

***ExcelDerby* User's Manual**

1 Introduction

ExcelDerby is a Microsoft® Excel Add-In package that manages all aspects of running a derby. It was originally written to run a Cub Scout Pinewood Derby, but it can easily be configured to run most any kind of derby or contest.

ExcelDerby uses the following model to run a derby:

1. A *Derby* consists of a list of *Entrants* grouped into *Divisions*.
2. Each *Entrant* has certain information. Namely *First Name*, *Last Name*, *ID* and *Team Name*.
3. *Entrants* in each *Division* compete with each other to produce a number of *Division Finalists*.
4. All the *Division Finalists* can optionally compete with each other in the *Finals Division* to produce the overall *Derby Finalists*.
5. A *Division's* competition is made up of a preliminary *Race* and a set of *Tie-Breaking Races*.
6. A *Race* is made up of a set of *Heats* that are divided into *Rounds*.
7. A *Heat* is one run of some of the *Entrants*.
8. All of the *Entrants* compete in a number of *Heats* and accumulate scores. After the *Preliminary Race* is run, if some of the *Entrants* are tied, *Tie-Breaking Races* are run.
9. After any ties are resolved, the *Entrants* with the top scores are the *Division Finalists*.

ExcelDerby was designed to meet the following goals:

1. Easy to use
2. Totally customizable
3. Fairest scoring system possible
4. Pleasant and useful displays
5. Communicate with electronic "Judges"
6. Better than any "commercial" program
7. Open-Source development

1.1 Easy to use

ExcelDerby is easy to setup and easy to use. *ExcelDerby* runs on top of Microsoft Excel. So anyone familiar with Excel spreadsheets should be able to use *ExcelDerby*. All the setup and entrant information is entered in spreadsheets. All of the derby results are saved in spreadsheets.

1.2 Totally customizable

ExcelDerby does not limit you to a built-in derby organization like most of the "commercial" racing programs. All the entrant's information for each division is entered on a separate Excel spreadsheet. Using Excel, you can then change the name of the spreadsheet to match the division's name. The setup spreadsheet contains the information about how to run each division.

1.3 Fairest scoring system possible

ExcelDerby uses a scoring system called Perfect-N. In this system every entrant races against every other entrant and races in every track lane. Every entrant races the same number of times and the overall results are not calculated until the end. The slow racers race as many times as the fast racers. No more dejected looks from racers out of the running halfway into a race.

For a discussion on why the Perfect-N scoring system is the fairest method, visit <http://members.aol.com/StanDCmr/pwraces.html> and <http://members.aol.com/StanDCmr/steam1.html>

For a good Pinewood Derby information web page, visit <http://members.aol.com/StanDCmr/pwportal.html>

1.4 Pleasant and useful displays

ExcelDerby's displays are designed to be used with a computer video projector. The displays are large and colorful and contain the all the information needed to keep everybody informed and interested in the race.

1.5 Communicate with electronic "Judges"

ExcelDerby was designed to allow the race results to be entered manually or to read the race results from an electronic judge. Currently, *ExcelDerby* only supports the MicroWizard electronic judge. Mainly because it was the only electronic judge that I had access to. If someone would like to add support for others, please do. If someone could send me a log file containing the actual data sent to and from other judges, I could add support for them.

1.6 Better than any "commercial" program

ExcelDerby was written to correct the serious deficiencies in all of the "commercial" derby programs. Either they're buggy, have cumbersome user interfaces, or are difficult to use. But most importantly, they have inferior scoring methods.

The Cub Packs that have used *ExcelDerby* all think it's the best derby program available.

1.7 Open-Source development

ExcelDerby is an Open Source project. An Open Source project is one where not only do you get the program for free, you also get the source code for the program. So if there's something about *ExcelDerby* that you don't like, you can change it. Or if there's a really useful feature that you wish *ExcelDerby* had, you can add it. *ExcelDerby* is written in Visual Basic for Applications. You have all the sources. You can make any changes you want. The only thing you can't do is keep the source code from others. See *lgpl.txt* for the details.

If you do make improvements, send the changes to me and I'll incorporate them into the next official release. The improvements do not have to be limited to the program. If you can help improve the user's manual, please do. I'll add the changes to the official user's manual.

2 Getting Ready

Getting ready for a derby is easy with *ExcelDerby*. The steps involved include:

1. Install *ExcelDerby* on your race computer
2. Connect the electronic judge to your race computer
3. Enter the derby entrant information on the *Division* worksheets
4. Enter the derby setup information on the *Setup* worksheet
5. Run the derby

2.1 Installing ExcelDerby

To install *ExcelDerby*, just run the installation program and follow the on-screen directions. The installation program will copy two files to the installation directory that you specify. The file named "ExcelDerby-vN.xla" contains the Excel macros that *ExcelDerby* was written in. 'N' is the version number. The file named "PinewoodDerby.xls" is a sample derby Excel workbook.

2.2 Connecting the Electronics

To use the MicroWizard, follow the instructions for connecting the MicroWizard to your computer. Make sure you test the connection with HyperTerminal. Remember which COM port the MicroWizard is connected to, since you'll need to enter that information in the setup worksheet.

2.3 Division Worksheet(s)

Each division in the derby needs a separate worksheet to record the entrant information. In the sample workbook, "PinewoodDerby.xls", the division worksheets are "Tiger", "Wolf", "Bear", "Webelos I", and "Webelos II". Each division worksheet consists of a set of columns, the meanings of which are as follows:

ID	A unique identification code for each entrant. This code can be any combination of characters. It doesn't have to be limited to three numbers as in the example. At our Pack's Pinewood Derby we attach a small sticker with the ID printed on it to each car.
Team	A team identification for each entrant. At our Pack we use Den numbers and Patrol names.
Last Name	The entrant's last name. It doesn't have to be limited to only one character as in the example.
First Name	The entrant's first name.
Racing	Enter a "Y" to indicate if the entrant is racing or an "N" if the entrant is not.

2.4 Setup Worksheet

The setup worksheet allows you to configure *ExcelDerby*. It consists of a set of rows, the meanings of which are as follows:

Title	This line will be printed at the top of each display.	
Subtitle	This is the second line that will be printed on each display.	
Number of Lanes	Number of lanes on your track.	
Data Acquisition	"manual finish"	For entering the race finishes manually.
	"manual time"	For entering the race times manually.
	"random finish"	For simulating a derby using only race finishes.
	"random time"	For simulating a derby using race times
	"MicroWizard,COMn"	To use the MicroWizard electronic judge connected to COM port n , where n is from 1 to 4.
Divisions	Each column should contain the names of the division worksheets to be included in the derby.	
Number of Rounds	The number of rounds to run for that division. A round is a set of heats, the number of which is equal to the number of entrants in that division.	
Number in Final Standings	The number of top-place finishers from this division that will be printed on the "Final Standings" display.	
Number in Finals	The number of top-place finishers from this division that move on to the Finals division, if you're running a Finals division.	
Tie Break to Place	Run tie-breaking races down to the indicated place. Enter the word "ALL" to run tie-breaking races for all places.	
Complete	The computer will enter a "Y" here when the division races are complete.	

3 Running a Derby

Once your derby Excel workbook contains all the necessary information, open the file "ExcelDerby-vn.xls", where **n** is the current version of *ExcelDerby*. A new drop down menu, called "Derby", will appear on the top menu bar. It's one selection, "Run Derby", will run a derby from the active workbook.

3.1 Division Selection Display

The first display will contain a selection list for choosing which division to run. Run the division by either selecting it and pressing the "Run Division" button or just double click the division name.

3.2 Entrants Display

The next display will contain a list of all the division entrants. This is your last chance to make sure everybody who's racing is on this list. If the list is correct, press the "Continue" button otherwise press the "Cancel" button and edit the division worksheet.

3.3 Print Preview of the Racing Chart

The next display will be a print preview of the racing chart. This chart allows for pre-staging the entrants. Press the "Print..." button to print to the default printer, otherwise press the "Close" button to continue.

3.4 Data Entry Display

The next display will be the data entry display. Use this display to enter or re-enter the results from a race. Pressing the "<< Previous" and "Next >>" buttons allows you to display any of the scheduled heats. Pressing the "Run Heat" button causes *ExcelDerby* to generate the race results, either randomly or by communicating with the electronic judge. Pressing the "Accept" button records the displayed results and displays the next heat. When using manual data entry, just enter the results on the display and press the "Accept" button.

If you need to rerun a heat for any reason, just use the arrow buttons to bring up the heat display and press the "Rerun Heat" button or just reenter the new results. Then press the "Accept" button.

3.5 Standings Display

After each round, the preliminary standings will be displayed. Press the "Continue" button to start the next round. After all the tie-breaking rounds, if any, the final standings will be displayed. If you have configured the derby for a finals division, then *ExcelDerby* will automatically move the division finalists to the finals division.

3.6 Division Chart Worksheet

ExcelDerby creates a new worksheet for each division run, called the division chart. It records the race chart, the heat finishes, and the standings for each race. You can use this worksheet to give you a snapshot of the division.

3.7 Results Workbook

ExcelDerby creates a new workbook for each division run, called the results workbook. It records the details of each heat run. *ExcelDerby* uses this workbook to recover from interruptions. You can use this workbook to get the details for each heat.

4 Handling Problems

This is the list of *ExcelDerby's* pop-up messages and what they mean:

Attempt to recover the results log	Division Selection Display	A division recovery workbook has been found. You can have <i>ExcelDerby</i> try to recover the results so you won't have to rerun the entire division.
Entrant list does not match	Division Recovery	The entrant list in the division recovery worksheet does not match the entrant list in the division worksheet. More than likely this recovery worksheet has either been severely corrupted or it's not the recovery worksheet for this derby workbook.
'Name' is an unknown data acquisition method	Run Derby menu selection	The "Data Acquisition" line in the setup worksheet did not contain a valid option.
'Name' was not found	Run Derby menu selection	The entry <i>Name</i> from the setup worksheet was missing or misspelled.
No active workbook was found	Run Derby menu selection	You need to open the derby workbook in Excel.
No entrants found for the 'Name' division	Division Selection Display	You did not have any entrants that are racing entered into the division worksheet.
No worksheet named 'Name' was found	Division Selection Display	The division worksheet was missing or the name of the worksheet did not match the name entered into the Setup worksheet.
No worksheet named 'Setup' was found	Run Derby menu selection	Either you have not opened your derby workbook in Excel or your derby workbook is not the active workbook or your derby workbook doesn't have a setup worksheet named 'Setup'.
'Number of Lanes' was not found	Division Recovery	The row containing the number of lanes was missing from the division results worksheet. Unless you can edit the worksheet to add this value, <i>ExcelDerby</i> will not be able to recover the division results.
'Number of Rounds' was not found	Division Recovery	The row containing the number of rounds was missing from the division results worksheet. Unless you can edit the worksheet to add this value, <i>ExcelDerby</i> will not be able to recover the division results.
Please enter a correct time value	Data Entry Display	You entered a bad time value. Times can only contain numbers and only one decimal point.
Please enter all lane results	Data Entry Display	If you're not using run times, then you

		must enter the finish order for all the entrants in the heat.
Please enter all lane times	Data Entry Display	You must enter all the finish times before you can accept the results.
Please select a division	Division Selection Display	You need to select a division before pressing the "Run Division" button.
'Race Title' Round Number Heat Number Bad finish value	Division Recovery	The division recovery worksheet is probably corrupt. Recovery is not possible.
'Race Title' Round Number Heat Number Entrant does not match	Division Recovery	There's a mismatch between the division recovery worksheet and the derby division worksheet. Recovery is not possible.
Rerun the completed 'Name' Division	Division Selection Display	You selected a completed division to run. You can rerun it if you like.
The 'Name' division needs to be completed before Finals can be run	Division Selection Display	You tried to run the Finals division before all of the other divisions have been completed. Either run the other divisions or change the Setup worksheet.
The Number of Lanes does not match	Division Recovery	The row containing the number of lanes value from the division results worksheet does not match the number of lanes in the setup worksheet. Unless you can edit the worksheet to change this value, <i>ExcelDerby</i> will not be able to recover the division results.
The Number of Rounds does not match	Division Recovery	The row containing the number of rounds value from the division results worksheet does not match the number of rounds in the setup worksheet. Unless you can edit the worksheet to change this value, <i>ExcelDerby</i> will not be able to recover the division results.
The value for 'Name' is greater than the maximum (Value)	Run Derby menu selection	You need to enter a smaller value for <i>Name</i> in the setup worksheet.
The value for 'Name' is less than the minimum (Value)	Run Derby menu selection	You need to enter a larger value for <i>Name</i> in the setup worksheet.
The value for 'Name' is not numeric	Run Derby menu selection	The value you entered for <i>Name</i> in the setup worksheet was not a number.
This lane's result is incorrect	Data Entry Display	You must enter a finish order number that is between one and the number of lanes.
Unknown Data Acquisition Method	Data Entry Display	The "Data Acquisition" line in the setup worksheet did not contain a valid option.
WARNING -- Bad generator data	Division Selection Display	You should never see this error message. It indicates a flaw in <i>ExcelDerby</i> .

WARNING -- Unknown Division:
'Name'

Division Selection Display

You should never see this error message.
It indicates a flaw in *ExcelDerby*.

5 Additional Information

If you have questions, suggestions or code/documentation changes, you can contact me at:

mchecky@hotmail.com