

**The ICC Duckworth-Lewis-Stern calculator**

**DLS Edition 2018**

**(DLS3.0)**

**Installation and operating instructions**

Queries about program operation should be sent to: [sstern@bond.edu.au](mailto:sstern@bond.edu.au)

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## Installation

The software is contained in a single file, named *DLS30.jar*, which should be copied onto any convenient location of your computer. As previously, you should create a desktop icon from which you can run the program. Right click on the name of the file and choose ‘send to’, then ‘desktop (create shortcut)’. You may prefer to edit the title to ‘*DLS30*’ and change the icon (right click on the icon and select ‘properties’).

The new version incorporates changes to the formula parameters; however, the program is operated just as its predecessors were, so those familiar with the workings of the previous software need read no further. When you change over to this new software, it is recommended you delete previous versions of WinCODA and DLS still on your computer.

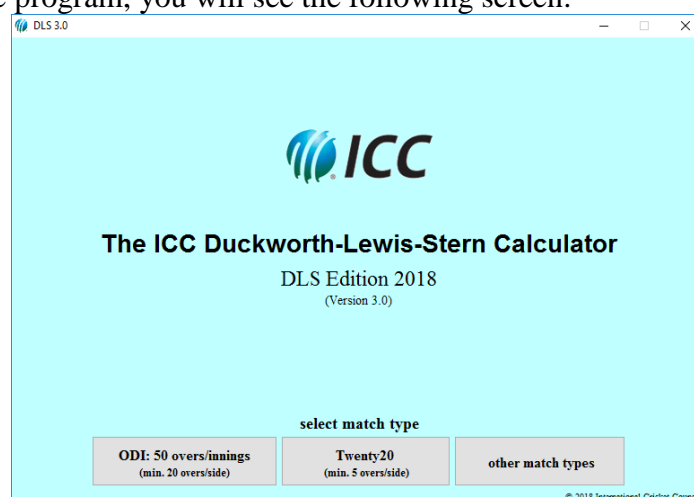
The program is designed to run on PC computers with Windows XP, Vista, 7, 8 or 10 operating systems. [NOTE: For 64-bit installations, you will still need to have the 32-bit Java Run-Time Environment available; see below. Further, for some Windows 10 installations, particularly on tablets, there may be a need to manually adjust the screen resolution to make the DLS input screen readable.]

Running the program requires that Java® (version 8 or later) be installed on your computer. Most computers have this installed as standard. If you find the program will not run, you will need to download Java from the internet. Go to [www.java.com](http://www.java.com) and click on the ‘Do I have Java?’ link underneath the ‘Free Java Download’ button to see what version, if any, is on the computer. If it is not at least version 8, you should click the ‘Free Java Download’ button to download and install the latest version. If you have a 64-bit Windows installation, you will need to make sure you have the 32-bit Java Run-Time Environment installed. If you are instead offered the 64-bit version, you need to click on the ‘All Java Downloads’ option at the upper left and then select the 32-bit Java version.

With some systems, the account used to download and install Java must have the appropriate privileges (e.g., an administrator account), but once Java installation is done any user will be able to use the program without requiring such privileges.

## Starting the program

When you open the program, you will see the following screen:



The first step is then to select the ‘match type’ applicable by clicking the appropriate grey button. The match types are defined by the number of overs per innings and the minimum number of overs which must be available to each side for a valid match. Select ‘ODI’ if the competition has 50-over innings with a minimum of 20 overs to be available to each. Select Twenty20 for standard Twenty20 International conditions (20 overs/innings, min. 5 per side).

If the match is neither of these, select ‘other match types’. Select the appropriate conditions from the drop down menu; if none is applicable, select ‘Custom’ and enter the required figures as prompted.

**Example:** the match is from a domestic competition which has 45 overs/innings with a minimum of 20 overs/side for a valid match. Select ‘other match types’; then click the down arrow in the box which appears and select the option ‘45 overs/innings; min. 20 overs/side’; click ‘OK’.

**Example:** the match is from a competition with 30 overs/innings and a minimum of 8 overs available to each side for a valid match. Select ‘other match types’; then click the down arrow in the box which appears and select the option ‘Custom’. Enter **30** (overs/innings), click ‘OK’, then **8** (min. overs/side) and click ‘OK’ again.

You then proceed to the calculation screen. The heading shows the match type (overs/innings and min. overs/side). For example, here is the calculation screen for an ODI:

## General notes

- Throughout, the team batting first are called ‘Team 1’; the team batting second are called ‘Team 2’.
- Overs are expressed in ‘cricket notation’, and this should be used when typing in a number of overs which is not a whole number. For instance, ‘4.5 overs’ means four overs and five balls. Only six-ball overs are recognised.
- You may navigate through the data entry boxes using either the mouse, the keyboard arrow keys or the Tab key (shift + Tab for moving backwards). The Tab key will move the cursor within an individual innings until it reaches the end of the available entry boxes. The arrow keys will move the cursor across innings directly.

## Target calculation in event of stoppage(s)

The number of overs/innings as per the match type appears in the top left box. If the start of play is delayed and the match begins with a reduced number of overs/innings, enter this number in the box to replace the default value.

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**      **Team 2's innings**

overs/innings at start of match: 50      overs at start of innings: 50

Team 1's final score:      **TARGET:** (to win)

overs	balls bowled	runs scored	wickets down	overs lost/side
1				
2				
3				
4				
5				

total overs available: 50      total overs available: 50

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report

## Team 1's innings

If there are no stoppages in Team 1's innings, enter Team 1's final score where indicated. The Target is displayed and you may then move to Team 2's innings.

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**      **Team 2's innings**

overs/innings at start of match: 50      overs at start of innings: 50

Team 1's final score: 234      **TARGET:** 235 (to win)

overs	balls bowled	runs scored	wickets down	overs lost/side
1				
2				
3				
4				
5				

total overs available: 50      total overs available: 50

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report

If there are stoppages in Team 1's innings after play has commenced and overs are lost, for each stoppage enter the match details at the stoppage and the number of overs lost per side in that stoppage.

**Example:** a 50 overs/innings game is interrupted by rain after 10.3 overs have been bowled with the score at 45/1, and the match is reduced to 48 overs/innings; this is a loss of 2 overs to each side, and you should enter **10.3** (overs bowled), **45** (runs scored), **1** (wicket down), **2** (overs lost per side).

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**

overs/innings at start of match: 50  
Team 1's final score:

**Team 2's innings**

overs at start of innings: 48

**TARGET:**  (to win)

overs bowled	balls	runs scored	wickets down	overs lost/side
10.3		45	1	2
2				
3				
4				
5				

add further stoppage row

total overs available: 48

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report

**Example (cont'd):** The innings is then further interrupted by rain after 16 overs have been bowled with the score at 67/5, and the match is now reduced to 44 overs/innings; this constitutes a further loss of 4 overs to each side and you should enter the details in the second row of the stoppage information boxes, these being **16** (overs bowled), **67** (runs scored), **5** (wickets down), **4** (overs lost per side).

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**

overs/innings at start of match: 50  
Team 1's final score:

**Team 2's innings**

overs at start of innings: 44

**TARGET:**  (to win)

overs bowled	balls	runs scored	wickets down	overs lost/side
10.3		45	1	2
16		67	5	4
3				
4				
5				

add further stoppage row

total overs available: 44

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report

If the innings has to be prematurely terminated, enter the match details at the stoppage (overs bowled, runs scored, wickets down) and then type **a** (for 'abandoned') in the 'overs lost' box. The runs scored will be replicated in the 'Team 1's final score' box, and you will move on to Team 2's innings with the revised Target displayed.

Further, once a completed stoppage row has been entered (i.e., including the number of overs lost) but prior to re-commencement of play, a **?** may be typed into the Team 1 final score field and a table of projected scores along with associated DLS target adjustments will be created to allow users to anticipate the likely size of the DLS target adjustment once the first innings is complete.

The screenshot shows the DLS 3.0 interface for a match. Team 1's innings is set for 50 overs, and Team 2's for 44. A callout bubble points to the 'Team 1's final score' field, which contains a question mark. An inset window titled 'Table of possible Targets' displays the following data:

further runs scored	final first innings score	DLS Target	DLS adjustment
53	120	119	-2
63	130	128	-3
73	140	138	-3
83	150	148	-3
93	160	158	-3

Finally, if the innings is not prematurely terminated and it is completed (either all overs bowled or ten wickets lost) do **not** enter the match situation at the end of the innings as this does not constitute a stoppage with a loss of overs. Instead, simply enter Team 1's final score in the appropriately labeled box, whereupon the revised Target will be displayed and you may then move to Team 2's innings.

### Team 2's innings

The 'overs at start of innings' box for Team 2's innings will automatically update to contain the number of full overs which were available to Team 1.

If the start of Team 2's innings is delayed and it has to be (further) shortened, enter ? in the box labeled 'overs at start of Team 2's innings' and a table will appear as a pop-up window giving Team 2's Target for all possible number of overs they are allocated (see section headed 'Tables and print-outs' below). When it is known how many overs Team 2 are allocated, enter this number in the box and the revised Target will be displayed.

**Example (cont'd):** Team 1 go on to make 204 in their available 44 overs. Rain then further interrupts play during the interval.

The screenshot shows the DLS 3.0 interface. On the left, a 'Table of possible Targets' pop-up window is displayed, listing targets for various overs lost. The main interface shows Team 1's score of 204 and Team 2's target of 201. A callout points to the 'overs at start of Team 2's innings' box, which contains a question mark, and explains that this is used when play is interrupted. Another callout points to the pop-up window, explaining that it shows possible targets for different numbers of overs lost.

overs lost in current stoppage	total overs in innings	overs remaining	Target
0	44	44	201
1	43	43	199
2	42	42	197
3	41	41	195
4	40	40	193
5	39	39	190
6	38	38	188
7	37	37	185
8	36	36	183
9	35	35	180
10	34	34	178
11	33	33	175
12	32	32	172
13	31	31	169
14	30	30	166
15	29	29	163
16	28	28	159
17	27	27	156
18	26	26	152
19	25	25	149
20	24	24	145
21	23	23	141
22	22	22	137
23	21	21	132
24	20	20	128
25	19	19	NR

If play is suspended during Team 2's innings, enter the match details at the stoppage in the boxes as indicated (overs bowled, runs scored, wickets down). Type ? in the 'overs lost' column to give the full schedule of revised Targets for any number of overs lost (see section headed 'Tables and print-outs' below).

When it is known how many overs are lost, enter this number in the 'overs lost' column and the revised Target, together with Team 2's revised further requirement, will be displayed.

If play cannot be restarted and the match has to be prematurely terminated, enter a (for an abandonment) as indicated and the match result will be displayed. If the details entered are such that the match is over (10 wickets down, all available overs bowled or Target achieved), the result of the match will be displayed.

Note that target scores will be calculated and displayed if no entry is made in the 'runs scored' box. This is because the runs scored at a stoppage do not enter into the calculation. However, the runs scored are needed to give statements of the state of the match (see below) and to display the result at the end of the match.

**Example (cont'd):** Team 2 are given 37 overs. They bat for 21 overs, reaching 101/5, when rain again intervenes. You should enter this stoppage information into the first Team 2 stoppage row: **21** (overs bowled), **101** (runs scored), **5** (wickets down).

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**

overs/innings at start of match: 50  
Team 1's final score: 204

overs	balls bowled	runs scored	wickets down	overs lost/side
1	10.3	45	1	2
2	16	67	5	4
3				
4				
5				

total overs available: 44

**Team 2's innings**

overs at start of innings: 37

**Team 2 are behind by 7 (Par Score = 108)**

**TARGET: 188 (to win)**

overs	balls bowled	runs scored	wickets down	overs lost
1	21	101	5	
2				
3				
4				
5				

total overs available: 37

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report

**Example (cont'd):** Team 2 lose 10 overs. Enter 10 in the overs lost field to display the revised target.

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**

overs/innings at start of match: 50  
Team 1's final score: 204

overs	balls bowled	runs scored	wickets down	overs lost/side
1	10.3	45	1	2
2	16	67	5	4
3				
4				
5				

total overs available: 44

**Team 2's innings**

overs at start of innings: 37

**Revised Target: 150 (27 overs) (49 further runs in 6 overs)**

**TARGET: 150 (to win)**

overs	balls bowled	runs scored	wickets down	overs lost
1	21	101	5	10
2				
3				
4				
5				

total overs available: 27

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report

**Example (cont'd):** Team 2 bat another 3 overs, reaching 120/6 in the available 24 overs, when their innings has to be abandoned.

DLS 3.0 - match type: ODI regulations (50 overs/innings; min. 20 overs/side)

**Team 1's innings**

overs/innings at start of match: 50  
Team 1's final score: 204

overs	balls bowled	runs scored	wickets down	overs lost/side
1	10.3	45	1	2
2	16	67	5	4
3				
4				
5				

total overs available: 44

**Team 2's innings**

overs at start of innings: 37

**TEAM 1 win by 7 runs (Par Score at end = 127)**

**TARGET: (to win)**

overs	balls bowled	runs scored	wickets down	overs lost
1	21	101	5	10
2	24	120	6	a
3				
4				
5				

total overs available: 24

Penalty runs awarded to Team 1 while Team 2 are batting:

create Par Score tables:  
over-by-over    ball-by-ball

reset input fields  
change match type  
create DLS match report



## Par Score tables

When Team 1's innings has been completed and Team 2's innings is about to start, or after a stoppage in Team 2's innings with a revised Target, the DLS operating protocol requires that Par Score schedules are produced for distribution. These are obtained by clicking on the buttons in the bottom left-hand corner (see section headed 'Tables and print-outs' below).

The screenshot shows the DLS 3.0 software interface for a match. On the left, there is a 'Table of over-by-over Par Scores' with columns for 'overs bowled', 'overs remaining', and 'wickets down' (0-9). The main area is split into 'Team 1's innings' and 'Team 2's innings'. Team 1's final score is 234. Team 2's target is 235. There are input fields for 'overs at start of match' (50) and 'overs remaining' (50). A callout box with a green background and black text says 'Use these buttons to get par score tables', pointing to the 'create Par Score tables' buttons at the bottom left.

The Par Score tables disappear whenever new or modified information is added, but you can produce new tables at any time that the appropriate button is active. The Par Score tables list only those values still relevant to the current match.

## Penalty runs

The laws of cricket, as revised in 2000, allow for penalty runs to be incurred by either side in either innings. The only situation where the DLS calculation is affected is that in which Team 2 incur penalty runs while batting. In this situation, the penalty runs (5 per incident) are added to Team 1's score but they are not consolidated for DLS purposes. The DLS calculation continues to be made on the basis of Team 1's original score but all Targets and Par Scores are increased by 5 runs per incident.

If Team 2 incur a penalty while batting, the penalty runs should be entered in the box provided (entered values in this box will appear in pink) and the Target and all Par Scores will be immediately updated.

## Tables and print-outs

Three tables are available as described earlier. These are:

- Possible Team 2 Targets
- Par Score schedule (over-by-over)
- Par Score schedule (ball-by-ball)

Each table is equipped with both a 'print' button and a 'save' button.

When printed, the tables will be automatically scaled so that a 50-over table will fit within the printer default boundaries. However, depending on the default options of the printer used, these scaled print-outs may be smaller than desired. If so, you will need to modify the default page size and margins directly from your computer system.

By default, saved tables are output in HTML format. They can be viewed using any program which can render HTML code (e.g., Internet Explorer® or Microsoft Word®). When saving an output table, the save dialog will have the default filename included automatically for convenience. However, you will be warned if you are about to overwrite an existing output file, and if you do not wish to overwrite the file select 'No' and you will be returned to the save dialog where you can modify the default filename to one of your own choosing. Alternatively, files may be saved as text files which may be read and edited using, for example, Notepad®.

Underneath each table is a 'TableID' reference which summarises all the information which has been input at the time the table was produced. The time and date at which the table was produced is also shown.

## **Match report**

When a match has been completed, and the final score details for Team 2's innings have been entered, an option is available for producing a DLS report. It is recommended that this report be produced as it may be used as a substitute for the DLS report form in Appendix I of the DLS operating protocol. Click on the button at the bottom right of the screen and enter the information requested: viz

- name of competition (e.g., ICC Champions Trophy)
- identity of teams (these may be abbreviated if required)
- match venue (include town or city)
- date of match
- which team batted first
- contact details (so that user may be contacted in the event of any queries)

The user may also enter any other information that is felt relevant; for instance, the cause of stoppages if other than rain or bad light.

The information entered will be remembered until you select 'reset input fields' or 'change match type' or close the program, thus facilitating production of the report if you have made an input error and corrected it.

Whenever possible, the match report should be emailed to Steven Stern for his records. This can easily be accomplished using the direct facility provided via the 'Email report' button at the bottom of the report window. It should also be sent by copy to the host country's board and/or to ICC as required. For the direct email facility to work properly, an internet connection must be established and the computer system on which DLS3 is being run must have a default email client set-up. The vast majority of computers will have a default email client appropriately configured; however, if your system is not configured to support the direct email facility, you will be advised either by the button label indicating 'Email option unavailable' or by a warning message appearing when you press the 'Email report' button. In this case, you will need to save the report to a file and then email this saved file manually. In most circumstances where the direct email facility is unavailable, your local system

administrator should be able to rectify the situation, should you so desire, by properly configuring your default email client.

### **Further operational notes**

- Stoppages must be listed in order of occurrence so that the ‘overs bowled’ and ‘wickets down’ columns are in ascending order. If this is not the case, an error message will appear underneath the relevant innings information and Targets will not be displayed.
- If any unacceptable figure is entered (e.g., too many wickets down, too many overs lost), an error message will be displayed and no Targets or Par Scores will be calculated until a valid entry is made.
- Input data can be overwritten at any time and the target will automatically be updated. To delete data from adjacent boxes simultaneously, use the mouse to highlight the relevant boxes and use either the Delete or Backspace key.
- While entering stoppage information during Team 2's innings, the value in the red Target box turns grey, allowing the operator to continue to see the old target, until all stoppage information is entered and a new revised target is displayed in red.
- The ‘total overs available’ boxes (coloured green) are automatically calculated by the program and are not for user input.
- If more than five stoppages occur in either innings, clicking the ‘add further stoppage row’ button will add an additional entry row.
- The ‘reset input fields’ button will clear all input cells, return the number of stoppage rows to the default of five and reset Team 1's ‘overs/innings at start of match’ and Team 2's ‘overs at start of innings’ to their default values based on the type of match chosen.
- The ‘change match type’ button allows you to modify the match type. You will be warned that this change will result in the loss of any information already entered.