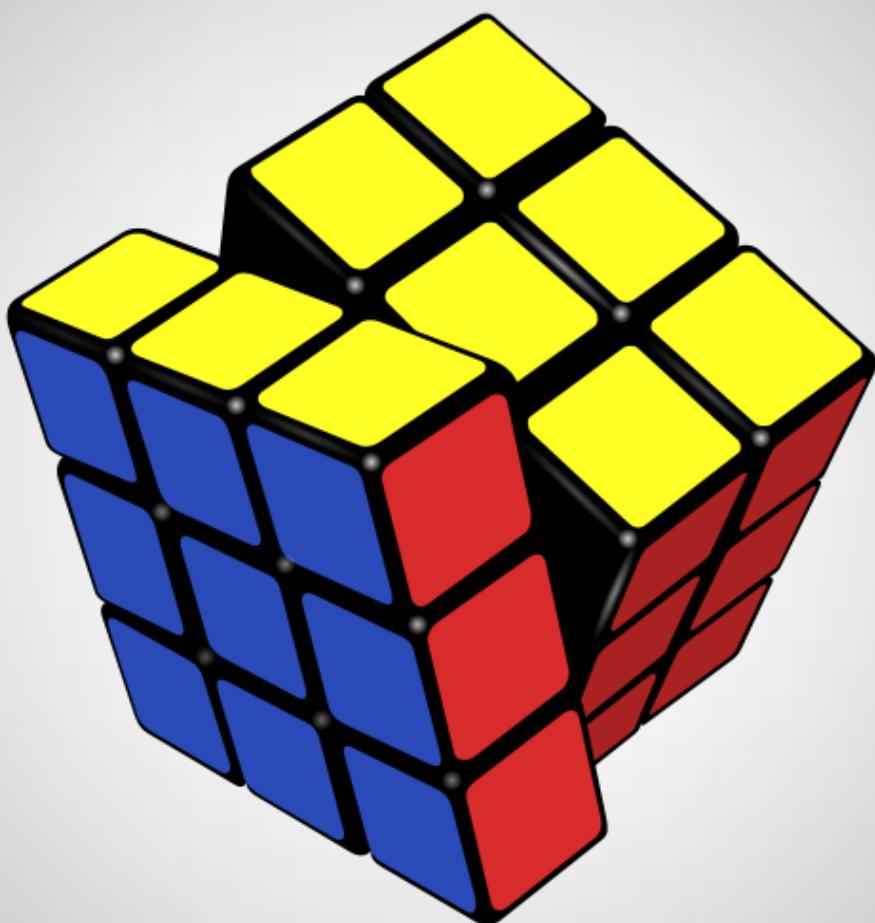


SECTION 5

USER MANUALS



Student User Manual

Contents

Introduction.....	3
Installation.....	4
Backup and Recovery.....	5
How to Use the System.....	6
Shortcuts.....	6
How to perform moves on the virtual cube.....	6
How to use the Solve Editor form	7
How to add solve information.....	9
How to edit solve information	11
How to delete solve information	13
How to save a cube state.....	14
How to load a cube state	15
How to save statistics	17
How to load solve information	18
How to use Time Graph window.....	19
How to use the Scramble List window	22
How to add a scramble	24
How to edit a scramble	25
How to delete a scramble	26
How to use the Algorithm Table.....	27
How to use the Solve Table	28
How to add a solve to the database	31
How to edit a solve in the database.....	33
How to delete a solve from the database	36
How to load a solve from the database into the main window.....	38
How to use the Preferences window	39
How to start a solve	42
How to delete all solves in the solve list	44
How to reset the cube to a solved state	45
How to paint a custom state.....	46
How to generate a solution for the current state	48
How to solve a selected piece	49
How to apply a random scramble.....	51
How to use the scrambles in the scramble list	52

How to show statistics	52
How to open a tutorial	53
How to load a tutorial from file	53
How to use tutorial mode	55
Data Input Guidelines	57
Entering times	57
Entering dates	58
Entering cube states	59
Entering preferences	61
Troubleshooting	62
1. Why is the cube not performing moves when I press keys on the keyboard?	62
2. Why are some of my solves being recorded with a penalty of 2?	62
3. When I try to solve an individual piece, the solution solves other pieces as well.	62
4. When I click the View Execution button in the Solve Editor window, an error message appears.	
.....	63
5. An error message appears when I try to enter a time	63
6. An error message appears when I try to edit or delete a solve in the list in the main window.	63
7. The program is saying that the cube state I enter/load is invalid.	63
8. The program is saying that the solve information I'm trying to load is invalid	63
9. I cannot open a file containing tutorial/cube-state/solve information.	63
10. The program is saying that the date I enter is invalid.	63
11. The data I enter in the Preferences window is not being accepted.	63
12. I cannot filter the times in the Solve Table	64
13. When I try to start a new solve, an error message appears saying "No scrambles in scramble list".	64
Limitations of the System	65

Introduction

Kuubik was developed to help people learn how to solve the Rubik's cube. There are features for both learning and practising, so the system can be used by people with all levels of experience. The system was intended to provide a comprehensive environment that would enable users to further their skill rapidly. The system can be used by anyone who wishes to learn how to solve the Rubik's cube.

The program allows you to:

- Learn how to solve the Rubik's cube using built-in and custom-made tutorials.
- Automatically generate solutions for a given cube state.
- Paint custom states onto a virtual Rubik's cube.
- Practise solving the Rubik's cube using randomly generated scrambles.
- Save/load cube states, solve information, statistics and scrambles.
- View a graph of your times and save this graph as an image.

Installation

The minimum requirements for the system are:

OS: Windows XP/Vista/7

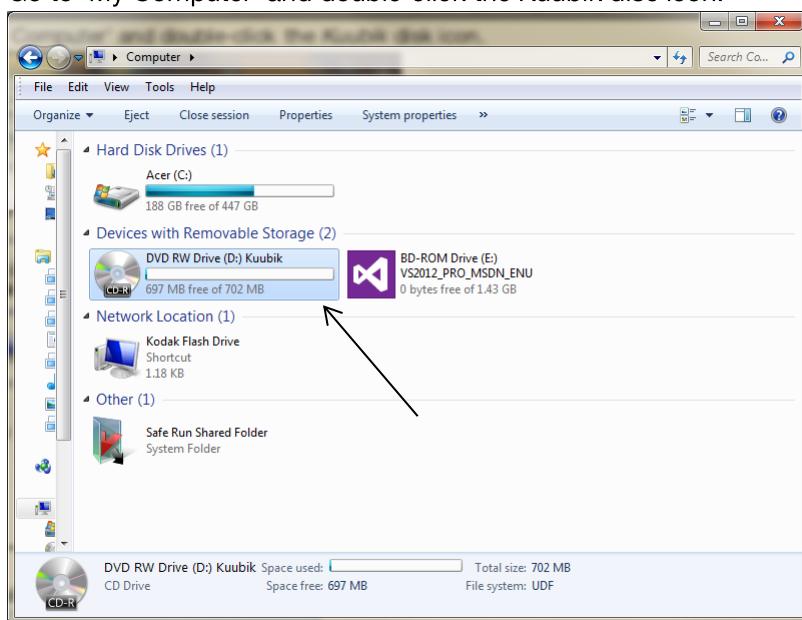
Processor: 1.0 GHz

Memory: 128 MB RAM

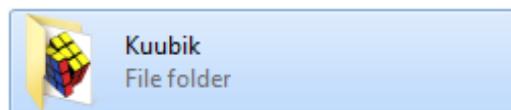
Graphics: N/A

Hard Drive: 8 MB available space

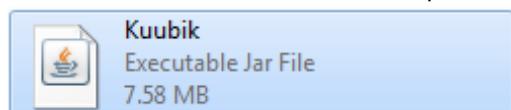
1. Ensure your version of java is up to date by going to www.java.com/en and downloading any relevant updates.
2. If you do not have a PDF software, download Adobe Reader from get.adobe.com/uk/reader
3. Insert the installation disc into the computer.
4. Go to 'My Computer' and double-click the *Kuubik* disc icon.



5. A folder called '*Kuubik*' is saved on the disc. Drag the *Kuubik* folder into your My Documents.



6. Once the *Rubik's Cube* folder is stored on your computer, you can open the folder and double-click the *Rubik's Cube* JAR file to open the program.



7. To access the program through the desktop, right-click on the *Rubik's Cube* JAR file and select 'Create shortcut', then drag the shortcut onto the desktop.

Backup and Recovery

To back up the data in the database, you can copy the *cube* database file to a different location.

1. Locate the *Kuubik* folder, which you saved during installation.
2. In the *Kuubik* folder, go the *res* folder.
3. Copy the *cube* database file to a different location, such as an external disk or flash drive.



If you need to recover the database, e.g. after re-installing the system, just copy and paste the *cube* database file that you saved as a back up to the *res* file in the *Kuubik* folder.

How to Use the System

Shortcuts

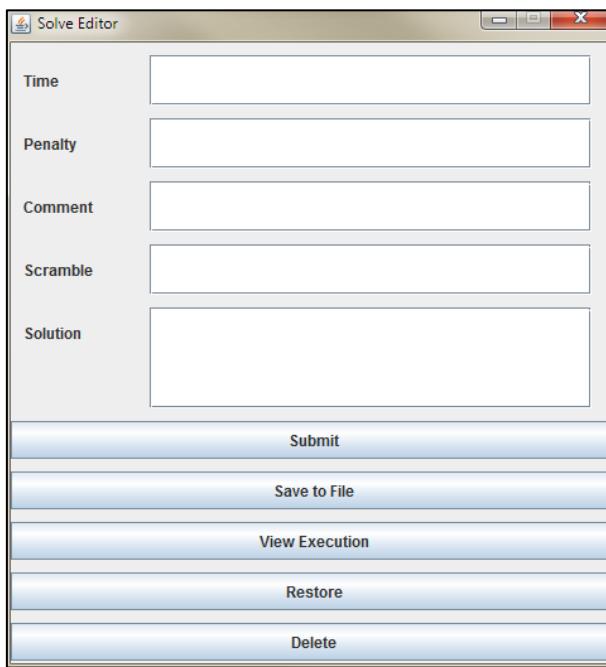
Action	Shortcut
Start new solve	Alt + 1
Save statistics	Ctrl + S
Load cube state	Ctrl + O
Add solve	Ctrl + D
Edit selected solve	Ctrl + E
Cancel solve	Ctrl + Q
Solve cube	Ctrl + R
Time graph – Save as image	Ctrl + S
Time graph – Close window	Ctrl + W
Time graph – Reset zoom	Ctrl + R
Time graph – 2D	Ctrl + 2
Time graph – 3D	Ctrl + 3

How to perform moves on the virtual cube

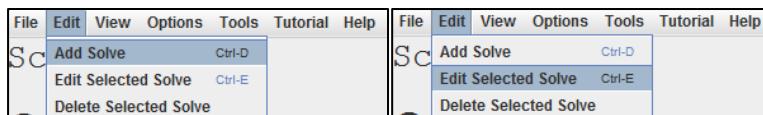
You can make the virtual cube perform moves by pressing the corresponding keys on the keyboard:

Move	Key
U	j
U'	f
D	s
D'	l
R	i
R'	k
L	d
L'	e
F	h
F'	g
B	w
B'	o
M	x
M'	.
Rw	u
Rw'	m
Lw	v
Lw'	r
x	y
x'	n
y	;
y'	a
z	p
z'	q

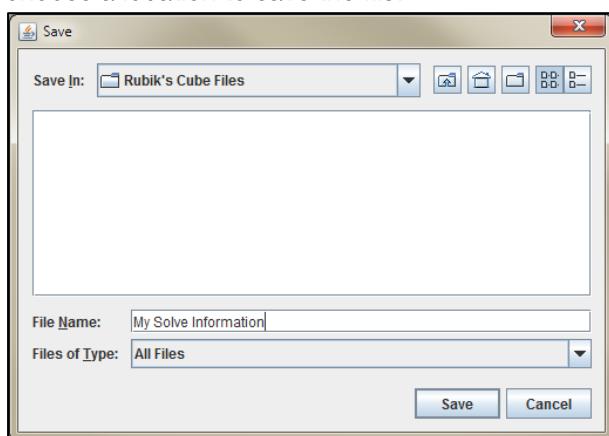
How to use the Solve Editor form



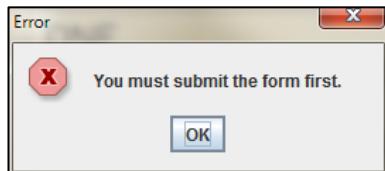
- You can access the Solve Editor form by selecting the *Add Solve* menu item or *Edit Selected Solve* menu item.



- *Submit Button:* The data in the form will be submitted and the corresponding in the list at the right-hand side of the screen will be updated.
- *Save to File Button:* If the data in the form is valid, then a window will appear asking you to choose a location to save the file.



- *View Execution Button:* The cube will be scrambled instantly using the moves provided in the *scramble field*, and then the moves provided in the *solution field* will be performed in real-time. The rate at which the moves are performed is specified in the preferences. This feature is available only if you are **editing** the solve; if you are adding the solve and you click this button, then the following error message will appear:

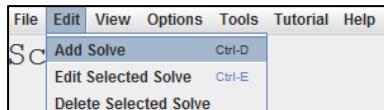


- *Restore Button:* Any changes made will be discarded and the original data will be shown in the form.
- *Delete Button:* The window will close and the corresponding item in the list at the right-hand side of the screen will be removed.

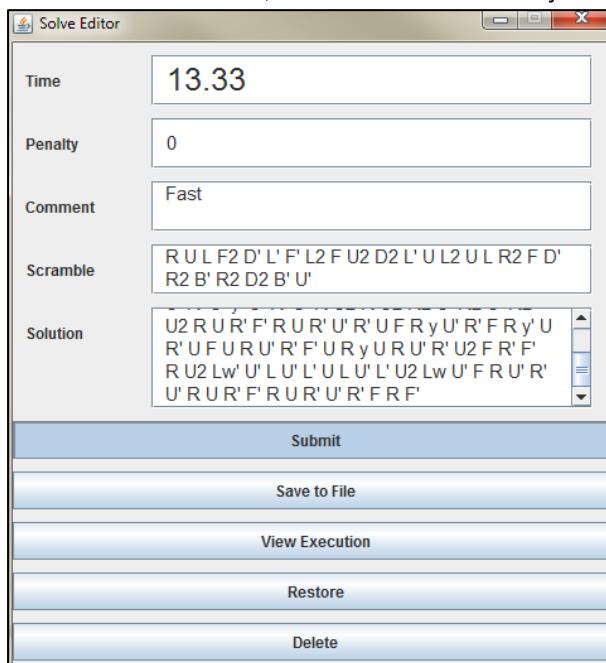
For more information, see *How to Add Solve Information*, *How to Edit Solve Information*, and *How to Delete Solve Information*

How to add solve information

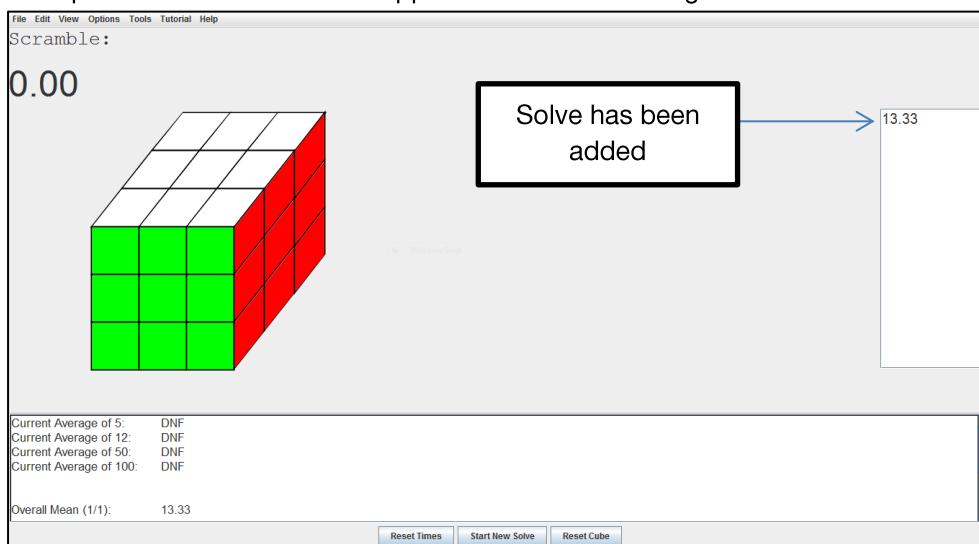
1. Main window menu bar → Edit → Add Solve



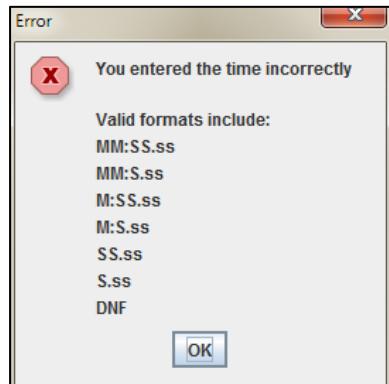
2. Enter the solve information into the *Solve Editor* form then click the *Submit* button. The *time* field must not be left blank, but the other fields may contain any type of data (including blank data).



3. The updated solve should then appear in the list on the right-hand side of the screen.



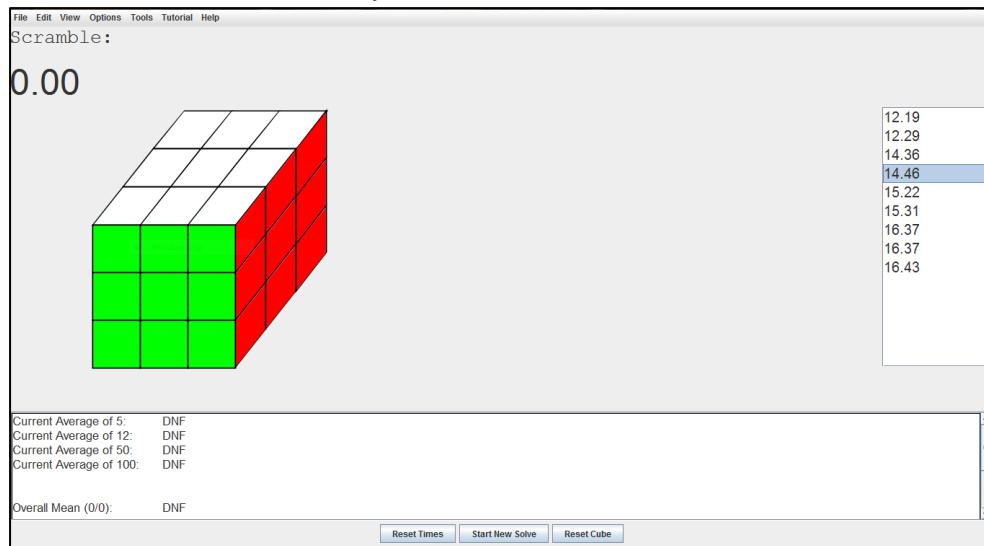
4. If the data in the *time* field is incorrect, then the following error message will be shown:



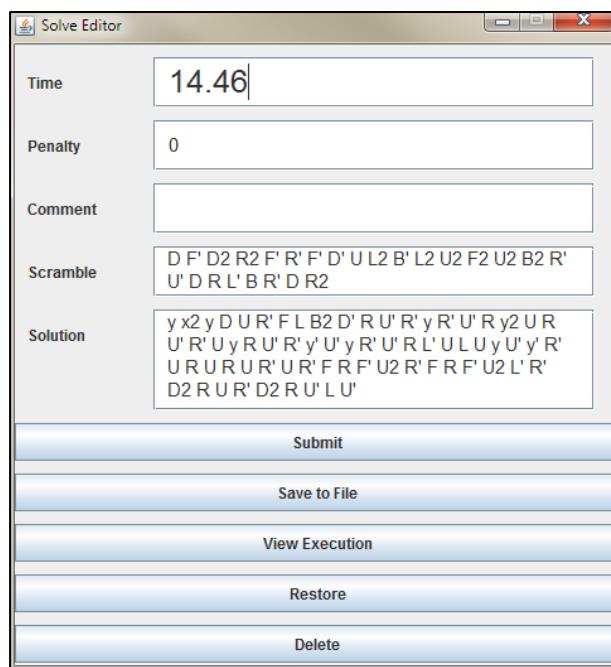
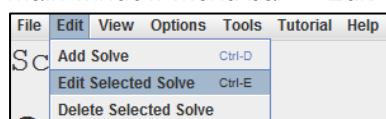
See the *Data Input Guidelines* section for help on how to enter valid data.

How to edit solve information

1. Select the solve in the list that you want to edit.

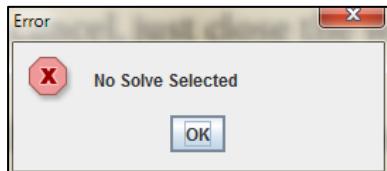


2. Main window menu bar → Edit → Edit Selected Solve



3. Edit the information as required then click the *Submit* button; the corresponding item in the list will be updated. The *time field* must not be left blank, but the other fields may contain any type of data (including blank data). If you wish to cancel, just close the window and any changes will be discarded.

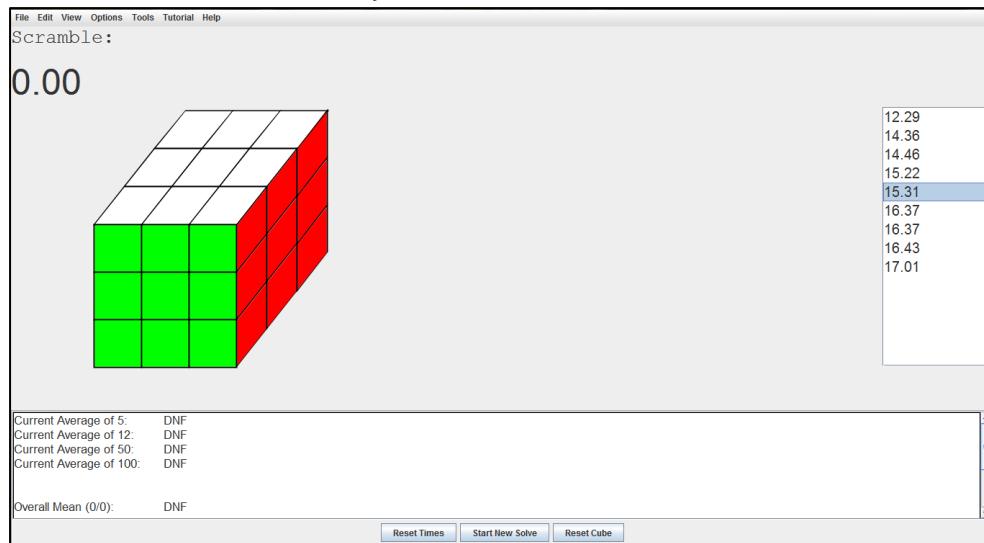
4. If no item in the list is selected, then the following error message will be shown:



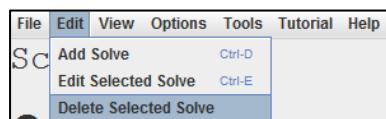
See the *Data Input Guidelines* section for help on how to enter valid data.

How to delete solve information

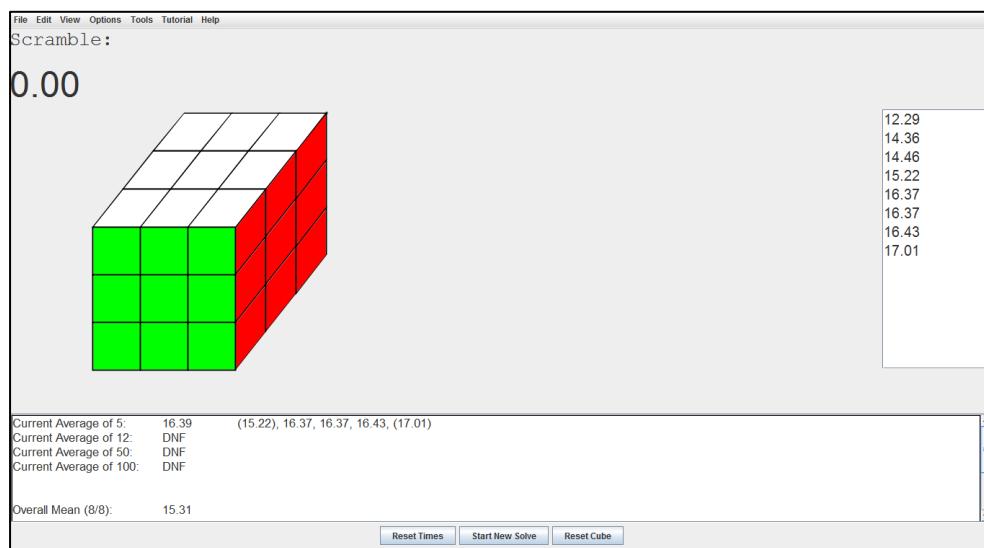
1. Select the solve in the list that you want to delete.



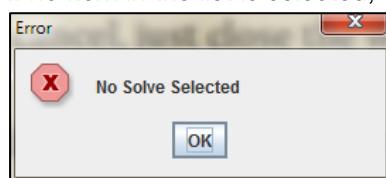
2. Main window menu bar → Edit → Delete Selected Solve



3. The selected solve will be removed from the list.

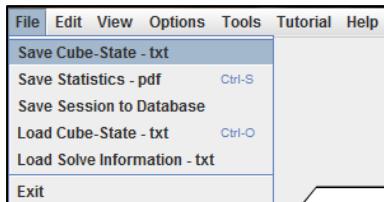


4. If no item in the list is selected, then the following error message will be shown:

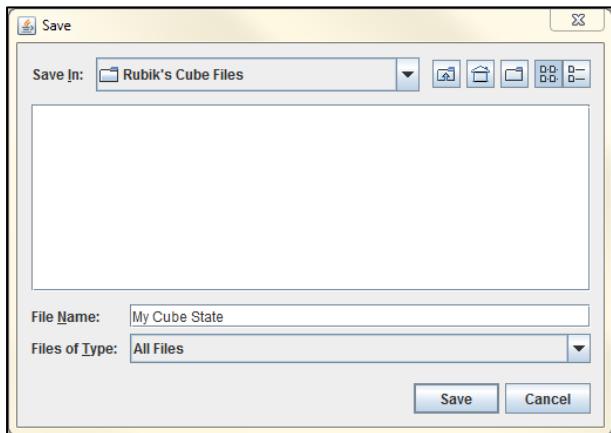


How to save a cube state

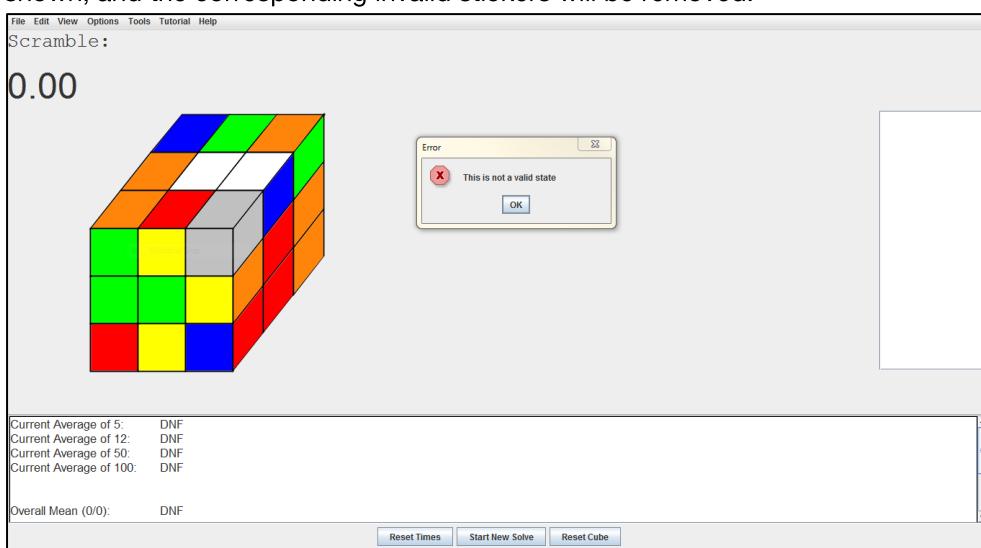
1. Main window menu bar → File → Save Cube-State – txt



2. Choose the location for the file.



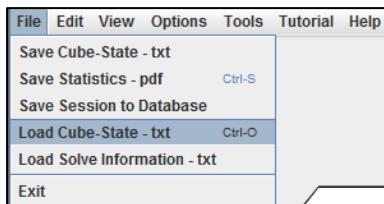
3. The current state/permutation of the cube will be saved in this file.
4. If the cube is not in a valid state when trying to save, then the following error message will be shown, and the corresponding invalid stickers will be removed.



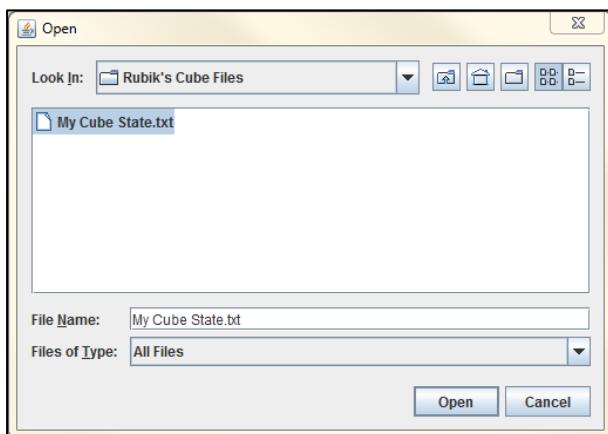
See the *Data Input Guidelines* section for help on how to enter valid cube states.

How to load a cube state

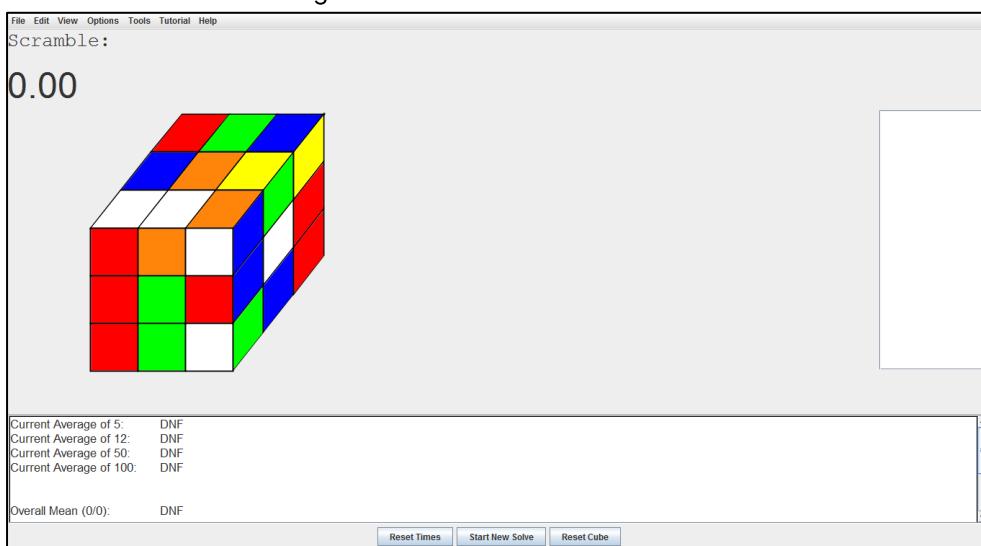
1. Main window menu bar → File → Load Cube State – txt



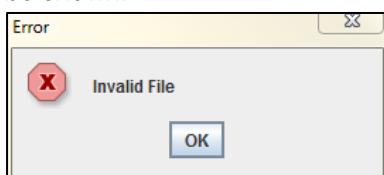
2. Choose the file to load.



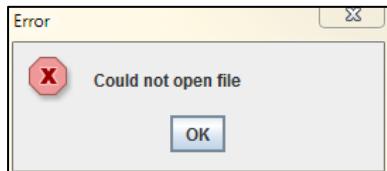
3. The cube's state will change to match the data stored in the text file.



4. If the text file contains data that is not in the correct format, then the following error message will be shown:



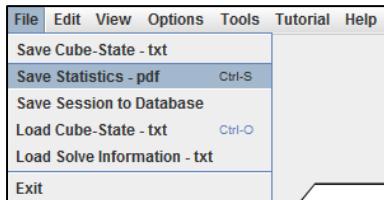
5. If the file cannot be opened, then the following error message will be shown:



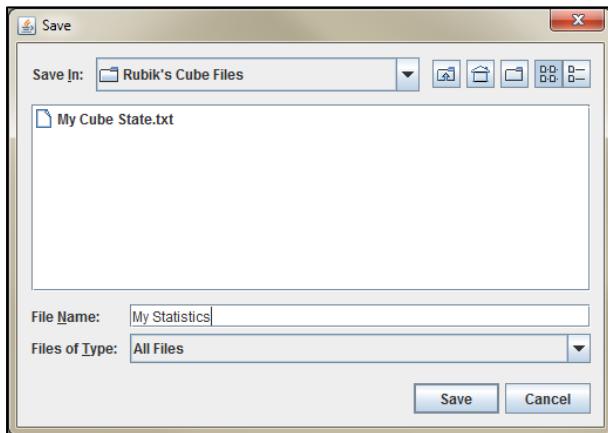
See the *Troubleshooting* section for advice on how to deal with these errors.

How to save statistics

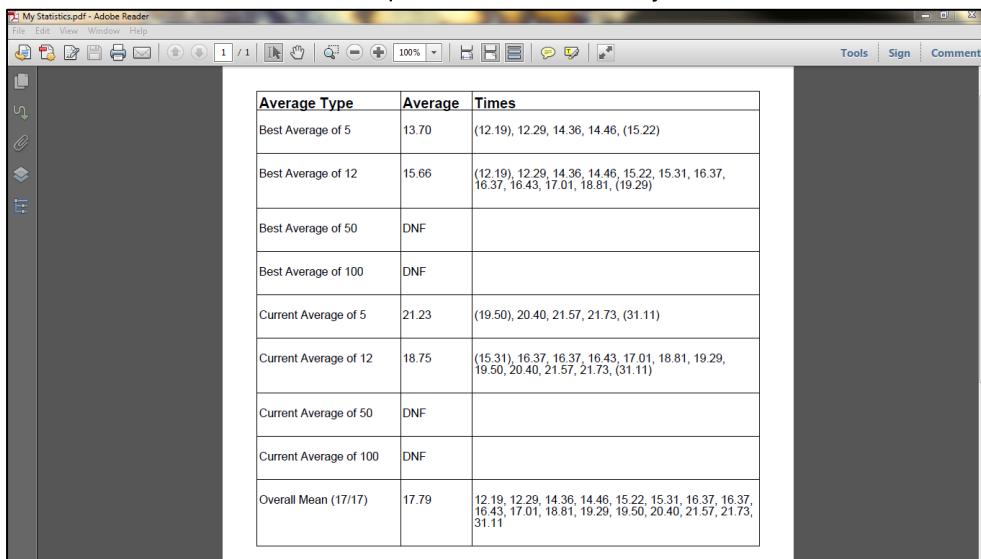
1. Main window menu bar → File → Save Statistics – pdf



2. Choose a location for the file.

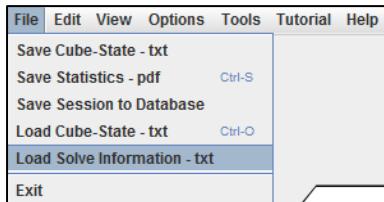


3. The statistics will be saved as a pdf file in the location you choose.

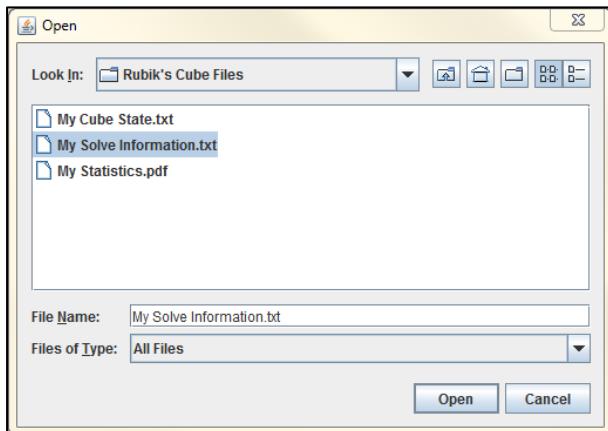


How to load solve information

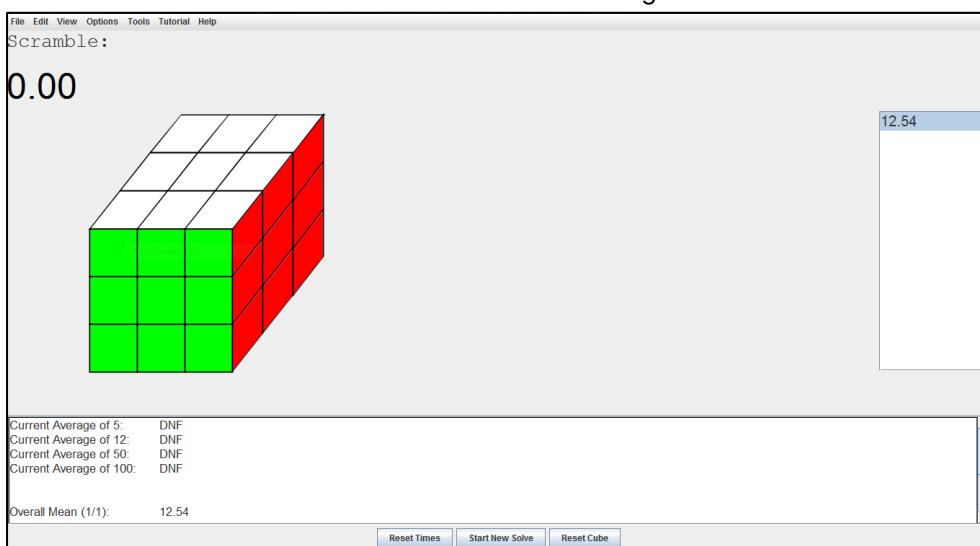
1. Main window menu bar → File → Load Solve Information - txt



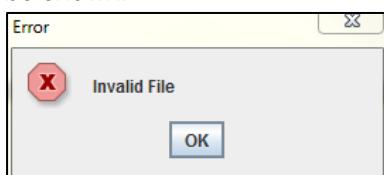
2. Choose the file to load.



3. The solve information will be added to the list at the right-hand side of the screen.



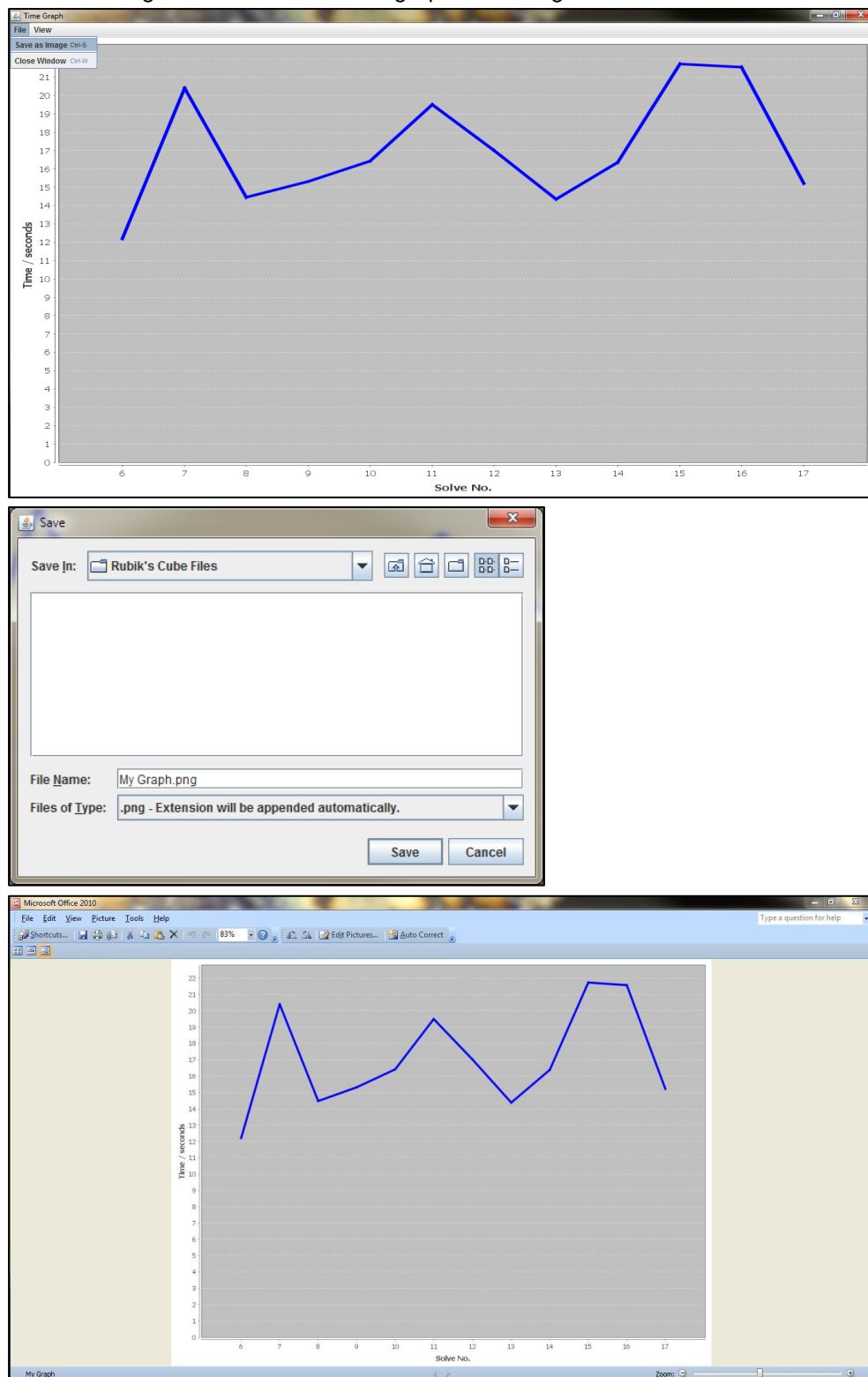
4. If the text file contains data that is not in the correct format, then the following error message will be shown:



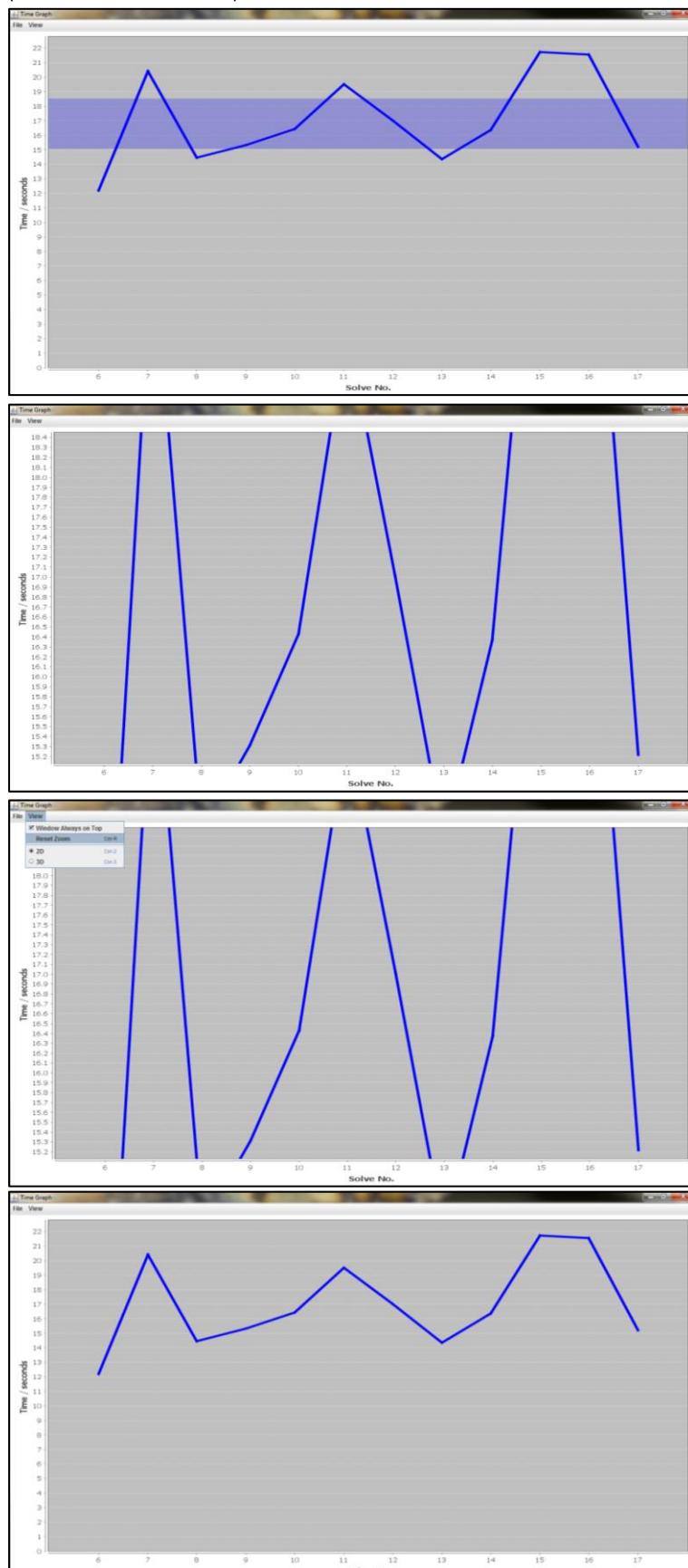
See the *Troubleshooting* section for advice on how to deal with these errors.

How to use Time Graph window

- You can access the time graph by selecting the *Show Time Graph* menu item (*Main window menu bar → View → Show Time Graph*)
- **Saving a Graph:** You can save the graph as an image by following (*File → Save as Image*) and then choosing a location to save the graph. The image will be saved with the extension .png

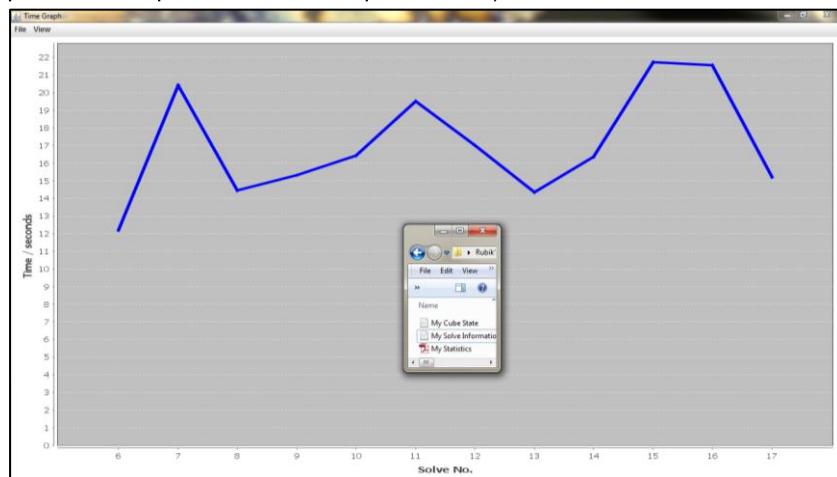


- **Changing Zoom:** You can zoom in on a section of the graph by clicking and dragging the mouse and highlighting the section. If you want to reset the zoom to the default zoom, then you can go (*View → Reset Zoom*).

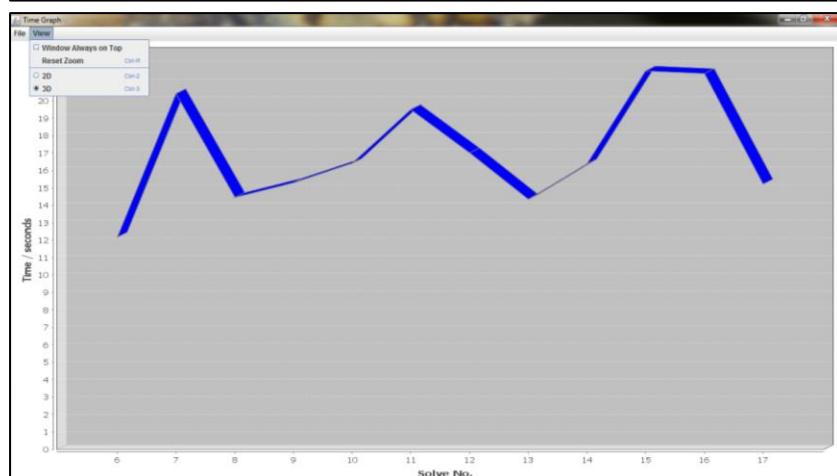
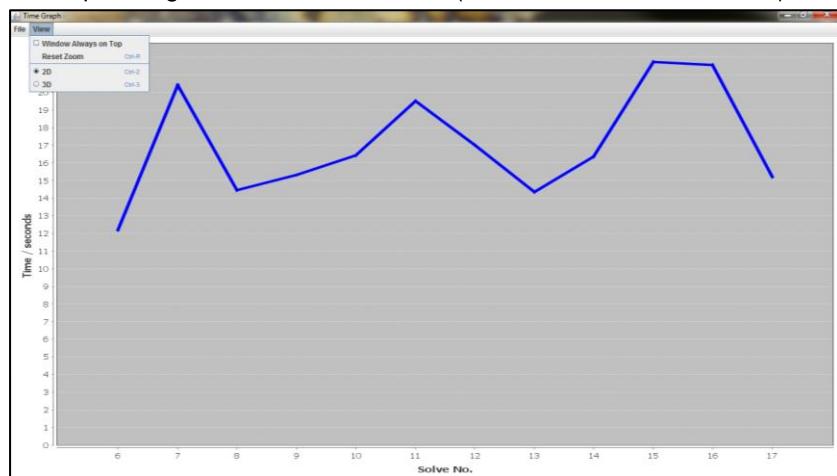


- **Change Always on Top option:** If you want the time graph window to be on top of all other windows, you can check the *Always on Top* menu item by following (*View* → *Window Always on Top*). If the box is checked, then the window will always be on top, i.e. no other window can be placed on top of this window, otherwise it will not always be on top, i.e. other windows can be placed on top of the window.

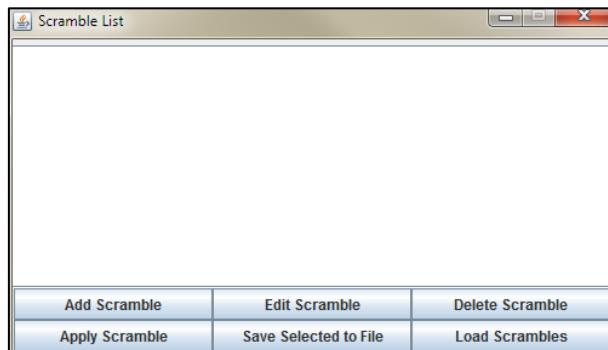
(Here the *Window Always on Top* is not checked, so the Windows Explorer window can be placed on top of the *Time Graph* window)



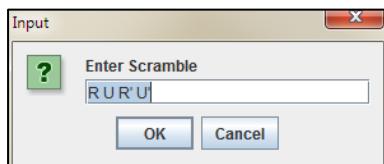
- **2D ↔ 3D:** You can select whether the graph is shown in a 2D or 3D fashion by selecting the corresponding item in the view menu (*View* → *2D*, or, *View* → *3D*).



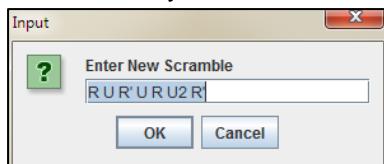
How to use the Scramble List window



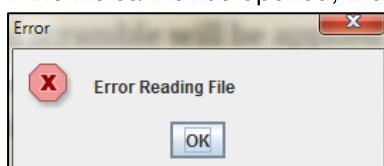
- You can access the Scramble List window by following (*Main window menu bar* → *View* → *Show Scramble List*)
- **Add Scramble Button:** After clicking this button, a window will be shown into which you can enter the scramble.



- **Edit Scramble Button:** After clicking, an input window will be shown with the original scramble in the text field; you can edit the scramble and submit it.



- **Delete Scramble Button:** After clicking, the selected scrambles will be removed from the list.
- **Apply Scramble Button:** The selected scramble will be applied to the virtual cube. For example, if the selected scramble consists of the text "R2 U2 F", then the moves "Right Right Up Up Front" will be performed on the cube (instantly). This has the effect of scrambling or 'mixing up' the cube with the moves specified.
- **Save Selected to File:** A window will be shown asking you to choose a location for the file. The selected scrambles will be saved to a text file: one scramble per line.
- **Load Scrambles Button:** A window will be shown asking you to choose the file containing the scrambles you wish to load. After selecting the file, the scrambles stored in the text file will be appended to the list.
- If the file cannot be opened, then the following error message will be shown:

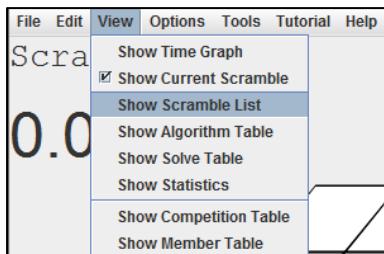


- Note: the data in this window will be discarded when the program is closed.

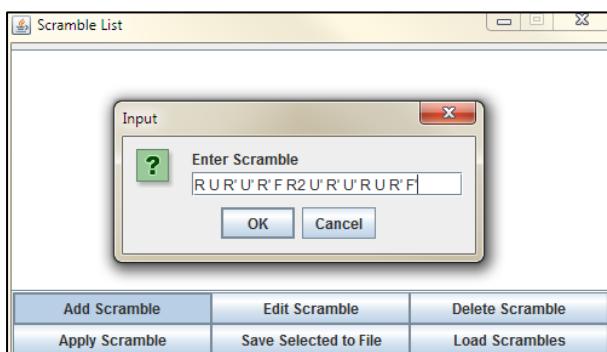
For more information, see *How to add a scramble*, *How to edit a scramble*, and *How to delete a scramble*.

How to add a scramble

1. Open the Scramble List window (*Main window menu bar → View → Show Scramble List*)



2. Click the *Add Scramble* button and enter the desired scramble into the window that appears.



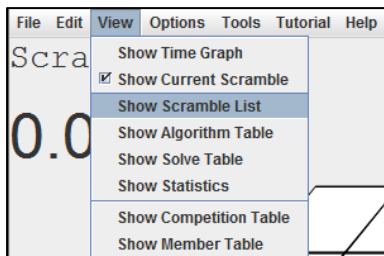
3. Click *OK* and the scramble will be appended to the list.



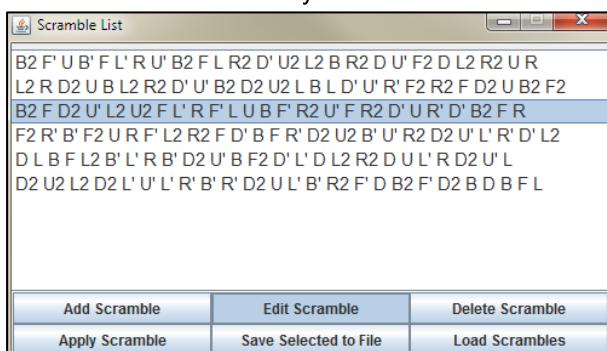
4. If the scramble you enter is blank or consists only of spaces, then nothing will be appended to the list. No other validation checks are run on the data you enter, so a typical scramble, such as "R U R' U", is valid and an input of "\$%^" is also valid.

How to edit a scramble

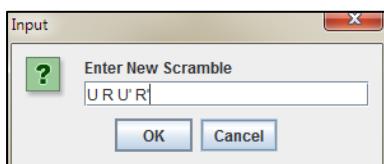
1. Open the Scramble List window (*Main window menu bar → View → Show Scramble List*)



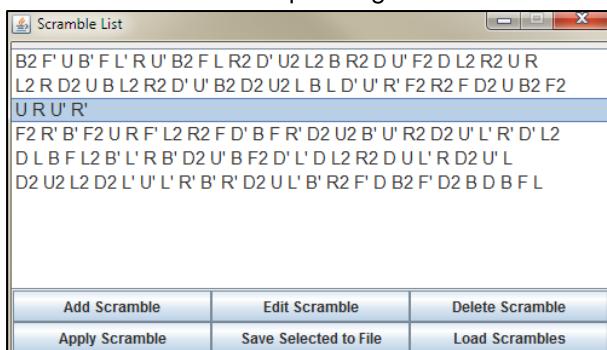
2. Select the scramble that you want to enter and click the *Edit Scramble* button.



3. Enter the new scramble in the window that appears.



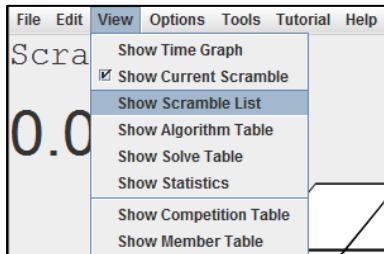
4. Click *OK* and the corresponding item in the list will be updated.



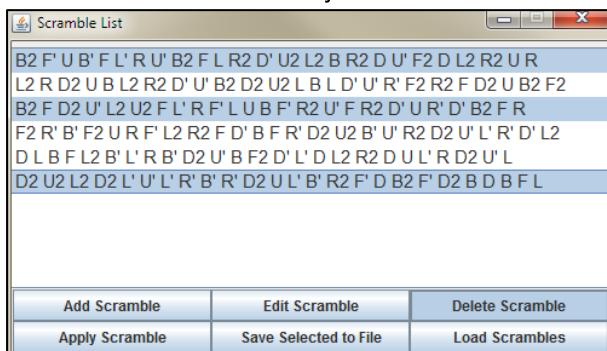
5. If the scramble you enter is blank or consists only of spaces, then the selected item will not be changed. No other validation checks are run on the data you enter, so a typical scramble, such as "R U R' U", is valid and an input of "\$%^" is also valid.

How to delete a scramble

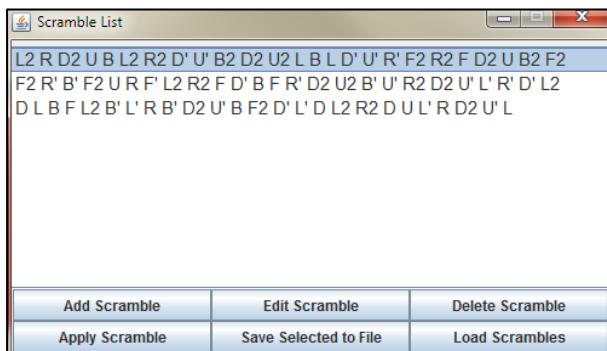
1. Open the Scramble List window (*Main window menu bar → View → Show Scramble List*)



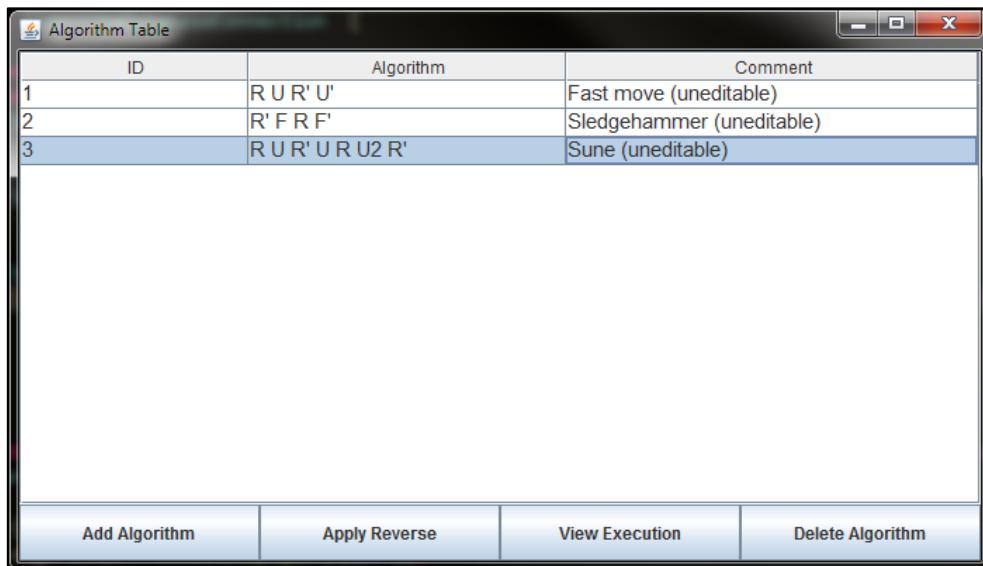
2. Select the scramble/s that you want to delete and click the *Delete Scramble* button.



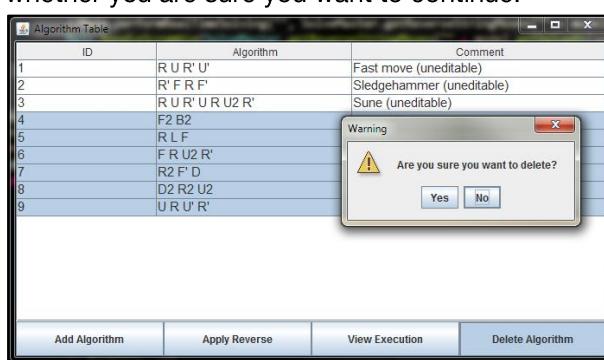
3. The selected scrambles will be removed from the list.



How to use the Algorithm Table



- You can access the Solve Table by following (*Main window menu bar → View → Show Algorithm Table*)
- The three algorithms shown are preset algorithms; these rows cannot be edited or deleted.
- *Add Algorithm Button*: A row will be added to the table.
- To edit a cell, double-click on the cell and then start typing. You cannot edit the ID column.
- *Apply Reverse Button*: The ‘reverse’ of the selected algorithm will be applied to the cube. For example, if the algorithm was “R2 B2 L U F”, then “F’ U’ L’ B2 R2” would be applied to the cube (instantly). This can be used so that you can practise performing algorithms.
- *View Execution*: The selected algorithm will be performed in real-time on the virtual cube.
- *Delete Algorithm Button*: The selected algorithms will be removed from the table.
 - If more than five rows are selected, then a warning message will be shown asking you whether you are sure you want to continue.



How to use the Solve Table

The screenshot shows a window titled "Solve Table". At the top, there are "Sorting" and "Filter" buttons. Below is a table with the following data:

ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R' ...	2014-03-08 20:...
8	12.29	0	Easy	F B' R2 U2 B F ...	y' x2 R' F2 D2 y ...	2014-03-08 20:...
26	14.36	0		L' R2 D F2 R' D ...	x2 y L U R' F B' ...	2014-03-08 20:...
11	14.46	0		D F' D2 R2 F' ...	y x2 y D U R' F ...	2014-03-08 20:...
12	15.31	0		L2 U2 R L' F2 U ...	x2 D' R2 y' R' U ...	2014-03-08 20:...
2	16.37	0	PLL Skip	D' F D' R D U L ...	x2 y2 F D2 U2 ...	2014-03-08 20:...
27	16.37	0		R' D' U R U B F ...	x2 R' B' R2 F D ...	2014-03-08 22:...
13	16.43	0		U' F D U' R' U' ...	x2 y' B U' R' F ...	2014-03-08 20:...
15	17.01	0		L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-03-08 20:...
1	18.81	0		U B' F' L' R2 U2 ...	x2 y' R2 M2 U2 ...	2014-03-08 20:...
7	19.29	0		F2 R' U' L2 U' B ...	x2 y2 D R2 D2 ...	2014-03-08 20:...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U' ...	2014-03-08 20:...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20:...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B' ...	2014-03-08 22:...
30	21.73	0		L D B D U F2 D ...	x2 y' D' U2 L F' ...	2014-03-08 22:...
6	31.11	0		B' F L' D2 L2 U' ...	x2 y' D' R F y' D ...	2014-03-08 20:...

At the bottom, there are buttons for "Add Solve", "Edit Solve", "Delete Solve", and "Load into Program".

- You can access the Solve Table by following (*Main window menu bar → View → Show Solve Table*)
- Add Solve Button:** The *Solve Form* window will be shown into which you can enter information about a solve.

The screenshot shows a window titled "Solve Form". It contains the following fields:

- Time: A text input field.
- Penalty: A text input field.
- Comment: A text input field.
- Scramble: A text input field.
- Solution: A text input field.
- Date Added: A text input field.

At the bottom is a "Submit" button.

- Edit Solve Button:** The *Solve Form* window will be shown with the selected solve's information in the text fields.

- **Delete Solve Button:** The selected rows from the table will be removed.
- **Load into Program Button:** the selected solves will be appended into the main window's list of solves. The time, penalty, comment, scramble and solution will be transferred to the list of solves.

The screenshot shows two windows of the Rubik's Cube software. The top window is titled 'Solve Table' and displays a table of solves. The bottom window is titled 'Scramble' and shows a 3D Rubik's cube visualization.

Solve Table Window Data:

ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0	Easy	L' D' U2 R U D... x2 U L2 R' U R...	2014-03-08 20...	
8	12.29	0		F B' R2 U2 B F...	2014-03-08 20...	
26	14.36	0		L' R2 D F2 R...	2014-03-08 20...	
11	14.46	0		D F' D2 R2 F...	2014-03-08 20...	
12	15.31	0		L2 U2 R L' F2...	2014-03-08 20...	
2	16.37	0	PLL Skip	D' F D' R D U...	2014-03-08 20...	
27	16.37	0		R' D' U R U B...	2014-03-08 22...	
13	16.43	0		U F D U' R' U...	2014-03-08 20...	
15	17.01	0		L2 U R' D2 U...	2014-03-08 20...	
1	18.81	0		U B' F' L' R2 U...	2014-03-08 20...	
7	19.29	0		F2 R' U L2 U...	2014-03-08 20...	
14	19.50	0		B R' B L' R' D2...	2014-03-08 20...	
10	20.40	0	Bad cross	F' R D R U2 L2...	2014-03-08 20...	
31	21.57	0		D2 L B2 F2 D2...	2014-03-08 22...	
30	21.73	0		L D B D U F2...	2014-03-08 22...	
6	31.11	0		B' F' L' D2 L2 U...	2014-03-08 20...	

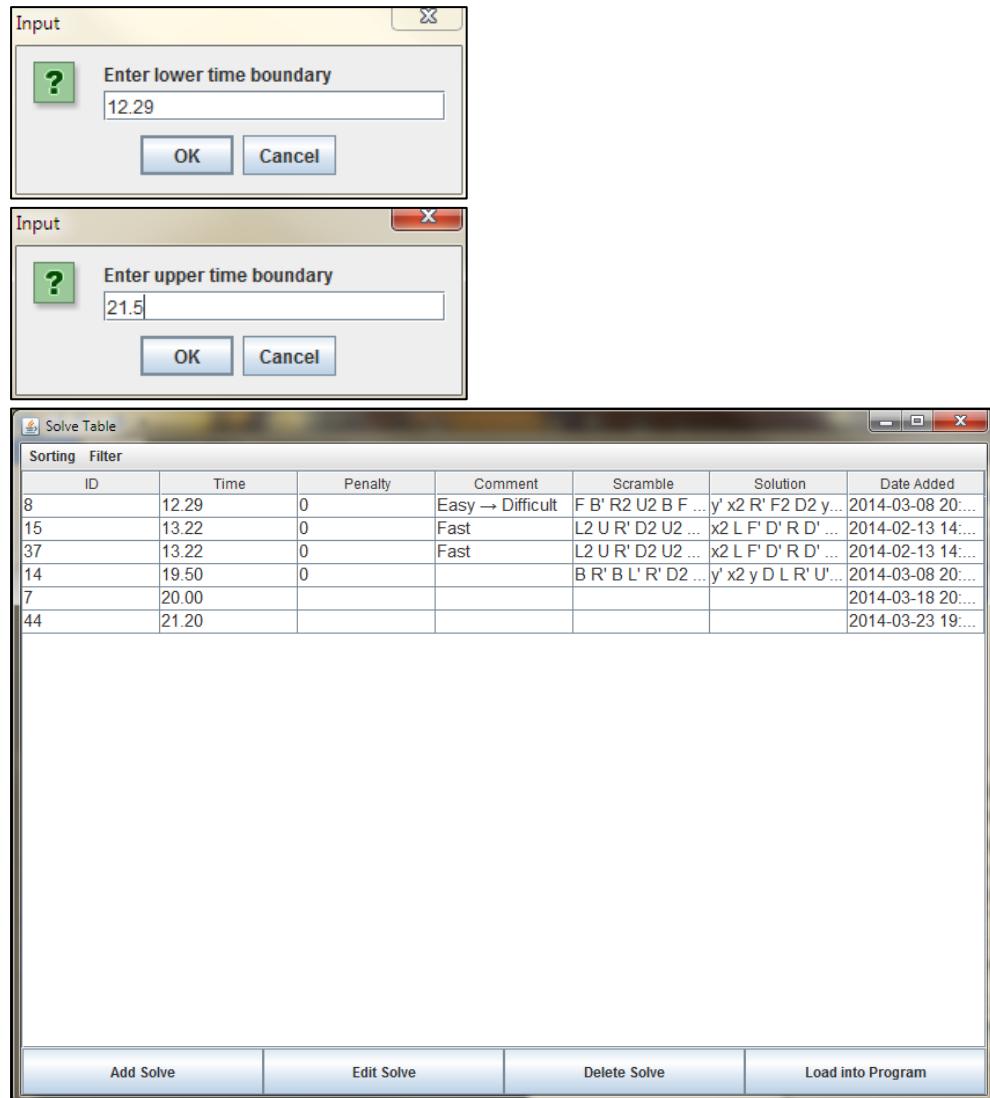
Scramble Window Data:

Current Average of 5: DNF
Current Average of 12: DNF
Current Average of 50: DNF
Current Average of 100: DNF

Overall Mean (0/0): DNF

- **Sorting Menu:** There are six menu items in the *Sorting* menu:
 - **Sort by Time (Ascending):** The rows in the table will be sorted with the fastest solve in the first row and the slowest solve in the bottom row.
 - **Sort by Time (Descending):** The rows in the table will be sorted with the fastest solve in the first row and the slowest solve in the bottom row.
 - **Sort by Date (Ascending):** The rows in the table will be sorted with the earliest date in the first row and the latest date in the bottom row.
 - **Sort by Date (Descending):** The rows in the table will be sorted with the latest date in the first row and the earliest date in the bottom row.
 - **Sort by ID (Ascending):** The rows in the table will be sorted with the least ID in the first row and the greatest ID in the bottom row.
 - **Sort by ID (Descending):** The rows in the table will be sorted with the greatest ID in the first row and the least ID in the bottom row

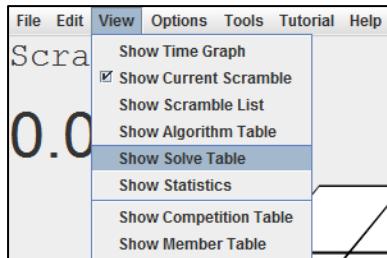
- **Filter Menu:** There are two items in the *Filter* menu:
 - **Filter by Time:** Clicking this menu item triggers a two-step input process. In the first pop-up window, you enter the lower boundary for the times to be shown; in the second pop-up window, you enter the upper boundary for the times to be shown. For example, if you enter the following data in the pop-up windows, the times shown in the table will be between 12.29 seconds and 21.50 seconds inclusive.



- **Remove Filter:** Clicking this menu item clears any filter present on the data, i.e. all data will be shown in the table.

How to add a solve to the database

1. Open the Solve Table (*Main window menu bar → View → Show Solve Table*)



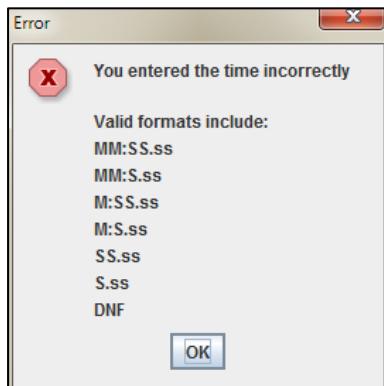
2. Click the *Add Solve* button.
3. The *Solve Form* window will appear. Enter the desired information into the form and click the *Submit* button.

4. A row containing the information will be appended to the table.

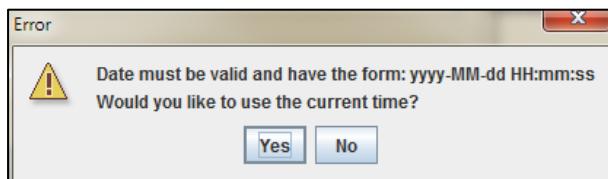
ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R' ...	2014-03-08 20...
8	12.29	0	Easy	F B' R2 U2 B F ...	y' x2 R' F2 D2 y ...	2014-03-08 20...
15	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14...
26	14.36	0		L' R2 D F2 R' D ...	x2 y L U R' F B' ...	2014-03-08 20...
11	14.46	0		D F' D2 R2 F' ...	y x2 y D U R' F ...	2014-03-08 20...
12	15.31	0		L2 U2 R L' F2 U ...	x2 D' R2 y' R' U ...	2014-03-08 20...
2	16.37	0	PLL Skip	D' F D' R D U L ...	x2 y2 F D2 U2 ...	2014-03-08 20...
27	16.37	0		R' D' U R U B F ...	x2 R' B' R2 F D ...	2014-03-08 22...
1	18.81	0		U B' F' L' R2 U2 ...	x2 y' R2 M2 U2 ...	2014-03-08 20...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U' ...	2014-03-08 20...
7	20.00					2014-03-18 20...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B' ...	2014-03-08 22...
30	21.73	0		L D B D U F2 D ...	x2 y D' U2 L F' ...	2014-03-08 22...
6	31.11	0		B' F L' D2 L2 U' ...	x2 y' D' R F y' D ...	2014-03-08 20...
37	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14...

Buttons at the bottom: Add Solve, Edit Solve, Delete Solve, Load into Program.

5. If the data in the *time field* is invalid, then the following error message will be shown:



6. If the data in the *date added field* is invalid, then the following warning message will be shown:

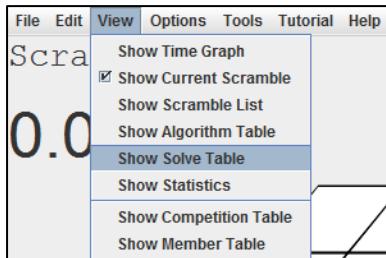


By selecting Yes, the information will be submitted and the current time will be used for the *Date Added* field. If No is selected, then you will have to enter a different datum for the date.

See the *Data Input Guidelines* section for help on how to enter valid data.

How to edit a solve in the database

1. Open the Solve Table (*Main window menu bar → View → Show Solve Table*)



2. Select the solve you want to edit, and then click the *Edit Solve* button.

Solve Table

Sorting Filter

ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R' ...	2014-03-08 20:...
8	12.29	0	Easy	F B' R2 U2 B F ...	y' x2 R' F2 D2 y ...	2014-03-08 20:...
15	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14:...
37	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14:...
26	14.36	0		L' R2 D F2 R' D ...	x2 y L U R' F B' ...	2014-03-08 20:...
11	14.46	0		D F' D2 R2 F' ...	y x2 y D U R' F ...	2014-03-08 20:...
12	15.31	0		L2 U2 R L' F2 U ...	x2 D' R2 y' R' U ...	2014-03-08 20:...
2	16.37	0	PLL Skip	D' F D' R D U L ...	x2 y2 F D2 U2 ...	2014-03-08 20:...
27	16.37	0		R' D' U R U B F ...	x2 R' B' R2 F D ...	2014-03-08 22:...
1	18.81	0		U B' F' L' R2 U2 ...	x2 y' R2 M2 U2 ...	2014-03-08 20:...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U ...	2014-03-08 20:...
7	20.00					2014-03-18 20:...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20:...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B' ...	2014-03-08 22:...
30	21.73	0		L D B D U F2 D ...	x2 y D' U2 L F' ...	2014-03-08 22:...
6	31.11	0		B' F L' D2 L2 U' ...	x2 y' D' R F y' D ...	2014-03-08 20:...

Add Solve Edit Solve Delete Solve Load into Program

3. The *Solve Form* window will appear; the text fields will be populated with the information of the selected solve. Edit the desired information the click the *Submit* button.

The screenshot shows the 'Solve Form' dialog box. It contains the following fields:

- Time:** 12.29
- Penalty:** 0
- Comment:** Easy → Difficult
- Scramble:** F B' R2 U2 B F D B2 F2 D B' D2 F' U2 R' B2 R' F R2 L' B2 F2 L2 U R
- Solution:** y' x2 R' F2 D2 y' R' U' R L' U L y2 U' R U2 R' U' R U' R' y' U R U R' y' U2 y' R' U R U' R' U R F' U' L' U L F' U2 L' U2 L F' L' U' L U L F' L2
- Date Added:** 2014-03-08 20:33:16

At the bottom is a blue **Submit** button.

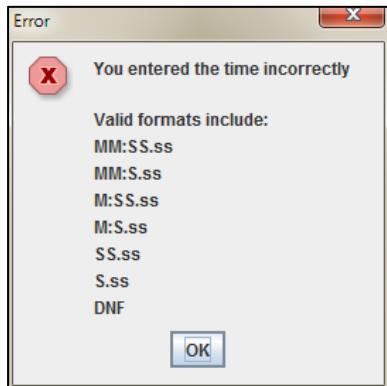
4. The corresponding row in the table will be updated.

The screenshot shows the 'Solve Table' window displaying a list of solves. The columns are:

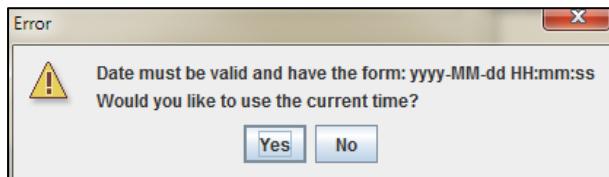
ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R' ...	2014-03-08 20...
8	12.29	0	Easy → Difficult	F B' R2 U2 B F ...	y' x2 R' F2 D2 y...	2014-03-08 20...
15	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14...
37	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14...
26	14.36	0		L' R2 D F2 R' D...	x2 y L U R' F B' ...	2014-03-08 20...
11	14.46	0		D' F' D2 R2 F' ...	y x2 y D U R' F ...	2014-03-08 20...
12	15.31	0		L2 U2 R L' F2 U ...	x2 D' R2 y' R' U ...	2014-03-08 20...
2	16.37	0	PLL Skip	D' F D' R D U L ...	x2 y2 F D2 U2 ...	2014-03-08 20...
27	16.37	0		R' D' U R U B F ...	x2 R' B' R2 F D ...	2014-03-08 22...
1	18.81	0		U B' F' L' R2 U2 ...	x2 y' R2 M2 U2 ...	2014-03-08 20...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U ...	2014-03-08 20...
7	20.00					2014-03-18 20...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B' ...	2014-03-08 22...
30	21.73	0		L D B D U F2 D ...	x2 y D' U2 L F' ...	2014-03-08 22...
6	31.11	0		B' F L' D2 L2 U' ...	x2 y' D' R F y' D ...	2014-03-08 20...

At the bottom are buttons: Add Solve, Edit Solve, Delete Solve, and Load into Program.

5. If the data in the *time* field is invalid, then the following error message will be shown:



6. If the data in the *date added* field is invalid, then the following warning message will be shown:

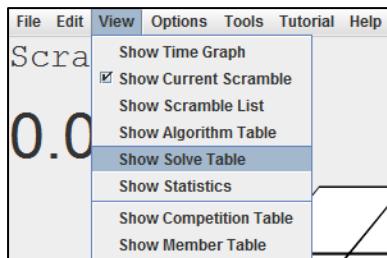


By selecting *Yes*, the information will be submitted and the current time will be used for the *Date Added* field. If *No* is selected, then you will have to enter a different datum for the date.

See the *Data Input Guidelines* section for help on how to enter valid data.

How to delete a solve from the database

1. Open the Solve Table (*Main window menu bar → View → Show Solve Table*)



2. Select the solve that you want to delete and click the *Delete Solve* button.
 - If more than four rows are selected, then a warning message with the text, “Are you sure you want to delete?” will be shown.

ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R' ...	2014-03-08 20:...
8	12.29	0	Easy → Difficult	F B' R2 U2 B F ...	y' x2 R' F2 D2 y...	2014-03-08 20:...
15	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14:...
37	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14:...
26	14.36	0		L' R2 D F2 R' D...	x2 y L U R' F B' ...	2014-03-08 20:...
11	14.46	0		D F' D2 R2 F' ...	y x2 y D U R' F ...	2014-03-08 20:...
12	15.31	0		L2 U2 R L' F2 U...	x2 D' R2 y' R' U...	2014-03-08 20:...
2	16.37	0	PLL Skip	D' F D' R D U L...	x2 y2 F D2 U2 ...	2014-03-08 20:...
27	16.37	0		R' D' U R U B F...	x2 R' B' R2 F D...	2014-03-08 22:...
1	18.81	0		U B' F' L' R2 U2...	x2 y' R2 M2 U2 ...	2014-03-08 20:...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U...	2014-03-08 20:...
7	20.00					2014-03-18 20:...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20:...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B' ...	2014-03-08 22:...
30	21.73	0		L D B D U F2 D...	x2 y D' U2 L F' ...	2014-03-08 22:...
6	31.11	0		B' F L' D2 L2 U'...	x2 y' D' R F y' D...	2014-03-08 20:...

Warning

Are you sure you want to delete?

Yes **No**

Add Solve Edit Solve Delete Solve Load into Program

3. The selected rows will be removed from the table.

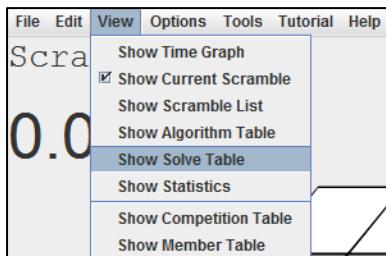
ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R'...	2014-03-08 20:...
8	12.29	0	Easy → Difficult	F B' R2 U2 B F ...	y' x2 R' F2 D2 y...	2014-03-08 20:...
15	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14:...
37	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14:...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U'...	2014-03-08 20:...
7	20.00					2014-03-18 20:...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20:...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B'...	2014-03-08 22:...
30	21.73	0		L D B D U F2 D...	x2 y D' U2 L F' ...	2014-03-08 22:...
6	31.11	0		B' F L' D2 L2 U'...	x2 y' D' R F y' D...	2014-03-08 20:...

Buttons at the bottom:

- Add Solve
- Edit Solve
- Delete Solve
- Load into Program

How to load a solve from the database into the main window

1. Open the Solve Table (Main window menu bar → View → Show Solve Table)



2. Select the solves that you want to load into the main window.

The 'Solve Table' window displays a list of solves. The columns are: ID, Time, Penalty, Comment, Scramble, Solution, and Date Added. The data is as follows:

ID	Time	Penalty	Comment	Scramble	Solution	Date Added
9	12.19	0		L' D' U2 R U' D ...	x2 U' L2 R' U R' ...	2014-03-08 20...
8	12.29	0	Easy → Difficult	F B' R2 U2 B F ...	y' x2 R' F2 D2 y ...	2014-03-08 20...
15	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14...
37	13.22	0	Fast	L2 U R' D2 U2 ...	x2 L F' D' R D' ...	2014-02-13 14...
14	19.50	0		B R' B L' R' D2 ...	y' x2 y D L R' U' ...	2014-03-08 20...
7	20.00					2014-03-18 20...
10	20.40	0	Bad cross	F' R D R U2 L2 ...	x2 y' D R' B' R' ...	2014-03-08 20...
31	21.57	0		D2 L B2 F2 D2 ...	y2 x2 y' R2 F B' ...	2014-03-08 22...
30	21.73	0		L D B D U F2 D ...	x2 y' D' U2 L F' ...	2014-03-08 22...
6	31.11	0		B' F L' D2 L2 U' ...	x2 y' D' R F y' D ...	2014-03-08 20...

At the bottom of the window are buttons for 'Add Solve', 'Edit Solve', 'Delete Solve', and 'Load into Program'.

3. Click the *Load into Program* button. The solves, with their respective information, will be loaded into the main window's solve list.

The main window now shows the solved scrambles in the solve list. On the right, a separate window displays the following solve times:

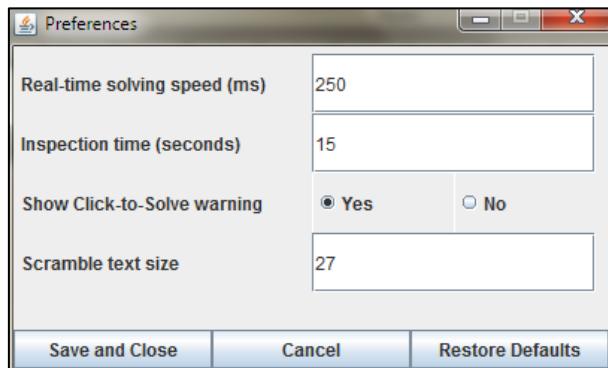
- 13.22
- 13.22
- 19.50
- 20.00
- 20.40

At the bottom of the main window, there are statistics:

Current Average of 100: DNF
Overall Mean (0/0): DNF

Buttons at the bottom include 'Reset Times', 'Start New Solve', and 'Reset Cube'.

How to use the Preferences window

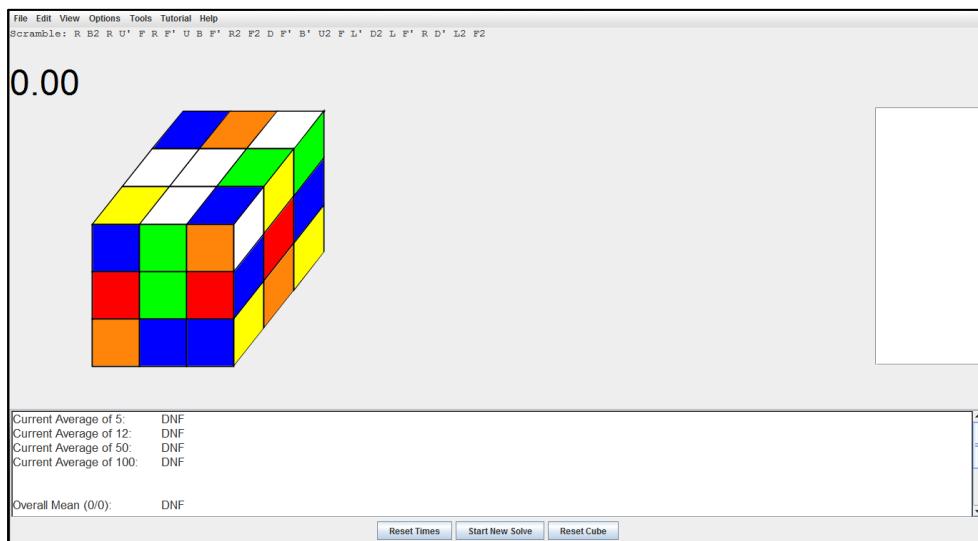


- You can access the Preferences window by following (*Main window menu bar → Options → Preferences*)
- *Real-time solving speed* field: The value in this field indicates the time taken per move when automatic execution (see page 6 for information on automatic execution) is taking place. For example, if the value was '125', then a move would be performed on the cube every 125 milliseconds, or every 0.125 seconds. The value entered can be between 1 and 9999 inclusive.
- *Inspection time (seconds)* field: The value in this field indicates how many seconds you have to inspect the cube before starting a solve. For example, if you click the *Start New Solve* button in the main window, the cube will be scrambled and the inspection timer will start with x seconds (where x is the value in the *Inspection time* field) and will begin to count down. You can inspect the cube while the timer is counting down. When the counter reaches zero, a two second penalty will be applied; after two further seconds, the solve will be disqualified. The value entered can be between 1 and 99 inclusive.
- *Show Click-to-Solve Warning* option: If *Yes* is selected, then an information/warning window will be shown after you click the *Solve Piece* menu item in the main window. If *No* is selected, then no information/warning window will be shown. It is recommended that this option remain *Yes*. If the *Yes* option is selected, then after clicking the *Solve Piece* menu item, this window will be shown.

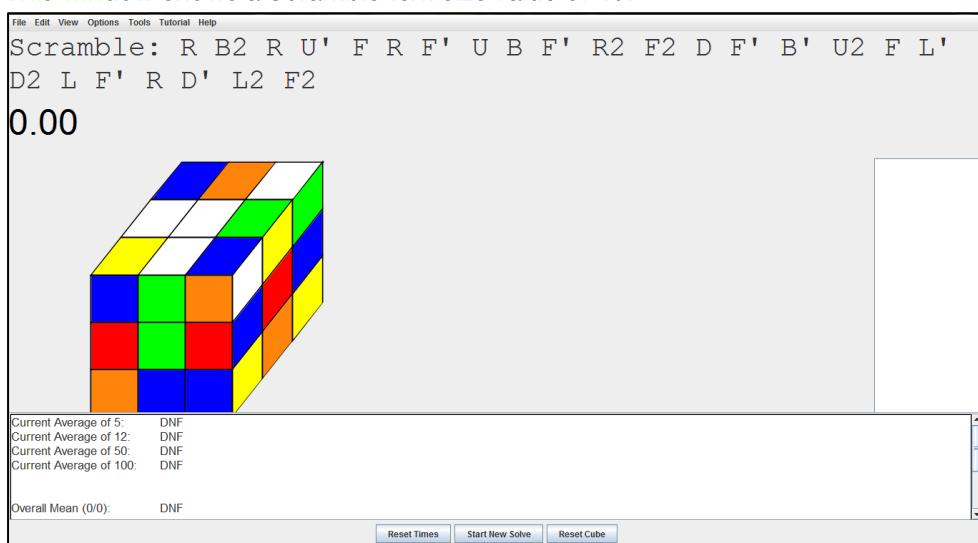


- *Scramble text size field:* The value in this field indicates the size of the scramble-text in the main window. The value entered can be between 1 and 99 inclusive.

This window shows a *Scramble text size* value of 15:

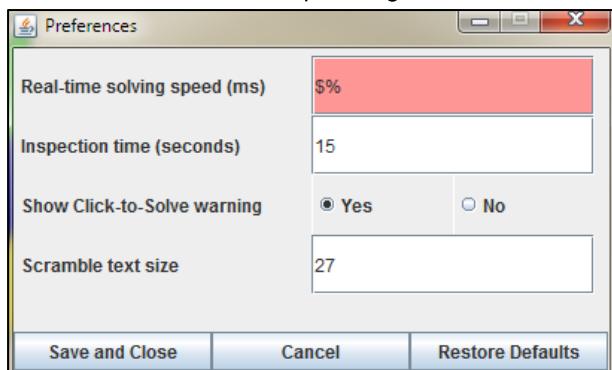


This window shows a *Scramble text size* value of 40:



- *Restore Defaults button:* After clicking this button, the default preferences will be restored and saved:
 - *Real-time solving speed (ms):* 250
 - *Inspection time (seconds):* 15
 - *Show Click-to-Solve warning:* Yes
 - *Scramble text size:* 27
- *Cancel Button:* After clicking this button, the window will close and any changes will be discarded.

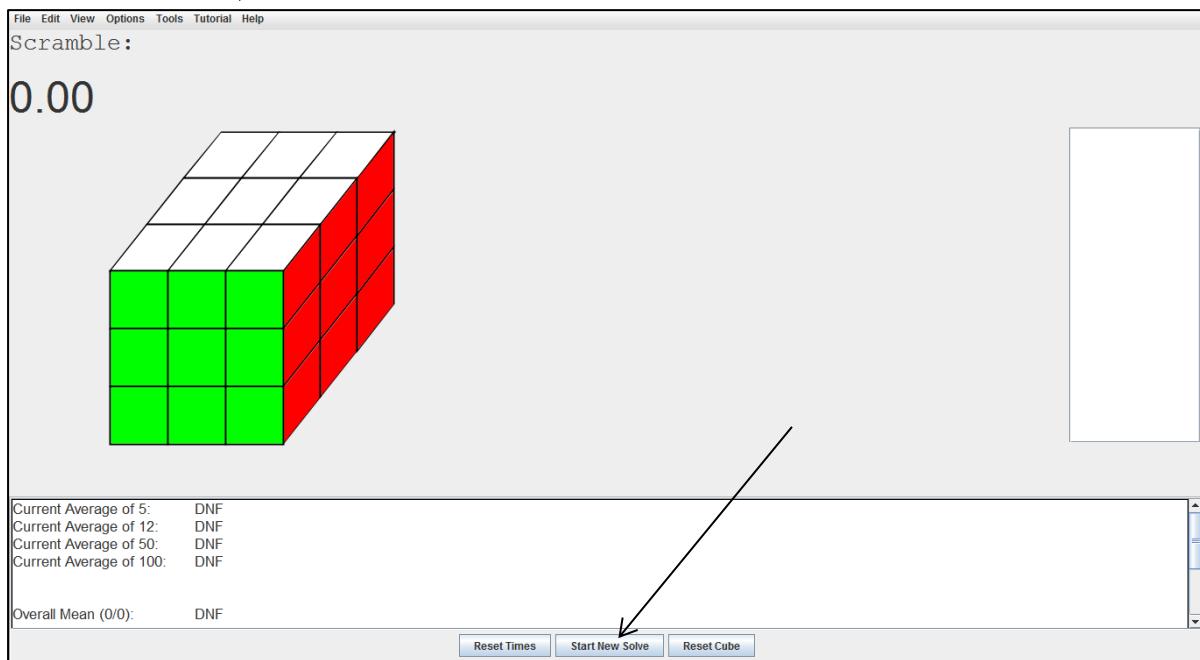
- **Save and Close Button:** After clicking this button, the information entered will be saved. If any data is invalid, the corresponding text field will become red:



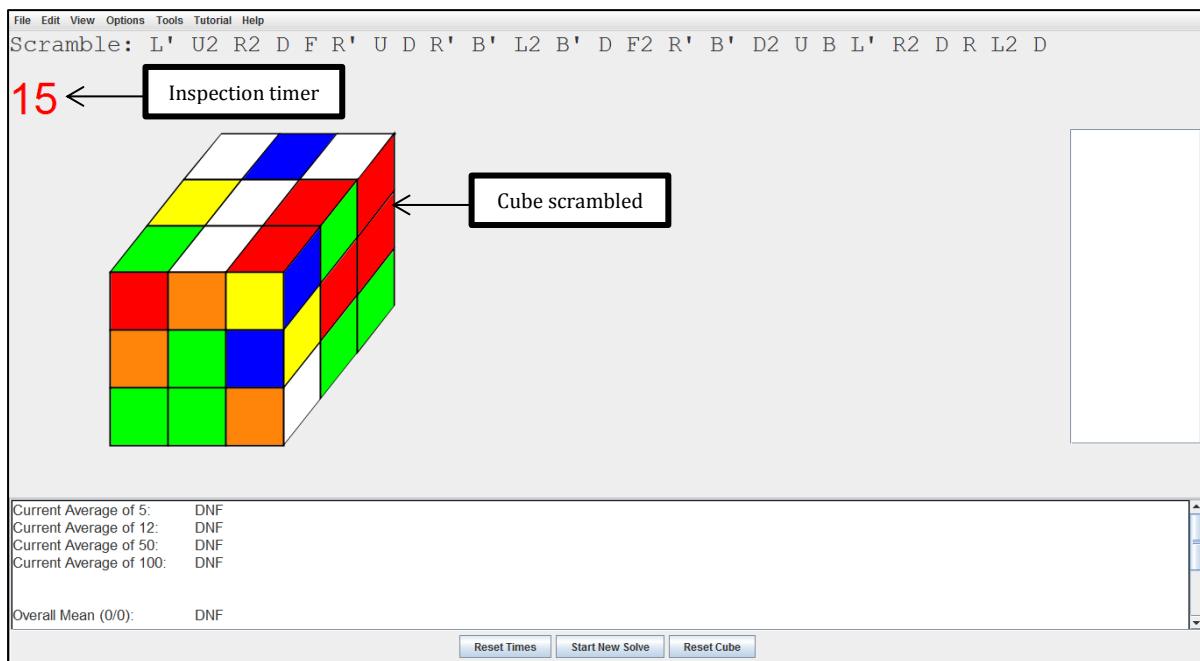
See the *Data Input Guidelines* section for help on how to enter valid data.

How to start a solve

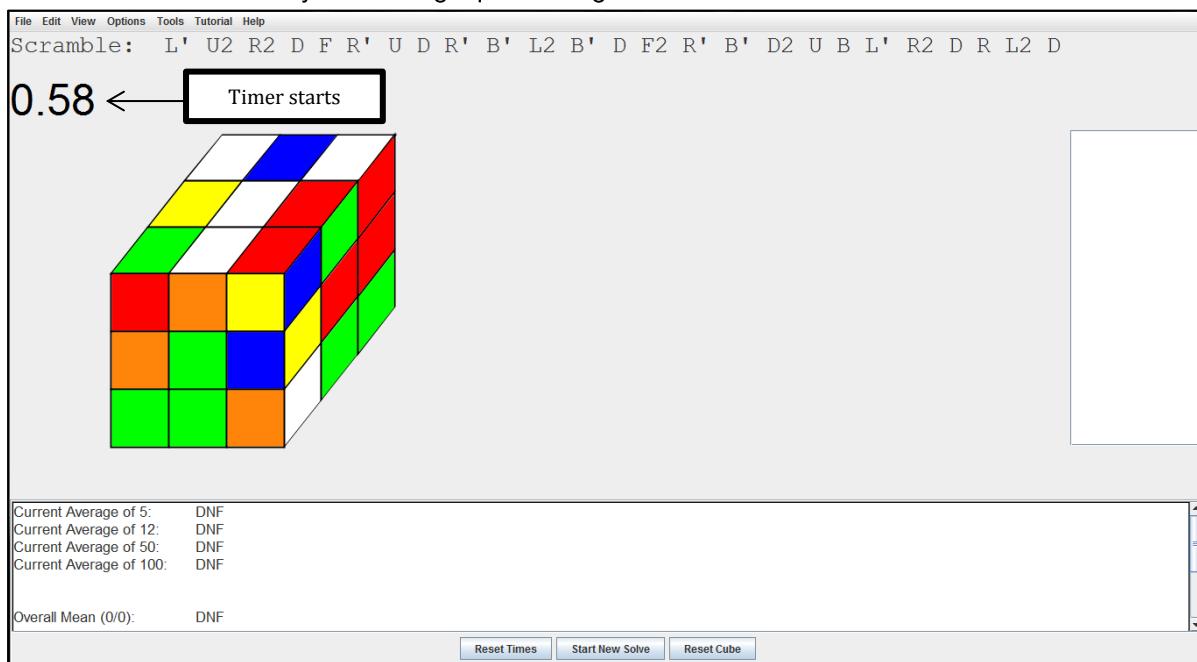
1. In the main window, click the *Start New Solve* button.



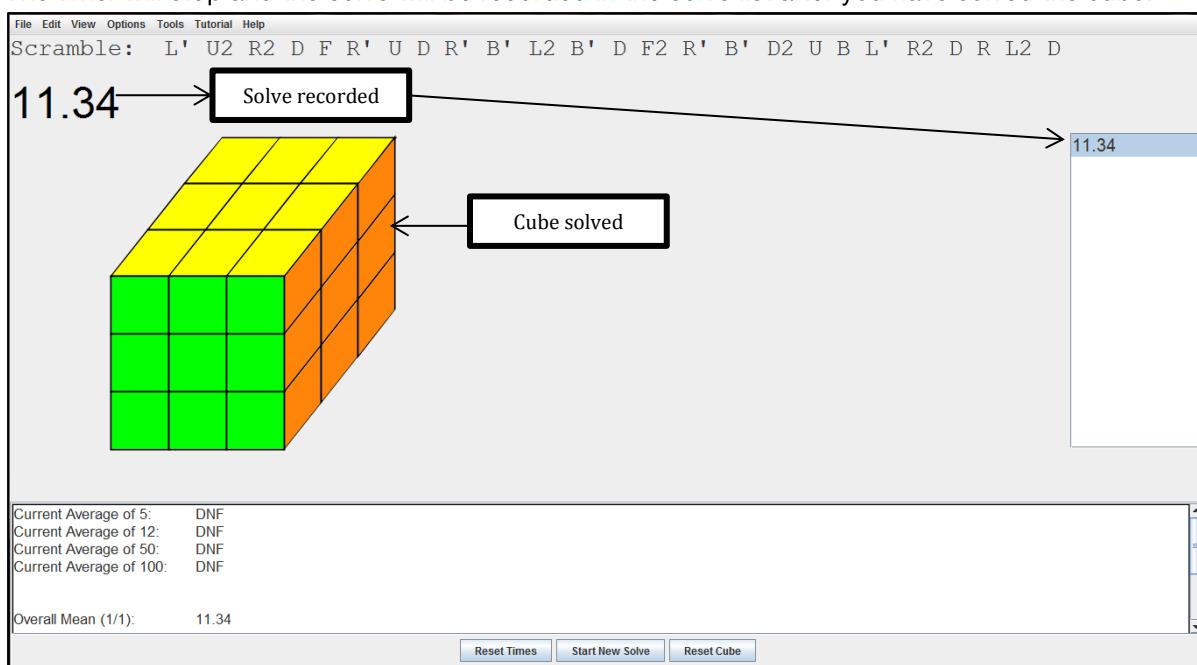
2. The cube will be scrambled randomly and the inspection timer will start counting down. You cannot perform moves while the inspection timer is running, but you are permitted to perform rotations.



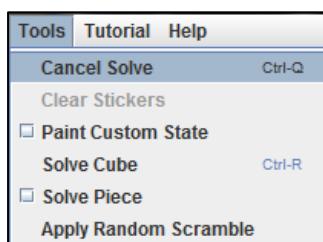
3. To start the timer (and the solve), press and release spacebar. After releasing the spacebar, the solve timer will start and you can begin performing moves.



4. The timer will stop and the solve will be recorded in the solve list after you have solved the cube.

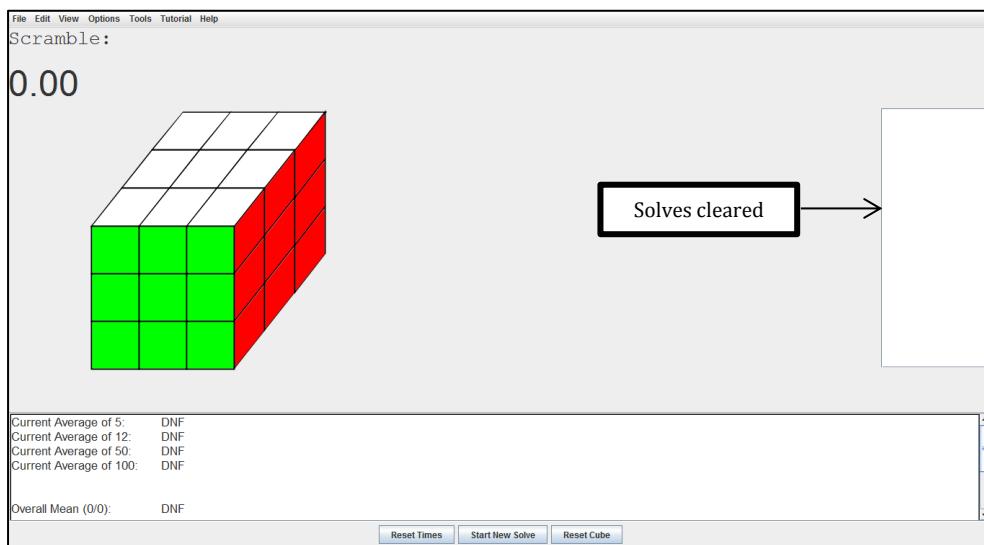
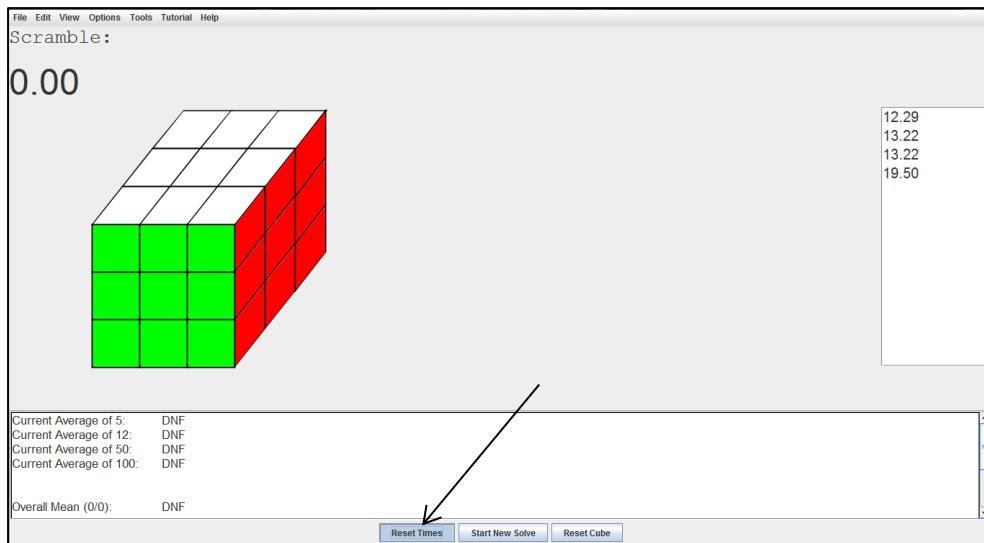


5. If you wish to cancel the current solve, i.e. reset the timer and continue with other tasks, you can click the *Cancel Solve* menu item (*Main window menu bar → Tools → Cancel Solve*).



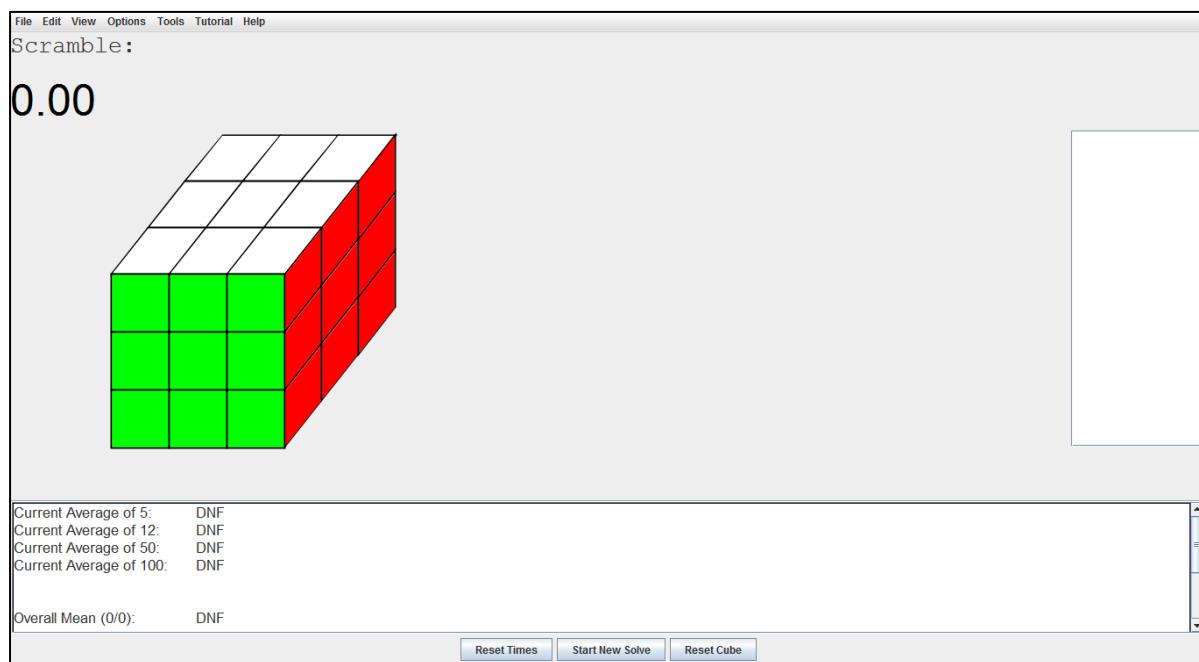
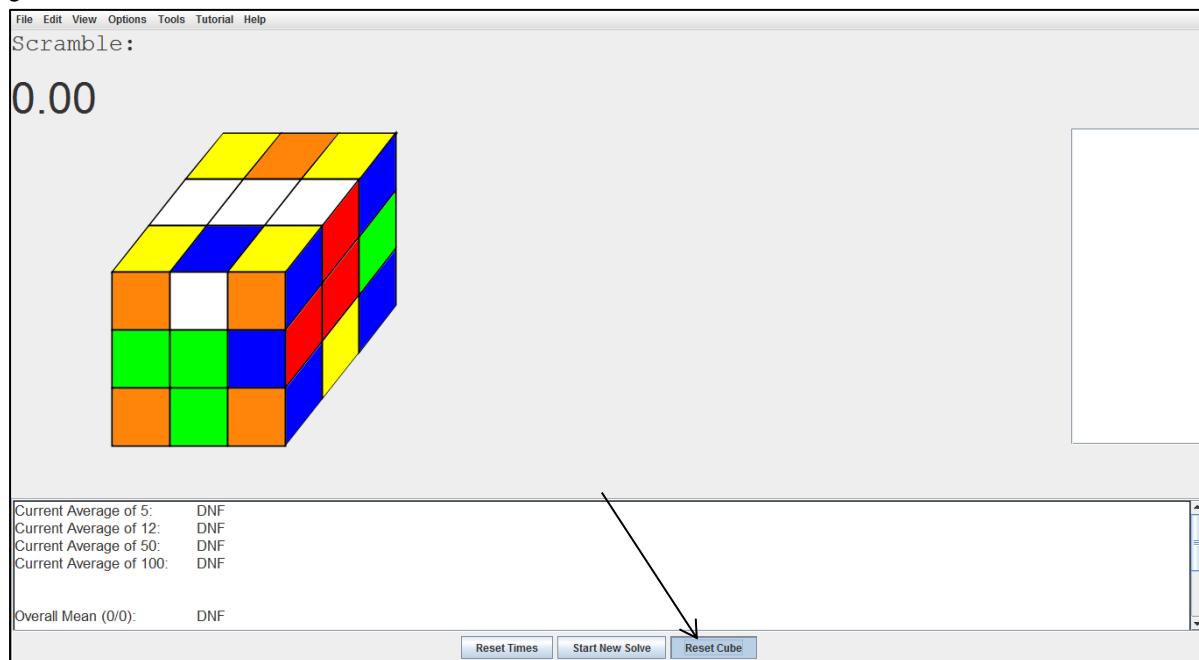
How to delete all solves in the solve list

1. Click the *Reset Times* button and all solves in the solve list will be cleared.



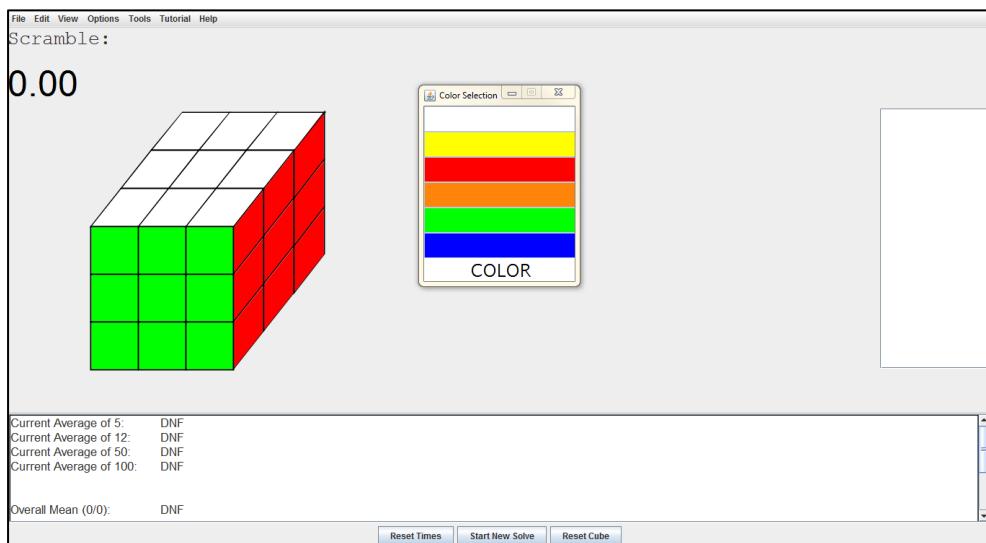
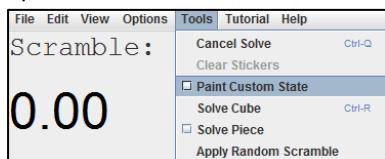
How to reset the cube to a solved state

1. Click the *Reset Cube* button and the cube will be reset to a solved state with white on top and green on front.

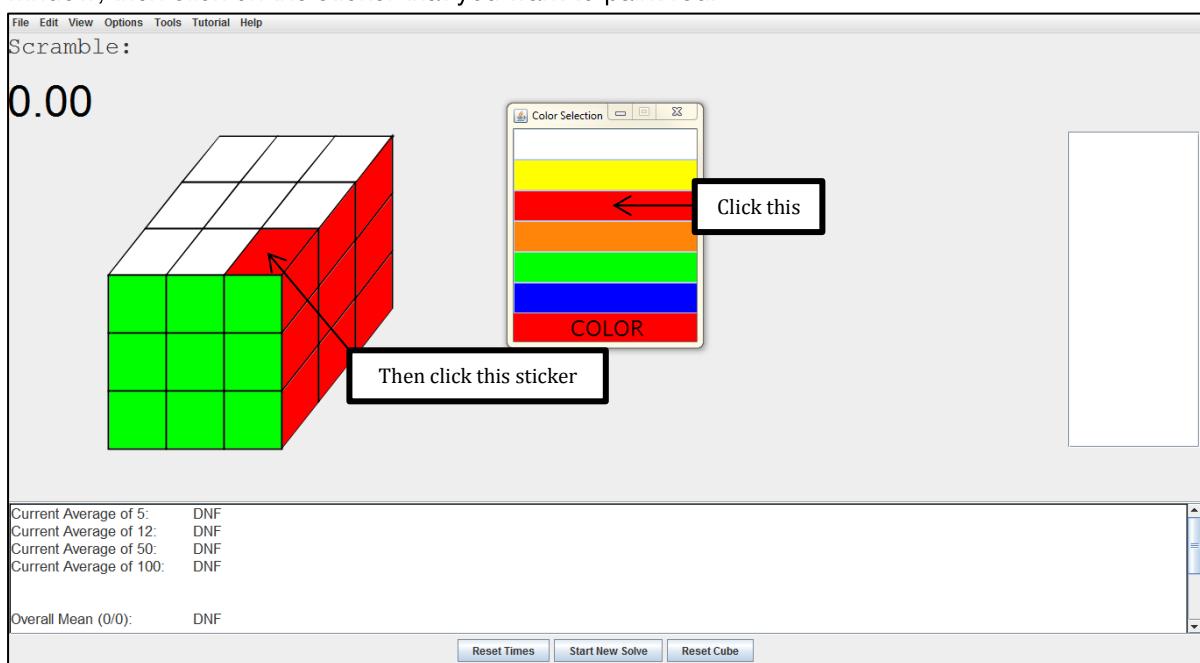


How to paint a custom state

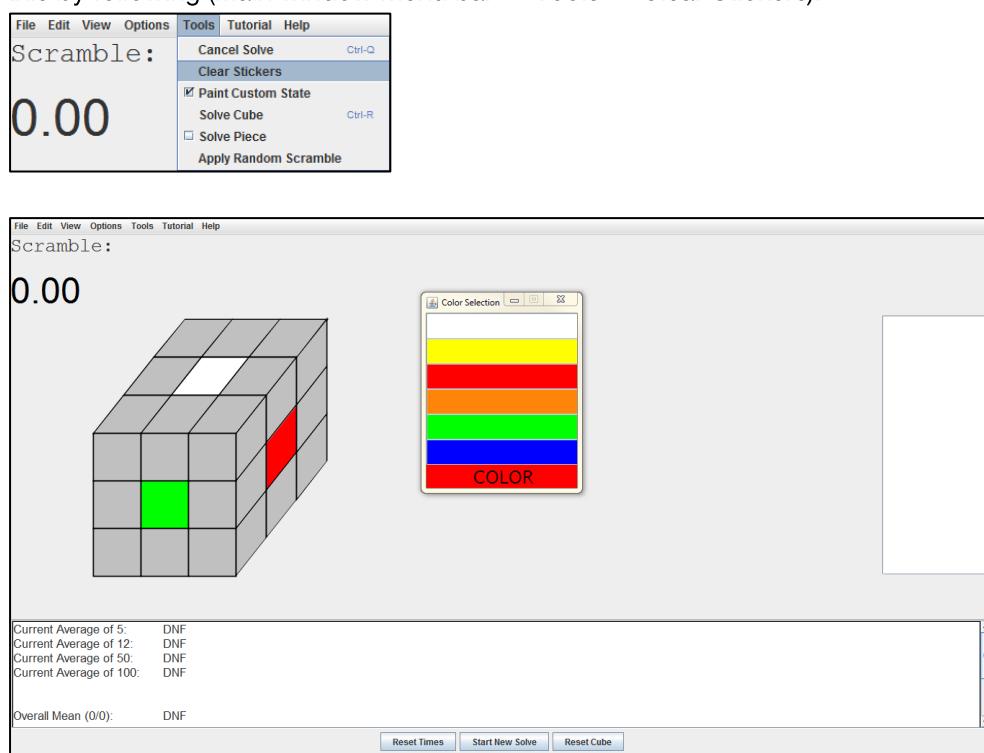
1. Main window menu bar → Tools → Paint Custom State. The Color Selection window will then open.



2. If, for example, you want to paint a sticker red, click on the red rectangle in the Color Selection window, then click on the sticker that you want to paint red.

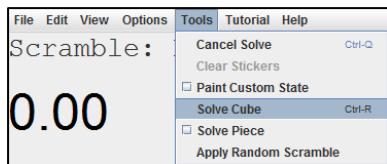


3. To make painting easier, you can first clear all stickers so that they all show grey. You can do this by following (*Main window menu bar → Tools → Clear Stickers*).



How to generate a solution for the current state

1. Main window menu bar → Tools → Solve cube



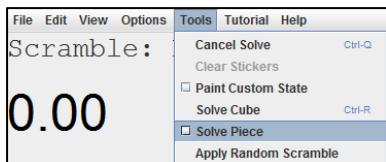
2. A solution will be generated and shown in the text area at the bottom of the main window. The solution will be performed automatically on the cube.



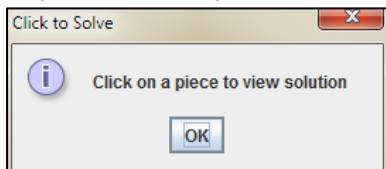
3. If you click the *Solve Cube* menu item while a solve is in progress, the solve will be cancelled and then the solution will be generated.

How to solve a selected piece

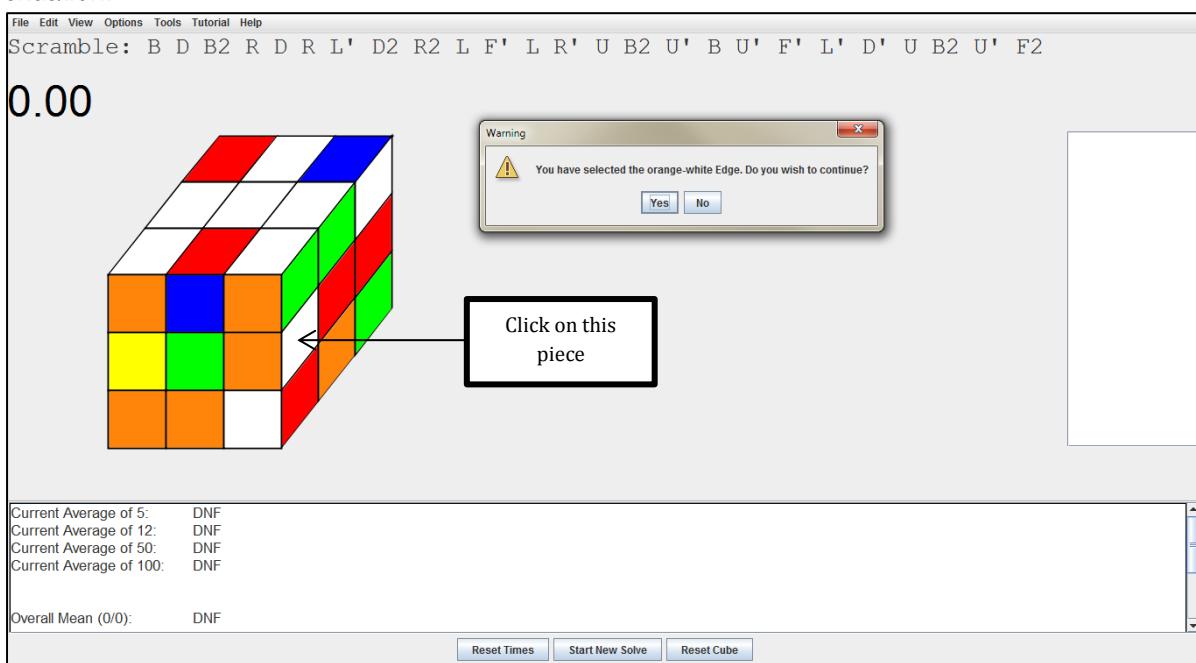
1. Click the *Solve Piece* menu item (Main window menu bar → Tools → Solve Piece)



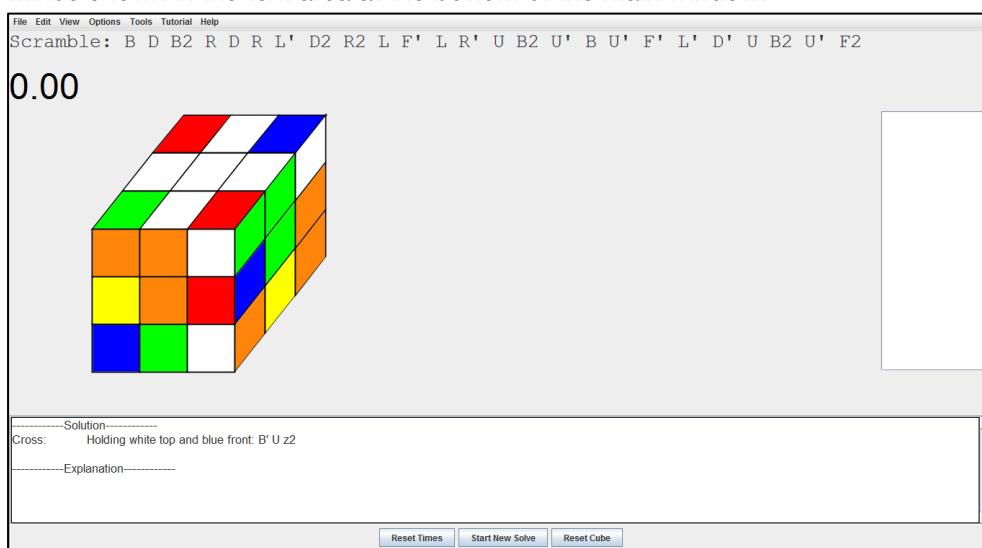
2. If specified in the preferences, a warning window will be shown:



3. Click on the piece for which a solution should be generated. A warning window will be shown, asking you to confirm your choice. For example, if you click on the orange-white edge in this situation:



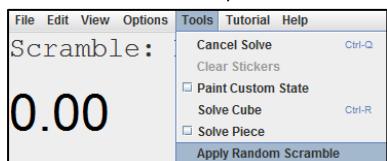
4. If you wish to continue, select Yes. The solution will be generated for that piece, and the solution will be shown in the text area at the bottom of the main window.



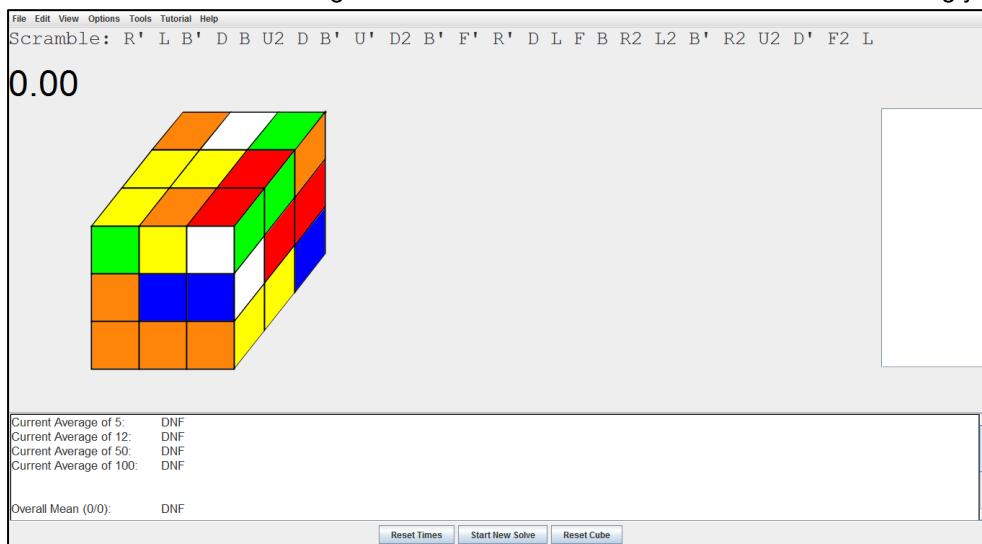
5. If you accidentally select the wrong piece, you can choose not to continue by clicking No. You will then have to click the *Solve Piece* menu item again and select the correct piece.

How to apply a random scramble

1. Click the *Apply Random Scramble* menu item (*Main window menu bar → Tools → Apply Random Scramble*)



2. A random scramble will be generated and the cube will be scrambled accordingly.

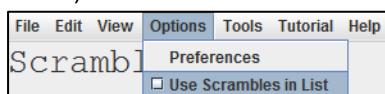


3. You cannot apply a random scramble when any timers are running or when you are painting a custom state.

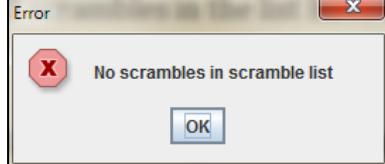
How to use the scrambles in the scramble list

If you have scrambles saved in the scramble list window (see page 22), you can use the scrambles to scramble the cube for each solve. This is useful for competitions; five scrambles could be saved in the scramble list and then these could be used to scramble the cube each time (instead of a random scramble).

1. Click the *Use Scrambles in List* menu item (*Main window menu bar → Options → Use Scrambles in List*).

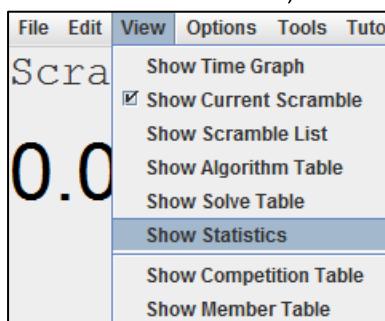


2. If you click *Start New Solve*, the first scramble in the scramble list will be used to scramble the cube. After solving the cube (or clicking *Cancel Solve*), the next scramble in the list will be used to scramble the cube for the next solve. After all scrambles in the list have been used, the first one will be reused, then the second etc.
3. If there are no scrambles in the list, the following error message will be shown:



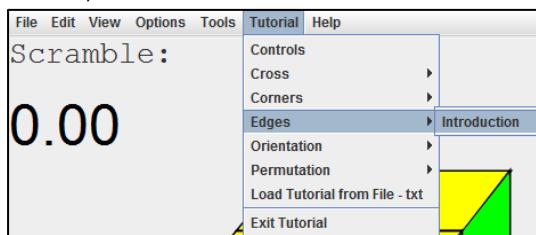
How to show statistics

1. If the text area at the bottom of the screen is showing something other than statistics, then you can show the statistics by selecting the *Show Statistics* menu item (*Main window menu bar → View → Show Statistics*)



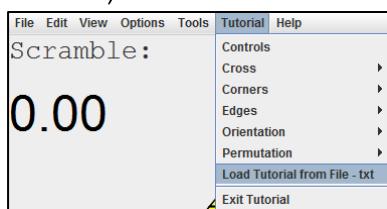
How to open a tutorial

1. Select the desired tutorial from the tutorial menu (*Main window menu bar → Tutorial → Desired tutorial*)

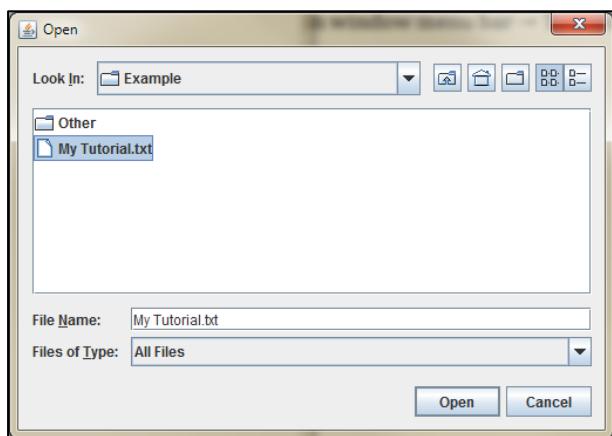


How to load a tutorial from file

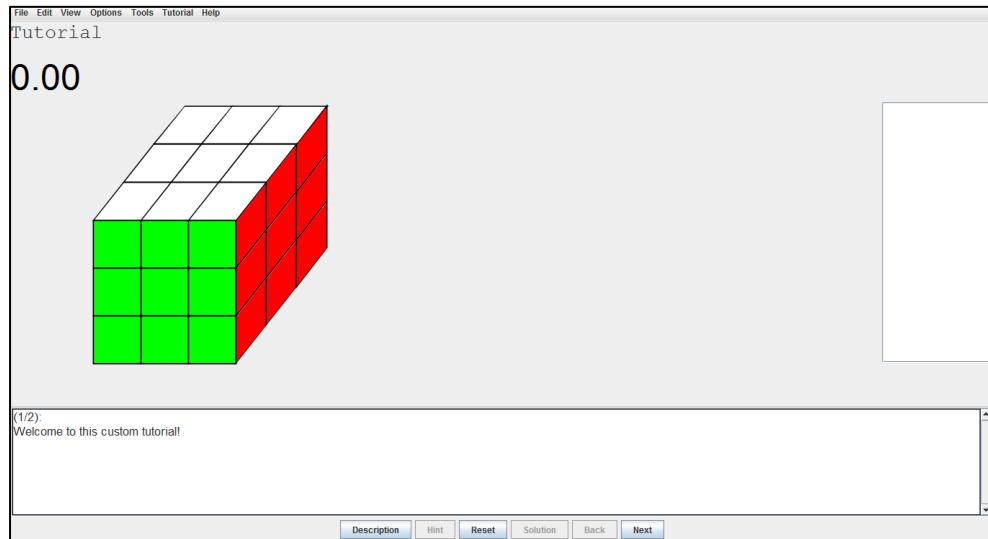
1. Click the *Load Tutorial from File* menu item (*Main window menu bar → Tutorial → Load Tutorial from File*).



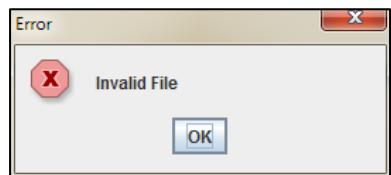
2. Choose the file to load.



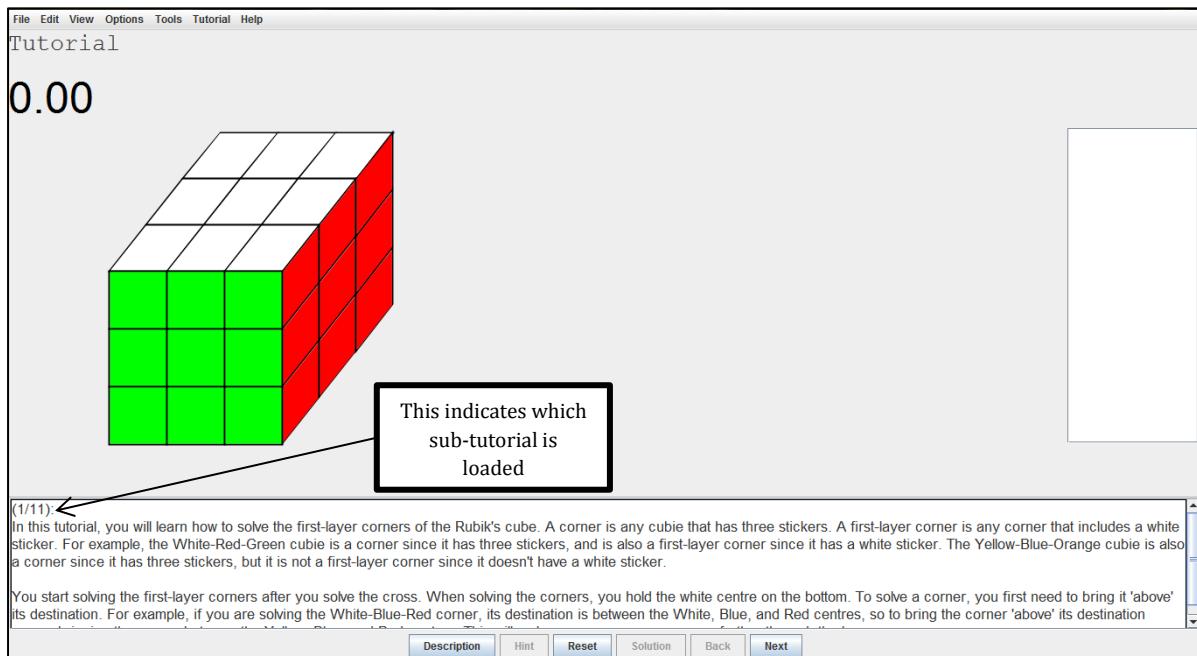
3. The tutorial will be loaded into the main window.



4. If the tutorial file is invalid, then the following error message will be shown:

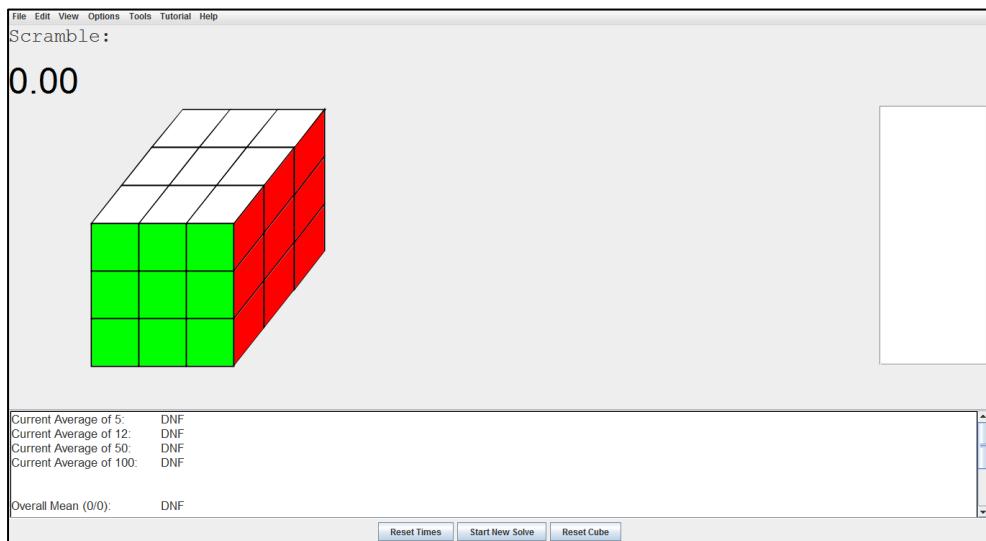
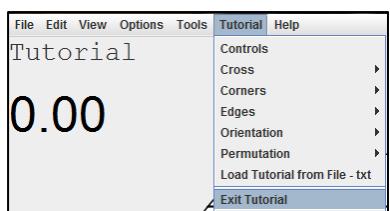


How to use tutorial mode



- *Description* Button: The description for the current step of the tutorial will be shown.
- *Hint* Button: The n^{th} hint for the current step of the tutorial will be shown. The next time this button is clicked, the $(n + 1)^{\text{th}}$ hint for the current step will be shown etc. After all hints have been shown, the first hint will be shown again.
- *Reset* button: The cube will be reset to its original state for the current step of the tutorial. This is useful if the tutorial is asking you to solve a certain piece, then you make a mistake; you can simply reset the cube and start again.
- *Solution* button: The solution for the current step of the tutorial will be shown.
- *Back* button: The previous sub-tutorial will be loaded.
- *Next* button: The next sub-tutorial will be loaded.

- To exit tutorial mode, (*Main window menu bar → Tutorial → Exit Tutorial*). The normal ‘Timing’ mode will be shown.



Data Input Guidelines

Entering times

Times are entered in the *Solve Editor* form (see page 6) and in the *Solve Form* window (see page 31). Times must be of the form MM:SS.ss and must be between 00:00.00 and 59:59.59 inclusive. The time can also be ‘DNF’ (Did Not Finish) which indicates a disqualified time.

Here are some examples of valid and invalid times:

Valid	Invalid	Explanation
21.57	\$^%	All characters in this input are illegal, so it is obviously invalid.
12.19	5.5.	There are two ‘.’ characters in this input, so it is invalid. 5.5 would be valid.
13.22	.	This input consists only of a ‘.’, it has no digits, so it is invalid. ‘0.’ would be valid.
5.55	2:40:50	This input has a colon between ‘40’ and ‘50’ instead of a ‘.’ character; 2:40.50 would be valid.
1:23.91	20	This has no decimal point, so it is invalid. 20. would be valid.
1:4. (= 1:04.00)	-1.2	The presence of the ‘-‘ character makes this input invalid. 1.2 would be valid.
59:59.59	60:00.00	This is outside the range of valid times, so it invalid.
DNF	rAnDoM	The only non-‘MM:SS.ss’ input allowed is ‘DNF’, so ‘rAnDoM’ is invalid.

Entering dates

Dates are entered in the *Solve Form* window (see page 31). Dates must be entered in the form YYYY-MM-DD HH:MM:SS, and they must be valid, for example, you could not have 2003-02-29 00:00:00, because 2003 was not a leap year. The time must be between 00:00:00 and 23:59:59 inclusive.

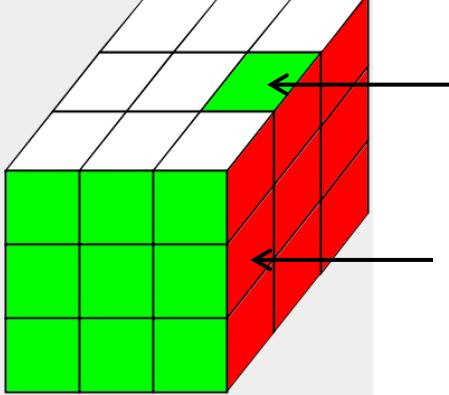
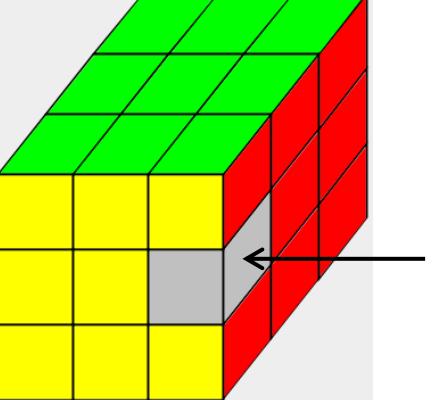
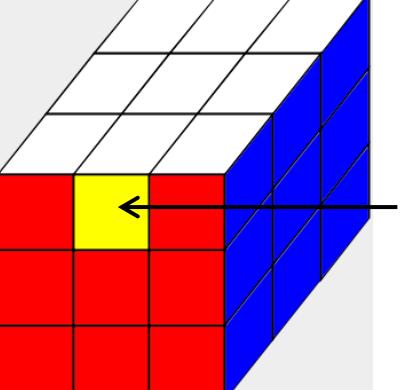
Here are some examples of valid and invalid dates:

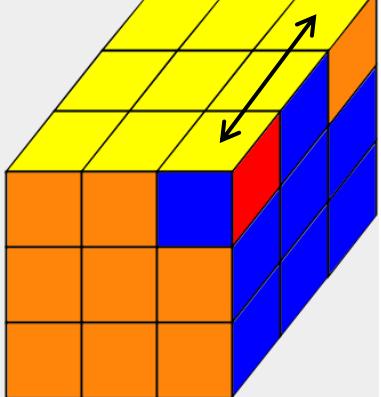
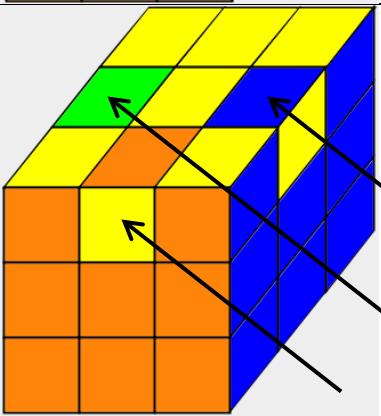
Valid	Invalid	Explanation
2002-01-24 20:33:16	\$^&”*	This input is not in the correct format, so it will not be accepted.
1998-12-13 12:04:46	2001-11--15 00:00:00	This has two ‘-‘ characters adjacent to each other, so it is not in the correct format.
2001-05-22 00:00:00	1998-27-5	This input is in the correct format, but there is no 27 th month, so this input is invalid. In addition, this input does not have HH:MM:SS included, only YYYY-MM-DD
1998-01-18 23:59:59	2000-01-32 00::00:00	This input is in the correct format, but there is no month with 32 days. There are also two ‘:’ characters adjacent to each other, so this is not valid.
2001-1-1 1:1:1	2014-02-14 30:00:00	This input is in the correct format, but the time ‘30:00:00’ is not valid
2004-02-29 00:00:00	2003-02-29 00:00:00	29 February only occurs during leap years; 2003 was not a leap year, so this input will be rejected.

Entering cube states

You can enter cube states by using the 'Paint Custom State' tool. Valid cube states solvable states. States that cannot be solved include those with duplicate pieces, missing pieces, unknown pieces, invalid permutations/orientations, and combinations thereof.

Examples of invalid states:

State	Explanation
	The two green-red edges are duplicates, so this state is invalid.
	The yellow-red edge is missing, so this state is not valid.
	The white-yellow edge is an unknown edge, i.e. it does not exist on a standard Rubik's cube, so this state is invalid.

State	Explanation
	Only the yellow-red-blue and yellow-blue-orange corners have been swapped. Basic theory tells us that this state is unsolvable; if we solve these two corners, we will destroy the permutation of other pieces.
	Only the yellow-green, yellow-orange, and yellow-blue edges have been flipped. Basic theory tells us that this state is unsolvable; there must be an even number of edges flipped for the orientation to be solved.

Entering preferences

- *Real-time solving speed (ms)* field:

This value can be between 1 and 9999 inclusive. The input must consist of digits only, e.g. 20 not ‘twenty’. If the input contains any character other than 0, 1, 2, ... 9, then the input will be invalid. If you enter a fractional value, such as 125.6, then it will be rounded down to the nearest integer (125 in this case).

- *Inspection time (seconds)* field:

This value can be between 1 and 99 inclusive. The input must consist of digits only, e.g. 15 not ‘fifteen’. If the input contains any character other than 0, 1, 2, ..., 9, or ‘.’ then the input will be invalid. If you enter a fractional value, such as 15.4, then it will be rounded down to the nearest integer (15 in this case).

- *Scramble text size* field:

This value can be between 1 and 99 inclusive. The input must consist of digits only, e.g. 27 not ‘twenty seven’. If the input contains any character other than 0, 1, 2, ..., 9, or ‘.’ then the input will be invalid. If you enter a fractional value, such as 27.9, then it will be rounded down to the nearest integer (27 in this case).

Troubleshooting

1. Why is the cube not performing moves when I press keys on the keyboard?

This problem can usually be fixed by clicking somewhere on the cube. After clicking, the cube will have focus and your keyboard input will be acknowledged.

If the cube is still not performing moves, make sure you check the following points:

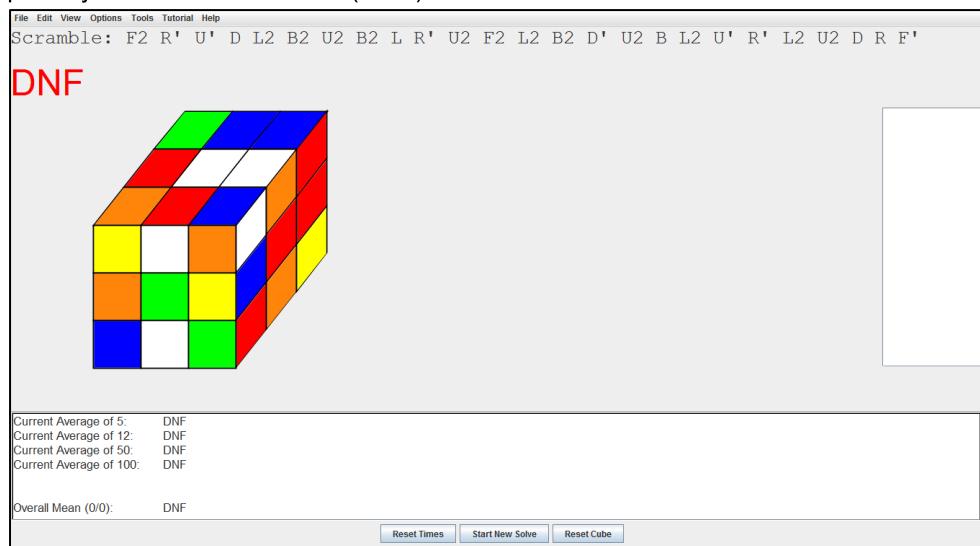
- Make sure the *Color Selection* window is not open – you are not allowed to perform moves when this window is open.
- Permission to perform moves can be restricted if the system is in tutorial mode – this may not be an error, just a feature of the particular tutorial.
- If the cube is being animated automatically, then you will not be allowed to perform moves. Click the *Cancel Solve* menu item (*Main window menu bar → Tools → Cancel Solve*) to cancel the current animation and you will be able to perform moves.
- You are allowed to perform rotations, but not moves, when the inspection timer is running.

Also, make sure that you are pressing valid keys on the keyboard (See page 6).

2. Why are some of my solves being recorded with a penalty of 2?

Solves are given a penalty of 2 if you take more than x seconds to inspect the cube, where x is the number of seconds allowed for inspection – this is specified in the preferences. For example, if you allow yourself 15 seconds for inspection, then a solve will be given a penalty of +2 if you take more than 15 seconds. You need to make sure that you don't exceed the allowed time so that you don't get these penalties.

In addition, if the timer shows 'DNF' during inspection, then your time will be disqualified. The DNF penalty will be incurred after $(x + 2)$ seconds.

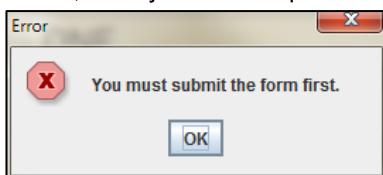


3. When I try to solve an individual piece, the solution solves other pieces as well.

If you choose to solve a piece, such as an edge, without having the previous sub-steps solved, such as cross and corners, the solution will have to complete these steps first. Solving other pieces is not an error or a limitation; these other pieces need to be solved for the solution to be sensible.

4. When I click the View Execution button in the Solve Editor window, an error message appears.

This feature is available only if you are **editing** the solve; if you are adding the solve and you click this button, then the following error message will appear. To avoid this error message, click the ‘Submit’ button, then you can reopen the window to access this feature.



5. An error message appears when I try to enter a time.

Times must be entered in a specific format (see page 57). If the time you enter is incorrect, then an error message will be shown (see below). Try re-entering the time in a format closer to the accepted formats to avoid this error message.

6. An error message appears when I try to edit or delete a solve in the list in the main window.

This error message appears because there is no selected item in the list. Make sure there is an item selected and then try to edit it.

7. The program is saying that the cube state I enter/load is invalid.

A strict validation process is carried out to determine whether the cube state you enter is valid or not, so ensure that *all* stickers are definitely correct (see page 59). If you are replicating the state of a physical cube, ensure that the physical cube has the same colour scheme and is solvable before continuing.

8. The program is saying that the solve information I'm trying to load is invalid.

Ensure that the file is valid, i.e. has the format {Time, Penalty, Comment, Scramble, Solution} with each of these on a separate line in the text file.

9. I cannot open a file containing tutorial/cube-state/solve information.

Make sure the directory in which the file is stored is accessible to programs, i.e. make sure it is not password-protected or similar, and ensure that the file is valid.

10. The program is saying that the date I enter is invalid.

Ensure that the date is in the form yyyy-MM-dd HH:mm:ss (see page 58), e.g. 2014-03-08 20:33:16, and is a date that actually exists, i.e. you cannot enter the 2014-02-29 00:00:00 because 2014 is not a leap year.

11. The data I enter in the Preferences window is not being accepted.

Ensure that you enter a number in each of the fields (not words, such as “fourteen”) and that the value lies within the valid range (see page 61 for ranges).

12. I cannot filter the times in the Solve Table.

Ensure that you enter the times in the pop-up windows correctly (see page 57). In addition, do not enter an upper boundary that is lower than the lower boundary.

13. When I try to start a new solve, an error message appears saying “No scrambles in scramble list”.

This error message appears when you have selected the ‘Use Scrambles in List’ menu item (*Main window menu bar → Options → Use Scrambles in List*) but have not provided data in the Scramble List window (*Main window menu bar → View → Show Scramble List*). You can fix this problem either by entering scrambles into the Scramble List window, or by unchecking the ‘Use Scrambles in List’ menu item.

Limitations of the System

- The system generates solutions using only the beginners' method. Advancements of the system could include more-advanced methods such as CFOP, ZZ, and Roux etc.
- Custom statistics are currently not available, e.g. calculating the average of 15, or average of 20 etc.
- The time graph shows 12 times or fewer – it does not show times over a custom range.
- The key-mappings for performing moves are fixed – they cannot be customised.
- The sticker colours of the cube cannot be customised, e.g. you cannot change the yellow face to show purple stickers.
- The system does not currently support custom notation; only WCA notation is supported.
- Certain tutorial files or solve-information files may cause the system to crash.
- There is currently no English-like explanation for solving the cross.