

Class Maker 2016

Program Description

Creating classes for the new school year is a time consuming task that teachers are asked to complete each year. Many schools offer their students the opportunity to request friends to accompany them into the new year. The task of trying to balance class size with student academic ability, behaviour, classroom participation and gender while ensuring that everyone has a friend is considerable.

Class Maker is an innovative software solution, developed to streamline this process and provide a number of balanced grade alternatives for teachers to choose from. Class groups can be sorted according to the following criteria.

- **Friend Requests**

Students have the opportunity to nominate up to 4 friends who they would like to be with the following year. Class Maker uses advanced matching algorithms to satisfy these requests. The program also offers the option to relax these requirements by allowing some friend requests to remain unfulfilled.

- **Student Separation**

Class Maker provides teachers the ability to separate students, even if the student has requested a particular friend. The teacher's condition overrides the student's request.

- **Essential Student Grouping**

There are times when students need to be kept together. Class Maker allows teachers to fix any number of student pairs or multiple groups of students into the same class.

- **Multi-age (composite) classes**

Class Maker provides the teacher the ability to create multi-age classes with 2 or 3 different year levels, and to control the ratio of each year level in the created classes.

- **Manual Class Size**

By default, Class Maker creates grades of equal or near-equal size. However, it also offers the ability to create classes of any size to suit the requirements of the school.

- **Gender Ratio**

It can be important to maintain a mix of male and female students in a particular grade. Class Maker provides the teacher the ability to produce class sets with any gender ratio required.

- **Teacher choice (new for 2016)**

A student may need to be placed in a particular teacher's class, or alternatively there may be a request to not be placed with that teacher. Class Maker offers this choice as an option.

- **File Compatibility**

Class Maker provides an easy to use Microsoft Excel template for student data input, which includes internal checking to ensure correct spelling of students' names. Class Maker outputs the sorted class data in Excel compatible format for easy viewing, manipulation and printing.

Student Information File Input

Class Maker uses a familiar Excel file format for entering student information. A template is included with the software to help you create your own class sets. It is **highly recommended** that you use this template for your own class lists, as it contains macros and internal checks to ensure the students' names are spelled correctly and that there are no internal inconsistencies. The figure below shows the file format with a description of each column.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
		Press "Ctrl q" to format your student data correctly and update the spell checker (enable macros first) Remember you can change the heading information in columns D to G to suit your requirements												
1	Student ID	Gender	Year Level	Numeracy	Literacy	Behaviour	Participation	Essential Friend	Friend 1	Friend 2	Friend 3	Friend 4	Incompatible 1	Incompatible 2
2	Andrew Aardvark	M	3	3	5	1	3		Nancy Numbat	Betty Butterfly	Ivan Iguana	Darren Dog		
3	Betty Butterfly	F	3	3	1	1	3		Nancy Numbat	Lisa Lemur	Queen Quokka	Darren Dog	Jessica Jaguar	
4	Charlie Camel	M	5	1	3	5	1		Darren Dog	Nancy Numbat	Peter Pig	Betty Butterfly		
5	Darren Dog	M	5	3	5	1	5		Hermione Horse	Tabitha Tortoise	Francine Frog	Jessica Jaguar		
6	Edward Emu	M	4	1	3	3	3		Nancy Numbat	Ivan Iguana	Rebecca Rabbit	Queen Quokka		
7	Francine Frog	F	4	5	3	3	1		Max Monkey	Lisa Lemur	Peter Pig	Samantha Snake	Andrew Aardvark	
8	Gerald Giraffe	M	3	5	5	1	3		Nancy Numbat	Betty Butterfly	Ivan Iguana	Darren Dog	Darren Dog	
9	Hermione Horse	F	5	3	3	3	3	Samantha Snake	Betty Butterfly	Andrew Aardvark	Darren Dog	Charlie Camel		
10	Ivan Iguana	M	3	3	5	1	5		Edward Emu	Lisa Lemur	Charlie Camel	Andrew Aardvark		
11	Jessica Jaguar	F	5	1	3	3	3		Nancy Numbat	Francine Frog	Olive Ostrich	Darren Dog		
12	Kris Kangaroo	M	3	3	1	5	3		Peter Pig	Betty Butterfly	Darren Dog	Ivan Iguana		
13	Lisa Lemur	F	4	5	3	5	1		Nancy Numbat	Jessica Jaguar	Edward Emu	Rebecca Rabbit	Charlie Camel	Hermione Horse
14	Max Monkey	M	4	5	3	3	3		Nancy Numbat	Lisa Lemur	Francine Frog	Peter Pig	Tabitha Tortoise	Ivan Iguana
15	Nancy Numbat	F	3	3	1	5	3		Charlie Camel	Andrew Aardvark	Francine Frog	Gerald Giraffe		
16	Olive Ostrich	F	5	5	3	3	5		Peter Pig	Francine Frog	Samantha Snake	Samantha Snake		
17	Peter Pig	M	3	1	1	3	5		Ivan Iguana	Francine Frog	Rebecca Rabbit	Gerald Giraffe		
18	Queen Quokka	F	4	3	5	1	1		Charlie Camel	Andrew Aardvark	Edward Emu	Ivan Iguana		
19	Rebecca Rabbit	F	4	1	3	1	1		Lisa Lemur	Olive Ostrich	Francine Frog	Max Monkey		
20	Samantha Snake	F	5	1	3	3	3		Wrong Spelling	Kris Kangaroo	Nancy Numbat	Darren Dog	Tabitha Tortoise	
21	Tabitha Tortoise	F	3	3	1	1	3		Kris Kangaroo	Betty Butterfly	Lisa Lemur	Edward Emu	Ivan Iguana	
22														

Column A – Student ID

Column A is where the students' names are placed. This should be in Firstname Lastname format, as Class Maker will sort the classes alphabetically using the second name specified here. If more than two names are specified here, Class Maker will use the first space (as read from the left) to separate the first name from the last name.

Do not use commas in this column to separate student names, or in fact anywhere else in the spreadsheet. Some education departments issue student names in "Lastname, Firstname" format. If you have your student data in this format, another Excel file which is included in the Class Maker 2016 package will reformat the student names for you (see the file called "Firstname Lastname swap with commas.xlsx").

Columns B to C – Student information

Column B contains the gender of the student, which must be either "M" or "F" (without the "quotes"). Column C contains the student's current year level. For prep/foundation students you can enter the number zero "0". This column is used for multi-aged (composite) class creation.

This is also the column where you can identify a teacher by entering the letter "T". If you want to link students with particular teachers to make your classes, you must include the same number of teachers in your data file as you have classes (ie 4 teachers for 4 classes). Teachers only need a name (eg Mr. A) and the letter "T" placed in column C.

Columns D to G – Student ability and personality levels

These optional columns provide additional information about the classes the program makes. When Class Maker finds a class set where all the students have friends, it then uses the data in these columns to calculate averages for each class. This will help avoid the situation where one class has all

the high achievers while another is relatively low. It can also avoid having all of the quieter students in one class while filling another with students who have poor behaviour.

A new feature in Class Maker 2016 is the ability to customise columns D to G to suit your own school requirements. By changing the text in the appropriate column in row 1 of the spreadsheet, you can specify your own identifier. For instance, you may not need the “Participation” column, but may instead wish to identify ESL ability levels, or musical ability etc. By changing the text in the column header, Class Maker 2016 will use this identifier in its class averages.

Another new feature in Class Maker 2016 is that five levels of performance are now used instead of three. You now enter the ability score as a number from 1 to 5, and Class Maker 2016 will calculate an average for the entire class based on these scores, centred about 3. For backwards compatibility with previous versions of Class Maker, you can also enter “L”, “M” or “H” in these columns. These will be given scores of 1, 3 and 5 respectively. If you do not enter a score in any particular cell, Class Maker 2016 will assign a value of 3 to that cell.

Column H – Essential friend

This column is used to force students together into a particular class. Enter the student’s name in column H to keep the students together, or leave blank. When the program runs, it will only produce solutions where these two students are together.

In the example above, “Samantha Snake” must be in the same class as “Hermione Horse”. Note that you do not put Hermione into Samantha’s Essential friend cell. If you need more than two friends together, you can “daisy chain” the friends. For instance, if you put, say, Lisa Lemur into Samantha Snake’s “Essential Friends” column, the program will only output solutions where all 3 students are in the same class.

When placing students and teachers together, it is preferable to daisy chain any essential students into the teacher’s class. For example, typing Lisa Lemur into Mr. A’s Essential friend column, then putting Peter Pig in Lisa Lemur’s Essential column will ensure they are both in Mr. A’s class.

This feature should only be used for those situations where it is absolutely essential, as forcing too many students together can significantly reduce the number of solutions available for Class Maker to find! It will also significantly increase the time Class Maker will take to find a solution. Best practice is to have no more than about 10% of students with an Essential friend specified.

Columns I to L – Friend requests

This is where the student friend requests are placed. Up to 4 friends per student can be specified, but having less than 4 makes finding a solution far more difficult, especially if there are a lot of students in your class list. It will also increase the time taken to find a solution, and in extreme cases it may be impossible! If less than 4 friends are requested, please leave the other cells blank or fill with “0” (zero).

For new students, you can leave columns I to L blank. Class Maker will assign their own name into Column I, meaning that wherever they are placed they will have a friend (themselves).

Columns M to N – Incompatible student pairs

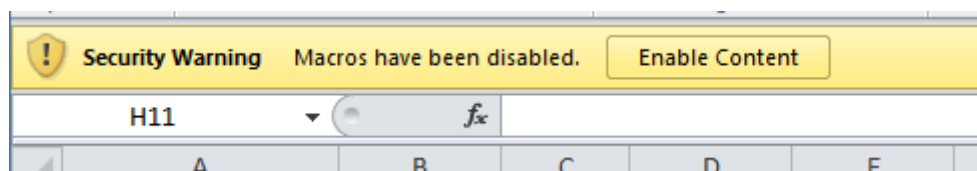
This is where you can force students to be separated from each other in the classes. Names in this column override any of the student's friend requests, and only needs to be in one of the incompatible students' area, not both. Use this option carefully, as forcing too many students apart from each other can lead to no solution being able to be found!

Like specifying Essential friends, this feature should only be used for those situations where it is absolutely essential, as forcing too many students apart can significantly reduce the number of solutions! It will also significantly increase the time Class Maker will take to find a solution. You should have no more than about 20% of students with Incompatible friends specified. If you accidentally place a student in both the Essential column and the Incompatible column, Class Maker will alert you to this fact, otherwise the program will run forever and never come up with a solution!

The Excel template file

The Excel template file which comes with Class Maker 2016 will also check for incorrect spelling of the students' names using the "Conditional Formatting" option in Excel. Note the name in Samantha Snake's row (cell I20), where the name "Wrong Spelling" has been entered. This background colour of this cell is not coloured green, as the Excel file has been set up to cross-check all the cells containing student names against the names entered in Column A – if an *exact* match is found, the cell will turn green, if not the cell will stay white.

Copying names from one cell to another can break this conditional formatting, but it can be restored using a Macro included with the file. Make sure that "Macros" are enabled when opening the file, and hit "**Ctrl q**" to restore the conditional formatting. ("Ctrl q" means hold the "Ctrl" button down, then hit the "q" key). When you open the template file you may see the warning message in yellow at the top of the spreadsheet which looks something like this.

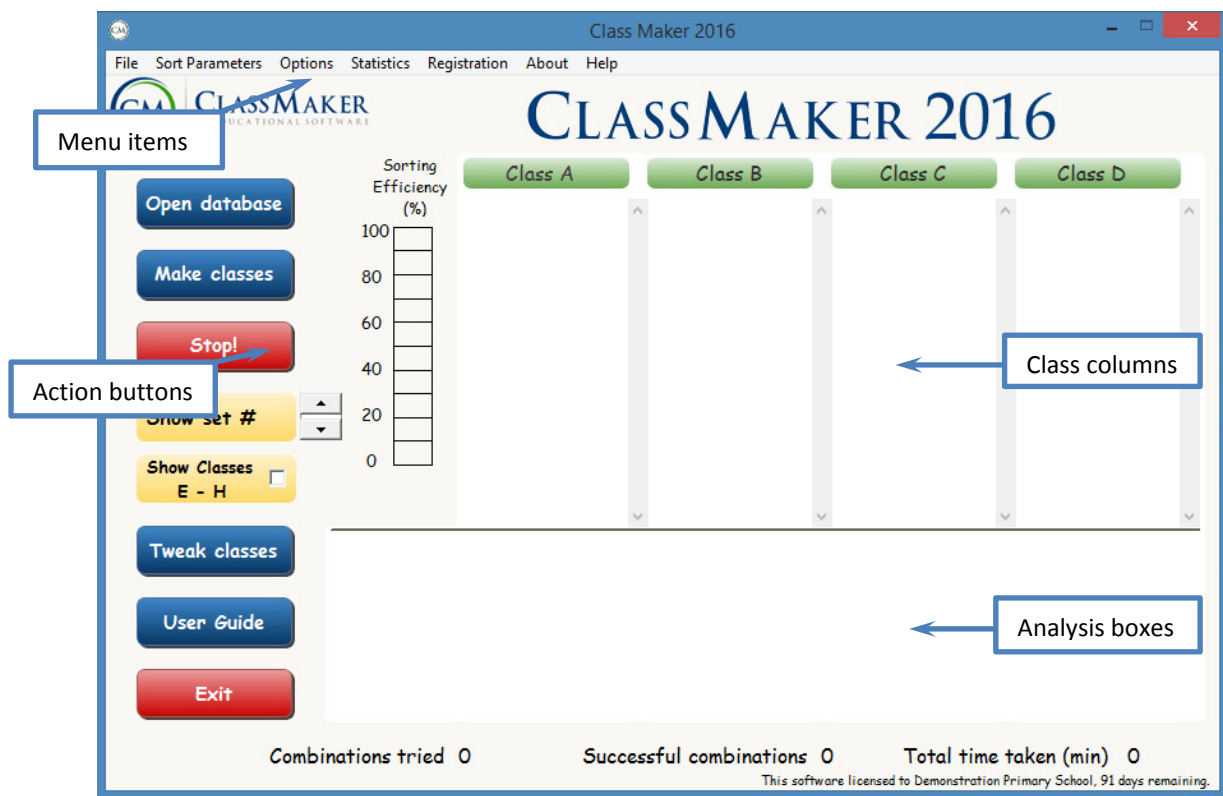


You must click on the "Enable Content" button to enable the macro. The macro will also remove any additional spaces in the student names, whether in front of the first name, behind the second name, or even double spaces in between the names. It is good practice to use the macro to check your student data file before trying to run Class Maker.

It will be easier to edit the demonstration file by overwriting the cells with your own student information. Once you have updated the file and you are happy with all the spelling, save the file in Excel format using your own file name (eg. Grade 2 list 2016.xls). This file will be used to generate your new class data.

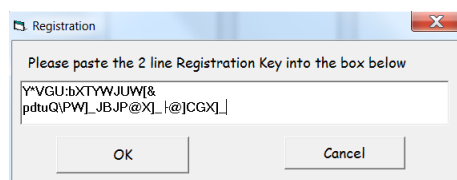
Running Class Maker 2016

Once you have created your class database file, start the program. The first time you start the program you may need to run in Administrator mode. Right click the program and select “Run as Administrator”. The program will check for a valid licence file (ClassMaker-Licence.lic) which needs to be in the same folder as the program. If there is a problem with the licence, an error message will appear and the program will default to the “demo” version. Contact the developers if you believe you have a valid licence file and the program is not recognising it properly. If a valid licence is found, the licence holder will appear in the bottom right corner of the main window.



Registration

If you are upgrading your licence, or the licence file is not found, press the Registration button to bring up a box to enter your unique registration code. Paste the code into the box as shown below and press OK.



If you have a valid Registration Key already and pressed the Registration button by accident, pressing the “Cancel” button will stop the process.

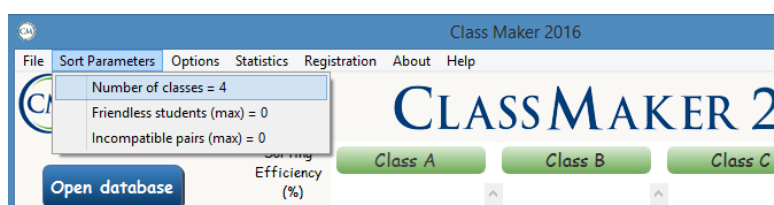
Open database file

To open your class database, click on the “Open database” button. A dialog box will open, showing valid Excel database files. Navigate to the directory containing your database file and either double click the file, or single click on the file and press “Open”. The program will then check the database file for errors. If a student name is miss-spelled or not present, a dialog box will appear providing information as to which student has errors in the Excel database file. You will then need to edit the database file to make sure the spelling in the file is correct.

If the Excel database is correctly formatted, the program will perform a quick analysis of the data, giving the number of students read and the average gender balance of the group. This will help you ensure the database is complete and set limits for the gender balance of the final class sets.

Sort Parameters menu

Clicking on the “Sort Parameters” menu item brings up the box shown below.

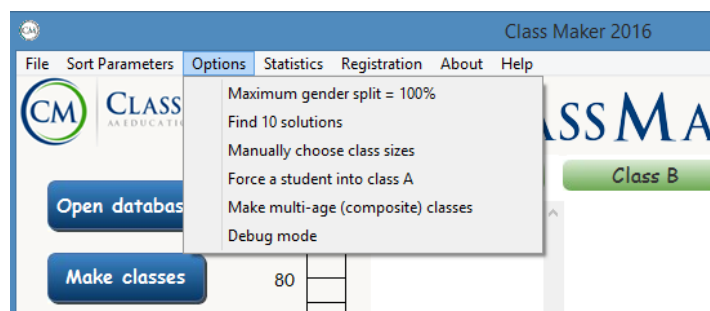


This area lets you choose the number of classes you want to place the students into. The “Standard” version of the program allows up to four classes, the “Extended” version allows up to eight. Click on the “Numbers of classes” area and a dialog box will appear, asking you to enter a number. The value you enter will now appear in the menu item, and the number of Class columns will change.

It is also possible to allow the program to produce class sets with students which do not have a friend (Friendless students) or allow incompatible student pairings (Incompatible pairs). Entering a number other than 0 into these fields will produce these solutions. For particularly difficult class groups this option may be helpful to narrow down the options from which you can choose from for the final class sets. It’s also useful to increase these numbers to ensure the program is working correctly the first time. Once you are happy the program is working, you can reduce these back to zero.

Options menu

Clicking on the “Options” menu button brings up the box shown below.



Here you can set the class gender ratio, change the number of solutions the program finds, manually choose the class size, force a particular student into Class A or make multi-age (composite) classes.

By default, the program will sort students into friendship groups, regardless of gender. This may lead to classes containing all boys or girls (ie 100% gender split). By clicking on the option button, it is possible to force the program to only accept a maximum gender split (say 75% of any one gender) in every class. However, setting a value too low may mean it is impossible to find a solution (for instance, if the gender ratio of the entire group is 75% girls, setting a value less than this would make it impossible to find a solution). If you have forgotten the gender ratio of the entire group, pressing the "Statistics" menu button will show you.

The program will continue searching for solutions until it reaches the value shown in the "Find XX solutions" area. You can choose a value from 1 to 20 solutions until the program stops by clicking on the menu button.

The "Manually Choose Class Sizes" option allows you to, well, manually choose the class size. First tell the program how many classes you require using the "Sort parameters" menu item. Next, press the "Manually Choose Class Sizes" button to bring up a series of input boxes into which you enter the class size. The class size numbers will then appear in the Class column headings.

If a particular student (or group of students) needs to be placed in a particular class, then use "Force student into Class A" option. This may be used if a particular student needs to be placed in a small class size for instance. This option will significantly increase the time taken to find a solution.

If you need to make multi-age (composite) classes, the program will use the values in column C of the student list spreadsheet. You can make classes with 2 or 3 different year levels using Class Maker. After you press the "Make Composite classes" button, follow the prompts to set up your classes. If you are making classes with two age levels, Class Maker will ask you to set the maximum age ratio in each class. In other words, you can set a value of (say) no more than 70% of a particular year level in each class.

For composites containing three age levels, you need to set the age split manually for each class. For example, let's say class A contains 10 year 3's and 6 year 4's, while class B contains 6 year 3's, 6 year 4's and 6 year 5's, and so on. If you make a mistake entering the class numbers (for multi-age composites containing three year levels) or the year level ratio (for multi-age classes containing two year levels), just hit the "Cancel" button and start again. If you want to try a different class ratio or number, simply click on the "Composites" button (which turns the option off), then click on it again to restart the process.

If instead you would like to make (say) three 3 straight Year 3 classes, three straight Year 4 classes and a single 3/4 composite, it will be far quicker to make these classes in two separate sorts using the "Manually Choose Class Size" option. Set Class A in each year level to have (say) 10 students, and Classes B to D to contain 20 students each. You can then manually combine both Class A sets to give you the multi-age composite you require.

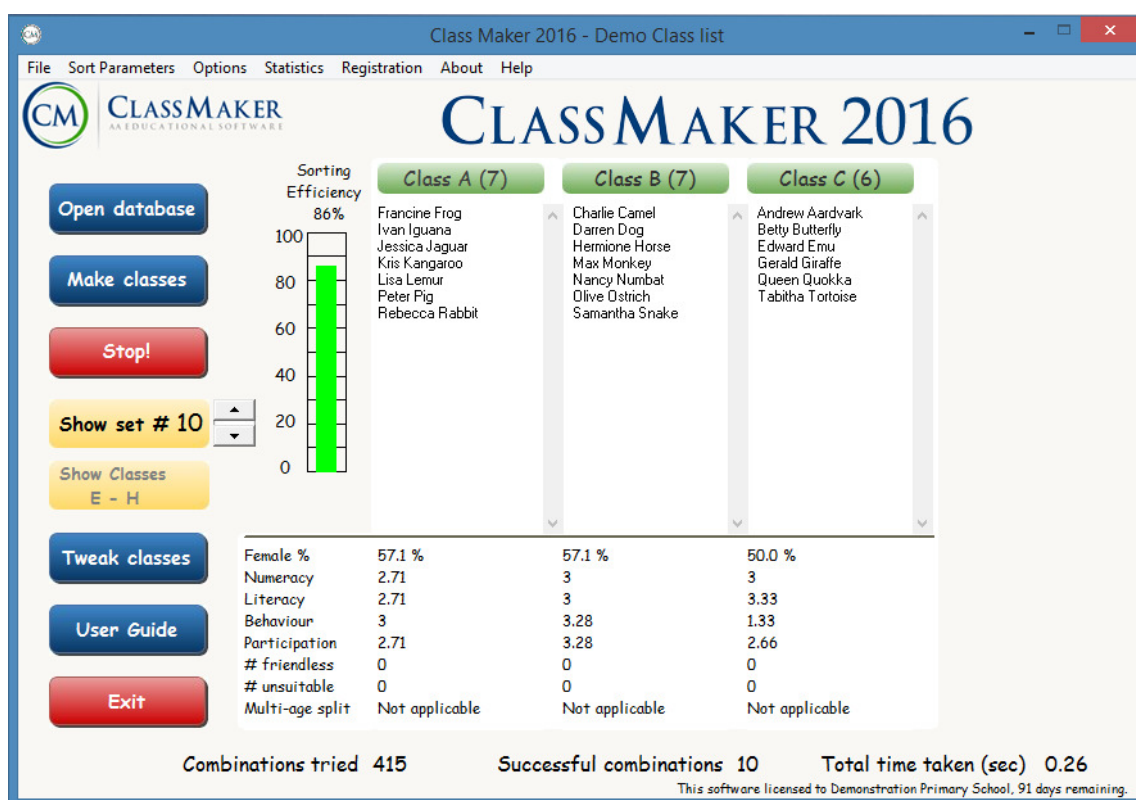
The Debug mode shows some more information if Class Maker 2016 is finding it hard to find a solution. It will show the average number of friendless students per iteration. You shouldn't need to use this feature unless requested by the developers.

Make your classes

Once you are happy with the database and all the options, press the “Make Classes” button. The program will start rearranging the student list and place the students into classes. After each combination is created, the “Combinations tried” value will increase, each successful combination will increase the number next to the “Successful combinations” box. After each successful combination, the student lists will appear in the Class columns.

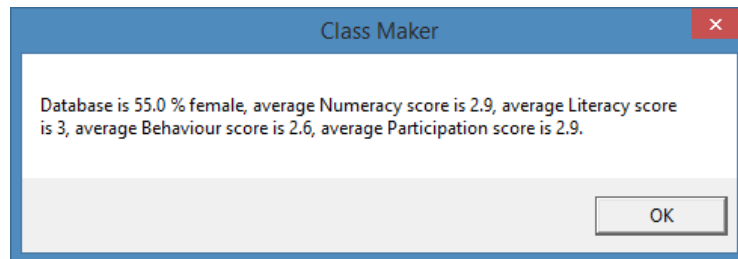
If you believe you have enough combinations, or you don’t believe the program is working properly, pressing the “Stop” button will stop the program searching. You can then change some of the parameters and start again, or view the solutions the program has found. If you have specified a number of restrictions, the program could take some time to come up with a solution. Particularly difficult class sets with a number of essential groups, student placements and incompatible students can take up to an hour to find a single solution. (Of course, you can do something else while the program runs ☺). If it still can’t find a solution, re-check your student database file to make sure you haven’t got a student which you are forcing to both be with and without another student. Relaxing the “Number of friendless students” or “Incompatible students” can help here.

Once the program has found the required number of solutions, the screen will look something like the figure below. This example used the sample Excel file above (after changing the name “Wrong Spelling” to something more appropriate).



The sorted classes are shown in the Class Columns areas. Note the Class Column titles show the number of students in each column. The names are sorted alphabetically according to surname. The values in the Analysis Boxes at the bottom show the gender ratio, the average numeracy, literacy, behaviour and participation scores, as well as the number of friendless students and unsuitable matches. The average scores are calculated from the data in columns D to G in the student data file.

A score of 3 represents a good mixture of student abilities. Values above 4 or below 2 are significantly different from the “average”. Of course, the averages will be affected by the overall ability scores of the entire group. To find out what the overall averages are, you can press the “Statistics” menu item button. For this data set, the statistics are shown below. Note the average values for the entire class set are all reasonably close to 3.



The class set shown when the program finished sorting is the last successful combination found, in this case combination 10. You can look at other class sets by pressing the up and down arrows next to “Show class set #” button. The Class Columns and Analysis Boxes will update accordingly.

For this sort, the multi-age option was set to “Off”, so the “Multi-age split” row is not applicable for this data. If we switch this value on to make multi-age composites with 2 age groups and a maximum age level of 75%, Class Maker will re-sort the classes and display new classes with the lowest year level ratio shown as a percentage of the class (see below).

The main interface of Class Maker 2016. The title bar says "Class Maker 2016 - Demo Class list 2 year composite". The menu bar includes File, Sort Parameters, Options, Statistics, Registration, About, and Help. The interface is divided into several sections:

- Left Panel:** Contains buttons for "Open database", "Make classes", "Stop!", "Show set # 10" (with up/down arrows), "Show Classes E - H", "Tweak classes", "User Guide", and "Exit".
- Sorting Efficiency:** A vertical bar chart showing 87% efficiency.
- Class Columns:** Three columns labeled "Class A (7)", "Class B (7)", and "Class C (6)". Each column lists student names and animal avatars.

	Class A (7)	Class B (7)	Class C (6)
Andrew Aardvark	Francine Frog	Betty Butterfly	
Charlie Camel	Ivan Iguana	Edward Emu	
Darren Dog	Jessica Jaguar	Gerald Giraffe	
Hermione Horse	Lisa Lemur	Kris Kangaroo	
Max Monkey	Olive Ostrich	Queen Quokka	
Nancy Numbat	Peter Pig	Tabitha Tortoise	
Samantha Snake	Rebecca Rabbit		
- Analysis Table:** A table showing various statistics for each class.

	Class A (7)	Class B (7)	Class C (6)
Female %	42.9 %	71.4 %	50.0 %
Numeracy	2.71	3	3
Literacy	3.28	3	2.66
Behaviour	3	2.71	2
Participation	3	3	2.66
# friendless	0	0	0
# unsuitable	0	0	0
Year 3 ratio	42.86%	57.14%	66.67%
- Bottom Status Bar:** Shows "Combinations tried 955", "Successful combinations 10", and "Total time taken (sec) 0.51". A small note at the bottom right says "This software licensed to Demonstration Primary School, 91 days remaining."

For multi-age classes containing 3 age levels, the row displays the actual class numbers (in this case years 3/4/5).

Tweak classes	Female %	50.0 %	33.3 %	75.0 %
User Guide	Numeracy	3	3	2.75
Exit	Literacy	2.33	3	3.5
	Behaviour	2.33	2.66	2.75
	Participation	3	3	2.75
	# friendless	0	0	0
	# unsuitable	0	0	0
	Year 3/4/5 split	Split = 4/2/0	Split = 4/2/0	Split = 0/2/6
Combinations tried 1077 Successful combinations 10 Total time taken (sec) 0.64 <small>This software licensed to Demonstration Primary School, 91 days remaining.</small>				

If you purchased the “Extended” version of Class Maker, you will also see the “Show Class E – H” button on the screen. Unsurprisingly, pressing this button will show classes 5 to 8 (if you requested them). They will display on the same screen with updated labels and statistics.

A new feature in Class Maker 2016 is the inclusion of a “Sorting Efficiency” graph. This gives the user some real time feedback on how the sorting process is going. The value shown in the graph is related to the number of Essential and Incompatible students present in the data file. The higher the levels of both types, the lower the sorting efficiency will be and the longer Class Maker will take to find the required number of solutions. You should try to keep the number of Essential and Incompatible students below around 10% and 20% of the total student numbers respectively, especially if your student numbers are above 100. If you have inadvertently linked a student as “Essential” to one student, who is incompatible with a second, who happens to be also essential to the first, the sorting efficiency will show as 0% and after a time Class Maker will alert you to this fact and ask you to check your data file.

If the sorting efficiency is high and Class Maker is still not finding any solutions, it may indicate that there are a large number of students who do not have 4 friends specified. You should try to give every student a choice of 4 friends if possible. You could also try increasing the number of “Friendless” students in the Sort Parameters menu and tweak manually.

Tweaking Class Sets

Class Maker is designed to give you class sets which match your specific criteria, however it also allows you to alter the solutions it finds so you can fine tune your classes. If you find a solution using the up and down arrows which is almost what you want, but you think there may be a better solution, pressing the “Tweak Classes” button will bring up the current class set in a new window shown below. Note that all the students’ names are shown in black (this is a valid class set) and that the statistics are all shown under the class lists for the 2 age composite shown earlier.

	Class A (7)	Class B (7)	Class C (6)
Female %	42.9 %	71.4 %	50.0 %
Numeracy	2.71	3	3
Literacy	3.28	3	2.66
Behaviour	3	2.71	2
Participation	3	3	2.66
# friendless	0	0	0
# unsuitable	0	0	0
Year 3 ratio	42.86%	57.14%	66.67%

This software licensed to Demonstration Primary School, 91 days remaining.

The class lists can be changed using a familiar “Drag and Drop” technique. Simply click on the student you wish to move, drag them across the page, and drop them onto the class you would like to place them in. The class statistics will instantly update, as will the colours of the students’ names. If you placed the student in a class where they no longer have a friend, their name will turn red (friendless student). If you put them in a class where they have an incompatible student pairing, that name will turn blue. If they have both their name will turn pink, and if any student had an “Essential” pairing which is no longer met, their name will turn orange. An example of this is shown below.

Class Maker - Tweak classes			
 CLASS MAKER <small>AN EDUCATIONAL SOFTWARE</small> <div>Save Classes</div> <div>Re-start</div> <div>Print</div> <div>Cancel</div> <div> <p>Friendless student</p> <p>Incompatible student in class</p> <p>Both friendless and incompatible</p> <p>No essential match</p> </div>	Class A (7)	Class B (7)	Class C (6)
	Andrew Aardvark	Francine Frog	Betty Butterfly
	Charlie Camel	Gerald Giraffe	Edward Emu
	Darren Dog	Ivan Iguana	Kris Kangaroo
	Hermione Horse	Jessica Jaguar	Olive Ostrich
	Lisa Lemur	Nancy Numbat	Rebecca Rabbit
	Max Monkey	Peter Pig	Tabitha Tortoise
	Queen Quokka	Samantha Snake	
Female %	42.9 %	57.1 %	66.7 %
Numeracy	3.28	2.71	2.66
Literacy	3.85	3	2
Behaviour	2.71	2.71	2.33
Participation	2.42	3.28	3
# friendless	1	1	2
# unsuitable	1	1	1
Year 3 ratio	28.57%	71.43%	66.67%

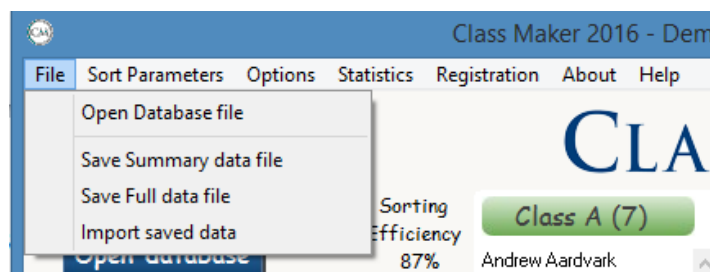
This software licensed to Demonstration Primary School, 91 days remaining.

If you decide you would like to save the new “tweaked” class list, simply press the “Save Lists” button to save the data to file. Alternatively, you might like to print the data out so pressing the “Print” button will print out a low resolution copy of the page for later use. If you decide you’ve made too many changes and it’s too hard to go back manually, the “Re-start” button will let you start again. Pressing “Cancel” will bring you back to main page. **Note that any changes you make here will not change the class lists stored in the main page, so you must remember to save or print any of your tweaked data sets.**

If you have more than 4 classes, the “Tweak Classes” window will expand to show all the classes, so that you can move any student to any class.

Saving Class Sets

While it might be nice to view the class sets in the program, in order to be useful you need to be able to save the data to file. Class Maker offers two options for this purpose, the full sorted class sets with all the data you entered, or a summary file giving just the student names and the averages. Class Maker outputs the class sets in .csv (comma separated variable) format which can be opened in Excel. Use the “File” menu button to bring up the menu items shown below.



Pressing the button for the data type you require (Summary or Full) brings up a box where you can type in the filename and directory for your sorted class sets. After the file is saved, double clicking the file in Explorer will open Excel and the data file. The Summary data file looks like the figure below, where the widths of columns A, B and C have been increased to view the entire student names.

	A	B	C	D	E	F	G	H	I	J	K
1	Summary file for Demo Class list 2 year composite, 10 class sets, 3 classes.										
2	Class Set 1, 0 students with no friends, 0 unsuitable student pairs.										
3	Class A, 57.1 % female, average Numeracy = 3.57, average Literacy = 2.71, average Behaviour = 2.42, average Participation = 3, Missing friends = 0 (),										
4	Class B, 42.9 % female, average Numeracy = 2.14, average Literacy = 3.57, average Behaviour = 2.71, average Participation = 2.71, Missing friends = 0 (),										
5	Class C, 66.7 % female, average Numeracy = 3, average Literacy = 2.66, average Behaviour = 2.66, average Participation = 3, Missing friends = 0 (),										
6	Class A (7)	Class B (7)	Class C (6)								
7	Betty Butterfly	Andrew Aardvark	Darren Dog								
8	Gerald Giraffe	Charlie Camel	Francine Frog								
9	Lisa Lemur	Edward Emu	Hermione Horse								
10	Max Monkey	Ivan Iguana	Kris Kangaroo								
11	Olive Ostrich	Jessica Jaguar	Samantha Snake								
12	Peter Pig	Nancy Numbat	Tabitha Tortoise								
13	Rebecca Rabbit	Queen Quokka									
14											
15	Class Set 2, 0 students with no friends, 0 unsuitable student pairs.										
16	Class A, 57.1 % female, average Numeracy = 3, average Literacy = 3.57, average Behaviour = 2.42, average Participation = 2.71, Missing friends = 0 (),										
17	Class B, 42.9 % female, average Numeracy = 3, average Literacy = 3, average Behaviour = 3, average Participation = 2.71, Missing friends = 0 (),										
18	Class C, 66.7 % female, average Numeracy = 2.66, average Literacy = 2.33, average Behaviour = 2.33, average Participation = 3.33, Missing friends = 0 (),										
19	Class A (7)	Class B (7)	Class C (6)								
20	Andrew Aardvark	Charlie Camel	Betty Butterfly								
21	Gerald Giraffe	Edward Emu	Darren Dog								
22	Lisa Lemur	Francine Frog	Hermione Horse								

- Line 1 gives description of the type of data and the filename used (“Demo Class list 2 year composite”), the number of solutions found (10) and the number of classes in each (3).
- Line 2 shows the class set number (1), and a summary of friendless student numbers.
- Lines 3 to 5 show the averages for each class, which you can use to choose the best set from the options available.
- Lines 6 to 13 show the class lists. You can copy and paste these cells to any other program you like, eg into a table in Word, or keep the data in Excel format.
- Line 14 is a line space used to separate different class sets from each other.
- Line 15 is the same as line 2, only for class set 2. The cycle then repeats for all class sets.

If you would like to see all the data (for example if you want to check the program is actually working correctly or you want to double check the data), you can output the entire data set by pressing the “Save full data file” button. This again outputs the data in .csv format, and looks like this.

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Student ID	Gender	Year Level	Numeracy	Literacy	Behaviour	Participation	Essential Friend	Friend 1	Friend 2	Friend 3	Friend 4	Incompatible 1	Incompatible 2
2	Class Set 1, 0 students with no friends, 0 unsuitable student pairs.													
3	Class A, 57.1 % female, average Numeracy = 3.57, average Literacy = 2.71, average Behaviour = 2.42, average Participation = 3, Missing friends = 0 (), 46.4 % friend ratio													
4	Betty Butterfly	F	3	3	1	1	3		Nancy Numbat	Lisa Lemur	Queen Quokka	Darren Dog	Jessica Jaguar	
5	Gerald Giraffe	M	3	5	5	1	3		Nancy Numbat	Betty Butterfly	Ivan Iguana	Darren Dog	Darren Dog	
6	Lisa Lemur	F	4	5	3	5	1		Nancy Numbat	Jessica Jaguar	Edward Emu	Rebecca Rabbit	Charlie Camel	Hermione Horse
7	Max Monkey	M	4	5	3	3	3		Nancy Numbat	Lisa Lemur	Francine Frog	Peter Pig	Tabitha Tortoise	Ivan Iguana
8	Olive Ostrich	F	3	5	3	3	5		Peter Pig	Francine Frog	Samantha Snake	Samantha Snake		
9	Peter Pig	M	3	1	1	3	5		Ivan Iguana	Francine Frog	Rebecca Rabbit	Gerald Giraffe		
10	Rebecca Rabbit	F	4	1	3	1	1		Lisa Lemur	Olive Ostrich	Francine Frog	Max Monkey	Tabitha Tortoise	
11														
12	Class B, 42.9 % female, average Numeracy = 2.14, average Literacy = 3.57, average Behaviour = 2.71, average Participation = 2.71, Missing friends = 0 (), 53.6 % friend ratio													
13	Andrew Aardvark	M	3	3	5	1	3		Nancy Numbat	Betty Butterfly	Ivan Iguana	Darren Dog		
14	Charlie Camel	M	3	1	3	5	1		Darren Dog	Nancy Numbat	Peter Pig	Betty Butterfly		
15	Edward Emu	M	4	1	3	3	3		Nancy Numbat	Ivan Iguana	Rebecca Rabbit	Queen Quokka		
16	Ivan Iguana	M	3	3	5	1	5		Edward Emu	Lisa Lemur	Charlie Camel	Andrew Aardvark		
17	Jessica Jaguar	F	3	1	3	3	3		Nancy Numbat	Francine Frog	Olive Ostrich	Darren Dog		
18	Nancy Numbat	F	3	3	1	5	3		Charlie Camel	Andrew Aardvark	Francine Frog	Gerald Giraffe		
19	Queen Quokka	F	4	3	5	1	1		Charlie Camel	Andrew Aardvark	Edward Emu	Ivan Iguana		
20														
21	Class C, 66.7 % female, average Numeracy = 3, average Literacy = 2.66, average Behaviour = 2.66, average Participation = 3, Missing friends = 0 (), 33.3 % friend ratio													
22	Darren Dog	M	4	3	5	1	5		Hermione Horse	Tabitha Tortoise	Francine Frog	Jessica Jaguar		
23	Francine Frog	F	4	5	3	3	1		Max Monkey	Lisa Lemur	Peter Pig	Samantha Snake	Andrew Aardvark	
24	Hermione Horse	F	4	3	3	3	3		Betty Butterfly	Andrew Aardvark	Darren Dog	Charlie Camel		
25	Kris Kangaroo	M	3	3	1	5	3		Peter Pig	Betty Butterfly	Darren Dog	Ivan Iguana		
26	Samantha Snake	F	4	1	3	3	3		Jessica Jaguar	Kris Kangaroo	Nancy Numbat	Darren Dog	Ivan Iguana	
27	Tabitha Tortoise	F	3	3	1	1	3		Kris Kangaroo	Betty Butterfly	Lisa Lemur	Edward Emu		
28														
29	Class Set 2, 0 students with no friends, 0 unsuitable student pairs.													

This data file is more difficult to use as class sets, but if you want to see the full data file for checking purposes (or don't trust the program is working correctly 😊), you can use this file format.

Importing Class Sets

Class Maker also allows you to import previously saved Summary and Tweaked data files so you can view the class lists or tweak them a little more. To do this, perform the following steps:

1. Open the student database file (the Excel file, not the saved class set file) as if you were going to make a new class set
2. Press “File/Import Saved Data” from the “File” menu
3. Click and open the saved class data file, this must be in csv format, not an Excel file

You should now be able to tweak the saved class lists as before.

In order to be able to import these data files for re-tweaking, it is important that the files are not changed in any way. Class Maker requires the files be in exactly the format it wrote them in, and if they are edited it will not be able to read them back again. If you do want to save a copy of the Summary or Tweaked data files, please make a copy and save them using a different file name and/or format.

Final thoughts

Hopefully this guide has helped you create your own sorted class lists. If not, or if you have any suggestions, bug fixes or improvements you would like to see, please contact the developers of the program and we'll see if we can help solve your problems. The school we used as a test platform suggested many of the options available in the program, if there is a specific problem you would like to see incorporated in future versions, please let us know.

When there are a large number of students in a class set, Class Maker can take a long time to find a valid solution. To understand why, consider that the total number of unique class sets that can be made by placing 100 students into 4 classes is $\frac{100!}{25!25!25!25!}$, which in numerical terms is 6.71753×10^{55} (or 67,175,312,842,324,100,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000) possible different combinations! (Sorting 150 students into 6 classes gives 5.6975×10^{108} possible combinations). It therefore may be helpful to start the program allowing a few Friendless students and Incompatible pairings to help Class Maker reduce this total number to manageable levels.

If you have found the program useful, please tell your friends and colleagues about your experience!

Thanks.

Andrew
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<http://classmaker1.wix.com/classmaker>