FIRST Lego League (FLL) Schedule Tool Manual

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1 Introduction

This manual covers the operation of the Schedule Tool for FIRST Lego League (FLL) tournaments. The tool is intended for usage by FLL Tournament Directors (or their delegates) to generate a comprehensive tournament schedule taking into account competition matches, practice matches, and judging sessions. The tool is quite flexible. It can be used for other purposes than the generation of FLL tournament schedules, however, the central purpose for which it is designed remains FLL tournament schedule creation.

If you have tried your hand at generating a schedule for a tournament and found
- Either your volunteers or the attending teams complain they're not able to understand where they are supposed to be next
- Teams complain they are rushing from one place to the next
- Teams complain they are playing the same team more than once
- Your blood pressure increases when a team (or teams) drop immediately before the day of the tournament
- You are reluctant to change the schedule because you spent the last two weeks coming up with what looks like a good schedule
- No matter what you've tried, the schedule always seems to fall behind
- The competition rounds are held up awaiting a team still being judged

Then this tool is for you.

1.1 Characteristics of FLL Tournaments

FLL is a program that encourages the interest of young kids in science and technology through a structured competition using Lego™ Mindstorms™. The kids form teams of about 10 people and construct an autonomous Lego robot to then satisfy a challenge. The challenge takes on the physical form of a series of Lego models as designed and provided by FLL, placed on a pre-printed mat also designed and provided by FLL, designed to fit within a 4 x 8 foot table with walls. During competitions, two of these tables are placed back-to-back with one mission common to both tables straddling the two tables. The teams then have 2 ½ minutes to complete all of the missions on the table to maximize their points. The teams usually have three tries (rounds) to post their best score. This best score is either used to gain entry into some form of finals or to be directly used as the basis of awards. Practice matches are atypical, but not unheard of.

A typical tournament runs in a single day. It often tries to fit in an opening ceremony, one to three sets of judging interviews (for awards such as Robot Design, Project Presentation, and Teamwork), three rounds of matches, a few rounds of final/elimination matches, and a closing (or awards) ceremony.

The main consumers of the schedule are the teams, the public, the Master of Ceremonies (MC) and the queuers (assisting the teams to know where they need to be). Other people who benefit from knowing the schedule are the individual judges, the referees, and the tournament staff as they are integral to ensuring the schedule is monitored and adhered to.

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1.2 Feature Summary of the Schedule Tool

The Schedule Tool provides a series of views into the schedule, each catered to a different audience.

- Match Score Entry – A basic sheet capable of accepting scores on a match by match basis. The teams are automatically ranked as scores are entered.
- Schedule By Match – A view of each table from a time perspective. i.e. One can look for a time and figure out what team is in what location.
- Schedule For Judges – A view of each judging session room from a time perspective. i.e. One can look for a time and figure out what team is in what location.
- Schedule By Team – A view sorted by team number as to where they need to be for their first, second, and third matches, each of their presentation interviews, and, if applicable, their practice matches.
- Graphical Schedule – This view of the schedule shows time commitments for each team on a time chart where each commitment is a line whose length corresponds to the duration of each event.
- Official Rounds Schedule for MC – This view is specifically for the Master of Ceremonies to proceed from match to match and be able to announce who is up at which table. Very helpful for queuers, referees, and scorekeepers.
- Practice Rounds Schedule for MC – The same as the Official Rounds Schedule for the Master of Ceremonies, but for any practice rounds.
- Graphical Schedule By Time(P) – This is a view of events for each room by time. This is a much more informative view than the Graphical Schedule in the blocks are filled with individual team numbers.
- Normal FLL Tournament – This view is to assist in managing tournament finals conducted in a normal fashion where the teams with the highest scores advance to the next finals round. Teams can be inputted manually, but the data is being fed from the Match Score Entry worksheet.
- Single Elimination – This view is to assist in managing tournament finals conducted in a single elimination method where the teams are bracketed and advance based upon winning the match in the bracket. Teams can be inputted manually, but the data is being fed from the Match Score Entry worksheet. *Not a recommended tournament format.*
- Double Elimination – This view is to assist in managing tournament finals conducted in a double elimination method where the teams are bracketed and advance based upon winning their matches. A single loss places them in a losers bracket to advance in the same way. Teams can be inputted manually, but the data is being fed from the Match Score Entry worksheet. *Not a recommended tournament format.*
- CSV Export – This sheet is used to export the output from the tool to another FLL tool used in tournaments for integral display of information to screens around a tournament.

The tool can also assign teams to matches on a pseudo-random basis. Whereas a true random assignment can result in teams competing against the same team twice (supposed to be highly unlikely, but not impossible), the algorithm employed checks the team assignments and regenerates the schedule if the teams plays another more than once. Another consistency check forces a redo of the schedule if a teams plays on the same side for all three matches or plays on the same table for all of the matches.

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Teams names can be changed on a single sheet and the change is reflected on all the sheets. The same applies for room or table names.

Because the underlying tool is Excel, the data can be massaged or reformatted to suit needs for better handouts.

1.3 Background and Impetus

I've been involved in For Inspiration and Recognition of Science and Technology (FIRST) programs since the 1996-1997 season. I directly supported a FIRST Robotics Competition (FRC) team as a lead mentor. My increasingly demanding workload forced me to shift my time to assist our company's efforts in the fledgling FIRST Lego League (FLL) programs in 2003. My assistance then and still is as the Head Referee for the NH State Tournament. As a witness to the results of good and not-so-good schedules, the need for some sort of tool to create schedules become compelling to me.

In our first year of running the NH FLL Tournament, the schedule focused on the round schedules and was generated by hand in Excel. Pretty good given the small number of teams, however, the teams found it difficult to follow and were sure to let us know it. This was also the first year we had run the State Tournament, so we were looking for feedback. The second year, the schedule was redone to focus on where the teams needed to be. For the MC, the referees, the judges, and the people running the tournament, it turned out to be problematic to figure out where any team should be now or next in time. In both years, it was a challenge keeping to the schedule given the problems encountered. As an engineer, it seemed to me there should be way to generate a single schedule able to satisfy both types of users.

The topic resurfaced during our planning for the 2005 FLL State tournament. There was a rumor that FIRST was in the process of doing such a tool as well during that summer. I figured even if we (the group of us responsible for the NH State Tournament) got to December (when we run our State Tournament) and the FIRST tool was better than mine, I would have ended up with a summer diversion. The tool took shape in the summer of 2005 with an initial trial at the NH State Tournament that year. The initial trial then progressed into trials at the WI State tournament and the other NH local tournaments with a formal release to FLL Tournament Partners in the Fall of 2006. The tool has continually been refined based upon errors and suggestions.

1.4 Implementation Details of the Schedule Tool

The tool is implemented using Microsoft Excel with reliance from the underlying Visual Basic for Applications (VBA) macro language underneath. While I'm not a particular fan of Microsoft, Microsoft Excel had a number of advantages going for it that few other programming environments could or can match. First, it is used on more than one computing platform (Macs and PCs). Second, the output is usable by multiple people (while the smarts to generate the schedule may make people's head spin, the worksheet is fairly portable). Third, I'm pretty proficient in programming VBA as I continually program quick tools in Excel to help me out in my own day-to-day job. The downsides are people do have to foot the bill for MS Excel (leaving those who use Linux or avoid Microsoft products without a solution).

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Maybe someday I'll change to a more portable environment (Java comes to mind). First the feature set of the current tool in Excel must be completed (it's almost there). Then I need to spend a fair bit of time learning a new language and then port the tool to recreate all of the functionality embodied by the current tool. Considering the current tool represents almost 2 years of effort in between all sorts of other demands on my time, an equivalent version in a new language would probably represent an equal amount of time. So look for that in 2009 (or later). People should hope I don't get promoted further and stay single.

1.5 If You Need Help

I really hope that this manual will cover your needs. If it doesn't please let me know so I can fix the manual on the theory that if you have questions, so too will others. My email address is bdlee.first@gmail.com. Email me and I'll assist in any way that I can. I'm still finding bugs in the code despite my best efforts. I've been programming for many years, but the size of the code underneath this has exceeded my efforts to fully understand the code base in the same way I did when I first did the majority of the work. No amount of commenting and proper variable naming is fully able to overcome the sheer size. A large number of tournaments have successfully run with this tool, so the possibility of errors has diminished, but it's not zero.

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2 Schedule Views

The FLL Schedule Tool provides a number of views into a tournament schedule. Each view is designed to present schedule information for a different user (or audience). It is expected that many of the views are not useful for any single user. Each view has been pre-formatted with settings generally suitable for printing with pre-established headers, footers, and margins. Adjustment afterwards may be necessary.

2.1 Match Score Entry

A basic sheet capable of accepting scores on a match by match basis. The teams are automatically ranked as scores are entered. The primary user of this view are scorekeepers should they wish to use this program to monitor scores versus other programs FLL has for keeping score. The spreadsheet is linked to the Tournament Finals spreadsheets. A sample of the spreadsheet is shown in Figure 1.

#	Start	End	Table	Team #	Pit #	Team Name	Score		Rank	Team #	Team Name
						Tournament Ranking Matches & Scores					
1	9:15 A	9:19 A	Table 1 Side 1	3550	22	Londonderry Great White Sharks			1	1	Stand-In 1
1	9:15 A	9:19 A	Table 1 Side 2	3009	44	Tsunami Surfers			2	3	The NERDS
2	9:19 A	9:23 A	Table 2 Side 1	2840	32	Team 50937			3	15	Mindstorms Mayhem
2	9:19 A	9:23 A	Table 2 Side 2	15	35	Mindstorms Mayhem			4	45	Robosharks
3	9:23 A	9:27 A	Table 1 Side 1	3077	52	The Pleiades			5	48	Electroids
3	9:23 A	9:27 A	Table 1 Side 2	685	25	Mach 6			6	487	Exotic Robotics
4	9:27 A	9:31 A	Table 2 Side 1	1610	40	Gear Girls			7	685	Mach 6
4	9:27 A	9:31 A	Table 2 Side 2	2259	50	The Navy Seals			8	706	20,000 Legos Under the Sea
5	9:31 A	9:35 A	Table 1 Side 1	1439	4	Sea Urchins			9	747	Hampstead Hackers
5	9:31 A	9:35 A	Table 1 Side 2	1599	27	Aqua Sox			10	826	Engine Ears
6	9:35 A	9:39 A	Table 2 Side 1	1598	38	Psycho Blockheads			11	1232	Jammin' Robo Girls
6	9:35 A	9:39 A	Table 2 Side 2	1611	41	The Inventioneers			12	1326	Flying Geeks
7	9:39 A	9:43 A	Table 1 Side 1	1588	18	Blue Dragons			13	1350	Stormbreakers
7	9:39 A	9:43 A	Table 1 Side 2	1608	12	The Right Angle			14	1351	Liquid Fire
8	9:43 A	9:47 A	Table 2 Side 1	1734	42	AquaGeeks			15	1439	Sea Urchins
8	9:43 A	9:47 A	Table 2 Side 2	747	14	Hampstead Hackers			16	1492	SMS PUMAS
9	9:47 A	9:51 A	Table 1 Side 1	1601	9	Shmieglehumberflu			17	1585	SMS PUMAS 2
9	9:47 A	9:51 A	Table 1 Side 2	1	10	Stand-In 1			18	1587	Sky Surfing Geeks
10	9:51 A	9:55 A	Table 2 Side 1	1778	15	Batteries Not Included			19	1588	Blue Dragons
10	9:51 A	9:55 A	Table 2 Side 2	1617	7	Cool Cats			20	1596	RoboSharks
11	9:55 A	9:59 A	Table 1 Side 1	2802	51	The Top Blocks			21	1598	Psycho Blockheads
11	9:55 A	9:59 A	Table 1 Side 2	1587	5	Sky Surfing Geeks			22	1599	Aqua Sox
12	9:59 A	10:03 A	Table 2 Side 1	3007	2	Batteries			23	1601	Shmieglehumberflu
12	9:59 A	10:03 A	Table 2 Side 2	3404	33	GPRT (Girls Precision Robotics Team)			24	1603	The Magigers
13	10:03 A	10:07 A	Table 1 Side 1	1609	28	The Lego Chicks			25	1605	More Mayhem
13	10:03 A	10:07 A	Table 1 Side 2	1585	3	SMS PUMAS 2			26	1606	Pirate Hogs
14	10:07 A	10:11 A	Table 2 Side 1	1606	1	Pirate Hogs			27	1608	The Right Angle
14	10:07 A	10:11 A	Table 2 Side 2	45	45	Robosharks			28	1609	The Lego Chicks
15	10:11 A	10:15 A	Table 1 Side 1	2240	49	And the Cat			29	1610	Gear Girls
15	10:11 A	10:15 A	Table 1 Side 2	1326	37	Flying Geeks			30	1611	The Inventioneers
16	10:15 A	10:19 A	Table 2 Side 1	706	47	20,000 Legos Under the Sea			31	1616	Chaotic Robotics
16	10:15 A	10:19 A	Table 2 Side 2	487	17	Exotic Robotics			32	1617	Cool Cats
17	10:19 A	10:23 A	Table 1 Side 1	3821	23	Aqua Divers			33	1734	AquaGeeks
17	10:19 A	10:23 A	Table 1 Side 2	2168	20	DigiDudes			34	1778	Batteries Not Included
18	10:23 A	10:27 A	Table 2 Side 1	1616	29	Chaotic Robotics			35	2168	DigiDudes
18	10:23 A	10:27 A	Table 2 Side 2	2556	30	Wild Wacky Wolves			36	2240	And the Cat
19	10:27 A	10:31 A	Table 1 Side 1	1350	26	Stormbreakers			37	2259	The Navy Seals

Figure 1 - Match Score Entry View

The individual columns in the worksheet are as follows
  A. Match Number
  B. Match Start Time
  C. Match End Time

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D. Table Name- the names can be edited in the menu "FLL Scheduler"->"Edit Table/Room Names"->"Edit Official Rounds Table Names…"
E. Team Number
F. Pit Number
G. Team Name
H. Match Score – Enter the match score here
I. Not Used
J. Calculated Rank for teams listed in Columns L and M
K. Hidden Calculation Column
L. Team Number for team with rank per Column J – The information in each cell updates based upon match scores entered into Column H.
M. Team Name for team with rank per Column J – The information in each cell updates based upon match scores entered into Column H.

The only editable column is Column H; all other columns are automatically generated or updated.

The rank for each team is computed by the following criteria, where ties are broken by the next criteria listed:
1. Highest single round score
2. Second-highest round score
3. Third-highest round score
4. Lowest team number*

*I've recently heard that this tie-breaker has changed to be based upon the shortest time it took to complete the match. That information is currently not tracked by this tool.

2.2 Schedule By Match

This view presents the user with a view of the schedule by time by location. The schedule is primarily used by event volunteers asking the question- it's 1:13P, a team is missing from this room, what team is supposed to be here? Alternatively, the event volunteers can ask, who is supposed to be in this room next?

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			Tournament Ranking Match Schedule				Research Presentation						Technical Judging						Teamwork Interview					
			Table 1	Table 1	Table 2	Table 2			Room	Room	Room	Room			Room	Room	Room	Room			Room	Room	Room	Room
#	Start	End	Side 1	Side 2	Side 1	Side 2	Start	End	1	2	3	4	Start	End	1	2	3	4	Start	End	1	2	3	4
		Round 1					9:15 A	9:30 A	3077	1609	1610	1616	9:15 A	9:30 A	1585	2840	1599	3007	9:15 A	9:30 A	1596	706	3550	15
1	9:15 A	9:19 A	826	2556			9:30 A	9:45 A	1232	1605	685	1734	9:30 A	9:45 A	48	3	4868	2802	9:30 A	9:45 A	1351	3009	3404	2809
2	9:19 A	9:23 A			1588	1	9:45 A	10:00 A	1606	1603	3550	706	9:45 A	10:00 A	1587	2338	4419	2240	9:45 A	10:00 A	1616	826	1492	1610
3	9:23 A	9:27 A	1492	2259			10:00 A	10:15 A	747	1	3821	1585	10:00 A	10:15 A	3077	2259	2809	2168	10:00 A	10:15 A	1605	1617	1734	1588
4	9:27 A	9:31 A			4419	1603	10:15 A	10:30 A	1326	48	1601	826	10:15 A	10:30 A	1351	3009	2556	2337	10:15 A	10:30 A	1439	487	1598	45
5	9:31 A	9:35 A	45	2168			10:30 A	10:45 A	1350	1611	3007	2773	10:30 A	10:45 A	1609	1492	3821	1778	10:30 A	10:45 A	2840	1608	2259	2168
6	9:35 A	9:39 A			747	3821	10:45 A	11:00 A	2802	3	1439	1596	10:45 A	11:00 A	1326	3404	685	1603	10:45 A	11:00 A	1	2337	2240	2556
7	9:39 A	9:43 A	1326	1601			11:00 A	11:15 A	1588	2338	4868	45	11:00 A	11:15 A	1232	1616	1601	1606	11:00 A	11:15 A	747	3821	1609	3007
8	9:43 A	9:47 A			2337	1350	11:15 A	11:30 A	487	1492	1599	2168	11:15 A	11:30 A	3550	1605	1350	15	11:15 A	11:30 A	1585	1603	1326	2802
9	9:47 A	9:51 A	1599	1439			11:30 A	11:45 A	2259	2840	1351	3404	11:30 A	11:45 A	1611	45	1596	1588	11:30 A	11:45 A	4868	1232	1606	1778
10	9:51 A	9:55 A			1598	1608	11:45 A	12:00 P	1608	3009	4419	1617	11:45 A	12:00 P	487	1439	1598	2773	11:45 A	12:00 P	1587	1350	1599	3077
11	9:55 A	9:59 A	487	2773			12:45 P	1:00 P	1598	1587	2809	2337	12:45 P	1:00 P	706	1610	747	1	12:45 P	1:00 P	1601	4419	2773	2338
12	9:59 A	10:03 A			1778	1611	1:00 P	1:15 P	1778	15	2556	2240	1:00 P	1:15 P	1617	1608	826	1734	1:00 P	1:15 P	48	3	1611	685
13	10:03 A	10:07 A	3007	2840																				
14	10:07 A	10:11 A			3404	1232																		
15	10:11 A	10:15 A	2802	1609																				
16	10:15 A	10:19 A			2240	685																		
17	10:19 A	10:23 A	1596	3550																				
18	10:23 A	10:27 A			2338	4868																		
19	10:27 A	10:31 A	3	1610																				
20	10:31 A	10:35 A			1606	1616																		
21	10:35 A	10:39 A	15	706																				
22	10:39 A	10:43 A			1734	1617																		
23	10:43 A	10:47 A	1605	2809																				
24	10:47 A	10:51 A			1587	3077																		
25	10:51 A	10:55 A	48	1585																				
26	10:55 A	10:59 A			1351	3009																		
		Round 2																						
27	11:05 A	11:09 A	1587	1778																				
28	11:09 A	11:13 A			1608	1611																		
29	11:13 A	11:17 A	4419	2773																				
30	11:17 A	11:21 A			3	3077																		
31	11:21 A	11:25 A	1617	1598																				
32	11:25 A	11:29 A			2337	1734																		
33	11:29 A	11:33 A	2338	1																				
34	11:33 A	11:37 A			685	747																		
35	11:37 A	11:41 A	2809	2240																				
36	11:41 A	11:45 A			48	706																		
37	11:45 A	11:49 A	2556	1616																				
38	11:49 A	11:53 A			1585	826																		
39	11:53 A	11:57 A	1610	2168																				
40	12:45 P	12:49 P			4868	3009																		

Figure 2 - Schedule by Match View

The individual columns in the worksheet are as follows
    A. Match Number
    B. Match Start Time
    C. Match End Time
    D. Competition Team #'s (the number of columns vary due to the inputs to the tool)

The remaining columns represent each judging event following a similar format to the column listing above.

For the example shown, there are a number of items to note
- The table or room names listed in row 2 can be edited in the menus under "FLL Scheduler"->"Edit Table/Room Names"
- Each round of competition is marked as in rows 3 and 30
- From this view, it is clear that the competition format is alternating matches between two tables
- While not shown, practice match schedules will automatically be added to this view.

2.3 Schedule By Team

This view presents the schedule sorted by team number as to where they need to be for their first, second, and third matches, each of their presentation interviews, and, if applicable, their practice matches. It is very much a schedule for the teams and those supporting the teams (parents, friends, family, supporters, etc.)

Tournament Ranking Match Schedule

Team #	Pit #	Team Name	Match #	Time	Table	Match #	Time	Table	Match #	Time	Table	Research Presentation Slot	Room	Time	Technical Judging Slot	Room	Time	Teamwork Interview Slot	Room	Time	Min. Min. Between
1	10	Stand-In 1	2	9:19 A	Table 2 Side 2	33	11:29 A	Table 1 Side 2	58	1:57 P	Table 2 Side 1	4	Room 2	10:00 A	12	Room 4	12:45 P	7	Room 3	10:45 A	29
3	24	The NERDS	19	10:27 A	Table 2 Side 1	30	11:17 A	Table 2 Side 2	68	2:37 P	Table 2 Side 2	7	Room 2	10:45 A	6	Room 2	9:30 A	13	Room 2	1:00 P	14
15	35	Mindstorms Mayhem	21	10:35 A	Table 1 Side 1	52	1:33 P	Table 2 Side 1	64	2:21 P	Table 2 Side 2	13	Room 2	1:00 P	9	Room 4	11:15 A	1	Room 4	9:15 A	18
45	45	Robosharks	5	9:31 A	Table 1 Side 1	49	1:21 P	Table 1 Side 1	72	2:53 P	Table 2 Side 2	8	Room 4	11:00 A	10	Room 2	11:30 A	5	Room 4	10:15 A	15
48	46	Electroids	25	10:51 A	Table 1 Side 1	36	11:41 A	Table 2 Side 1	73	2:57 P	Table 1 Side 2	5	Room 2	10:15 A	2	Room 1	9:30 A	13	Room 1	1:00 P	21
487	17	Exotic Robotics	11	9:55 A	Table 1 Side 1	51	1:29 P	Table 1 Side 1	65	2:25 P	Table 1 Side 2	9	Room 1	11:15 A	11	Room 1	11:45 A	5	Room 2	10:15 A	15
685	25	Mach 6	16	10:15 A	Table 1 Side 1	34	11:33 A	Table 2 Side 2	75	3:05 P	Table 1 Side 1	3	Room 3	9:45 A	7	Room 3	10:45 A	7	Room 4	1:00 P	26
706	47	20,000 Legos Under the Sea	21	10:35 A	Table 1 Side 2	36	11:41 A	Table 1 Side 1	71	2:49 P	Table 1 Side 1	3	Room 4	9:45 A	12	Room 1	12:45 P	1	Room 2	9:15 A	15
747	14	Hampstead Hackers	6	9:35 A	Table 2 Side 1	34	11:33 A	Table 1 Side 1	62	2:13 P	Table 2 Side 1	4	Room 1	10:00 A	12	Room 3	12:45 P	8	Room 1	11:00 A	18
826	16	Engine Ears	1	9:15 A	Table 1 Side 1	38	11:49 A	Table 2 Side 2	70	2:45 P	Table 2 Side 2	5	Room 1	10:15 A	13	Room 3	1:00 P	3	Room 2	9:45 A	15
1232	36	Jammin' Robo Girls	14	10:07 A	Table 2 Side 2	49	1:21 P	Table 1 Side 2	70	2:45 P	Table 1 Side 2	2	Room 1	9:30 A	8	Room 1	11:00 A	10	Room 3	11:30 A	15
1326	37	Flying Geeks	7	9:39 A	Table 1 Side 1	47	1:13 P	Table 2 Side 1	78	3:17 P	Table 1 Side 2	5	Room 4	10:15 A	7	Room 1	10:45 A	9	Room 3	11:15 A	15
1350	26	Stormbreakers	8	9:43 A	Table 2 Side 2	47	1:13 P	Table 1 Side 2	73	2:57 P	Table 1 Side 1	6	Room 1	10:30 A	9	Room 3	11:15 A	11	Room 2	11:45 A	15
1351	48	Liquid Fire	26	10:55 A	Table 2 Side 1	46	1:09 P	Table 2 Side 1	77	3:13 P	Table 1 Side 1	10	Room 3	11:30 A	5	Room 1	10:15 A	2	Room 1	9:30 A	25
1439	4	Sea Urchins	9	9:47 A	Table 2 Side 1	51	1:29 P	Table 2 Side 1	61	2:09 P	Table 1 Side 2	7	Room 2	10:45 A	2	Room 2	11:45 A	5	Room 3	9:45 A	15
1492	11	SMS PUMAS	3	9:23 A	Table 1 Side 1	42	12:53 P	Table 2 Side 1	54	1:41 P	Table 2 Side 2	9	Room 2	11:15 A	6	Room 2	10:30 A	3	Room 3	9:45 A	18
1585	3	SMS PUMAS 2	25	10:51 A	Table 1 Side 2	38	11:49 A	Table 2 Side 1	63	2:17 P	Table 1 Side 1	4	Room 4	10:00 A	4	Room 1	9:15 A	9	Room 1	11:15 A	19
1587	5	Sky Surfing Geeks	24	10:47 A	Table 2 Side 1	27	11:05 A	Table 1 Side 1	74	3:01 P	Table 1 Side 1	12	Room 2	12:45 P	3	Room 1	9:45 A	11	Room 1	11:45 A	14
1588	18	Blue Dragons	2	9:19 A	Table 1 Side 1	43	12:57 P	Table 1 Side 1	65	2:25 P	Table 1 Side 1	8	Room 1	11:00 A	10	Room 4	11:30 A	4	Room 4	10:00 A	15
1596	8	RoboSharks	17	10:19 A	Table 2 Side 1	43	12:57 P	Table 2 Side 2	72	2:53 P	Table 1 Side 2	7	Room 4	10:45 A	6	Room 1	10:45 A	1	Room 1	9:15 A	22
1598	38	Psycho Blockheads	10	9:51 A	Table 2 Side 1	31	11:21 A	Table 1 Side 2	57	1:53 P	Table 1 Side 2	12	Room 1	12:45 P	11	Room 3	11:45 A	3	Room 3	10:15 A	20
1599	27	Aqua Sox	9	9:47 A	Table 1 Side 1	50	1:25 P	Table 2 Side 1	69	2:41 P	Table 1 Side 1	9	Room 3	11:15 A	3	Room 3	9:15 A	11	Room 3	11:45 A	15
1601	9	Shmieglehumberflu	7	9:39 A	Table 1 Side 2	48	1:17 P	Table 2 Side 1	78	3:17 P	Table 2 Side 1	5	Room 3	10:15 A	8	Room 1	11:00 A	12	Room 1	12:45 P	17
1603	19	The Magigers	4	9:27 A	Table 2 Side 2	41	12:49 P	Table 1 Side 1	76	3:09 P	Table 1 Side 1	3	Room 2	9:45 A	7	Room 4	10:45 A	9	Room 2	11:15 A	14
1605	39	More Mayhem	23	10:43 A	Table 1 Side 1	44	1:01 P	Table 2 Side 2	57	1:53 P	Table 1 Side 1	3	Room 4	9:30 A	9	Room 2	11:15 A	4	Room 1	10:00 A	15
1606	1	Pirate Hogs	20	10:31 A	Table 2 Side 1	42	12:53 P	Table 2 Side 2	60	2:05 P	Table 2 Side 1	3	Room 1	9:45 A	8	Room 4	11:00 A	8	Room 4	11:00 A	15
1608	12	The RightAngle	10	9:51 A	Table 1 Side 2	28	11:09 A	Table 1 Side 1	59	2:01 P	Table 1 Side 2	11	Room 1	11:45 A	13	Room 2	1:00 P	6	Room 2	10:30 A	24
1609	28	The Lego Chicks	15	10:11 A	Table 1 Side 1	48	1:17 P	Table 1 Side 1	66	2:29 P	Table 2 Side 2	6	Room 3	10:15 A	6	Room 2	11:00 A	8	Room 1	11:00 A	15
1610	40	Gear Girls	19	10:27 A	Table 2 Side 2	39	11:53 A	Table 1 Side 1	71	2:49 P	Table 2 Side 2	1	Room 3	9:15 A	12	Room 2	12:45 P	3	Room 4	9:45 A	15
1611	41	The Inventioneers	12	9:59 A	Table 2 Side 2	28	11:09 A	Table 2 Side 2	62	2:13 P	Table 2 Side 1	6	Room 2	10:30 A	10	Room 1	11:30 A	13	Room 3	1:00 P	17
1616	29	Chaotic Robotics	20	10:31 A	Table 2 Side 2	37	11:45 A	Table 1 Side 1	69	2:41 P	Table 2 Side 1	4	Room 4	9:15 A	8	Room 2	11:00 A	3	Room 1	9:45 A	15
1617	7	Cool Cats	22	10:39 A	Table 2 Side 2	31	11:21 A	Table 1 Side 1	54	1:41 P	Table 1 Side 1	11	Room 4	11:45 A	13	Room 1	1:00 P	4	Room 2	10:00 A	20
1734	42	AquaGeeks	22	10:39 A	Table 1 Side 1	32	11:25 A	Table 2 Side 2	74	3:01 P	Table 1 Side 2	2	Room 1	9:30 A	13	Room 4	1:00 P	3	Room 2	10:00 A	15
1778	15	Batteries Not Included	12	9:59 A	Table 1 Side 1	27	11:05 A	Table 2 Side 2	64	2:21 P	Table 1 Side 2	13	Room 1	1:00 P	6	Room 4	10:30 A	10	Room 4	11:30 A	20
2168	20	DigiDudes	5	9:31 A	Table 1 Side 2	39	11:53 A	Table 1 Side 2	67	2:33 P	Table 1 Side 1	9	Room 4	11:15 A	6	Room 4	10:00 A	6	Room 1	10:30 A	15
2240	49	And the Cat	16	10:15 A	Table 1 Side 2	35	11:37 A	Table 1 Side 2	56	1:49 P	Table 2 Side 1	13	Room 1	1:00 P	3	Room 4	9:45 A	7	Room 4	10:45 A	15
2259	50	The Navy Seals	3	9:23 A	Table 1 Side 2	46	1:09 P	Table 1 Side 1	75	3:05 P	Table 1 Side 2	10	Room 1	11:30 A	2	Room 2	10:00 A	6	Room 3	10:30 A	15
2337	43	Spineless Gnomes	8	9:43 A	Table 2 Side 1	32	11:25 A	Table 2 Side 1	63	2:17 P	Table 2 Side 2	8	Room 4	11:00 A	5	Room 2	10:15 A	7	Room 1	10:45 A	15
2338	13	Crazy Fishes	18	10:23 A	Table 2 Side 2	33	11:29 A	Table 2 Side 1	67	2:33 P	Table 1 Side 2	8	Room 2	11:00 A	4	Room 2	9:45 A	12	Room 4	12:45 P	14
2556	30	Wild Wacky Wolves	18	9:15 A	Table 1 Side 2	37	11:45 A	Table 1 Side 2	66	2:29 P	Table 2 Side 2	13	Room 3	1:00 P	5	Room 3	10:15 A	7	Room 2	10:45 A	15
2773	31	Lilbots	11	9:55 A	Table 1 Side 2	29	11:13 A	Table 1 Side 1	56	1:49 P	Table 2 Side 2	2	Room 3	9:45 A	6	Room 3	11:45 A	12	Room 3	12:45 P	28
2802	51	The Top Blocks	15	10:11 A	Table 1 Side 1	41	12:49 P	Table 1 Side 2	61	2:09 P	Table 1 Side 2	7	Room 1	10:45 A	2	Room 4	9:30 A	9	Room 4	11:15 A	15
2809	21	Aqua Squad 9	23	10:43 A	Table 1 Side 2	35	11:37 A	Table 1 Side 1	59	2:01 P	Table 1 Side 1	12	Room 3	12:45 P	4	Room 3	10:00 A	2	Room 4	9:30 A	15

Figure 3 - Schedule by Team Number View

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The key columns of interest in this view are the following…
      A. Team Number
      B. Pit Number
      C. Team Name
      D. Match Number
      E. Match Start Time
      F. Table Information
Columns D-F are repeated for as many official or practice rounds as needed.
      M. Time slot for the judging event (if a match number could be applied to nth meeting in a day, this would be the number "n")
      N. Room Number for the judging event
      O. Start time of the judging event
Columns M-O are repeated for each judging event.
      V. The last column in this view represents the Minimum number of Minutes in between events for the team in this row. The number represents a time buffer of sorts for the team to gauge how little time it may have before its next event.

All of the columns are automatically updated based upon information contained in other worksheets.

2.4 Graphical Schedule

This view of the schedule shows time commitments for each team on a time chart represented by lines whose length corresponds to the duration. From the sample shown in Figure 4, the longer lines represent team judging sessions while the smaller blocks represent competition matches. The vertical white space is indicative of competition breaks for all teams. The view was created as a debugging aid during development of the tool.
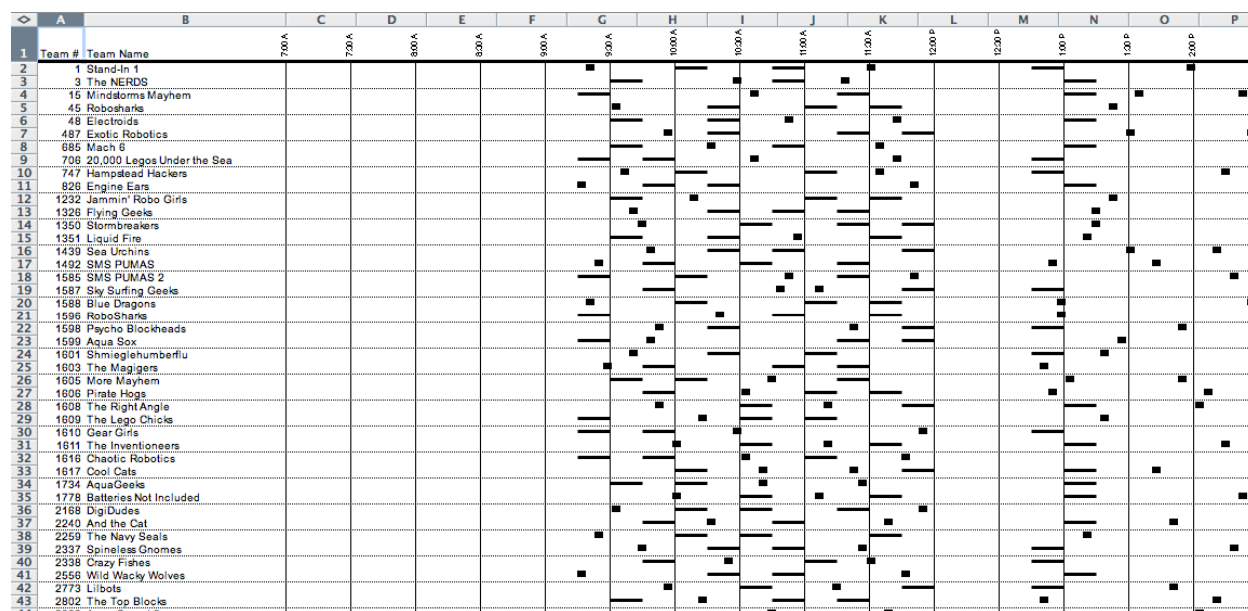
Figure 4 - Graphical Schedule View

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2.5 Official/Practice Rounds Schedule for MC

This view is specifically for the Master of Ceremonies to proceed from match to match and be able to announce who is up at which table. A different view exists for the Official and Practice Rounds Matches. The other uses of this view at tournaments are
- For queuers to recognize who is at each table, and which teams are going to be needed soon.
- For referees to have a schedule to check which teams belong at the particular side of the table and to check information being written to the score sheets.
- The scorekeepers to check the score sheets after receipt for round information.

As an example, in the NH State Tournament, there are
- two competition tables,
- each running in a flip-flop manner,
- with a single Master of Ceremonies providing team introductions and match commentary.

While one table is competing, the other table has the referees filling in the Referee Sheet with the Team Number, clearing the table for reset by the table resetters, and then signaling the Team Querer to allow the next two teams to come up to the table and set up before the other table completes its match and the MC come over to this table.

So, in this sequence, the MC is scanning the sheet for the upcoming match and then announcing the teams to the audience. The MC is also checking along the way to see if the matches are proceeding per the schedule.

The Queuers are challenged to make sure the next team is standing by awaiting the call to proceed up to the competition table. With this sheet, they are checking off who is in line, and giving notice to the teams (potentially by runners) to gently remind them that they are due at the competition tables soon. The Pit Number is listed specifically to help them. They are also watching the times to ensure the schedule is kept.

The Referees are the final check verifying the teams are on the correct side of the table and then transfer the team number information from the sheet to the Referee Score Sheet that is handed to the scorekeepers after the match is completed.

The sheet is used by the scorekeepers in case the score sheet they receive from the Referees is missing either the match or team number.

A last usage for the sheet is to figure out which team was last at a particular table. Why? Because, more than once after the team leaves, either a part of the robot is left at the table and needs to be returned, or a table element is missing and a runner needs to find the team and get the part back to resume competition. Trust me, it happens.

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#	Start	End	Table	Team #	Pit #	Team Name	Table	Team #	Pit #	Team Name
						Tournament Ranking Match Schedule				
						Round 1				
1	9:15 A	9:19 A	Table 1 Side 1	826	16	Engine Ears	Table 1 Side 2	2556	30	Wild Wacky Wolves
2	9:19 A	9:23 A	Table 2 Side 1	1588	18	Blue Dragons	Table 2 Side 2	1	10	Stand-In 1
3	9:23 A	9:27 A	Table 2 Side 1	1492	11	SMS PUMAS	Table 1 Side 2	2259	50	The Navy Seals
4	9:27 A	9:31 A	Table 2 Side 1	4419	6	TunaDudes	Table 2 Side 2	1603	19	The Magigers
5	9:31 A	9:35 A	Table 1 Side 1	45	45	Robosharks	Table 1 Side 2	2168	20	DigiDudes
6	9:35 A	9:39 A	Table 2 Side 1	747	14	Hampstead Hackers	Table 1 Side 2	3821	23	Aqua Divers
7	9:39 A	9:43 A	Table 1 Side 1	1326	37	Flying Geeks	Table 1 Side 2	1601	9	Shmieglehumberflu
8	9:43 A	9:47 A	Table 2 Side 1	2337	43	Spineless Gnomes	Table 2 Side 2	1350	26	Stormbreakers
9	9:47 A	9:51 A	Table 1 Side 1	1599	27	Aqua Sox	Table 1 Side 2	1439	4	Sea Urchins
10	9:51 A	9:55 A	Table 2 Side 1	1598	38	Psycho Blockheads	Table 2 Side 2	1608	12	The Right Angle
11	9:55 A	9:59 A	Table 1 Side 1	487	17	Exotic Robotics	Table 1 Side 2	2773	31	Lilbots
12	9:59 A	10:03 A	Table 1 Side 1	1778	15	Batteries Not Included	Table 1 Side 2	1611	41	The Inventioneers
13	10:03 A	10:07 A	Table 1 Side 1	3007	2	Batteries	Table 1 Side 2	2840	32	Team 50937
14	10:07 A	10:11 A	Table 2 Side 1	3404	33	GPRT (Girls Precision Robotics Team)	Table 2 Side 2	1232	36	Jammin' Robo Girls
15	10:11 A	10:15 A	Table 1 Side 1	2802	51	The Top Blocks	Table 1 Side 2	1609	28	The Lego Chicks
16	10:15 A	10:19 A	Table 1 Side 1	2240	49	And the Cat	Table 2 Side 2	685	25	Mach 6
17	10:19 A	10:23 A	Table 1 Side 1	1596	8	RoboSharks	Table 1 Side 2	3550	22	Londonderry Great White Sharks
18	10:23 A	10:27 A	Table 2 Side 1	2338	13	Crazy Fishes	Table 2 Side 2	4868	34	Oil Raiders
19	10:27 A	10:31 A	Table 1 Side 1	3	24	The NERDS	Table 1 Side 2	1610	40	Gear Girls
20	10:31 A	10:35 A	Table 2 Side 1	1606	1	Pirate Hogs	Table 2 Side 2	1616	29	Chaotic Robotics
21	10:35 A	10:39 A	Table 1 Side 1	15	35	Mindstorms Mayhem	Table 1 Side 2	706	47	20,000 Legos Under the Sea
22	10:39 A	10:43 A	Table 1 Side 1	1734	42	AquaGeeks	Table 2 Side 2	1617	7	Cool Cats
23	10:43 A	10:47 A	Table 1 Side 1	1605	39	More Mayhem	Table 1 Side 2	2809	21	Aqua Squad 9
24	10:47 A	10:51 A	Table 2 Side 1	1587	5	Sky Surfing Geeks	Table 2 Side 2	3077	52	The Pleiades
25	10:51 A	10:55 A	Table 1 Side 1	48	46	Electroids	Table 1 Side 2	1585	3	SMS PUMAS 2
26	10:55 A	10:59 A	Table 2 Side 1	1351	48	Liquid Fire	Table 2 Side 2	3009	44	Tsunami Surfers
						Round 2				
27	11:05 A	11:09 A	Table 1 Side 1	1587	5	Sky Surfing Geeks	Table 1 Side 2	1778	15	Batteries Not Included
28	11:09 A	11:13 A	Table 2 Side 1	1608	12	The Right Angle	Table 2 Side 2	1611	41	The Inventioneers
29	11:13 A	11:17 A	Table 2 Side 1	4419	6	TunaDudes	Table 1 Side 2	2773	31	Lilbots
30	11:17 A	11:21 A	Table 2 Side 1	3	24	The NERDS	Table 2 Side 2	3077	52	The Pleiades
31	11:21 A	11:25 A	Table 1 Side 1	1617	7	Cool Cats	Table 1 Side 2	1598	38	Psycho Blockheads
32	11:25 A	11:29 A	Table 2 Side 1	2337	43	Spineless Gnomes	Table 2 Side 2	1734	42	AquaGeeks
33	11:29 A	11:33 A	Table 2 Side 1	2338	13	Crazy Fishes	Table 1 Side 2	1	10	Stand-In 1
34	11:33 A	11:37 A	Table 2 Side 1	685	25	Mach 6	Table 2 Side 2	747	14	Hampstead Hackers
35	11:37 A	11:41 A	Table 1 Side 1	2809	21	Aqua Squad 9	Table 1 Side 2	2240	49	And the Cat
36	11:41 A	11:45 A	Table 1 Side 1	48	46	Electroids	Table 2 Side 2	706	47	20,000 Legos Under the Sea
37	11:45 A	11:49 A	Table 1 Side 1	2556	30	Wild Wacky Wolves	Table 1 Side 2	1616	29	Chaotic Robotics
38	11:49 A	11:53 A	Table 1 Side 1	1585	3	SMS PUMAS 2	Table 2 Side 2	826	16	Engine Ears
39	11:53 A	11:57 A	Table 1 Side 1	1610	40	Gear Girls	Table 1 Side 2	2168	20	DigiDudes
40	12:45 P	12:49 P	Table 2 Side 1	4868	34	Oil Raiders	Table 2 Side 2	3009	44	Tsunami Surfers
41	12:49 P	12:53 P	Table 1 Side 1	1603	19	The Magigers	Table 1 Side 2	2802	51	The Top Blocks

Figure 5 – Official Rounds Schedule for MC View

2.6 Graphical Schedule By Time (P)

This is a view of events for each room by time. This is similar to the Graphical Schedule View already described except the focus is shifted. The prior schedule showed on a team by team basis if a team was busy or not. This schedule shows time from top to bottom, with blocks filled in with either a team number or the break information. This view tends to be large and can be used on large-format printers as a poster to put on walls around the tournament. Breaks are delineated by large grey blocks spanning the width of the view.

Graphical Schedule By Time (P) View — View 1

	A	B	C		D	E	F		G	H	I		J	K	L
	Ranking Match Schedule				Research Presentation				Technical Judging				Teamwork Interview		
	Start Time	Table 1	Table 1	Table 2	Table 2	Start Time	Room 1	Room 2	Room 3	Room 4	Start Time	Room 1	Room 2	Room 3	Room 4	Start Time	Room 1	Room 2	Room 3	Room 4

Registration (7:00 A - 8:30 A)

Opening Ceremony (8:30 A - 9:00 A)

Ranking Match Schedule:

Start Time		
9:15 A	826	2556
9:19 A		
9:23 A	1588	1
9:27 A	1492	2259
9:31 A	4419	1603
9:35 A	45	2168
9:39 A	747	3821
9:43 A	1326	1601
9:47 A	2337	1350
9:51 A	1599	1439
	1598	1608

Research Presentation:

Start Time	Room 1	Room 2	Room 3	Room 4
9:15 A	3077	1609	1610	1616
9:30 A	1232	1605	685	1734
9:45 A	1606	1603	3550	706

Technical Judging:

Start Time	Room 1	Room 2	Room 3	Room 4
9:15 A	1585	2840	1599	3007
9:30 A	48	3	4868	2802
9:45 A	1587	2338	4419	2240

Teamwork Interview:

Start Time	Room 1	Room 2	Room 3	Room 4
9:15 A	1596	706	3550	15
9:30 A	1351	3009	3404	2809
9:45 A	1616	826	1492	1610

Figure 6 - Graphical Schedule By Time (P) View – View 1

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Figure 7 — Graphical Schedule By Time (P) View (spreadsheet, rows 76–130, columns A–L)

Top section (morning, 11:05 A – 11:53 A)

Column A times (rows 76–90): 11:05 A, 11:09 A, 11:13 A, 11:17 A, 11:21 A, 11:25 A, 11:29 A, 11:33 A, 11:37 A, 11:41 A, 11:45 A, 11:49 A, 11:53 A

Columns B / C pair list:

B	C
1587	1778
1608	1611
4419	2773
3	3077
1617	1598
2337	1734
2338	1
685	747
2809	2240
48	706
2556	1616
1585	826
1610	2168

Table D–F (time labels 11:15 A, 11:30 A, 11:45 A):

D	E	F	
1588	2338	4868	45
487	1492	1599	2168
2259	2840	1351	3404
1608	3009	4419	1617

Table G–I (time labels 11:15 A, 11:30 A, 11:45 A):

G	H	I	
1232	1616	1601	1606
3550	1605	1350	15
1611	45	1596	1588
487	1439	1598	2773

Table J–L (time labels 11:15 A, 11:30 A, 11:45 A):

J	K	L	
747	3821	1609	3007
1585	1603	1326	2802
4868	1232	1606	1778
1587	1350	1599	3077

Lunch (12:00 P - 12:45 P)

Bottom section (afternoon, 12:45 P – 2:09 P)

Column A times (rows 105–130): 12:45 P, 12:49 P, 12:53 P, 12:57 P, 1:01 P, 1:05 P, 1:09 P, 1:13 P, 1:17 P, 1:21 P, 1:25 P, 1:29 P, 1:33 P, 1:37 P, 1:41 P, 1:45 P, 1:49 P, 1:53 P, 1:57 P, 2:01 P, 2:05 P, 2:09 P

Columns B / C pair list:

B	C
4868	3009
1603	2802
1492	1606
1588	1596
3550	1605
3404	2840
1351	2259
1326	1350
1601	1609
45	1232
1599	3821
1439	487
15	3007
2840	4868
1617	1492
3821	3404
2773	2240
1605	1598
1	4419
2809	1608
1606	3007

Table D–F (time labels 12:45 P, 1:00 P):

D	E	F	
1598	1587	2809	2337
1778	15	2556	2240

Table G–I (time labels 12:45 P, 1:00 P):

G	H	I	
706	1610	747	1
1617	1608	826	1734

Table J–L (time labels 12:45 P, 1:00 P):

J	K	L	
1601	4419	2773	2338
48	3	1611	685

Figure 7 - Graphical Schedule By Time (P) View – View 2

2.7 Normal FLL Tournament

This view is to assist in managing tournament finals conducted in a "normal" fashion where the teams with the highest scores advance to the next finals round. "Normal" in this case refers to the predominately-accepted method for conducting FLL Tournament Finals. There is no specific guidance listed in the Operational Partners Manual (as of the 2005 version). Teams can be inputted manually, but the team number and team names are being fed from the Match Score Entry worksheet.

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Rank	Team #	Team Name			Match #	Rank	Team #	Score	
1	1	Stand-In 1			1	8	706		
2	3	The NERDS				7	685		
3	15	Mindstorms Mayhem			2	6	487		
4	45	Robosharks				5	48		
5	48	Electroids			3	4	45		
6	487	Exotic Robotics				3	15		
7	685	Mach 6			4	2	3		
8	706	20,000 Legos Under the Sea				1	1		

Figure 8 – Normal FLL Tournament View (Columns A-K)

Match #	Rank	Team #	Score		Match #	Rank	Team #	Score	
5	4				7	2			Tie
	3					1			Tie
6	2								
	1								

Figure 9 – Normal FLL Tournament View (Columns L-W)

For the above example, there are 8 teams in the finals. The team numbers and names are automatically copied from the Match Score Entry worksheet. The first 4 matches (Columns G-J) are then computed and displayed awaiting the entry of the scores into the grey shaded cells in Column J. Once the scores are entered into Column J, Column O will automatically display the team numbers of the four (in this case) teams with the highest scores. Entry of scores into Column P will then repeat the sequence into Columns R through V. For the last match, the two cells after the last grey column are triggered to display "1st Place", "2nd place", or "Tie" as appropriate.

2.8 Single Elimination

This view is to assist in managing tournament finals conducted in a single elimination method where the teams are bracketed and then advance based upon winning the match in the bracket. Teams can be inputted manually, but the data is being fed from the Match Score Entry worksheet. Match scores are entered into the grey boxes in Figure 10. As of v4.13, this tournament format can handle a number of teams that are not a power-of-two.

Teams are seeded via "Equitable Seeding". This is described in "Organizing Successful Tournaments", 2nd ed, John Byl, 1999. The tool is capable of generating "Advantage Seeding" as well, if needed. Equitable Seeding gives the lower ranked team in each bracket an equal chance of succeeding relative to other lower-ranked teams in each bracket. This reduces the chance of a blowout within each match that tends to arise with Advantage Seeding.

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Figure 10 – Single Elimination FLL Tournament View

Rank	Team #	Team Name		Rank	Team #	Score		Team #	Score		Team #	Score	Team #
1	1	Stand-In 1		1	1								
2	3	The NERDS					Match 1	1W					
3	15	Mindstorms Mayhem		5	48								
4	45	Robosharks								Match 5	5W		
5	48	Electroids		2	3								Tie
6	487	Exotic Robotics					Match 2	2W					
7	685	Mach 6		6	487								
8	706	20,000 Legos Under the Sea										Match 7	
				3	15								
							Match 3	3W					
				7	685								
										Match 6	6W		Tie
				4	45								
							Match 4	4W					
				8	706								

2.9 Double Elimination

This view is to assist in managing tournament finals conducted in a double elimination method where the teams are bracketed and advance based upon not losing more than two matches. A single loss places the team in a losers (or single-loss) bracket to advance until a second loss occurs. Teams can be inputted manually, but the data is being fed from the Match Score Entry worksheet. As of v4.13, this tournament format can handle a number of teams that are not a power-of-two.

Teams are seeded via "Equitable Seeding". This is described in "Organizing Successful Tournaments", 2nd ed, John Byl, 1999. The tool is capable of generating "Advantage Seeding" as well, if needed. Equitable Seeding gives the lower ranked team in each bracket an equal chance of succeeding relative to other lower-ranked teams in each bracket. This reduces the chance of a blowout within each match that tends to arise with Advantage Seeding.

Figure 11 – Double Elimination FLL Tournament View

2.10 CSV Export

This sheet is used to export the output from the tool to other FLL tools used in tournaments for integral display of information to screens around a tournament.

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3 Information the Schedule Tool Needs

3.1 The Input Form

The Input Form is the primary means the tool collects information from you, the user, to be able to generate the schedule. The tool collects information from the user in order to schedule Practice Round Matches, Official Round Matches, Final Matches, and up to three Judging Sessions. The initial information at the top of the form, the General Inputs section, is information needed by the tool in order to generate any of the schedules.

3.1.1 General Inputs Section

The General Inputs section is shown in Figure 12.

General Inputs   v4.11 7/20/2007

Tournament Name		NH State 2005 FLL State Tournament		
Is this a one-day tournament? (Yes/No)		Yes		
		Start Time	**End Time**	**Break Name**
Tournament Break Times (Max 7)	1	7:00 AM	8:30 AM	Registration
No events or matches will be scheduled during these breaks	2	8:30 AM	9:00 AM	Opening Ceremony
	3	12:00 PM	12:45 PM	Lunch
For multi-day tournaments add a break from the end of Day 1 until the start of Day 2	4	3:30 PM	4:30 PM	Finals
	5	4:30 PM	5:00 PM	Closing Ceremony
	6			
	7			
Team Travel/Buffer Time Between Scheduled Events (Minutes)		14		
Scheduling Method (1=Integrated, 2=Block, 3=Hybrid Block)		1		
Integrated Schedule - Random assignments of teams to time slots for rounds or judging sessions. Competition rounds and judged events occur simultaneously.				
Block Schedule - Teams are grouped in groups (blocks) of 4 teams and compete and go to judging sessions together. Very little overlap between judged events and competition matches can be tolerated.				
Hybrid Block - Teams go to judging sessions together in groups of 4, competition times are randomized. Very little overlap between judged events and competition matches can be tolerated.				
How many teams are competing?		52	*An estimated minimum of 26 teams are needed to support this schedule.*	

Figure 12 - General Inputs

3.1.1.1 Tournament Name

Enter the name of the tournament in this field. The information is used in two different ways. First, it will appear in the header of any printouts of the generated views. Secondly, the name appears in the menu bar under the FLL Scheduler Menu.

3.1.1.2 One Day Tournament Check

This field only accepts a "Yes" or a "No". The implication is the date and time formats are checked for whether they are acceptable given whether the desire is for the tournament to be a single day or multiple days. Any fields not meeting the date test will be colored red as a result.

3.1.1.3 Break Times

Up to seven breaks can be entered in this section of the form. These breaks are periods in time no matches or judging sessions can be scheduled. The break times can specify both a date and a time as shown in the example. This is useful if the tournament spans more than a single day. In this specific case, a break should be added to span the intervening night period. Otherwise, care

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should be taken that all dates and times are within a single 24-hour span.   The break name will show up in all of the Graphical Schedules.

3.1.1.4 Team Buffer Time

The Team Buffer Time represents a period of time after any match or judged event where no other match or event can be scheduled. This is useful to permit teams time to travel between different areas of the competition. A longer time directly influences the perception by the teams of the tournament pace. A small or non-existent buffer time can result in teams rushing from one location to another increasing stress of everyone around. And stress can be contagious. A long buffer time minimizes the stress, however, longer buffer times make it exponentially harder for the tool to compute a valid schedule. Changes in the buffer time of as little as 1 minute can make the difference in the ability of this tool to compute a valid schedule.

3.1.1.5 Scheduling Method

There are three possible scheduling methods. The three are listed below along with some general advantages and disadvantages associated with each one. The tool itself is shipped with three example schedules, one of each type. Broadly, the Integrated Schedule interleaves everything throughout a day and the Block Schedules (mostly) only permit a judging interview or matches to go on at any one instance in time throughout the day.

3.1.1.5.1 Integrated Schedules

Integrated Scheduling – Generate schedules with interleaved matches and judging sessions in time.
- Benefits
    - o More activities for spectators to watch
    - o More match diversity possible
    - o Good for larger tournaments
    - o Highest flexibility of all three schedule methods
- Drawbacks
    - o Harder to generate a valid schedule (especially since the schedule may work, but may take lots of times hitting "retry" in order to get the schedule generated)
    - o Requires more resources (volunteers, rooms, etc) to pull off
- Comparison Example
    - o For two tables, three judging-sessions, single day tournament, 50 teams is the approximate upper limit.

3.1.1.5.2 Block Schedules

Block Scheduling – Generate schedules based upon groups of 4 teams rotating matches and judging sessions among themselves. Judging sessions and matches are generally not able to overlap in time.
- Benefits
    - o The group of 4 teams are mutually supportive-when one team goes to a match or event, the other three feel the implicit pressure to go as well. Having the teams pit together reinforces this.
    - o Schedule generation is the easiest of the three schedules

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- o Resources can pull double-duty, shift between Judging sessions and matches
- o Good for small tournaments
- Drawbacks
  - o Only 3 rounds of tournaments are supported without running into match diversity issues (playing the same team or using the same table and side repeatedly)
- Comparison Example
  - o For two tables, three judging-sessions, single day tournament, 20-25 teams is the approximate upper limit. The morning is typically the judging interviews or presentations and the afternoon is the competition itself.

3.1.1.5.3 Hybrid Block Schedules

The Hybrid Block Schedule removes the restriction in the traditional Block that the group of four teams competes in matches together. This method permits some overlap in time between judging sessions and matches.

- Benefits
  - o The group of 4 teams are mutually supportive-when one team goes to an event, the other three feel the implicit pressure to go as well. Having the teams pit together reinforces this.
  - o No match diversity issues as teams can compete against any in the competition
- Drawbacks
  - o Because overlap in time is possible, extra resources may be needed over that of the traditional Block Schedule
- Comparison Example
  - o For two tables, three judging-sessions, single day tournament, 20-25 teams is the approximate upper limit. The morning is typically the judging interviews or presentations and the afternoon is the competition itself.

3.1.1.6 Number of Teams

The number of teams in the competition should be entered here. Note that for some tournament table combinations, extra "stand-in" teams will be added to the schedule to ensure uniformity. If this is confusing for you, consider a competition with a single table. In this situation, if there are an odd number of teams, every round of competition will result in one match where a team has no competitor. The schedule tool will generate a surrogate team to take the place of the fictional team while still conforming to all of the characteristics of the other teams. This means any team can take the place of the surrogate team and will not affect competition standings. These surrogate teams are not scheduled in the judging sessions.

It is critical to pay attention to the message displayed to the right of the number of teams input. The message as shown in Figure 13 will provide rough guidance as to the viability of the schedule inputs.

Figure 13 – Minimum Number of Teams

In this case, the predicted minimum number of needed teams (40) is less than the number of teams (52) the tournament is designed to host. The formula behind this calculation is assessing the likelihood of a viable schedule, but cannot wholly replicate the schedule generation algorithm. As such, any estimate close to the number of teams in the tournament should be treated with caution and can be wrong. The guidance is most helpful for integrated schedules. For a block or hybrid block schedules, other aids will be shown later on.

3.1.2 Tournament Inputs Section (Practice and Official Rounds)

The generation of match schedules are similar for both the official and practice rounds. The input sections as they appear in Figure 14 and Figure 15 are effectively the same so the following section will refer to Figure 15 as a reference.

Figure 14 – Tournament Inputs (Practice Matches)

Figure 15 – Tournament Inputs (Official Rounds)

3.1.2.1 How Many Times Will Each Team Compete?

Enter a number between 0 and 3. Entering a zero will cause matches to not be scheduled irrespective of any other inputs in this section.

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3.1.2.2 Tournament Start Time

Enter the time the tournament matches start. It is recommended that the day be added to the time, but if dates are eliminated from ALL fields, the tool will still work.

3.1.2.3 How Many Total Table Pairs?

A tournament table is two FLL tables with mats back-to-back to one another. The question is looking for the number of tournament tables being used.

3.1.2.4 How Many Matches Per Time Slot?

The question can also be phrased as how many matches can be running simultaneously? One at a time, two at a time, three at a time, etc…

3.1.2.5 How Many Teams Per Table?

Until such time that the rules change, there is only 1 team per table. The reason for the question was in response to the evolution FRC went through with the introduction of alliances. Not expected here, but one never knows.

3.1.2.6 Match Duration

For a FLL matches, the minimum number here should be 2.5. Between this number and the next field, the two should generally equal about 4 minutes for alternating tables and 6 minutes for non-alternating tables.

3.1.2.7 Clean-up/Buffer Time After Each Match

This field represents the time after a match before the table can be used again for matches. The distinction between this Buffer Time and the match duration has to do with the travel time for teams between events.

To clarify the two fields by way of example. If a team starts a match at 9AM, the match itself would finish at 9:02.30. Some time is needed after each match to clean up in order for the next match on the same table or a different table. Supposing there is a 15 minute buffer time before a team can either compete again or go to a judging event, the Team Buffer Time, the match duration is 5 minutes, and the Buffer Time After Each Match is 5 minutes. In this case, the team cannot go to the next event until 9:20AM (9AM + 5 minute match duration + 15 minute Team Buffer Time) and the next match would not happen until 9:10AM (9AM + 5 minute match duration + 5 minute clean-up time). One field applies to matches and helps insulate teams from rushing, the other field only delays the competition matches.

3.1.2.8 Match Specific Breaks

The tool permits up to 4 breaks to be entered that only delay the official or practice rounds.

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3.1.3 Tournament Inputs Section (Final Matches)

Final/Elimination Rounds

How many teams are competing? (Must be 0,2,4,8,16,32,64,…)	8
How many minutes from the start of one match to the start of the next match? *The assumption is only one match is occurring at a time*	4
Final/Elimination Rounds Start Time	3:30 PM
Predicted End Time	*3:58 PM*

Figure 16 – Tournament Inputs (Final Matches)

3.1.3.1 How Many Teams Are Competing?

Basically, how many teams go to the finals. It is generally good practice for this number be a power-of-two (2, 4, 8, 16, …). As of v4.13, this tournament format can handle a number of teams that are not a power-of-two.

3.1.3.2 How Many Minutes Between Each Match

The tool basically assumes finals occur a match at a time. Therefore, how many minutes should there be between each match. The predicted match end times are based upon that assumption and taking into account the various types of tournament finals that could be run.

3.1.3.3 Finals Start Time

Enter the time the tournament finals start. It is recommended that the day be added to the time, but if dates are eliminated from ALL fields, the tool will still work.

3.1.4 Judging Sessions Input Section

Judging Sessions are generally interviews by judges, but it can also include a team photo with a photographer, or interviews with reporters.

Judging Sessions Inputs

Number of Judging Sessions (Max 3)	3	
Name of Judging Session #1	Research Presentation	
Start Time of Judging Session #1 *Predicted End Times (May need to expand cells on the right to see all time slots*	9:15 AM	Research Presentation Time Slots Information 1: Start: 09:15 A End: 09:30 A Length: 15 2: Start: 09:30 A End: 09:45 A Length: 15 3: Start: 09:45 A End: 10:00 A Length: 15 4: Start: 10:00 A End: 10:15 A Length: 15 5: Start: 10:15 A End: 10:30 A Length: 15 6: Start: 10:30 A End: 10:45 A Length: 15 7: Start: 10:45 A End: 11:00 A Length: 15 8: Start: 11:00 A End: 11:15 A Length: 15 9: Start: 11:15 A End: 11:30 A Length: 15 10: Start: 11:30 A End: 11:45 A Length: 15 11: Start: 11:45 A End: 12:00 P Length: 15 12: Start: 12:45 P End: 01:00 P Length: 15 13: Start: 01:00 P End: 01:15 P Length: 15
Number of Rooms for Judging Session #1	4	
Length of Judging Session #1 time slot (in minutes)	15	
Clean-up/Buffer time after each time slot (minutes)		

Judging Session #1 Specific Breaks (Max 4) *These breaks interrupt Judging Session #1 ONLY*		Start Time	End Time
	1		
	2		
	3		
	4		

Figure 17 – Judging Session Inputs

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3.1.4.1 Number of Judging Sessions

Enter a number between 0 and 3. If additional judging sessions are desired-email me with the request.

3.1.4.2 Name of Event

Is this a Teamwork Interview, a Presentation, Photo Opportunity, …

3.1.4.3 Start Time of Judging Session

Enter the time the judging session starts. It is recommended that the day be added to the time, but if dates are eliminated from ALL fields, the tool will still work.

3.1.4.4 Number of Rooms

How many rooms are doing the interviews (for example). It can also be turned around to ask how many judging teams exist. Say you wanted to interview teams in their pits, the number here should represent how many teams of people are roaming to do the interviews.

3.1.4.5 Length of Each Judging Session Time Slot

How long are the interviews within each judging session.

3.1.4.6 Clean-up/Buffer Time After Each Time Slot

This field represents the time after an individual interview before the room can be used again for a judging session. The distinction between this Buffer Time and the event duration has to do with the travel time for teams between matches and/or judging sessions.

To clarify the two fields by way of example. If a team goes to an interview at 9AM, the interview itself would finish at 9:15. Some time is needed after each judging session to clean up in order for the next judging session in the same room. Supposing there is a 15 minute buffer time before a team can either compete again or go to a judging session, the Team Buffer Time, the judging session duration is 20 minutes, and the Buffer Time After Each Event is 5 minutes. In this case, the team cannot go to the next event (match or judging session) until 9:30AM (9AM + 15 minute judging session duration + 15 minute Team Buffer Time) and the next event would not happen until 9:20AM (9AM + 15 minute match duration + 5 minute clean-up time). One field applies to judging sessions and helps insulate teams from rushing, the other field only delays the room from being scheduled.

3.1.4.7 Judging Session Specific Breaks

The tool permits up to 4 breaks to be entered that only delay the specific judging sessions.

3.2 Team Information Worksheet

This sheet accepts the specific team information the tool will then use to populate all of the views in the schedule. The first column is the team number, the second column is the team name, and the third column is the pit number. The last column is for comments by you. The tool ignores any information in column D and beyond. In the example shown in Figure 18 the comments are indicative of allocations of slots to the local tournaments feeding the state

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tournament. The tool left in placeholders (Team Stand-In 1 on line 11 is an example) for the tournament director to fill in as teams positively confirm their intent to attend the state tournament.

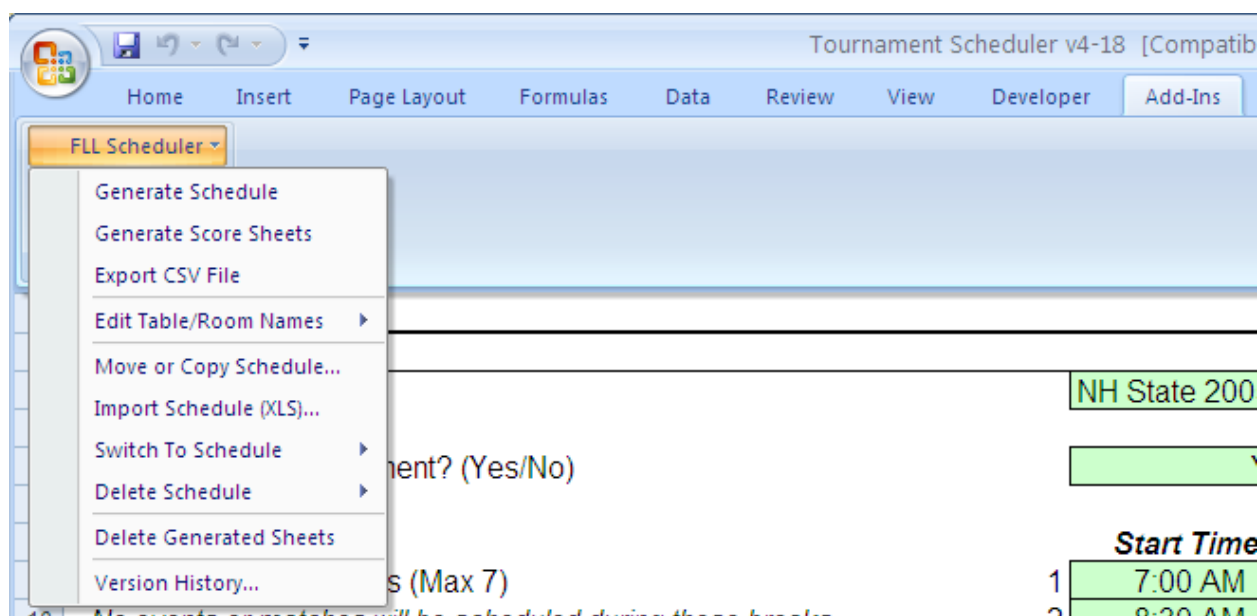|	A	B	C	D
1	Team Number	Team Name	Pit Number	Comments
2	1606	Pirate Hogs	1	
3	3007	Batteries	2	
4	1585	SMS PUMAS 2	3	
5	1439	Sea Urchins	4	
6	1587	Sky Surfing Geeks	5	
7	4419	TunaDudes	6	
8	1617	Cool Cats	7	
9	1596	RoboSharks	8	
10	1601	Shmieglehumberflu	9	
11	1	Stand-In 1	10	
12	1492	SMS PUMAS	11	BG
13	1608	The Right Angle	12	
14	2338	Crazy Fishes	13	
15	747	Hampstead Hackers	14	
16	1778	Batteries Not Included	15	
17	826	Engine Ears	16	
18	487	Exotic Robotics	17	Nashua
19	1588	Blue Dragons	18	
20	1603	The Magigers	19	
21	2168	DigiDudes	20	
22	2809	Aqua Squad 9	21	
23	3550	Londonderry Great White Sharks	22	
24	3821	Aqua Divers	23	
25	3	The NERDS	24	Manchester
26	685	Mach 6	25	
27	1350	Stormbreakers	26	
28	1599	Aqua Sox	27	
29	1609	The Lego Chicks	28	
30	1616	Chaotic Robotics	29	
31	2556	Wild Wacky Wolves	30	
32	2773	Lilbots	31	
33	2840	Team 50937	32	
34	3404	GPRT (Girls Precision Robotics Te	33	
35	4868	Oil Raiders	34	

Figure 18 - Team Info Worksheet

3.3 The FLL Scheduler Menu

The FLL Scheduler menu is the means by which to generate the schedule and to enter additional information that the Excel worksheet cannot handle within the input sheets themselves. Figure 19 and Figure 20 shows the expanded menu. The remainder of this section outlines the individual selections within the menu. Note that for Office 2007 for the PC, the menu is in the Add-Ins menu.

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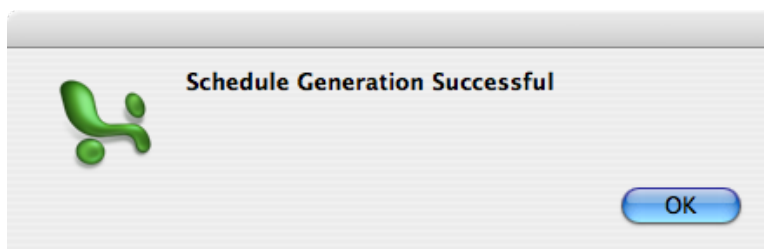
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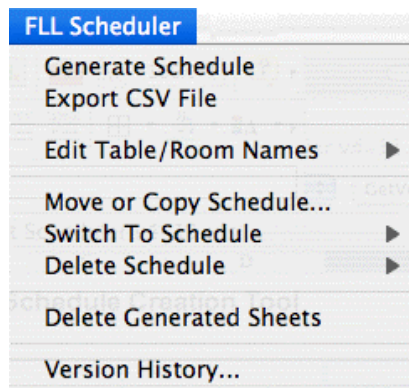
Figure 19 - FLL Scheduler Menu (Mac)

**Figure 20 - FLL Scheduler Menu (Office 2007-PC)**

3.3.1 Generate Schedule

Once the input form is filled in, select this menu item to kick off the tool to generate the schedule. If the tool is successful, the window as shown in Figure 21 will appear.

Figure 21 - FLL Scheduler Menu

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If the tool is not successful, the window as shown in Figure 22 will appear.
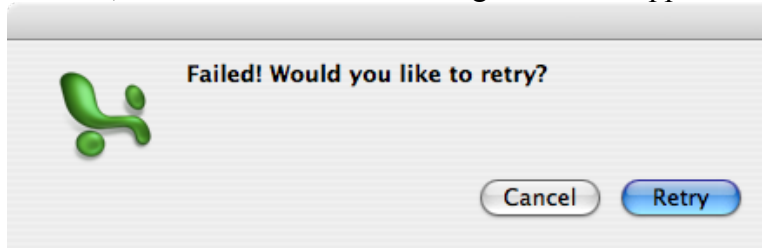
Figure 22 - FLL Scheduler Menu

Hitting "Retry" will cause the tool to immediately retry generating the schedule. A couple of generalities should be mentioned at this time.

- If you're trying to generate an Integrated Schedule, hitting Retry multiple times may be necessary for a specific schedule input. As an example, the NH Tournament Schedule provided as a sample schedule with the tool often will not generate on the first, second, or third try. But, it is a working schedule. Even minor tweaks to this schedule will cause the schedule to generate all the time, or never.
- For a block or integrated schedule, if the schedule doesn't generate on the first try, it is unlikely to ever generate. Some parameter will need to be tweaked in order to cause the schedule to be generated.

3.3.2 Export CSV File

This menu item exports a Comma Separated Value (CSV) file of the generated schedule. This is for usage into other programs after an acceptable schedule has been generated.
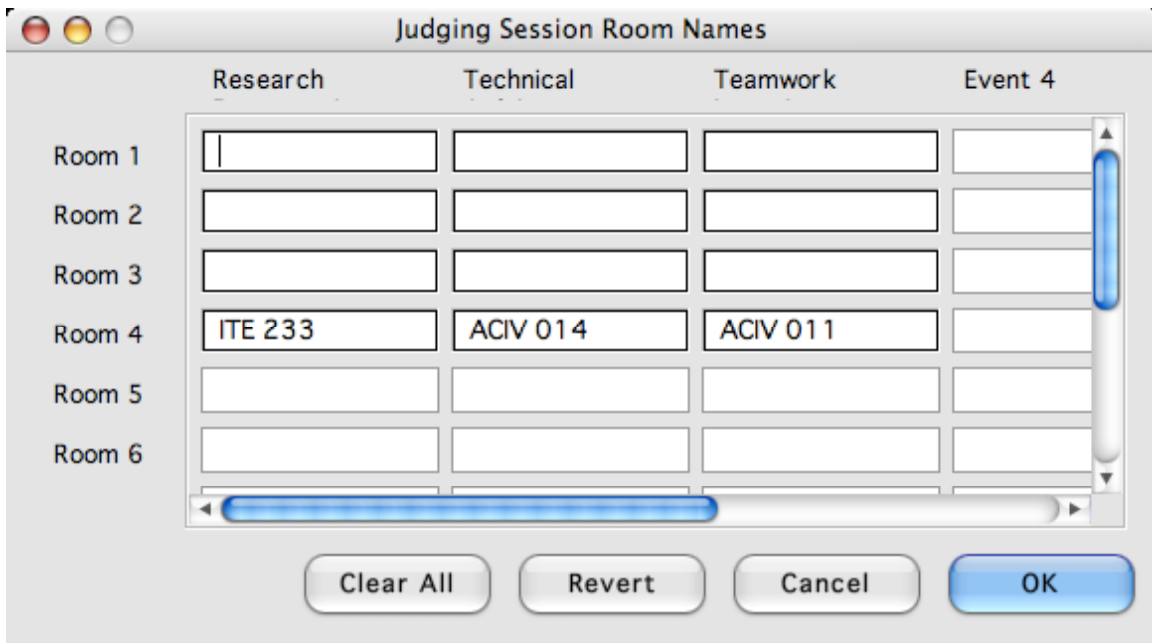
3.3.3 Edit Table/Room Names

In this menu item, custom room and table names can be entered for display in the schedules. If no names are input, the default is to direct teams to "Table 1 Side 1", "Table 4 Side 2", or "Table 2 Side 1" or "Room 1", "Room 2", or "Room 3" for example. These can then be relabeled as "Blue Table", "Atlantic Ocean", "Room Fido", or other suggestive name that the year's challenge may suggest. These names can be changed before or after the schedule has been generated without affecting the generated schedule. Figure 24 and Figure 25 are examples of the name dialog boxes that will appear.

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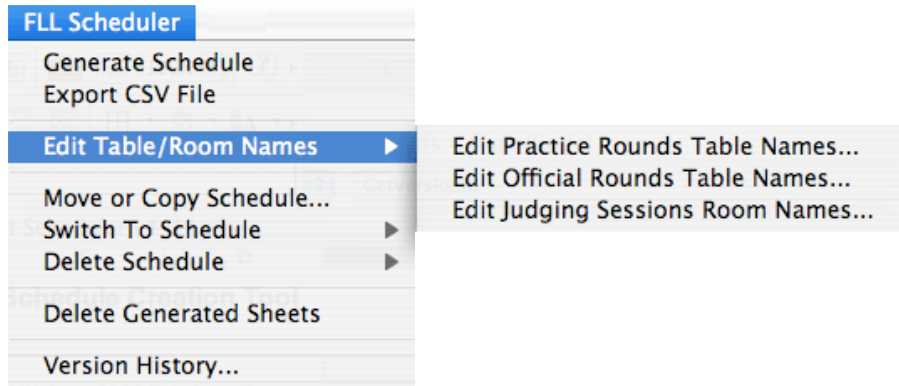
Figure 23 - Edit Table/Room Names Sub Menu
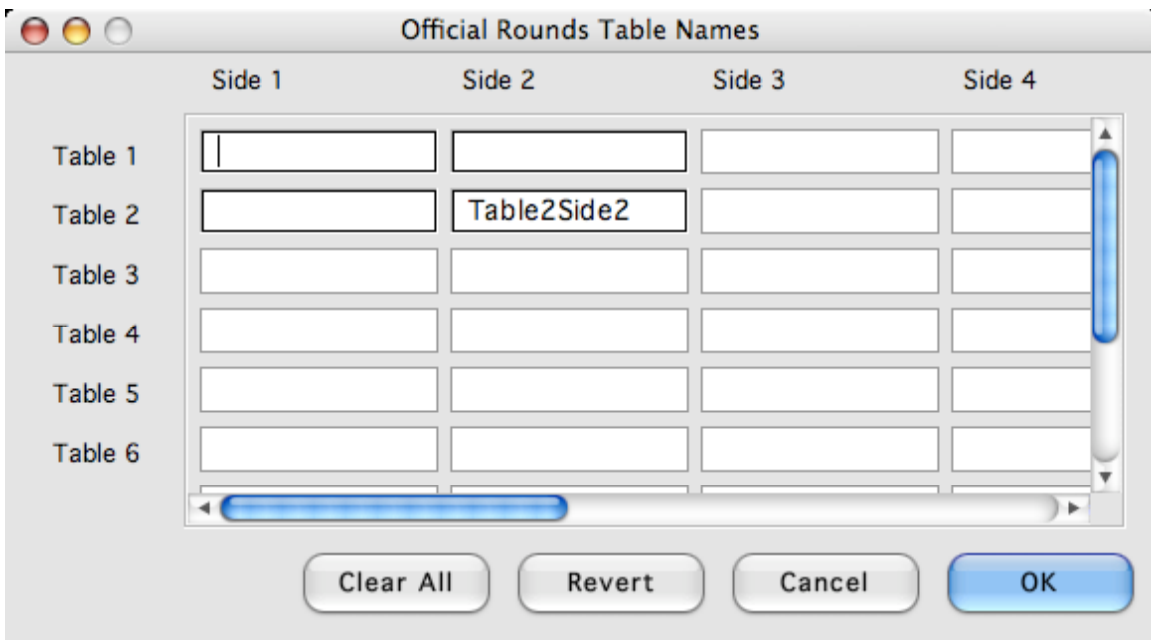
**Figure 24 - Practice or Official Rounds Table Names Dialog Box**

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Figure 25 – Event Room Names Dialog Box

3.3.4 Move or Copy Schedule…

This group of menu items are meant to assist in the management of potential schedules within this tool. These menu items mimic the built-in Excel capability to move, copy, or delete worksheets within Excel. This menu will bring up the window as shown in Figure 26.

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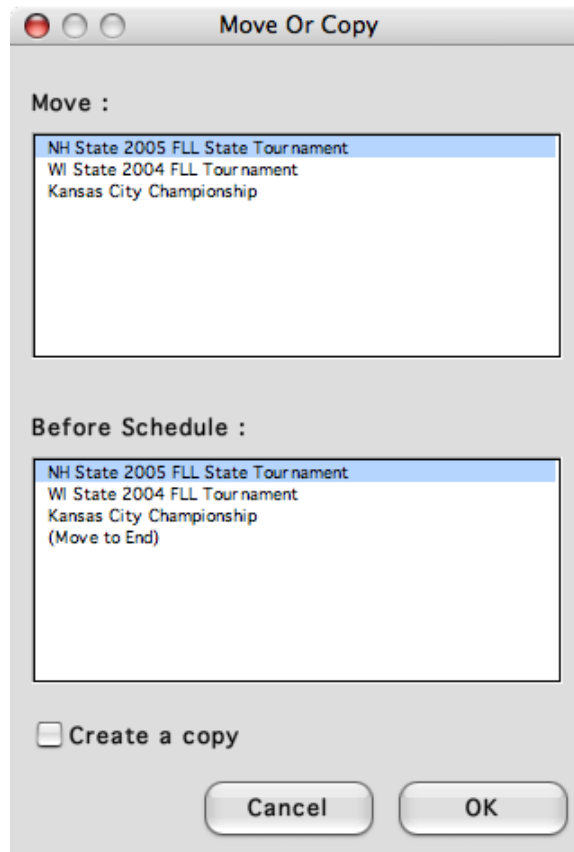
Figure 26 – Move or Copy Dialog Box

Each of the schedules memorized by the tool are shown in both the upper and lower halves of the window. To move a schedule, leave the checkbox at the bottom of the window unchecked, select the schedule you desire to move in the upper window, and select a schedule in the bottom half of the window. The schedule selected in the top half of the window will be moved *in front* of the schedule selected in the bottom half of the window.

Selecting the "Create a copy" checkbox and repeating the process will create a copy of the selected schedule with the word "copy" appended to the name as it appears in the Schedule Input Sheet. This name can be edited at any point in time and the tool will reflect the change.

3.3.5 Import Schedule (XLS)

This menu item allows you to import parameters from a prior version of this tool.

3.3.6 Switch To Schedule

This menu item allows changing between different saved schedules.

3.3.7 Delete Schedule

This menu item will delete the selected schedule.

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3.3.8 Delete Generated Sheets

This menu item removes all of the sheets the schedule generated. This slims down the file and is primarily a housekeeping item. This can prevent confusion between a failed and a successful schedule previously generated. Once the tool has discerned a schedule can be generated, it will overwrite any existing schedule sheets with the same name. If a schedule with practice matches had already been scheduled and then followed by a schedule without one will not delete the previously generated sheets specific to the practice matches.

3.3.9 Version History

This simply brings up a window with the current version history of the tool. The version number itself is shown at the top of the Schedule Input Sheet.

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4 Sample Tournament Schedules

Three tournament schedules are included with the tool. The three tournaments are examples of each of the three tournament types. Feel free to use these as starter templates for your own tournaments.

The NH State Tournament is an example of a 52-team tournament with no Practice Rounds, Official Rounds, Final Rounds, three Judging Sessions, all within a single day using an Integrated Schedule.

The WI State Tournament is an example of a 48-team tournament with no Practice Rounds, Official Rounds, no Final Rounds, three Judging Sessions, all within a single day using a Block Schedule.

The Kansas City State Tournament is an example of a 27-team tournament with a single Practice Rounds, Official Rounds, no Final Rounds, three Judging Sessions, all within a single day using a Hybrid Block Schedule.

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5.1 Primary Cause of Failed Schedules

The biggest obstacle in generating a successful schedule is trying to make the teams go too many places at any one time. The problem is recognizing that has occurred and secondly, what to do about it.

Example

Let's start with two teams. The match is 3 minutes long and a 15 minute travel buffer is desired. This means that the two teams will face each other for 3 minutes every 15 minutes with 12 minutes of referees, match scorers, and MC's standing doing nothing.

To keep the referees, match scorers, and MC's busy, at least 10 teams are needed.

Simple so far?

Adding a single Judged Event interviewing two teams at a time every 15 minutes, imposes a new complexity. At the prior 10 teams, it will take 5 – 15 minute time blocks to interview all of the teams. However, during the 15 minutes the two teams are being interviewed and the 15 minutes afterwards (travel buffer, remember?), the teams cannot be scheduled to be elsewhere. To now fill the gap in the match schedule, more teams are required.

One intuitive solution might be to add more competition tables. That would exacerbate the problem.
The other intuitive solution might be to add more judges. That will take some more teams out of the tournament for half-hour stretches. The number of teams required just to support the tournament increases as well.
The solution is to add more teams or don't overlap the two needs.

The Nitty-Gritty

I've saved off two examples of schedules in the tool. The block schedule that might have been used in the 2006 World Festival and the 2005 NH State FLL Tournament. I'll be adding the 2004 WI State FLL Tournament as an example later.

The 2006 World Festival is an example of a large Block scheduled tournament. The 2005 NH State Tournament is an example of a large Integrated scheduled tournament.

Hit the button and you're off.

If the schedule looks like it's not doing much, you may have created an impossible schedule. Or stop it and try again.

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5.2 Tip #1

The entries in the Team List worksheet are cross-linked to the other sheets. If you get a name change later on, just retype the name in the Team List worksheet. The other sheets will change suit automatically.

5.3 Tip #2

Because the other sheets dynamically link to the team information in the Team Info sheet, the data can be changed on the fly as outlined above. This means, team information can be shuffled within the schedule by hand. The downside is some of the checks run when first generating a schedule will not be run again. But there is a major caution here due to how Excel manages information. Excel knows how to update the data in the other sheets by remembering the cell location in the other sheets. If the cell is moved, the cell reference in the other sheets will move with it. For a spreadsheet, this is generally the desired behavior. For moving teams around in the list, this is generally a bad thing as the cell references tend to get messed up and the only solution is to re-generate the schedule.

5.4 Tip #3

Insert one or two five-minute delays in the morning sections. Either the delays won't be needed and people get a quick respite from the tournament. Or the delays will be needed and a little schedule time will be regained. Even though the NH Tournament has been running for several years with little volunteer turnover, the delay has been useful because it's been a year since the last tournament for all involved and it takes the first round of the day for teams and volunteers to get in a groove.

5.5 Tip #4

To troubleshoot the generation of schedules, eliminate or reduce the number of judging sessions, or practice rounds until the schedule successfully generates. Looking at the generated sheets may provide insight into where there may be time crunches. Then start re-adding the eliminated events.

5.6 Tip #5

Please remember to enable macros! The tool is based on Visual Basic for Applications. It is the "macro" language for Microsoft Office programs. A picture is shown in Figure 27.
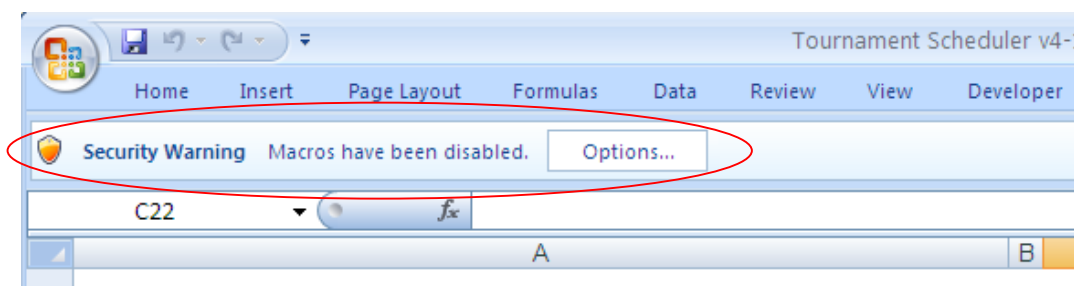
Figure 27 – Disabled Macros in Excel 2007 (PC)

Macros will have to be enabled via the selection as shown in Figure 28.

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Figure 28 – Enabling Macro Content in Excel 2007 (PC)

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6 Version History

- v1.0 8/23/2005 Initial Beta release for comments
- v1.1 8/24/2005 Improved Match/Team Schedule Formatting, Changed Predicted End Time Algorithm
- v1.2 8/29/2005 Fixed scheduling bug in v1.1, added graphical & MC schedules, additional formatting
- v1.3 9/1/2005 Allowing multiple matches per time slot
- v1.4 9/6/2005 Added Graphical match schedule by time, elim. auto reset to table 1 at round close
- v1.5 9/8/2005 Custom Break Names, fixed bug preventing multiple breaks
- v1.6 9/12/2005 Minor formatting improvements
- v1.7 9/13/2005 Parameters for final rounds, but no schedule (yet), and predicted end time
- v1.8 9/19/2005 Score Entry and automatic standings (official rounds only)
- v1.9 9/19/2005 Adding check for custom security level (Excel 2002 and higher)
- v1.10 9/20/2005 Refined the event procedure to call an external (and more maintainable) function
- v1.11 9/21/2005 Data validation checking, Status Bar updating
- v1.12 9/25/2005 Added Single Elimination Tournament Schedule
- v1.13 9/26/2005 Added Hybrid Single Elim Tournament Schedules, fixed bug counting bug in v1.12
- v1.14 9/27/2005 Minor formatting improvements
- v1.15 10/3/2005 Double Elimination Tournament Schedules,Deterministic Scheduling Added
- v2.0 10/3/2005 Major Rev-This version satisfies initial design goals
- v2.1 10/11/2005 More definitive indication of pass/fail
- v2.2 10/13/2005 Don't gen. certain sheets if 0 teams in finals. Initial changes for block scheduling
- v2.3 10/15/2005 I think I got the WI Block scheduling working...
- v3.0 10/21/2005 GUI finished, but not behaving as expected. Need to give it some more thought.
- v3.1 10/22/2005 Changed how teams are assigned in block schedule
- v3.2 10/22/2005 Added rolling break capability and room naming capability
- v3.3 10/23/2005 Added a rotated view (landscape vs. portrait) for the graphical by time
- v3.4 11/1/2005 Removed rolling breaks and replaced with individual selectable breaks (max 4)
- v3.5 11/5/2005 Put in a variable-sized break after each event to allow down-time to not impact team scheduling
- v3.6 11/21/2005 Fixed bug-#teams in Entry sheet not equal to #teams in List sheet caused infinite loop
- v3.7 11/26/2005 You can now edit team & room information AFTER the schedule has been generated!
- v3.8 1/1/2006 Never released
- v3.9 2/20/2006 Merging Table & Side Info together to enable later renaming, fixed restriction on <= 3 rounds & 1 match per slot

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- v3.10 3/6/2006 CSV Export Worksheet
- v3.11 3/13/2006 The program can now handle scheduling practice rounds
- v3.12 3/17/2006 Match numbers displayed now correspond to time slots rather than match pairings
- v3.13 3/23/2006 Missed a field in the CSV file format-fixed
- v4.0 9/7/2006 Major interface change
- v4.1 10/5/2006 Comments and hybrid block format added
- v4.2 10/6/2006 Removed About... menu-wouldn't work on a PC
- v4.3 10/6/2006 Added date consistency check
- v4.4 10/15/2006 Removed reliance on VBA for Extensibility Library (PC-Mac Compatability)
- v4.5 11/9/2006 Bug removal-Surrogate teams not being added correctly
- v4.6 12/3/2006 Bug removal-Params wasn't saving/recalling teams correctly and block schedules now generate events before matches
- v4.7 1/10/2007 Bug removal-Not handling situations with more than two tables very well
- v4.8 1/24/2007 Bug removal-Another multiple table error-In the formatted by table view, if a round fell inbetween matches at the same time slot the cell merge failed. If a pit number was not numeric and non-printable (e.g. a space), a type mismatch was generated.
- v4.9 3/25/2007 New Feature- Added a new sheet for a normal FLL tournament. I had to code a new function to do it-hence the long wait. I also realized the tournament team # and name data were getting their data from the wrong columns in the Match Score Entry worksheet. That is now fixed.
- v4.10 7/17/2007 Parameter Name Tweaks-Upon consultation with Nancy Paul and Betsy Daniels at FLL, some of the names I used have been changed to better communicate the intent of certain parameters. The underlying variables are left intact (for now). Some additional error checking will be added to the next version.
- v4.11 7/20/2007 Formatting Changes-Changing a number of things about how the input page looks in order to help users out.
- v4.12 1/5/2008 Enable Separate Command to Generate Scoring sheets
- v4.13 10/5/2008 Handle non-power-of-two tournament Sizes
- v4.14 10/20/2008 Menu appears at start on a Mac finally!
- v4.15 11/2/2008 Bug fix - incorrect formula for events 2 &3 on input sheet
- v4.16 11/16/2008 2nd attempt to fix menu start upon open. Menu might work internationally now? Also addressed the number of surrogate teams. Calculation was wrong. Made Judged Event names unique for csv export for Skip's tool
- v4.17 2/10/2009 Addressed minor Excel 2007 (PC Only) formatting problem
- v4.18 11/2/2009 Addressed minor Excel 2007 (PC Only) formatting problem (again!). Turns out my "fix" wasn't actually being called in Excel 2007. New strategy. It helps I actually now own a copy of 2007 to test with this time around.

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