

An Introduction to Sports Scheduling with Diamond Scheduler

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Diamond Scheduler Sports Scheduler Software

Welcome to Diamond Scheduler Sports Scheduling Software. This overview will provide you with the introductory information you need to successfully schedule most sports leagues.

Types of Scheduling

You have probably heard of many types of scheduling - round robin, elimination, pool play, and guaranteed-play. Diamond Scheduler can be used to support several types of scheduling tasks. Its strength is round-robin scheduling with the ability to control several constraints.

Round-robin scheduling implies that for each "round," each team plays every other team once. So, if you have 4 teams, each team will have 3 games per round since there are 3 teams each one can play. In short, for every round of play, each team will have $n - 1$ games, where n is the number of teams.

Creating round-robin schedules for 4 or 5 teams is quite simple to do by hand. However, when you start dealing with a large number of teams or when you want to control some factors like which days certain teams can not play, a computer-based scheduling program like Diamond Scheduler comes in handy.

How to use this Introduction

This introduction to using Diamond Scheduler employs a tutorial approach. Follow the steps of creating a sample schedule and you will learn the basics of scheduling.

You may find it more interesting or engaging to watch a video that introduces the basics of scheduling in a similar manner. You can find those movies at my web site: <http://www.cactusware.com/movies>.

Let's get started.

Creating a Schedule: A tutorial

What You Need First

Before you can begin scheduling, you need to gather a few pieces of information.

You will need the following:

1. The name of the division (or level - e.g., Major Softball)
2. The names of the teams (or players if it's an individual sport)
3. The names of the venues (fields or courts or ice rinks)
4. The times that each venue is available

If you are working with an individual sport (e.g., darts), substitute the term "person" for "team;" it will work fine. If you work with "courts" or "rinks" instead of fields, substitute those names where appropriate.

Tip: If you want to change the labels on the tabs for Diamond Scheduler, hold down the shift key while clicking on the tab's label. For instance, if you use "rinks" instead of "fields," hold down the shift key and click on the label "Fields/Courts" on the third tab, then follow the directions.

Once you have gathered all the information above, you are ready to begin your schedule.

Creating the Round-robin Schedule

For now, I'll keep things pretty simple. However, along the way, I'll talk about more advanced features and their use.

(Note: The sample below details a round-robin league schedule. However, the process for creating an elimination tournament is the same until you click on the scheduling method.)

1. Load the program

Assuming you loaded the program onto your computer, start Diamond Scheduler by doing the following:

- Click on the *Start* button at the bottom left of your computer.
- Click on *All Programs*.
- Click on *Diamond Scheduler*.
- Click on the icon for the program.

I hope that went well. I wanted to give you something easy to start with ... a real confidence-booster.

2. See where we're going by looking at a completed schedule

One important principle to understand is that in Diamond Scheduler, you schedule one division at a time. Each division is a separate file. Once you have completed all divisions, you can merge them into a Combined Schedule Report (by choosing File > Merge Schedule Files) that will display the global schedule and calendar.

In this tutorial, I'm going to walk through a tutorial that represents one division of a league. Before we actually create that file, I'd like you to take a quick look at a file that is similar, although not exactly the same, so that you can get a feel for how the program works:

- ❑ Click on the *File* menu.
- ❑ Click on the *Open* menu.
- ❑ Load *sample.shd*, which should be in the My Documents\Schedules directory, unless you chose to install the program in a different location.

You will see that the file is for a Softball Seniors division (click on the Division/Level tab and note that *Softball Seniors* is the division), with 5 teams (click on the Team/Players tab), using one field (click on the Fields/Court tab).

I also know that this one field has 65 available playing times - what I call *timeslots* in Diamond Scheduler. I know that for two reasons: 1) I created the schedule and I know how many timeslots I identified (authoring the program has real advantages when it comes to writing the manual) and 2) I can go to the Tools menu and choose *Timeslot Calculator*, which will tell me the total number of times available across all fields. Since I only have one field in this file, I know all 65 timeslots are associated with this one field.

I also know, by looking midway down the field tab information, that all 5 teams can use this field as their home field – in other words, they can all play home games here.

You now have all the information you need to create the schedule.

- ❑ Click on the *Schedule* tab.
- ❑ Click on the *Optimized* button near the top right (this is the most frequently used pairing algorithm – you can look around the options a little if you like but we'll come back to these later).
- ❑ Click on the *Schedule It Now* button at the bottom right of the screen. You should see a gauge reflecting the progress of the schedule's creation.

Once the schedule is complete, you can a) click on the *Master Calendar* button to view the calendar or b) click on the *Reports* button to explore the available reports.

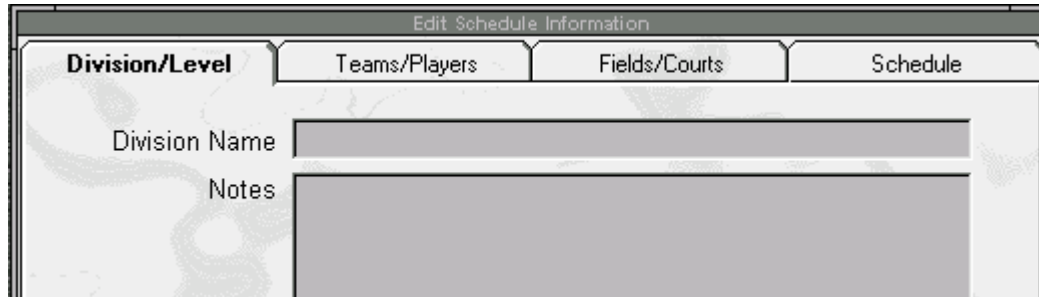
My goal now is to get you to create a very similar schedule, understanding the scheduling issues in a bit more depth as we go along. In addition, we'll create one that uses two fields so that you can see how that works.

3. Create a new schedule file

We'll start from scratch so you get plenty of practice creating a sample schedule.

- ❑ Click on the menu item at the top that says *File*.
- ❑ Click on "New" (if the program asks if you want to save changes say, "No").

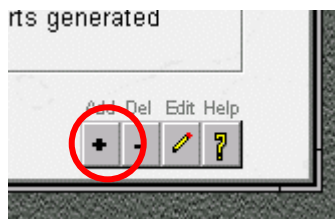
We're starting a new file. All the information you saw before should be gone and you should have a blank schedule.



Reminder about the Tabs - you can change the labels by holding down the shift key while you click on any of the labels.

4. Create the division name

- ❑ Click on the Divisions/Level tab. If you're not already on the tab, click on the label that says "Division/Level."



- ❑ Click on the "+" button at the bottom right of the tab. The program asks for a name to give the division. Input *Softball Seniors* (if you would like to start creating your own file, go ahead and put in the name of your first division).

Tip: If you can keep the division name fairly short and descriptive, it will make for less verbose reports later on.

If you have any general notes regarding this division, you can type them into the Notes field.

5. Create the team names

- ❑ Click on the Teams/Players tab. Here's where you enter all the teams in the division.
- ❑ Click on the "+" button to create your first team.
- ❑ Provide a short name of the team, avoiding punctuation like periods and commas and other symbols that will make later reports look a bit messy. Name the first team:

Burbs 1

- ❑ Next you need to provide the program with a code for Burbs 1 (up to 5 letters), use:

B1

Tip: Although the code can be used on printouts, its main function is for the program to use internally to keep track of teams. It is quite important that you give this team a unique code, even if it's simply a number code like 01 or 23. Even more importantly, make the code unique across your entire league. In other words, don't use B1 here and then use B1 in another file for another division to refer to a different team.

Basic principle: Name your teams uniquely across divisions and use unique codes across divisions so that when you merge all the files, there's no chance that a team from one division can be mistaken for a team from another division.

- ❑ Add whatever additional information you have or want to track for the Coach (you can store information on two coaches).
- ❑ At the bottom of the form, give this team a unique Custom HTML Code. This is a code that can be used on HTML exports instead of the regular code. This allows you to use a different abbreviation upon export to HTML, if that's useful to you. However, the longer this abbreviation, the more crowded calendar displays will appear.

For this sample, I'll give Burbs 1 the Custom HTML Code of:

Brb1

- ❑ Repeat this process for 4 more teams.

You already have:

Team	Code	Custom HTML Code
Burbs 1	B1	Brb1

Now add:

Team	Code	Custom HTML Code
Burbs 2	B2	Brb2
Central 1	C1	Cntr1
Central 2	C2	Cntr2
Mavericks	MV	Mavs

Some advanced tips for creating teams:

1. Use the No-play times to prevent a team from being double booked if they're already scheduled in another file. When you click on the No-play Times button, you'll be given the opportunity to base no-play times for the current on one team from another schedule or base no-play times for all teams on another schedule's already determined timeslots.
2. Use the No-play field only if it's really necessary to solve a problem. Same with no-play teams – the latter is best use to avoid a match between teams that have fights.
3. Use the Import Teams to import information about all the teams from a previously made schedule.

Tip: You can use advanced tip number 1 above to make sure a coach who participates in two divisions is not double booked. Schedule the first division in which s/he coaches, then when creating the second division, click on the No-play Times button and base the no-play times on the team s/he coaches in the first division.

6. Create the field names

Once you're done entering all the teams, it's time to identify all the fields where the teams can play. You may be using "courts" or "rinks" - that's fine. In the sample file, I'll be using baseball fields.

To demonstrate how teams can have a specific home field, I will create two fields.

- ❑ Click on the Fields/Courts tab.
- ❑ Click on the "+" button.
- ❑ Provide a name of the field, avoiding punctuation like periods and commas and other symbols that will make later reports look a bit messy. I name the first field

Central Field

When asked, provide the program with a code for Central Field. I use:

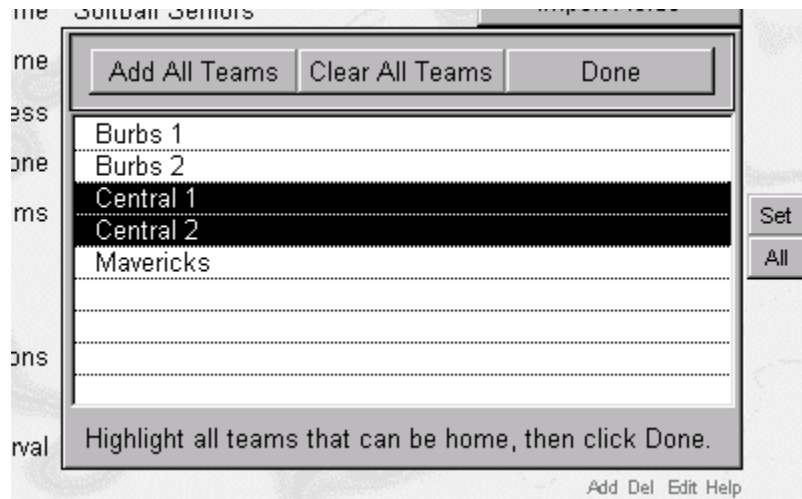
CF

Tip: If you are going to refer to this field in another schedule (i.e., another division for the same league), be sure to use the exact same spelling of the name and code so that the program recognizes the two fields to be the same when the schedules are merged. You can ensure that the spelling is exactly the same in the next file by using the Import Fields button on the field tab of that file.

After identifying the field name and code, you must tell Diamond Scheduler which teams can use the field as a home field. If all teams in your league can play a home game at this venue, click on the small button on the right side that says "All" and all teams will be added into the Home Teams area. If all teams can use all fields at your site, be sure to click "All" for each of the fields.

In this tutorial, we want only the two Central teams to use this as a home field.

- ❑ Click on the small button on the right that says "Set" (meaning set the home teams for this field).
- ❑ Highlight the two Central teams (Central 1 and Central 2) in the multi-select list box that appears.



Adding home teams to a venue. Click on the Set button, then highlight the teams that can use this field as a "home field"

(Note: Instead of "Home Teams," selection would best be named "Teams that are allowed to use this field as a home field, even if they use other fields also," or so I've been told. Unfortunately, there's not enough space on the screen to make that clear so the section simply says, "Home Teams.")

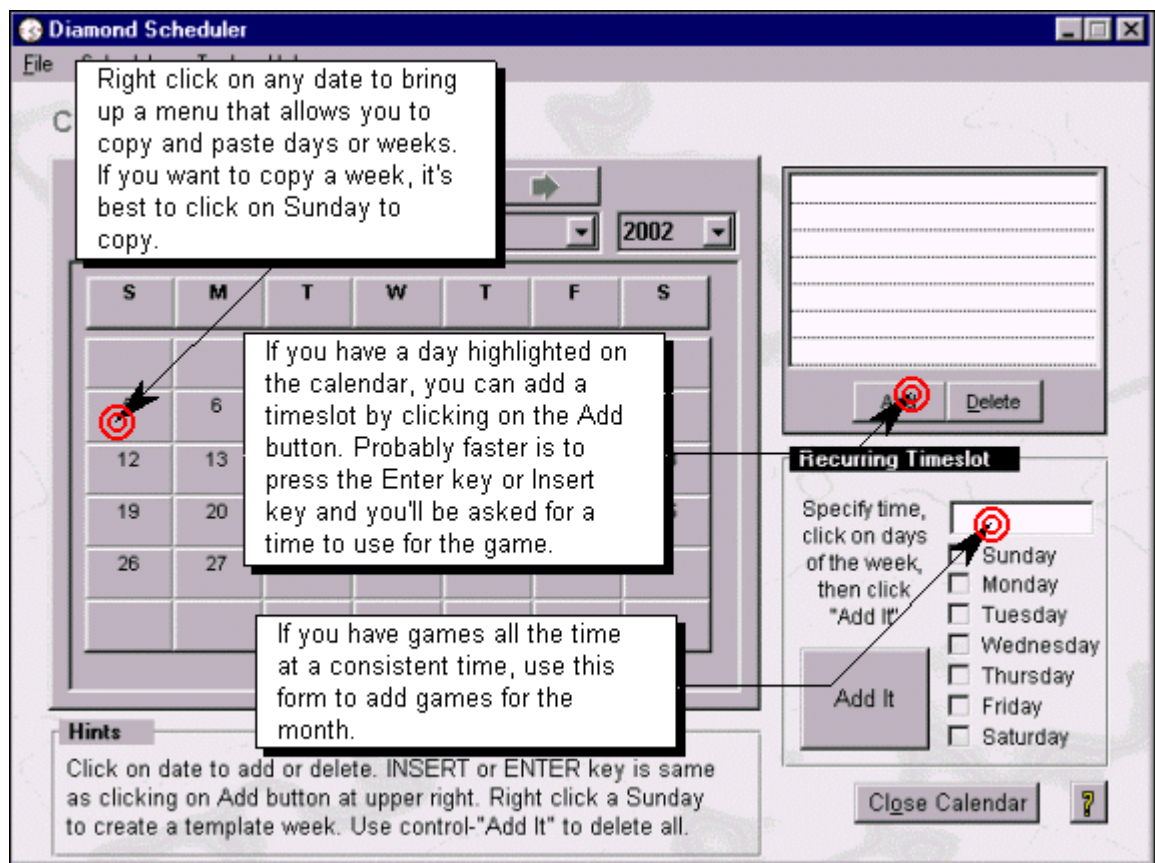
- Click on the *Done* button above the list box.

So far, you have created the field and you've identified the two teams that can use this field as their "home field."

However, Diamond Scheduler doesn't know *when* those teams can use this field as their home field. To identify those times, we create what I call "timeslots."

7. Create timeslots

Click on the button that says *Create Timeslots*. You will be presented with a calendar display like the one below (without all the explanatory labels and a different color now, but the concept remains the same).



There are many ways to enter timeslots. Try each of the following methods to become familiar with the technique.

- ❑ Left click on a day on the calendar. You will notice a blue highlight around the day.
- ❑ Press the enter key.
- ❑ When it asks what time the field is available, type in

5PM

You could have also typed:

1700
 17:00
 5:00P
 5P

All would have been interpreted as 5PM. However, if you had only typed 5:00, that would have been interpreted as 5AM. To create a week of 5 o'clock games, you could copy the day to each of the remaining days by using any of the following methods:

Method 1

- ❑ Left click on the next day that should have a 5 o'clock game.
- ❑ Press the Enter key.
- ❑ Press the Enter key.
- ❑ Repeat for as many days as you like.

This method works fine if you only have one timeslot. If you have many timeslots per day, the following method is more efficient:

Method 2

- ❑ Right click on the day for which you just entered a time.
- ❑ Click on *Copy Day as Template*.
- ❑ Right click on a different day.
- ❑ Click on *Paste Template Day*.

As you can see, you can quickly copy a whole day's games to repeat on another day. If you examine the right click menu, you'll also note that once you have a whole week's pattern created, you can copy and paste weeks. Entering timeslots can go quite quickly this way.

Once you have a week of games created, you can use it as pattern for a weekly template. You would

- ❑ Right click on a Sunday of the sample week, choose *Copy Week as Template*.
- ❑ Right click on the Sunday of a week to which you want to copy the week and choose *Paste Week from Template*.

You could, alternatively, right click anywhere on the calendar and choose *Paste Week until Specific Date*, which will paste the template week until the date you specify on the calendar that pops up.

All of these options make creating the timeslots easy.

Method 3

Let's say instead that you play every weekday of the month at 5PM on this field. At the lower right of the timeslot calendar, you'll see a form entitled *Recurring Timeslot*.

- ❑ Type 5PM in the text field of the Recurring Timeslot form.
- ❑ Click on the box in front of each weekday.
- ❑ Click on the *Add It* button.

Quickly, a 5PM timeslot is added for all days of the month.

For the sake of our tutorial, please

- ❑ Delete all the timeslots you just created by clicking on the button that says *Clear All Timeslots for this Location*.

Once all the timeslots you practiced creating above are erased, do the following:

- ❑ Using whatever method you like, add seven weeks of weekday-only games at 5PM for Central Field.
- ❑ On one day within those 7 weeks, delete the timeslot (right click and choose DELETE entire day). It doesn't matter for the tutorial which day you choose. If there isn't a real holiday during that time, pretend that one of the days is a holiday and avoid identifying timeslots for it since this is exactly how you would take care of a typical no-play day: You simply don't provide the program with a timeslot on that day.

OK, do you have seven weeks of timeslots? If so,

- ❑ Click the *Close Calendar* button at the bottom right of the timeslot calendar.
- ❑ Click on the *Tools* menu at the top of the screen.
- ❑ Click on *Calculate Identified Timeslots*. It should say 34 if you have seven weeks of games with one day off for a holiday. If not, go through this process again and pay careful attention to the directions.

OK, we have our first field done. Central Field is identified. It is used by the two Central teams and it has seven weeks of timeslots (with one day off for a holiday).

We need our other field for our other teams. That field is called the *Outerbanks Rec Center*.

- ❑ Click on the "+" button.
- ❑ Provide the name of the field:

Outerbanks Rec Center

- ❑ When asked, provide the program with a code for the field (up to 5 letters), use:
01

Three teams are going to use the Outerbanks field as a home field: the two Burbs teams and the Mavs.

- ❑ Click on the small button on the right that says "*Set.*"
- ❑ Highlight the two Burbs teams (Burbs 1 and Burbs 2) plus the Mavericks.
- ❑ Click the *Done* button.

So now we have the new field identified and we've indicated which teams can use this field as a home field. It's time, once again, to identify the timeslots for this field.

Let's assume that this field is available exactly the same times that the Central Field is available. Rather than spend the time needed to recreate the timeslots for the Central Field, we'll copy them from Central Field.

- ❑ Click on the button that says *Import Timeslots*.
- ❑ Choose *This File* (as you can see, you could import timeslots for another schedule file if you wanted).

Tip: If you have all the timeslots you want in another schedule file and you can click on this button to import all field information and all timeslots from another file. In this case, we're just copying timeslots from one field. However, keep this hint in mind if you have, let's say, ten fields with timeslot info in another schedule file. In this case, you would NOT create the fields here; you would import all the field info at one time from the other field before you ever click on a pencil icon of the fields/courts tab.

- ❑ Choose *Central Field* (in other words, we want to copy all the timeslots that exist for Central Field). If we already had some timeslots for the Outerbanks field, you would be asked if you wanted to Add to the existing timeslots or Replace the

existing timeslots. Since we have not created any timeslots for the Outerbanks field, the timeslots are copied without posing that question.

- ❑ Click on the *Tools* menu and choose *Calculate Identified Timeslots* (you should now have 68 timeslots identified).

We are about ready to go. We could try to schedule the teams right now, but you would be presented with a dialog box telling you that you must save the file before you can schedule the teams. So let's save the file and avoid the message box.

- ❑ Click on the *File* menu.
- ❑ Choose *SaveAs*.
- ❑ Use the name *tutorial* (the program will automatically append an *.shd file extension to the file - you do not have to do that manually).
- ❑ Click *OK*.

Some advanced tips for field and timeslots:

1. Use the Exclude Timeslots button to make sure you haven't double booked timeslots. This button will allow you to check another file/s and make sure the same timeslots are not repeated in the current file.
2. Use the Import Timeslots to copy all the timeslots from one field to another or to bring in timeslots for another file. If you have no fields created in the current file when you click on this, this button will allow you to bring in all timeslots from another schedule or from a leftover file.
3. The Import Fields button at the top right allows you to bring in information about fields without timeslots from another field.

8. Choose a scheduling method

We are about to schedule the teams for the season. To demonstrate a couple of features of the program, I've intentionally set you up for a little failure. Namely, we have 34 timeslots for two teams on one field and 34 timeslots for 3 teams on another field. Our field that hosts 3 teams is going to come up short by a couple timeslots. At that point, we'll be given the opportunity to allow those teams to play a home game on the Central Field using some of its leftover timeslots. I warn you solely so you don't think you did something wrong.

OK. Let's schedule.

- ❑ Click on the Schedule tab.

You can see that you have many choices of pairing methods. At the upper left you have two elimination methods that can be used for end-of-season tournaments or playoffs. On the right side, you have six different methods:

Optimized Method works for 2 - 30 teams using a pairing system that attempts to distribute the schedule such that all teams play each other once before playing another team again. Whether this can be accomplished is dependent upon the availability of home field timeslots, but the method is usually very good at finding a solution. This is the pairing algorithm that is best to use in your first attempt, as it provides a good balance of many scheduling variables.

Available Timeslots also works for 2 - 30 teams and attempts to schedule games until all timeslots are used. This method doesn't care if you schedule an exact

number of rounds or even if all teams have the same number of games. It is the same as the Optimized method except it just keeps scheduling until all timeslots are gone.

Randomize Pairings creates a different pairing each time you use it; the pairing is random. When you click on this option, you will be asked if you want to force an equal number of games for all teams. While this algorithm has been included by request, the Optimized pairings will always provide the best balance of home/away games without odd runs of home or away pairings.

Import Pairings allows you to edit your own pairings and import them into Diamond Scheduler. While this feature is not generally recommended, the facility has been created in case you already have your own system of matching teams. The format in which the pairings must exist is two comma-delimited lists with spaces between team numbers. If you are interested in importing pairings, take the time to read more about this method in the help file (go to the Help menu and choose Contents, then search for *Import Pairings*).

The **Practice Schedule** uses the identified timeslots for all fields as practice time. In other words, only one team is scheduled per timeslot.

Tip: It's quite common to create a practice schedule before the season starts in one schedule file, then create the regular season league play in another file, then merge the two files to create the combined total schedule.

The **Manual Entry** button of the schedule tab allows you to insert all timeslots into a finished calendar, without particular teams associated with those timeslots. You can then manually edit particular match ups (say the final game or opening game between two competitive teams), lock those games (right click on the game and choose "lock"), then unlock the schedule. You will be asked if you want to save the games you have locked. Then, when you create the automated schedule, you will be queried as to whether you want to insert the games you had originally locked. Answer "yes" and you've got a solid schedule with particular games inserted where you want.

The **Youth Baseball** pairing method works for 4 - 10 teams, with 4 teams having a choice between an 8-week or 9-week schedule. The algorithm used with this pairing is similar to that suggested by the most popular youth baseball organization whose initials are LL ☺.

The **Cyclic Foursomes** method is a special pairing of pairs. Commonly used in doubles tennis, Bridge or informal golf tournaments, this method identifies unique pairs of pairs for a season whereby each player is paired with every other player once and opposes every other player twice. This method is not commonly used but sure is handy if you're trying to set up a tournament to accomplish such social pairings.

For our tutorial, we will use the Optimized method of schedule. So:

- ❑ Click on the Optimized button.

9. Schedule the teams

There's a lot of information on this screen. Eventually, you should know what all the features can accomplish since various combinations of the buttons can help you solve difficult problems with scheduling.

To introduce you to what each button does, take the time now to sequentially right-click on each label on this screen to get more information about all the options.

Did you really take the time to right click on everything? It can save you a lot of time in the future if you understand what each button does. (And it can save me technical support!)

OK, for our tutorial, we're going to do a very simple schedule. A round robin, where teams can play two nights in a row, if need be, with normal pairings (not back-to-back).

- ❑ Make sure *Normal Pairings* is marked at the upper left.
- ❑ Make sure all other boxes on the left side are empty - no checkmarks.
- ❑ At the upper right, click on "Next Day OK," which means a team can play another game the next day, although this shouldn't happen too often (Note: because I've intentionally built in problems to demonstrate two-pass scheduling, having one Day's rest would make the schedule even more difficult. If you want to experiment with a file in which you can use one day's rest, see the sample file included with the program: *sample.shd.*).
- ❑ In the number of rounds, 6 rounds should be suggested. No need to change that; the program is pretty good about suggesting the correct number of rounds based on the number of timeslots you have identified. As you become more advanced, you'll want to be able to calculate rounds and timeslots need for a specific number of games. Although you don't need to worry about that right now, that's why the *calculator* button is there.
- ❑ Click on the *Schedule It Now* button.

If everything goes as planned, you will come up two games short. That's because we didn't give the Outerbanks field quite enough timeslots to support 3 home teams.

Fortunately, Central has several leftover timeslots and the program is now asking you if you want to do a second pass on the schedule attempt without worrying about where those final two games are played. In other words, will it be OK for the Burbs 1, Burbs 2, or Mavs to play a home game at the Central field just to finish up these last two needed games.

Let's pretend that doing so is not a political problem and say, "Yes":

- ❑ Click on the button that says "*Ignore Home Fields.*"

Your final two games should be scheduled and you should be notified that your schedule is complete.

10. Looking at Available Reports

Assuming that you're on the schedule tab, you'll see three buttons now that the schedule is created: Master Calendar, Reports, and Unlock Schedule.

Master Calendar takes you to a calendar view of the scheduled games. We'll take a look at this view of the schedule in a little while.

The *Reports* button will allow you to see three different kinds of reports. We'll take a look at those reports in just a minute.

Finally, the *Unlock Schedule* allows you to start over on the schedule creation process.

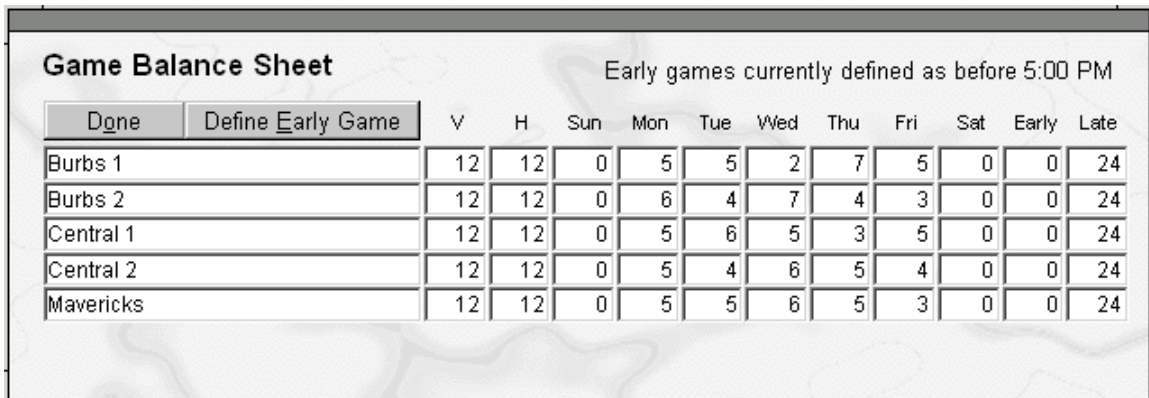
- ❑ Click on the *Reports* button.

You should now be seeing the reports form, looking first at the Teams report. You can tell it's the Team report because it says so in the upper left corner of the screen, plus the *Teams* button at the upper right is disabled.

As you'll notice at the bottom right of the screen, you can choose a team you care to analyze.

At the left, near the bottom, is a button with the caption of *Game Balance Sheet*.

- ❑ Click on the *Game Balance Sheet* button. When asked, choose *View* so that you can view the distribution of games by team across the days of the week (though the display is now a dark gray).



The screenshot shows a window titled "Game Balance Sheet" with a subtitle "Early games currently defined as before 5:00 PM". At the top left are two buttons: "Done" and "Define Early Game". The main content is a table with columns for "V", "H", "Sun", "Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Early", and "Late". The rows represent different teams: "Burbs 1", "Burbs 2", "Central 1", "Central 2", and "Mavericks".

	V	H	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Early	Late
Burbs 1	12	12	0	5	5	2	7	5	0	0	24
Burbs 2	12	12	0	6	4	7	4	3	0	0	24
Central 1	12	12	0	5	6	5	3	5	0	0	24
Central 2	12	12	0	5	4	6	5	4	0	0	24
Mavericks	12	12	0	5	5	6	5	3	0	0	24

As you can see, in our schedule, we have a pretty good balance. Each team has 12 home games and 12 visitor games. There's some disparity on the Wednesday night games (Burbs 1 only plays twice on that night), but otherwise the schedule is pretty well balanced.

For our purposes, we'll say this basic schedule is just fine. We'll pretend like we don't have a bunch of parents who whine about exact distributions of the days of the week (though we can address that issue later – see help file for more detail on using Days of the Week balancing).

- ❑ Click on the *Close* button to close the Game Balance Sheet.
- ❑ Next to the Game Balance Sheet button, click on the button that says *Games by Team Frequencies*.

As you can see, this allows you to see how many times each team plays every other team. In the case of an even round robin, the answer is, by definition, the number of rounds you input earlier. This button will become more useful when you're doing complex schedules that do not involve an even number of rounds.

- ❑ Close the *Games by Team Frequencies* dialog box by clicking on the *Close* button.

At the top of the reports screen, you will see three buttons that allow you to view the games by teams, fields, or division. Click on each to see what type of information is available.

- ❑ Return to the Team report tab by clicking on the *Team* button at the upper right.
- ❑ Click on the *List* button under the View area on the right side. This represents another view of the same information for this team.
- ❑ Click on the *Calendar* button under the View area and note the team's play dates in calendar form.
- ❑ Click on the *Done* button to return to the Reports area.

11. Printing a Report

(Note: Printing and Exporting information will only work in the registered version of the program).

You should be back at the Report area for teams. At the bottom, you'll see the name of the team you're currently examining.

- ❑ If you are not already in Cell mode, click on the *Cells* button on the right side in the View area.

Let's assume that you want to print out this information. You can, if you like, print out a rough report within Diamond Scheduler. If you are linked to a printer, click on the *Print* button at the bottom of the screen.

You should have a text-based printout of the current view.

However, throughout the program, you can create much nicer reports if you choose to Export to HTML. If you have Microsoft® Excel on your computer or any browser, Diamond Scheduler will prompt you to see if you want to open exported reports. If you want to do additional editing on the export, open the file in Excel as it turns out to be a very nice application in which to edit Diamond Scheduler's HTML.

If you have Excel on your computer and you're a registered owner (Diamond Scheduler won't export in the demo version), try the following:

- ❑ Click on the button on the right side that says *As HTML*.
- ❑ Accept the defaults for information to include when the dialog box appears by clicking on the *OK* button.
- ❑ When asked whether you want to create a report for this team or all teams, choose *This Team* for right now.
- ❑ Give the file a name ... it can be "*temp*" or some other name.

- ❑ If this is the first time you've exported to HTML, you will be asked if you want the program to prompt you for opening the exported report in Excel. If you have Excel on your computer, answer, "Yes."
- ❑ When asked if you want to open the file in Excel, say "Yes," if you have Excel, or choose "Browser" if you don't have Excel installed.

The spreadsheet should look something like the picture below.

	A	B	C	D	E	F
1	Schedule for Softball Seniors Burbs 1					
2						
3						
4	Date	Day	Time	Visitor	Home	Field
5	05/14/2002	Tuesday	5:30 PM	Central 1	Burbs 1	Outerbanks Rec Center
6	05/16/2002	Thursday	5:30 PM	Burbs 1	Mavericks	Outerbanks Rec Center
7	05/17/2002	Friday	5:30 PM	Burbs 2	Burbs 1	Outerbanks Rec Center
8	05/20/2002	Monday	5:30 PM	Burbs 1	Central 2	Central Field
9	05/21/2002	Tuesday	5:30 PM	Burbs 1	Central 1	Central Field
10	05/23/2002	Thursday	5:30 PM	Mavericks	Burbs 1	Outerbanks Rec Center
11	05/24/2002	Friday	5:30 PM	Burbs 1	Central 2	Central Field
12	05/27/2002	Monday	5:30 PM	Burbs 1	Burbs 2	Outerbanks Rec Center
13	05/28/2002	Tuesday	5:30 PM	Central 2	Burbs 1	Outerbanks Rec Center

The dates you have will likely be different than the picture.

Opening the file in Excel to do final editing allows you to sort the information in different ways, change the colors if you don't like the defaults, and, in general, just enjoy more control over the final output. Since this is HTML code, you can edit it using any HTML editor or post the file to a Web site.

All reports in Diamond Scheduler can be exported to HTML and opened in Excel or a Web browser.

- ❑ Close Excel.
- ❑ Back in Diamond Scheduler, click on the *Done* button at the bottom right of the screen to return to the schedule tab and the three large buttons.

12. Looking at the Master Calendar

You should now have a feel for the type of reports you have available to you.

Let's now take a look at the Master Calendar.

- ❑ Click on the *Master Calendar* button.

As you can see, the games that have been schedule are displayed in calendar format.

- ❑ Left click one of the days that has games. You will see a dialog box appear with details about the day's games. You can also turn on the flag near the center of the bottom that says, "Pop Up Day Schedules on Mouse Point." That will automatically display an expanded version of the games when you roll your mouse over the day on the calendar.

- ❑ Close that dialog box by clicking on the *Close* button.

That's how you can see detail on any given day's game. Still, there are several features hidden in the Master Calendar.

One of the first things you'll notice when you go to the Master Calendar is the *Options Tab* at the upper left of the screen. Clicking on the Options label of that tab reveals three calendar display options:

Show Open Timeslots - display those timeslots that still exist at the various venues, but which were not taken during the scheduling process.

Flag Field Conflicts - checking this box will highlight any days that games occur on any one field sooner than the specified window of time.

Flag Multiple Game Days for Teams - checking this box will highlight any days where the same team has more than one game (to avoid inadvertent scheduling of teams for more than one game per day).

- ❑ Right click on a day with games.

This menu allows you to do many things with the schedule to modify and enhance the automated scheduling results. This menu is your key to doing many things including switching games around, flipping home and away, locking certain games so that you can unlock the full schedule while keeping certain games "hard-wired" into the schedule, and a variety of other tasks.

Let's take a look at some of the options on the next page. While I have not yet had time to change the graphic, you'll see most of the same menu items but in a slightly different order. The functions remain the same, and a few have been added.

Undo	<p>Some of the things you can do:</p> <ul style="list-style-type: none"> • Limit the teams which are displayed on the Master Calendar • Edit game times and teams • Add a game manually • Cut a game • Copy a game • Paste a game • Move a whole day's schedule • Move whole schedule up a week or a year • Switch around who is home team and away team • Switch home and away on all games • Switch home and away only on unlocked games • Switch a Monday pairing with a Friday one • Delete pairing but not the timeslot • Edit the umpires for the game • Record who won the game • Lock games even if you unlock the schedule so you can "hard-wire" a game between certain opponents on specific days
Display Only Certain Teams	
Edit Game	
Add a Game	
Cut Game	
Copy Game	
Paste Game	
Move this Day	
Move Entire Schedule by Days	
Flip Home and Away Team for this Game	
Flip All Home and Away Pairings	
Flip Home and Away Pairings for Unlocked Games	
Switch Game Locations with Another Pairing	
Clear Teams and Leave Timeslot	
Umpires	
Record Winner	
Lock This Game	
Lock All Scheduled Games	
Lock All Games On or Before this Date	
Unlock All Games On or Before this Date	

- ❑ Dismiss the menu by pressing the escape key.
- ❑ Using the arrows at the top of the Master Calendar, go to the last month of your schedule (in my case it's June because I started my seven-week schedule in May).

You should see several timeslots with displays that have two asterisks playing two asterisks. This implies that this is still an open timeslot that can be used for rainouts or other postponements. You can either show or hide open timeslots using the Options tab at the top left of the Master Calendar.

When we first made the schedule, I asked you to leave one day open representing a holiday. Let's say that for some reason, you now need to move the games from one day earlier in the season to that date.

- ❑ Right click on the date that had a rainout.
- ❑ Choose *Move This Day*.
- ❑ Right click on the date to which all the games should be moved.

That's how you can quickly move an entire day's games

OK. That's the basics of making a schedule.

If you want to see what the calendar view can look like printed, you can click on the *Print* button at the bottom of the screen.

A nicer printed report can be created if you use Excel or a Web browser by clicking on the *Export* button at the bottom and choosing HTML. If you have provided your teams with Custom HTML Codes on the team tabs, the program will ask you if you want to substitute those abbreviations for the regular codes being used on the screen. I assume you would say "Yes" or there would have been no reason to create those codes in the first place.

The report in Excel or browser looks like a calendar. Since this is HTML code, you can post the file to a Web site.

That's all there is to scheduling (in its most basic form). Next, we'll look at some of the most frequently asked questions that I get in the hopes that they will help you solve some of your scheduling problems.

Frequently Asked Questions for Diamond Scheduler

Multiple Copies of the Program

Question: May I put the program on my computer at home and at work, and while I'm at it can I also put it on the computer of the league president and the field coordinator and

Yes, you can have the program on up to three computers as long as it directly supports the original league for which you bought the program.

Copying the Program to Disk

Question: I want a "hard copy" of the program in case we need to load it on a computer not connected to the Internet.

You can save the program to either CD or floppy disk to take it to another location. If you want to save a copy of the program on CD, the best thing to do is to download the installation file and save it to CD. That file is located at <http://www.cactusware.com/setup.exe>.

Custom HTML Codes

Question: My league really needs a different abbreviation for calendar view than the regular abbreviations. How can I do that?

If you choose to export to HTML, rather than just print from the program, the full team name will be used. In addition, when exporting to HTML in calendar view, you can use a custom HTML code (see bottom of the team tab) for each team. If teams have a custom HTML code associated with them, you'll be asked if you want to use those HTML codes for reports upon export instead of the regular code that is used internally by Diamond Scheduler.

Can not Schedule All the Games

Question: I have plenty of timeslots but the program keeps leaving some open and I can't get all my games scheduled. What's up with that?

The typical mail message I receive goes something like this: "John, I have six teams and when I go to the Tools menu and choose 'Calculate Timeslots Needed,' the program tells me I only need 60 timeslots to complete 4 full rounds. I have 80 timeslots and your program still doesn't make the schedule. What gives? I thought this was a good program."

This situation is frustrating for you and me. You, because you think you have enough timeslots, and me because sometimes it's difficult to explain the situation .. but here's the most common problem I see:

Typically, when I look at these schedules, there are, in fact, the claimed 80 timeslots. Unfortunately, they're broken up into 10 timeslots per night on two or three fields (it might be 6 per night or 8 per night ... the details vary and the number of fields in use may often be more than one). However, even if those timeslots are on several fields, it's common that they are concurrent; in the most extreme case, all the timeslots are all on one day. To explain, let's say they're all on Saturdays. If you

think about this as a little math puzzle, it should quickly become clear what's going on.

With six teams, that means only 3 games can occur per night (if teams don't play double headers) which means 3 of the timeslots per night are used and 7 of the 10 timeslots are wasted because all the teams are already occupied. Those timeslots might as well not exist! Really.

The basic guideline is you can only use $N / 2$ timeslots per night where N = number of teams. If you have 10 teams, the most timeslots you can use is 5. Any number of timeslots beyond that is of no use.

As a consequence, looking at my example (where every team should play 20 games per season for a complete 4-round season), only one game per week can be played each of the eight weeks and 7x8 timeslots are actually wasted ... they can't be used. That means only 24 games can be scheduled. Just like you can't be two places at once, teams can't play two games at once to use up the timeslots.

The situation is made worse when there's an uneven number of teams because one team typically has to sit out each night. The ideal way to solve the problem is to move any timeslots beyond the $N / 2$ number to a different night and then all the timeslots can be used.

Scheduling Multiple Divisions

Question: You just showed me how to schedule one division in the tutorial. However, I have many divisions. How do I schedule those without creating time conflicts?

Scheduling multiple divisions with Diamond Scheduler is simple, once you get the hang of it. Remember: Each division is scheduled separately from all other divisions. In other words, Major Baseball would be one file and Minor Baseball would be another file. When you have all your schedules (i.e., files) completed, you merge them into what is called a "Combined Schedule Report" to create a Master Schedule (select File menu > Merge Schedule Files).

Hint: Make sure you spell the names of fields (venues) and their associated codes exactly the same in all files (where they are supposed to refer to the same fields). That way, when you merge the files, the fields will be recognized as referring to the same locations in both files (the same goes for team names if they're used in more than one file as occurs with across-league scheduling).

Obviously, you don't want to accidentally identify the same timeslots for two different divisions. There are two approaches to avoiding this: Identify mutually exclusive timeslots or cascade the leftover timeslots. I prefer the first method, identifying mutually exclusive timeslots for each of the schedules.

Creating the *.SHD Files

Method 1

As an example, I might identify 5:30 PM on Mondays, 7:00 PM on Wednesdays and 3:30 PM on Saturdays for the Major Baseball schedule. For Major Softball, I might identify 7:30 PM on Mondays, 5:30 PM on Wednesdays, etc. The goal is to have mutually exclusive timeslots in each file so, by definition, no two divisions could possibly be scheduled at the same time.

There are a couple of tools to help you estimate how many timeslots to reserve for any given division (see Tools menu/Calculate Timeslots Needed and Tools menu/Calculate Identified Timeslots). One of the biggest advantages of approaching the multiple division scheduling by keeping the timeslot independent is that each division is isolated from other divisions. If a team is added or dropped from a division, it has no effect on other schedules, unlike the second of the two methods - cascading the timeslots. However, cascading timeslots can be quite an appropriate approach, especially for smaller leagues where re-working all schedules would not be a major problem.

Method 2

By cascading the timeslots I mean that you load all your timeslots into the first schedule. You then schedule that first division (generally with some constraints like a rest of two days between games and/or a maximum number of games per week in conjunction with a maximum number of games per season) so that not all the early timeslots are "stolen" by the first division. Once you have this schedule created to your liking, you export whatever timeslots are leftover for use in the next schedule.

To export leftover timeslots, you go to the Schedule menu/View Remaining Timeslots/Export. This exports the timeslots to an *.shl file. This *.shl file can be imported to your next schedule by clicking on the *Import Timeslots* button of the field tab.

Again, my preference is the first method for two reasons: First, if you have a lot of timeslots in the first, saturated schedule, it can *really* slow things down during the scheduling of the first few divisions. In fact, there's the potential of running into memory problems on your computer if you literally have hundreds of timeslots that are not going to be used by that division. So it's not efficient from a time management standpoint.

More importantly, since you are cascading the timeslots, i.e., passing along the open, leftover timeslots to subsequent schedules, what happens if you add a team to the first division? You have to re-do *all* of your divisions because you now need to add more games to the first schedule but all of its leftover timeslots have already been given away to another division. The schedules are dependent and this can be a real bother.

A Safety Net

The Exclude Timeslots button on the field tab will let you point to another schedule file and double check to make sure you've not included any of its timeslots in the current file. Of course, for this feature to work, the name of the field and its code must be the same in all files.

Combining the Divisions

Once you have all of your individual schedules done, you can create a Combined Schedule Report to merge the individual schedules together. To do that, select File menu > Merge Schedule Files and follow the directions.

Across-division (or league) Schedules

Question: I have two divisions, an American League and a National League. I want them to play two rounds within their division but also one time against the teams in the other division. How do I do this across-division scheduling?

Hint: Make sure you spell the names of fields (venues) and their associated codes exactly the same in all files where they refer to the same fields so that later on you can merge files into a combined schedule report and they'll be recognized as the same field (the same goes for team names if they're used in more than one file). The same goes for the team names and codes.

There are several approaches.

One approach is to reserve certain days or nights for one division (e.g., Division A plays on Mondays at 5:30 PM and Thursdays 7:30 PM and Division B plays on Tuesdays 7:30 PM and Wednesdays at 5:30 PM with across-division play on Saturday).

Alternatively, in your league, you might set aside two weeks in the middle of the schedule for across-league scheduling. That way, you're sure that an intra-division game can not be scheduled on the same day as an across-division game.

However, the most common approach is a third one: Schedule the two intra-division files then exclude those times from use in the third file which is used to create the across-division games. More on that later.

Since the approaches are pretty much the same as far as the files that are created (one for each intra-division schedule and then an across-division schedule), I'll use the third method as an example.

First, you need to create the two files that act as the within-division schedule for each of the two divisions. In these, teams only play teams within their division (e.g. the Monday and Thursday games for Division A). As long as the fields are available and not double booked, it's OK for teams to be playing at the same times at different fields in these intra-divisions schedules. You create these two files just like you would create schedules for two unrelated divisions. Use one of the methods mentioned above to make sure you have mutually exclusive timeslots on the fields you have available and you should be fine.

Next, given those two intra-division schedule files, you need to create the third, across-division games. In the third file, you identify all the teams from both of the first two files.

To make it easy to list all the teams, I typically do the following sequence.

- Choose one of the completed intra-division schedules

- ❑ Choose *File/SaveAs Without Timeslots* to a different name like "*acrossgames.shd.*"

This saves all the information in the first file (the team names, the fields and the division name) into the fresh, third file. All you need now is to add any additional teams from the second division and any additional fields used. This is pretty simple:

- ❑ On the team tab, click on *Import Teams* at the upper right
- ❑ Point to the schedule file for the second division

This will bring in the names and codes for the second division. If you use additional fields in the second schedule, which are not identified in the first schedule, repeat the process with the fields:

- ❑ On the field tab, click on *Import Fields* at the upper right.
- ❑ Point the schedule file for the second division.

Using this method of bringing in all the team and field info ensures that the names and codes are exactly the same in all three files so that they'll be recognized when the schedules are merged.

OK. So now you've got a third file with all the teams and venues that you can use. You'll need to identify the timeslots that are available to use. You may have exported leftover timeslots if you're cascading the times. If so, you could bring those timeslots in by clicking on the *Import Timeslots* button of the field tab and pointing to the appropriate *.shl file.

*Tip: If you have cascaded the timeslots, i.e., you have all your leftover timeslots in an external file (an *.shl file), do not bring in the field info ahead of time. In fact, if you have fields identified, delete them. The reason is that if you click on the Import Timeslots button and you have no fields identified, it will allow you to bring in information about all fields and timeslots in the *.shl file automatically. If you have a timeslot already identified in the new file, the program thinks you want to bring in the leftover timeslots one field at a time.*

OK, you have your timeslots ready to go, you've identified your home teams for each field and there's only one more thing to do before scheduling this across-division portion of the schedule.

- ❑ Go to the Team tab. Click on the button that says *No-play Times*
- ❑ Click on the button that says "*Import No Play Times for All Teams from Another Schedule*"
- ❑ Point to the first team's intra-division schedule file and click OK.
- ❑ Repeat the process for the second team's intra-division file and click OK.

You have just told the program, "regardless of what timeslots are identified in this schedule file, make sure that under no condition do you schedule a team in this file where that team is already scheduled for a game in their intra-division file."

OK. You're ready to schedule.

- ❑ Click on the Schedule tab.
- ❑ Click on *Optimized*.

- ❑ Make whatever adjustments you want for between games and other parameters
- ❑ Click on the checkbox that says *Across-league Schedule* near the bottom of the schedule tab

This takes you to a dialog box where you identify which teams constitute division A as opposed to division B so that Diamond Scheduler can do its work in this file by only scheduling games across divisions and not within divisions.

- ❑ After you identify which teams are division A and B, click the *Continue* button.
- ❑ Click the *Schedule Now* button and treat the rest of the process as a typical schedule.

Once you complete this inter-division portion of your schedule, you simply combine all three files (as described above) into a combined schedule file and your schedule is done.

Across-Division Schedules with Many Divisions

How Can I Schedule Many Divisions including Intra- and Inter-Division Games?

Hint: Make sure you spell the names of fields (venues) and their associated codes exactly the same in all files where they refer to the same fields so that later on you can merge files into a combined schedule report and they'll be recognized as the same field (the same goes for team names if they're used in more than one file). The same goes for the team names and codes.

Multiple divisions in across-division mode is a bit ugly, but here's how I'd approach it.

Let's say you have 4 divisions (A, B, C, D) and they all play an intra-division schedule, plus you want them all to play each other once.

- ❑ Schedule the 4 intra-division schedules. I'm hopeful that you have the hang of scheduling the regular divisions. Did that go smoothly? If you haven't gotten that far, be sure to go through the beginning of this document again.
- ❑ With that done, you'll have 4 files with no conflicts on the times (I hope). If you want to do a quick check to make sure you don't have any scheduling conflicts so far (i.e., you haven't double booked a field), you can go to the File menu > Merge Schedule Files. Hopefully, you've spelled the field names the same in all 4 files so that the program recognizes the fields as the same in each of the four files. If there are any potential conflicts, those days will be highlighted in dark gray in the Master Calendar of a combined schedule. If there is a day that's in dark gray, make sure that there's an appropriate time window being used to check for conflicts by clicking on the options tab at the upper left of the Master Calendar and setting the time.
- ❑ Let's say the intra-division schedules went well. Now, because you have 4 divisions, you've got to get all the combinations of those four divisions playing each other. What I would do is load all the remaining timeslots that can be used for the 4 divisions into the first of the across-division schedules you're about to create. Then you'll need to create the following files:

AB, AC, AD, BC, BD, CD

With all the timeslots in the AB across-division file, follow the directions above for scheduling a simple two-division across division schedule (i.e., go to the optimized pairings but be sure to click on the checkbox that says ""Across-league Scheduling"). Remember, before you schedule, go to the Team tab and click on the "No-play Times" button at the lower right, then click on the button that says "Import No Play Times for All Teams from Another Schedule." Sequentially, identify the two intra-league files to tell the program NOT to schedule either of the teams during times that they already have intra-league games scheduled.

This process will give you your file for the AB league.

- ❑ OK. You should have timeslots left over since you put all your available timeslots in this file. Go to the Schedule menu, View Remaining Timeslots, Export. This will allow you to take the leftover timeslots out to an external file (one that ends in *.shl). You're now done with this file. Save it.
- ❑ On to a new file for the AC inter-division scheduling. You can import the team names from existing files on the team tab (you should do this so you don't misspell team names or codes which would make the program think you're dealing with different teams) by clicking on the button at the upper right of the team tab that says "Import Teams" (obviously, in this file, you solely point to the two existing files - A and C - to get the appropriate team names for this file). To import the fields and timeslots that are available, go to the field tab and click on Import Timeslots at the bottom. Point to the external file you just created (the *.shl file) and import all the remaining timeslots for all the fields.
- ❑ On the team tab, click on the No-play Times button and then click on the "Import No Play Times for All Teams from Another Schedule" as you did above to make sure these teams are not scheduled here for any times they're already scheduled. However, be careful. You also need to point to the existing AB file because A has some games in there too.

In other words, the guiding principle is that you have to point to any schedule files in which either of the two participants of current interest have games. (In a four division combination, that means you could have up to 7 files that might be included in some match-ups).

- ❑ Export the leftover timeslots and repeat the procedure until you have all six of the across-division schedules done.
- ❑ Go to the File menu, Merge Schedule Files and merge the A, B, C, D, AB, AC, AD, BC, BD, and CD files into one Master Calendar.

Hope that makes sense. It's a LOT easier doing it than describing it.

Some Final Words

No matter how many hints I provide in a document like this, there are always new situations and problems to solve. I have tried hard to include tools in Diamond Scheduler that allow you to solve the majority of common scheduling problems.

If you have other questions or issues that should be addressed in the introduction, please let me know by emailing me at jhall@cactusware.com