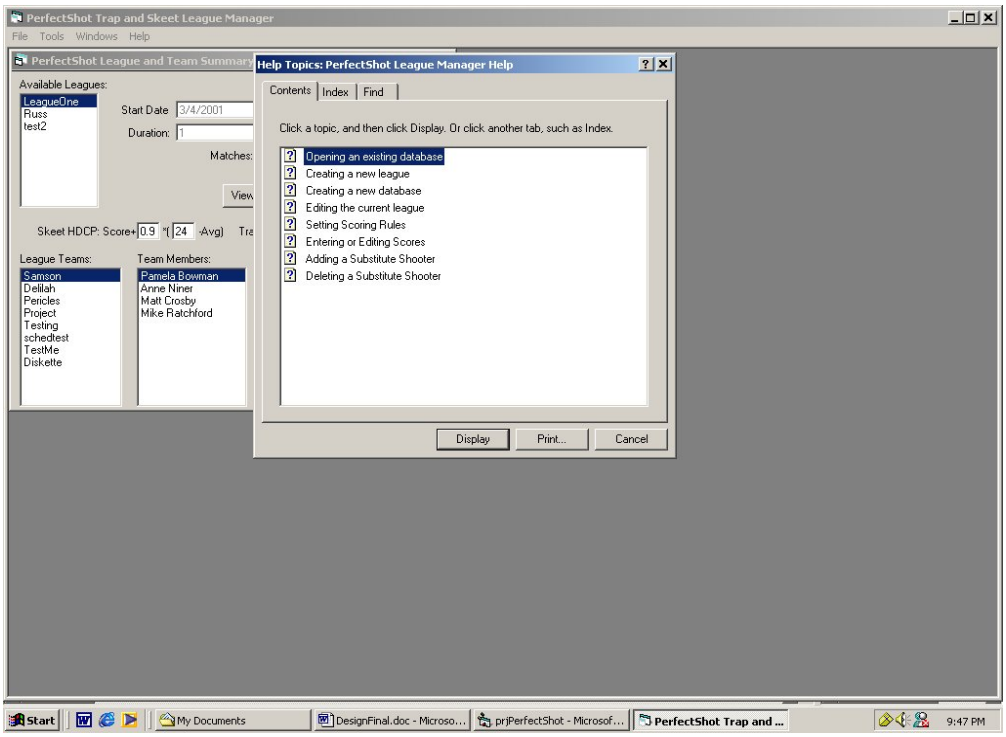


Figure 23. Help Screen – Contents

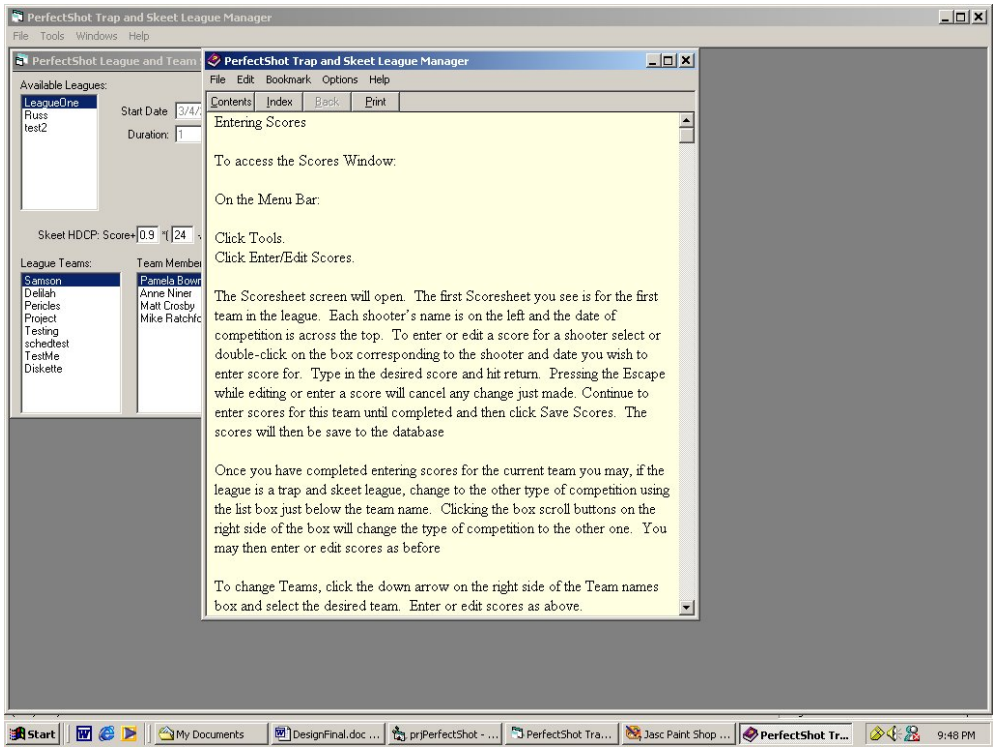


Figure 24. Help Screen - Sample Help File

6 Conclusions and Recommendations

As research shows, a need exists for a software package that can aid a skeet and trap league manager in recording and manipulating the data he collects during a league season. The execution of this project has fulfilled that need and enabled the league manager to concentrate on running the league without having to learn spreadsheet programming or keeping records by hand. I believe that PerfectShot is a useful tool for anyone managing a trap and skeet league. It eases the problems of record storage and calculations that have plagued league managers for years. PerfectShot is a versatile program with possible applications in other shooting sports, such as center-fire pistol competitions, sporting clays, and rifle marksmanship competitions.

Future versions of this program should include the ability to delete a shooter, team, or league from the database and to enable support of standard teams so that the user can use the same team in separate leagues without having to completely rebuild the team for each league. Enhancements should also include the ability to export the displays into a comma-delimited format for import to a spreadsheet program or into HTML format for display on a web site. The option to override the calculated handicapped score would allow the user greater freedom in scoring formats. The displays could be altered to allow the user to set a limit option in how many shooters are displayed on the Shooter Standing Display. The program could also be redesigned to allow multiple users with differing access levels to use the program. This last option would be a precursor to redesigning the program as a web-enabled application.

The ability to save a database file under a different filename would make backing up a database easier but, unfortunately, this was not possible to implement. Several

methods of saving files were investigated, including API calls, batch file programming, FileCopy method of Visual Basic, and shell commands. The same error was encountered with each method. If, during a current running of the program, the program accesses a database file, that database file cannot then be saved from within the program. The error encountered was a file permission error. Further study into the cause of this should be made. The problem may be operating system based.

Appendix A.

Budget

Software:	Microsoft Windows 98, Second Edition	$209.00	(5)
	MS Access 2000	339.00	(5)
	MS Visual Basic 6, Enterprise Edition	1299.00	(5)
Hardware:	AMD Duron 700 MHz Computer	214.00	(3)
	128 MB PC133 SDRAM	87.00	(4)
	17” Monitor	177.00	(1)
	Western Digital 20 GB HDD	99.00	(9)
	Total:	$2424.00	

Appendix B.

Project Schedule

Phase:	*Start*	*End*
• Research	10/05/00	06/08/01
o Skeet Shooting Rules and Scoring		
o Trapshooting Rules and Scoring		
o Database Design / ADO implementation		
o Visual Basic programming		
o Graphical interface design considerations		
o Database Design/Construction	11/06/00	12/06/00
o Create ShooterData Table	11/06/00	11/06/00
o Create LeagueData Table	11/06/00	11/06/00
o Create TeamData Table	11/06/00	11/07/00
o Create ScheduleData Table	11/06/00	11/06/00
o Create ScoreData Table	11/06/00	11/10/00
o Populate Database	11/27/00	12/06/00
o Continuous Redesign	11/06/00	05/08/01
• Interface Design/Coding	11/06/00	05/08/01
o Main Form Module	11/06/00	11/13/00
o Shooter Information Module	11/13/00	11/20/00
o Edit Team Module	11/20/00	12/20/00
o Create Team Module	01/01/01	01/15/01
o Edit League Module	01/15/01	01/22/01
o Create League module	01/22/01	01/29/01
o Enter Scores Module	01/29/01	02/21/01
o New/Open/Save Routines	02/21/01	02/23/01
o Schedule Generator	02/23/01	03/01/01
o Edit Schedule Module	03/01/01	03/05/01
o Display Schedule Module	03/05/01	03/12/01
o Display League Stats	03/12/01	03/19/01
o Display Team Stats	03/19/01	03/26/01
o Display Shooter Stats	03/26/01	03/29/01
o Display Scores	03/29/01	05/12/01
o Print Schedule Module	04/12/01	04/17/01
o Testing/Debugging	In accordance with module completion	

Dates are subject to change as project modules are completed early or as redesign may require

Appendix C.

Software

Operating Systems	Comments
Microsoft Windows 2000 Professional Edition	**Problem**: Unable to copy previously opened database to a new filename
Microsoft Windows Millennium Edition	**Problem**: Unable to copy previously opened database to a new filename
Microsoft Windows 98, Second Edition	**Problem**: Unable to copy previously opened database to a new filename **Problem**: Must include DCOM98.EXE when installing program to provide Jet Database access
Microsoft Windows 95, Version B	**Problem**: Unable to copy previously opened database to a new filename **Problem**: Must include DCOM95.EXE when installing program to provide Jet Database access

Other software used:

Microsoft Visual Basic 6.0, Enterprise Edition

Microsoft Access 2000

RoboHelp 9.0

Appendix D.

Hardware

Development and Testing Platforms	Location	Operating Systems
AMD Duron 700 MHz Computer 128 MB PC133 SDRAM 20 GB HDD 17” Monitor	Home	Windows Millennium
Pentium III 600 MHz Computer 256 MB PC100 SDRAM 20 GB HDD 17” Monitor	CAS, A401	Windows 2000 Professional

Testing Only Platform	Location	Operating Systems
Pentium 120 MHz Computer 32 MB RAM 6.7 GB HDD 15” Monitor	Home	Windows 98 SE Windows 95b

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