

Magic Mirror

Part 1

How to customise the content

Creating Your Own Magic Mirror Apps

The Magic Mirror software concept:

The Magic Mirror, much like other computer programs, consists of a file (or a document) that can be worked on and saved. Think Microsoft Word for example; a document is created, edited and saved. Later, a new document can be created and saved in the same way.

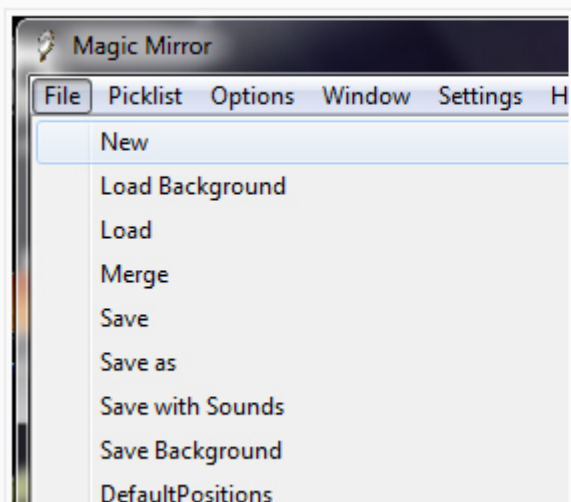
The apps that you see in the Sequencer are simply "layers" within the same document. These "layers" are known as Levels in the Magic Mirror. For example; "Jack In The Box" is on Level 1 while "Stars" is on Level 2. When you click on "Stars" while "Jack In The Box" is open, you are simple switching between Levels 1 and 2.

We are now going to look at creating a new file of our own and adding a second level to it, essentially creating two new apps!

The files in this tutorial are available at the bottom of the page, feel free to work along with them, or use your own in place of them.

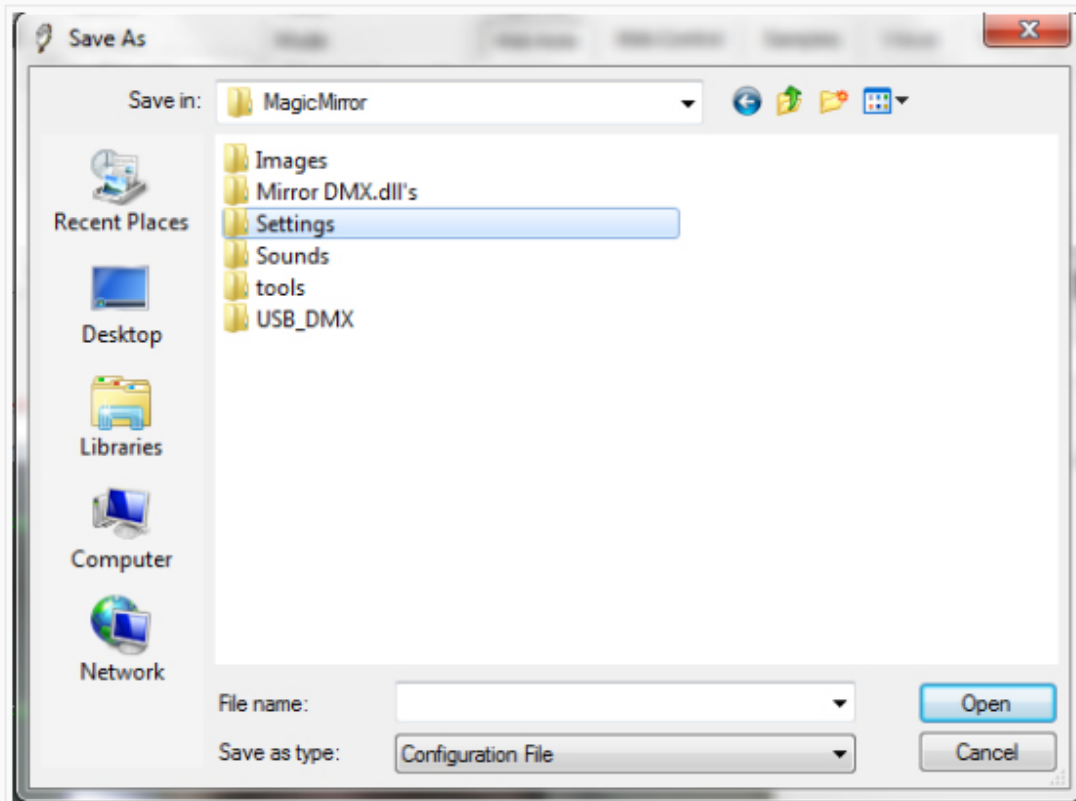
For this tutorial, it is recommended that you start a new file.

Open the Magic Mirror. Click File (from the very top tool bar) and select New.

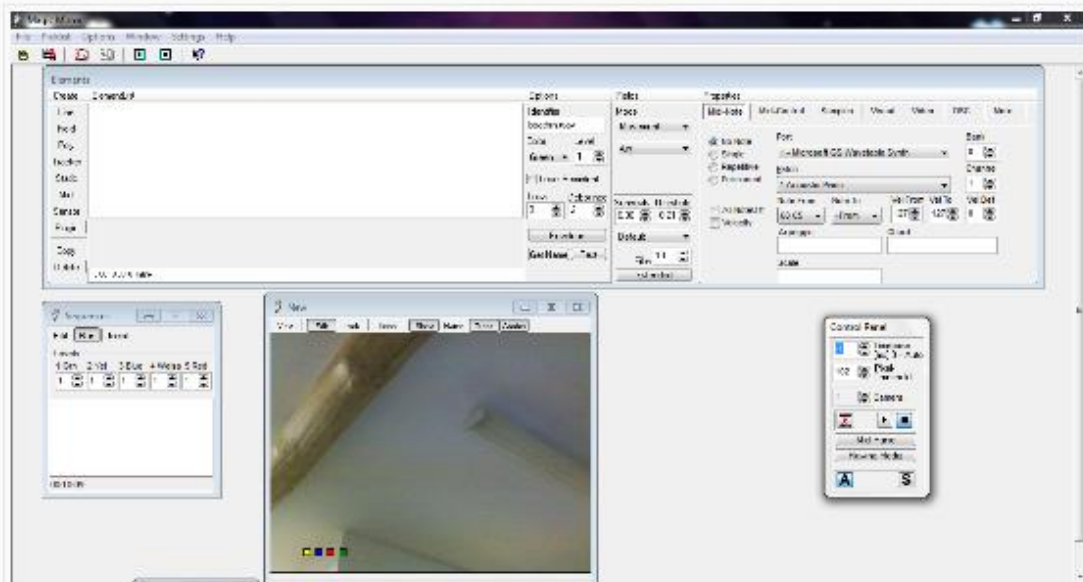


You will now have a fresh file to work with.

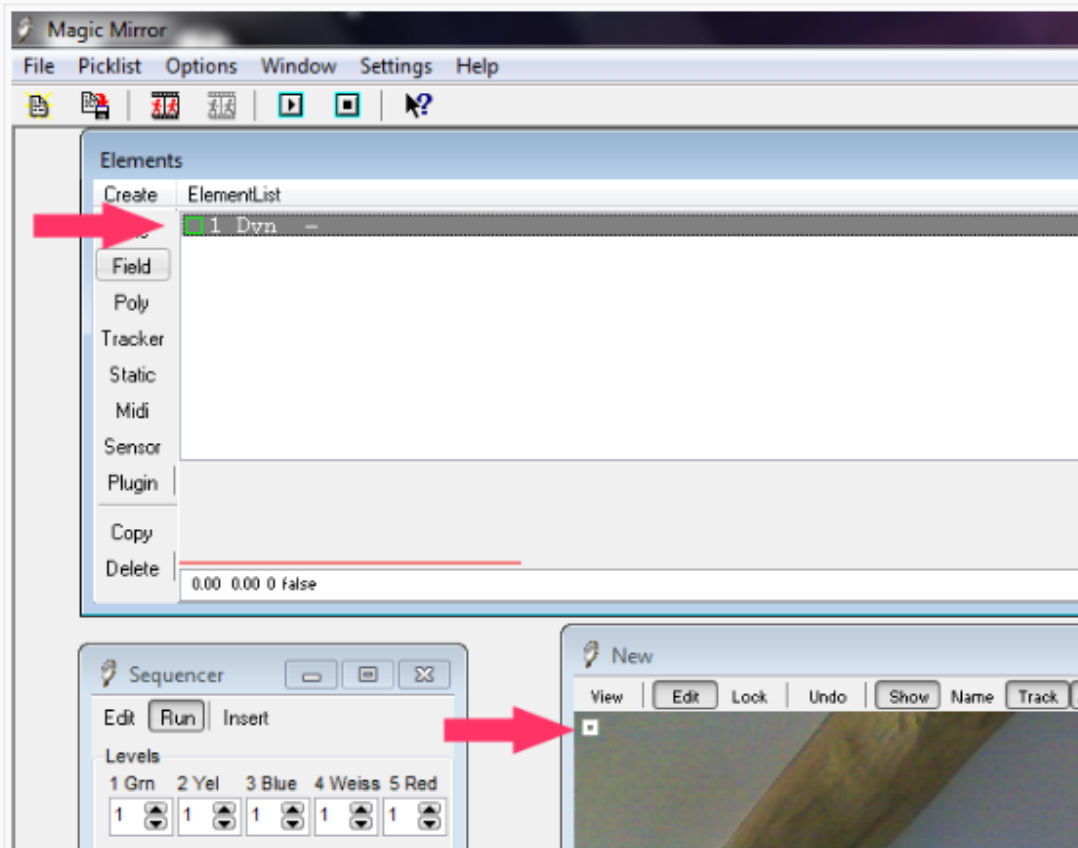
It would be a good idea at this point to save the new file. Click File>Save As. When the Save As browsing window appears, navigate to the Magic Mirror folder (C:\Program Files\Magic Mirror\) and look for the folder named "Settings". Give your file a unique memorable name and click Save.



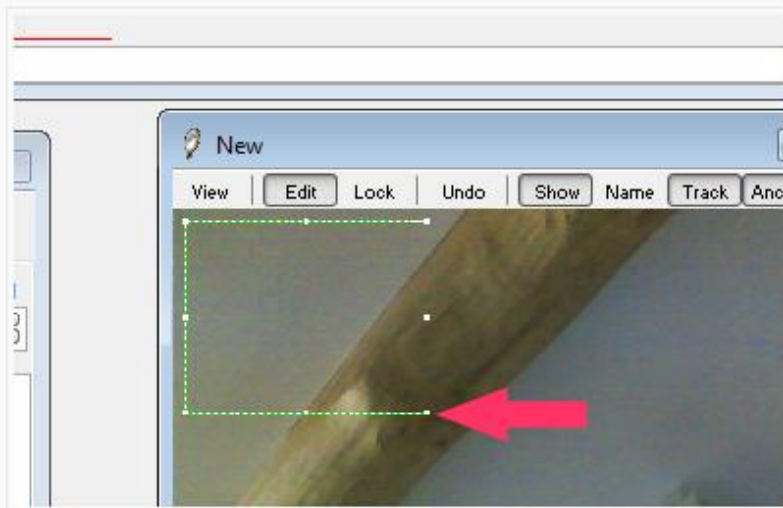
Note: the software, once opened, will load the default file (MagicMirrorMaster.Cfg). To load your own file, click File>Load - or Ctrl+O and navigate to the Settings folder. Open the Settings folder, locate your file and click Open.



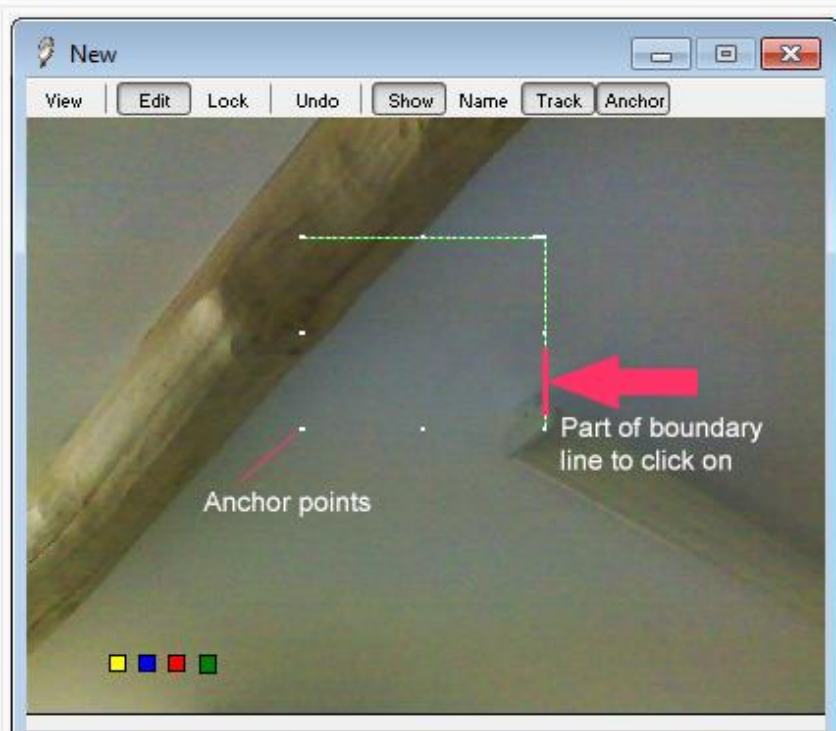
From the Elements panel under the Create column, click "Field". You will notice a small Field Element appear on the Working Monitor and a green square followed by a number (the Level) and the work Dyn (which is short for Dynamic Field Element).



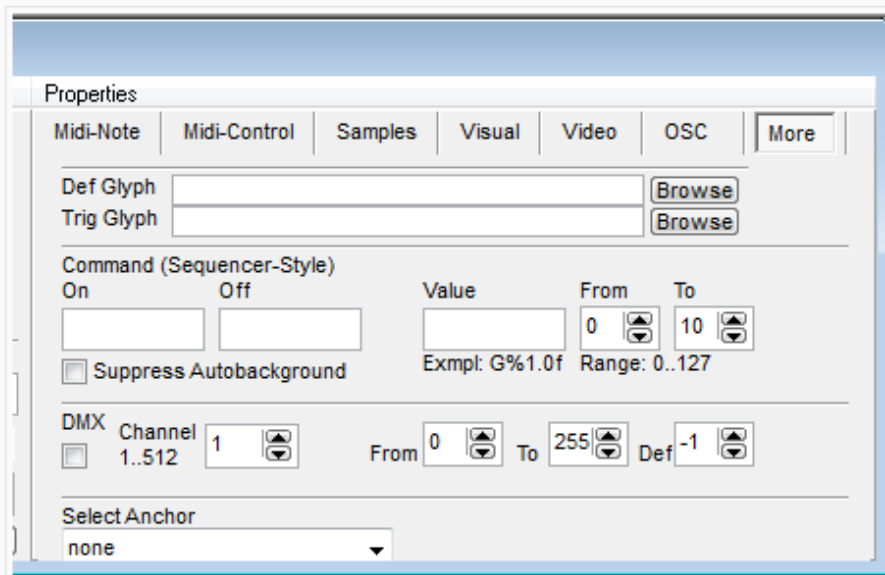
To make the new element easier to work with, click the bottom-right anchor point and drag to make it larger.



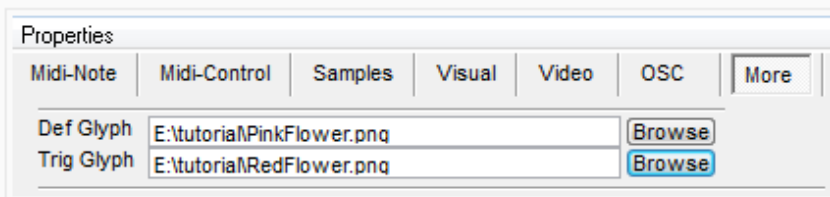
Now move the element. It is a good idea to do this now, as any further elements created will appear in this area so will be overlapped and tricky to get to. Click on a boundary line anywhere between the anchor points and drag to move (like drag and dropping items on your desktop!).



Move up to the Elements panel and click on the More tab (under the Properties column).

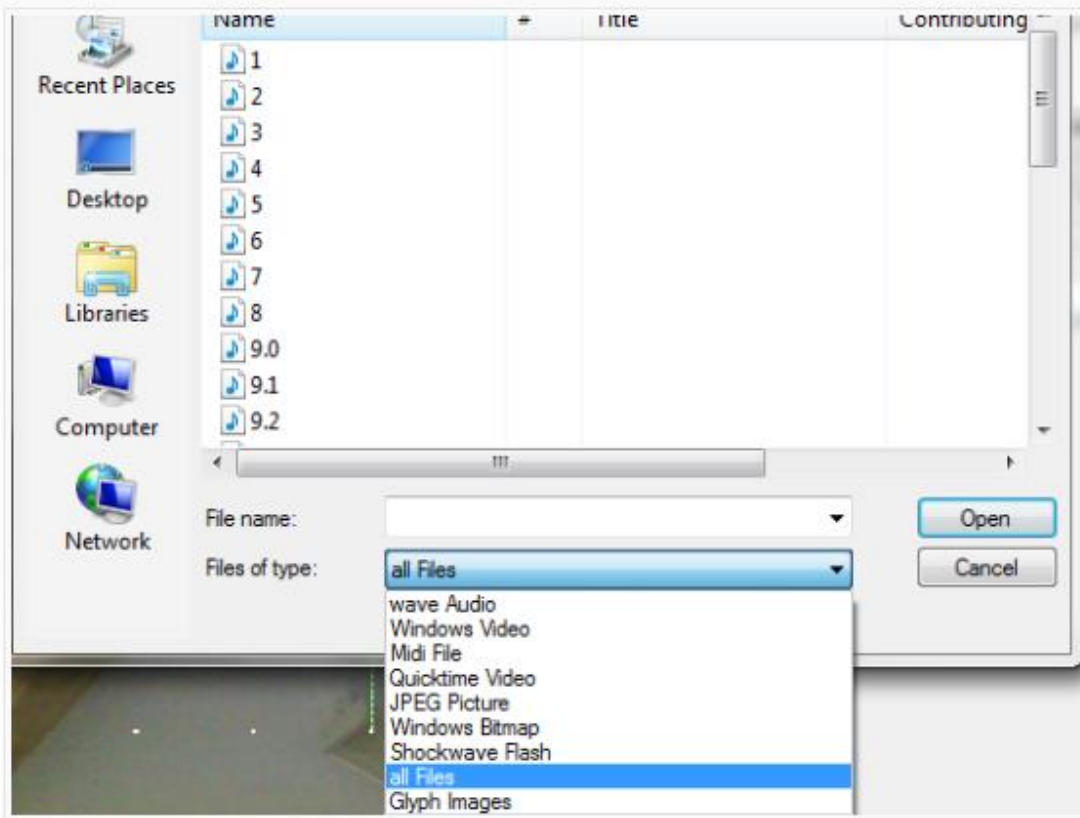


Click the "Def Glyph" Brose button and locate the image you wish to use. In this case, the image "PinkFlower.png". Do the same for "Trig Glyph" but this time, select the image "RedFlower.png". The two options will now show the image files that have been loaded, like this:



Tip!

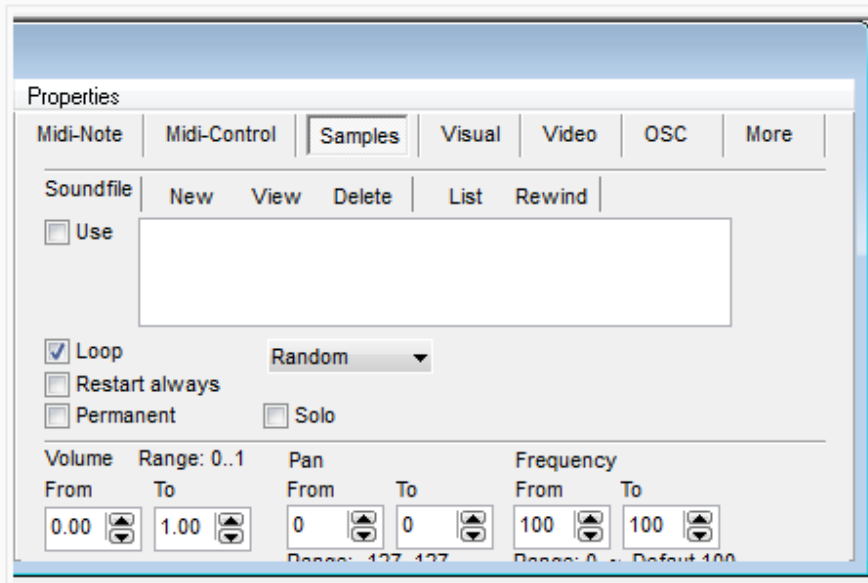
If you don't see any images where you would expect to find them, click on the drop list for "Files of type:" at the bottom of the Browse window and select "all files":



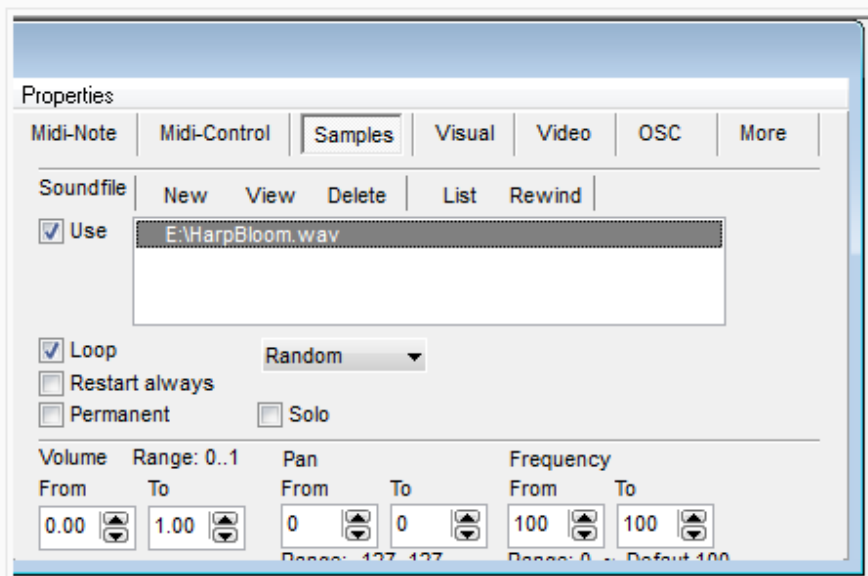
If you wish, you may test your progress by moving down to the Control Panel and pressing the Play button. Move over your element to see it triggered and the second image displayed!



The next step would be to add some sound. Move back up to the Elements panel and click the Samples tab under the Properties column.



Click "New" and locate the file "HarpBloom.wav". Once loaded, the Samples tab will now show the file, like this:



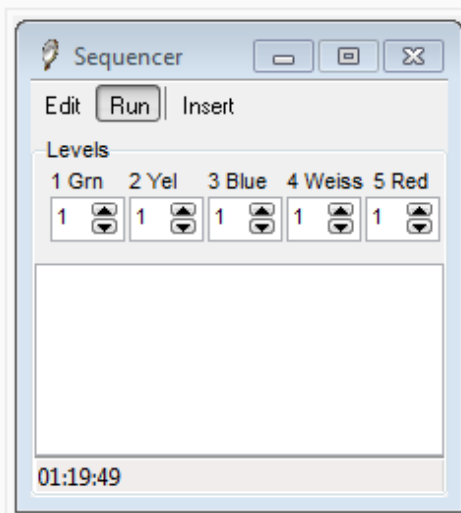
Again, if you do not see the sound file you are looking for, click on the drop list for "Files of type:" at the bottom of the Browse window and select "all files" (as above).

Test your progress once again to hear the sound now accompanies the image change when triggered.

Cast your mind back to the start of this tutorial, in the Elements List that contains information about the element. The number 1 is significant because it is the Level at which the element resides.

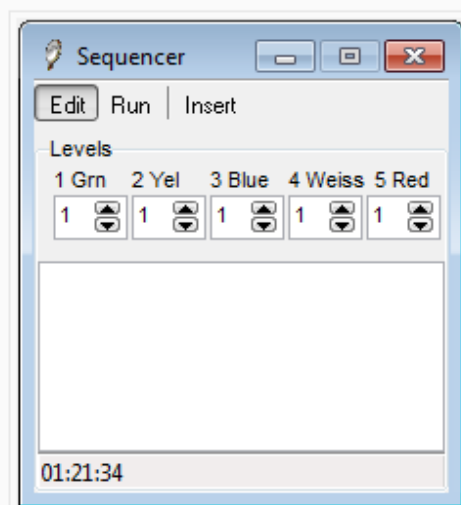
In order to make this work an app in its own right, let's give the app a name!

This is done with a small and simple piece of code typed into the Sequencer:



Notice that "Run" is highted. Also note the large white box below.

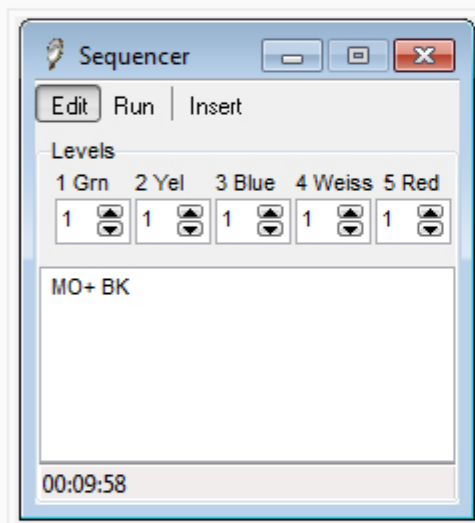
Click "Edit" and you will see that the large white box becomes editable.



In the large white box, we are going to type some words that will signify our element's Level as an "app".

Before we do so however, we will need to type a piece of code that will initiate the process. This is because we are working on a new file for the first time. Once this is entered, it need not be done for this app again, the following code is a two part command to tell the software to produce a secondary monitor ie; the Projected image (the "MO" part) and take a snap shot of the background for optimum use (the "BK" part)

The one-off code to type here is: "MO+ BK"



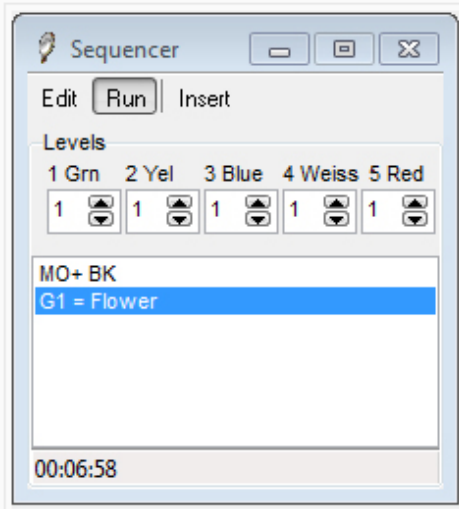
While we still have the Sequencer in edit mode, we may as well type the next part of code. The following code is required for each app you wish to create:

G1 = Name of app

where "G1" refers to the element. In this case G stands for "green" (the default colour given to an element when created. This need not be changed for these purposes)and the number 1 stands for "Level 1". And "Name of app" is your chosen name for the app you wish to create.

We need to type this new code on a new line. So, make sure the Sequencer is in edit mode, click immediately after MO+ BK and press return to enter a new line.

Type "G1 = Flower". Keep the Sequencer in edit mode for now.



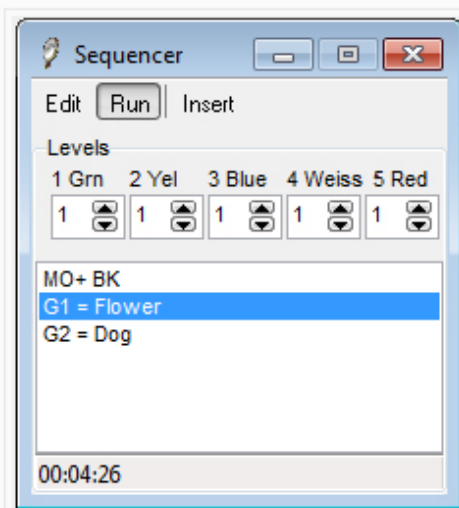
Let's type the code for the next app. Even though we have not yet created any content for it, it is a good idea to get this part done now as when the new app is selected, the next Level will automatically be selected for us to work on!

Again, go to the end of the previous line (in this case to the end of "G1 = Flower") and press return.

Type in the following:

"G2 = Dog"

This creates a new Level for our new app!



Now click Run.

Test your progress by now clicking on the next app. To do so, simply move the mouse cursor over the line that says "G2 = Dog" in the Sequencer and single-click it.

You should notice that the flower of the first app disappears. This is because we are switching to Level 2 (the next app). Let's put some content on it!

With the Dog app selected, create a new Field Element (as above). As before, move to the More tab in the Elements panel. For Default Glyph load the file "Dog1.png". For the Triggered Glyph, load "Dog2.png". Under the Samples tab, load the file "DogBark.wav".

You now have two apps!

Note: If you would like to add to either of your apps, simply select the app you wish to add to (by clicking on its name in the Sequencer) and create new elements as desired. Any new elements created will be created on the same Level hence they will all be a part of that app.

If you want to create a new app, first enter the new app's code as we did for app 2, click Run and with the newly created app selected, go about creating new Elements.

You will need to save any changes you make, if you wish to keep them, each time you close the software.

[PinkFlower.png](#) (30 KB)

[RedFlower.png](#) (30 KB)

[Dog1.png](#) (30 KB)

[Dog2.png](#) (30 KB)

[DogBark.wav](#) (20 KB)

[HarpBloom.wav](#) (200 KB)

Magic Mirror

Part 2

The system

How Do I Turn The System On?

There are a few things you need to familiarize yourself with before you attempt to turn the system on for the first time:

1. PC and Monitor - this will usually be housed in a dedicated server rack or on a shelf close to the projector
2. Projector - mounted on or above the ceiling and controlled by an IR remote control unit
3. Amplifier - powers the speakers

To begin with turn on the main power switch and make sure all equipment is in standby mode. You can tell that the equipment is in standby mode by checking the status of the standby LED's.

Next switch the PC on using the button on the front of the PC. The Monitor will turn on automatically and you will see the Magic Mirror software begin to load.

Note: if the Monitor doesn't come on, turn on using the Monitor's power button.

Note: if the Magic Mirror software does not load automatically, locate the icon on the Desktop and double click to run.

Locate the Projector Remote and turn the projector on. When the projector warms up and shows the image it should display the Magic Mirror's output screen with the first app in the list visible. If you don't see this, but instead see the extended PC Desktop (as standard, this is a Sensory Guru logo), then this is most likely because the software is not running. Locate the icon on the Desktop and double click to run. If you see nothing at all, check the projector input is set to Computer 1. This is the button directly below the ON button of the Projector remote.

The system is ready to use. Simply press Play on the Control Panel to activate.

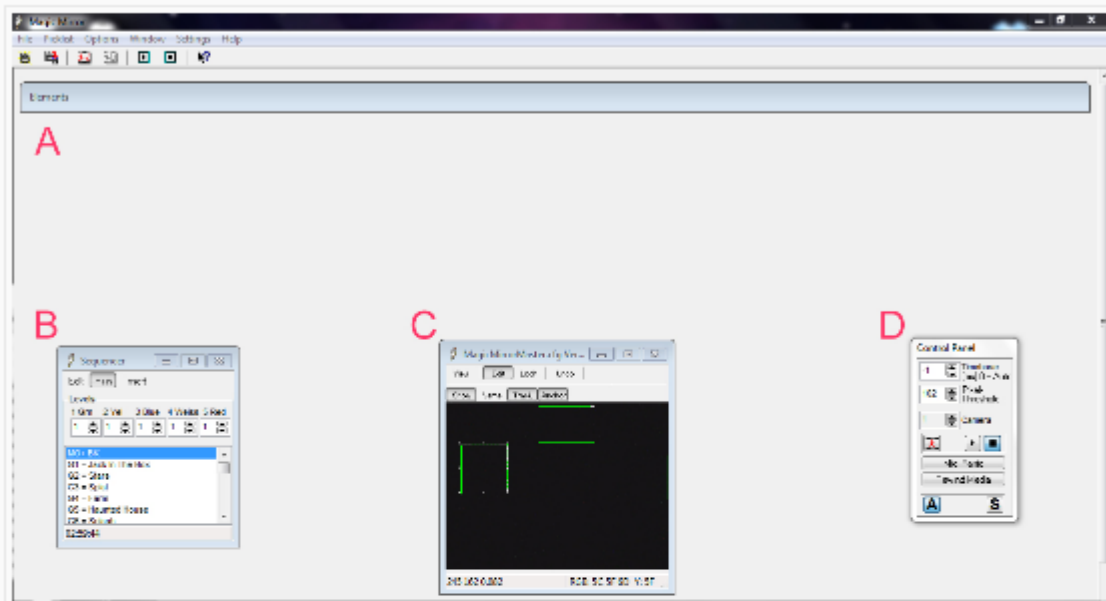
Magic Mirror

Part 3

How to start using the Magic Mirror

How Do I Start Using The Magic Mirror?

Once the system is **powered on**, you may begin to use the apps.



Start by selecting the app you wish to use from the Scheduler (B). To do so simply click on an app name (such as Jack In The Box) with a single-click using the left mouse button. The app is now selected and should appear on your Projection wall.

The next step is to activate the Magic Mirror. This is done by pressing the Play button on the Control Panel (D).

The system is now active and ready for use.

You may now switch between apps by simply clicking on the app name once (as above). The scene will change and be instantly ready for use. Elements may be freely moved around the screen by clicking anywhere on an their green boundary line (between the anchor points [the little white squares])

Tip!

Be careful when moving elements, especially if there is a background image underneath. If you don't quite place the mouse on the boundary line, it may click through to the element below, moving that one instead!

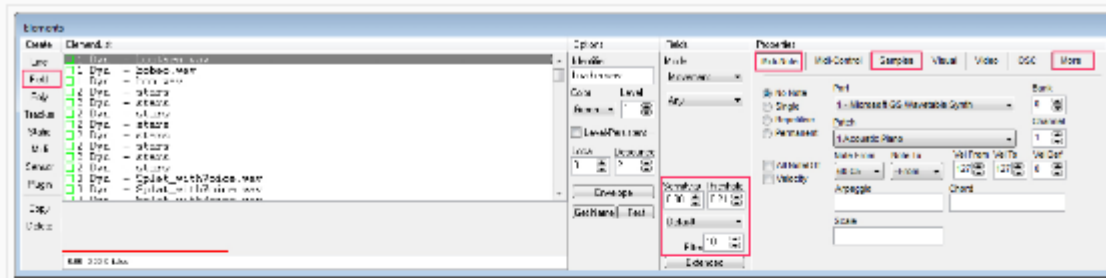
When you are finished using the system, close down the software by clicking the red box with the white cross at the top-right part of the screen (the same way most Windows applications are closed). If you have made any changes, a message will appear asking you if you would like to save them. Click "No" if you do not intend to keep changes or wish the system to be reset back to the default for the next use.

Magic Mirror

Part 4

Software Guide

The Elements Panel



The Elements panel is where you set parameters for new or existing Interactive Elements. Note that this panel is made up of various columns, namely; "Create", "Elements List", "Options", "Fields" and "Properties". The commonly used options from each (highlighted in pink above) are defined as follows;

Line (from the Create column) is a single line shaped Interactive Element. When you click on this button, a small green line will appear at the top left of the Working Monitor. You will notice two white squares at either end of the Line. These are anchor points and can be clicked on to resize and change the angle of the element. A good place to start once created is to click and drag the bottom-right anchor point so that the Line is larger and easier to work with. The Line element works well with a scale of midi notes set - moving along the line from left to right causes the notes to move up in a scale, say C major. Moving from right to left causes them to move down the scale.

Field (from the Create column) is a box shaped Interactive Element. When you click this button, a small green box will appear on the Working Monitor. The newly created element will have a green boundary line and eight white squares at central points around the boundary. These white squares are anchor points. They may be clicked and dragged around to form a new shape or size for the element. If you click carefully on the green boundary line and hold it, you will now be able to drag the element around the screen to where you want it. A good tip for creating Field Elements is to immediately resize it by clicking and dragging the bottom-right anchor point. Drag the point so that the element is now larger and easier to work with. A Field works well with two images (one as a default image that sits there until the element is triggered, and a second that is assigned to appear when triggered) and a sound (to play when triggered).

Activation Dynamics

Sensitivity, Threshold & Filter from the Fields column, applies to Fields. By default the settings are 0.30, 0.21 and 10 respectively. These settings are generally suitable for most environments. However, if you are finding an Interactive Element to be unresponsive or too sensitive, try adjusting the settings to suit.

Sensitivity and threshold work together to set a Field Element's overall sensitivity;

Sensitivity

Sensitivity relates to movement. The higher the sensitivity value the more easily the element will detect movement. For example; the sensitivity is set high, the element detects even the slightest of movement from a wiggling finger.

Threshold

Threshold relates to a value at which the element will trigger. Even though the element is set to a high sensitivity level and is detecting the movement from the wiggling finger, the element has not yet triggered. It will not trigger until the finger movement becomes more prominent and breaks through the threshold value. In this case, it is necessary to either reduce the threshold level, or increase physical movement to trigger the element.

Filter

The Filter option determines how quickly the Field Element resets after being triggered. For example; if increased in value, the triggered event will play for longer.

If the value is very low or set to zero, the element will reset itself almost instantly after being triggered. If the Filter is set in this way, you may experience a 'bouncing' trigger event. This is where the element is triggered, resets very fast and triggers instantly producing a bouncing effect. To reduce this effect you may set the Debounce value a little higher (the Debounce setting is to the left under the Options column). A value of around 2 will reduce this unwanted effect sufficiently for most situations. Unless of course, that's the effect you are looking for!

The Properties column

This is where elements get their image and sound settings assigned.

The Midi-Note tab

The screenshot shows the 'Properties' dialog box with the 'Midi-Note' tab selected. The 'Single' radio button is selected. The 'Patch' dropdown is set to '1 Acoustic Piano'. The 'Note From' dropdown is set to '60 C5' and the 'Note To' dropdown is set to '72 C6'. The 'Vel From' and 'Vel To' spinners are both set to 127. The 'Bank' spinner is set to 0 and the 'Channel' spinner is set to 1. The 'All NoteOff' and 'Velocity' checkboxes are unchecked.

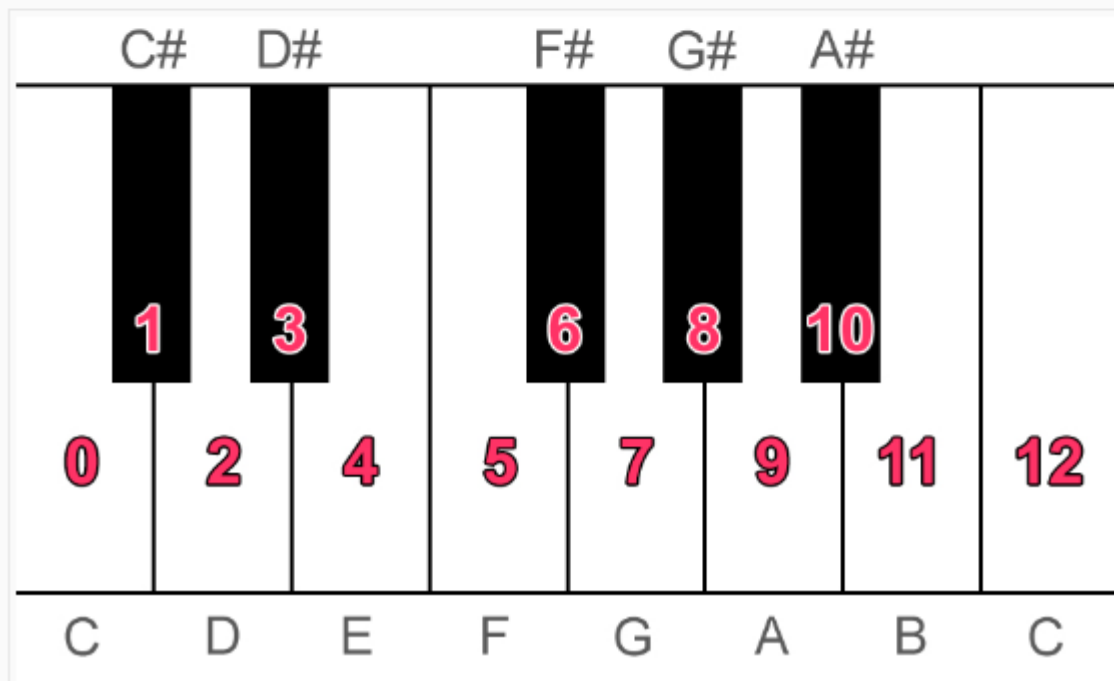
The Midi-Note tab allows you to set Midi sounds to elements. Here is a good example of how to use Midi-Note settings;

Create a Line Element (as above). With the Line Element selected, go to the Properties column and select Midi-Note.

Click on "Single" (directly underneath Midi-Note. This will produce a single note/sound when the element is triggered). Now, where it says Patch (to the right) select a musical instrument from the drop down list. Underneath, where it says "Note From" select the note you wish to start from, in this case C5. Now select the note you wish to to end with, we have selected C6 here. This means that all notes between the note C5 and C6 will be played (C, D, E, F, G, A, B and C - an octave above) as you physically move along the Line Element!

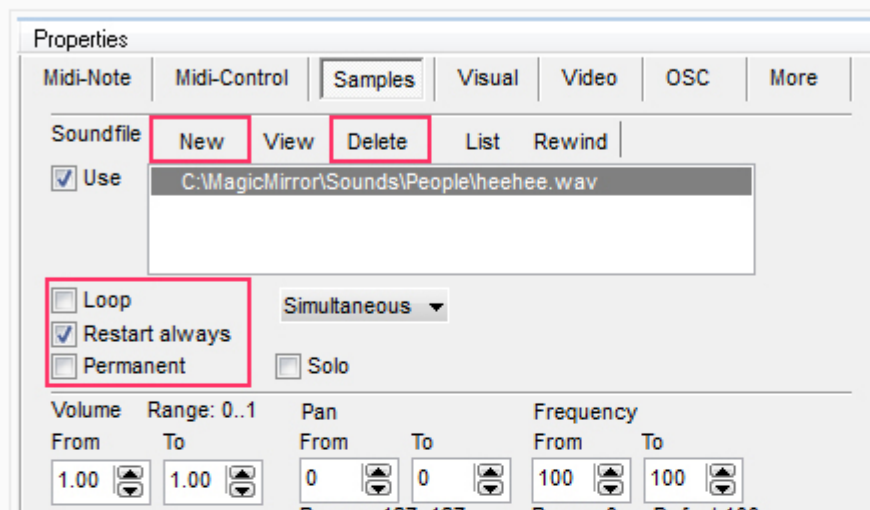
As a further feature, underneath where it says "Scale", you can pick out certain notes that you wish to be played when the element is triggered. The notes must be entered in number form, so it is necessary to know what the number values are for each note where the first note is 0.

Here is an example of the relationship between the actual notes and their respective number values:



If you enter the following into the Arpeggio box; "0,2,4,6" - only the notes C E G and B will be played when the element is triggered. Further still, if you were to enter "0,0,7,7,9,9,7" you would have the first bar of Twinkle Twinkle Little Star!

The Samples tab



The Samples tab allows sound files (samples) to be assigned to elements.

A good use of the Samples option is as follows:

Create a Field Element (as above). With the new element selected, click on the Samples tab. Click "New". This will bring up a browse window where you can navigate to a sound file you wish to use. Once you have selected the file, it will appear in the list below.

The next step is to give the sound event a setting. There are three options here; Loop, Restart Always and Permanent:

Loop will cause the sound to pause when triggering stops. The next time the element is triggered, the sound will pick up where it left off.

Restart Always will restart the sound each time the element is triggered, even if triggering stops half way through the sound.

Permanent will play the sound to the end, much like a switch. Once triggered, the sound will be played through to the end regardless of whether triggering stops or not.

Rather than just one sound file, you may have multiple sounds loaded - they will appear in list form. The idea here is that you have a different sound each time the element is triggered.

The More tab

The screenshot shows the 'Properties' dialog box with the 'More' tab selected. The 'Def Glyph' field is set to 'C:\MagicMirror\Images\box\box.png' and the 'Trig Glyph' field is set to 'C:\MagicMirror\Images\box\box_chinchilla.png'. Both fields have 'Browse' buttons next to them. Below these are sections for 'Command (Sequencer-Style)' and 'DMX' settings.

On	Off	Value	From	To
<input type="text"/>	<input type="text"/>	<input type="text"/>	0	10

Suppress Autobackground Exmpl: G%1.0f Range: 0..127

DMX Channel 1.512 1 From 0 To 255 Def -1

Select Anchor
none

The More tab allows up to two images to be assigned to an element. This concept works best with Fields, for example.

Create a new Field Element (as above). Click the More tab. Notice the two available spaces for images underneath; Def Glyph and Trig Glyph which in turn, mean "Default Image" and "Triggered Image". The Default being the image that is shown when the element is not triggered/inactive. And Triggered being the image that appears when the element is triggered. They may be any images of your choice.

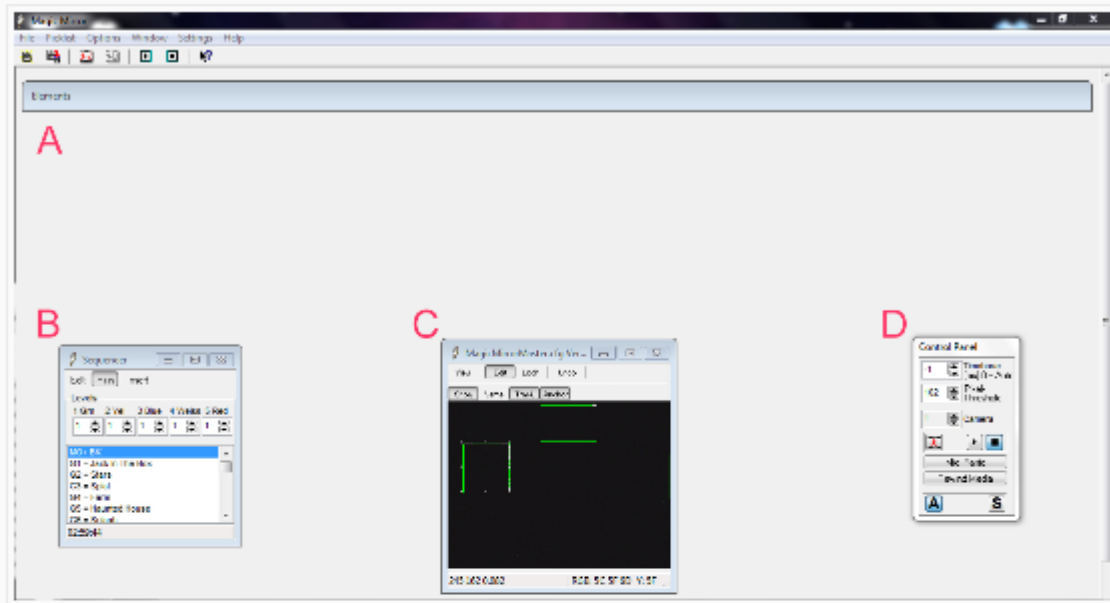
Click "Browse" on the first image option. Navigate to an image you wish to use and select it. It will now appear in the white space next to Def Glyph. Click on the next Browse option and do the same, but this time with a different image.

Test your image by moving across the element. You will see the picture change as it is triggered.

You may also set a sound to this same element by following the previous two sound option methods.

If you do not want the image to change when triggered, then set the same image to both Def and Trig Glyph options.

Graphical User Interface (GUI)



By default, the software will show a simplified interface. There are four main panels that you will need to familiarise yourself with;

A: The Elements panel. By default this is closed, as it is not required for general use of the apps. For editing content however, it will need to be opened (by hovering the mouse over the bottom edge anywhere along its length - until a double ended arrow appears. Click, hold and drag the arrow downwards to expand the panel).

B: The Sequencer. This is a kind of playlist of apps contained within the Magic Mirror. In order to select one, simply move the mouse cursor over an app name and left-click on it once. This will change what is seen on the Projection.

C: The Working Monitor. This shows the Magic Mirror from a facilitator's point of view. You can see what the camera is seeing and the overlaid Interactive Elements (green boxes) in outline form. Here you can move and resize the Interactive Elements around the screen as required (click on the boundary line, away from the anchor points, hold and drag to move. To reshape or resize, click on any anchor point (little white squares that are spaced evenly around the boundary line), click, hold and drag to a new shape/size).

D: The Control Panel. This is like the on and off button. To begin using an app, click on the Play button. This makes the system active and Interactive Elements are now live. When you press the Stop button, the system becomes inactive.

Magic Mirror

Part 5

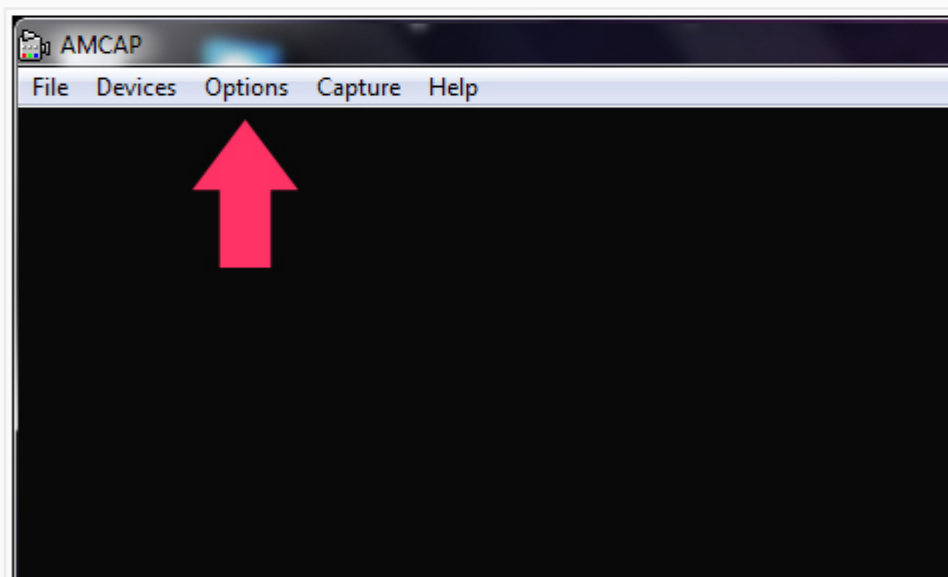
Troubleshooting

Debugging The Camera (Using Amcap)

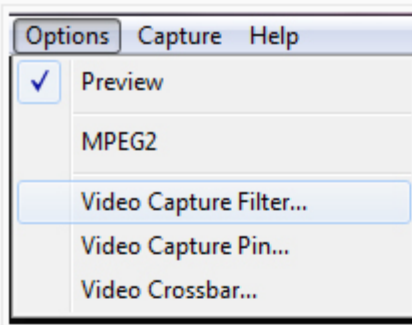
Amcap is a program we use to configure a camera connected via composite connection. For example; the cameras used by the Magic Carpet or Magic Mirror systems. Amcap can be opened by double clicking the Desktop shortcut icon if one has been created. If there is no shortcut icon, you can find Amcap here: C:\Program Files\Magic Mirror\tools\

Once open you will be presented with the main interface. Note, that if the camera is plugged in and set up correctly, you will see the camera image. If not, then there will be either a complete black or white image instead.

Locate the "Options" menu at the top:

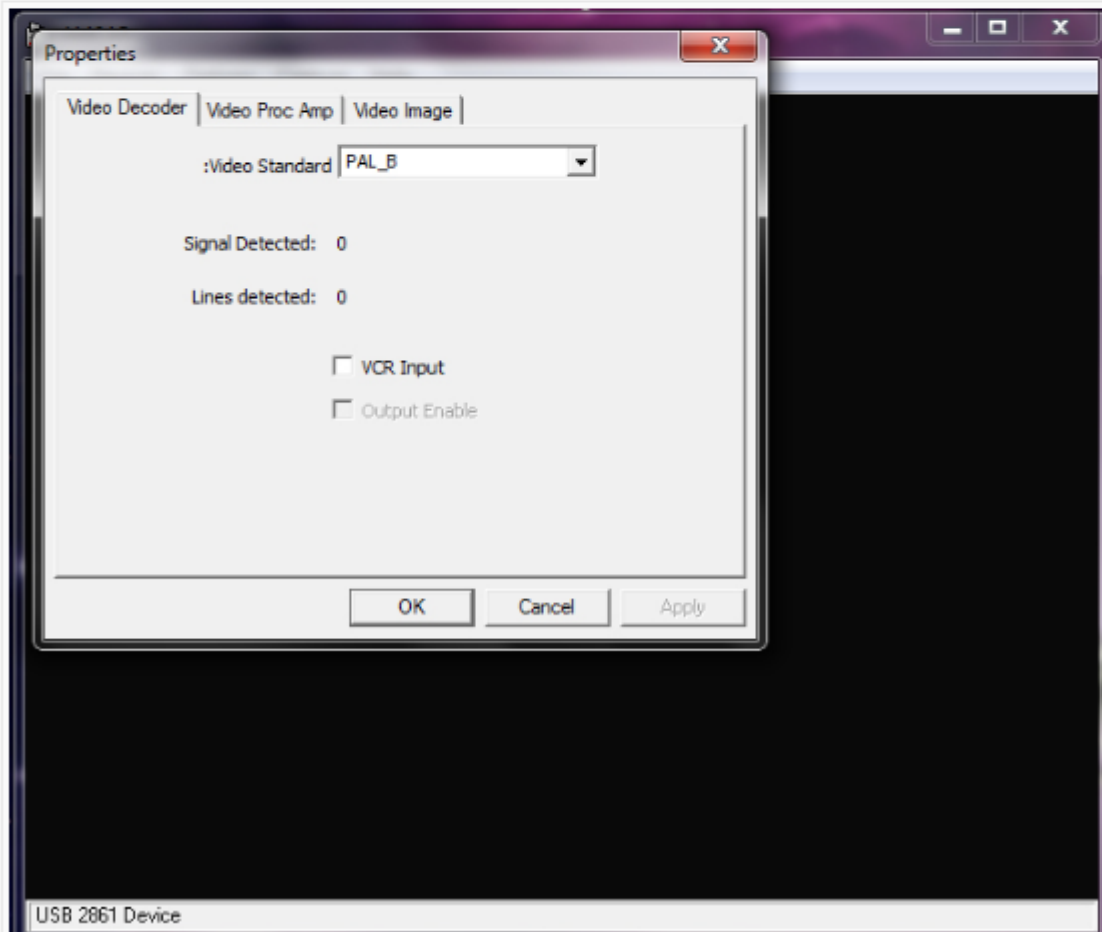


The Options menu contains some further options: "Video Capture Filter", Video Capture Pin" and depending on what version of the software you are running, you may have "Video Crossbar":

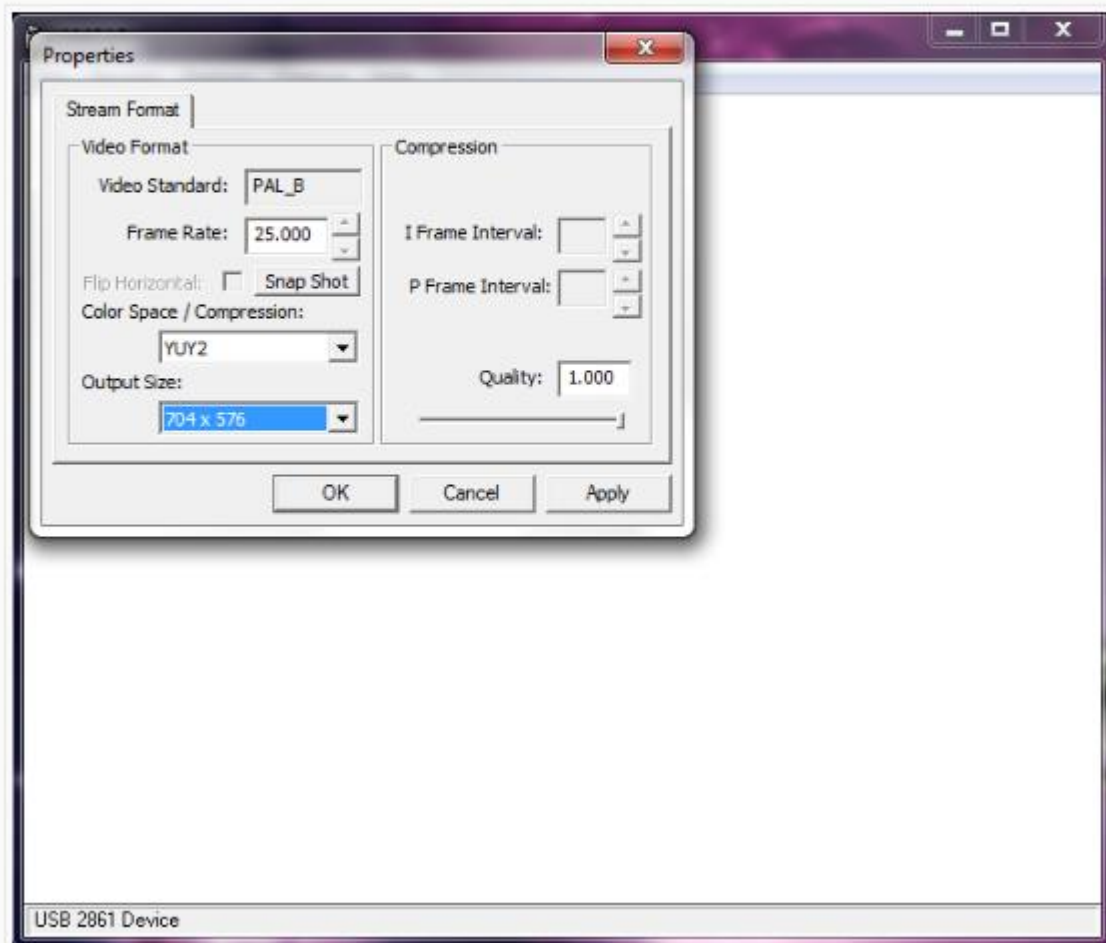


Let's go through the correct settings.

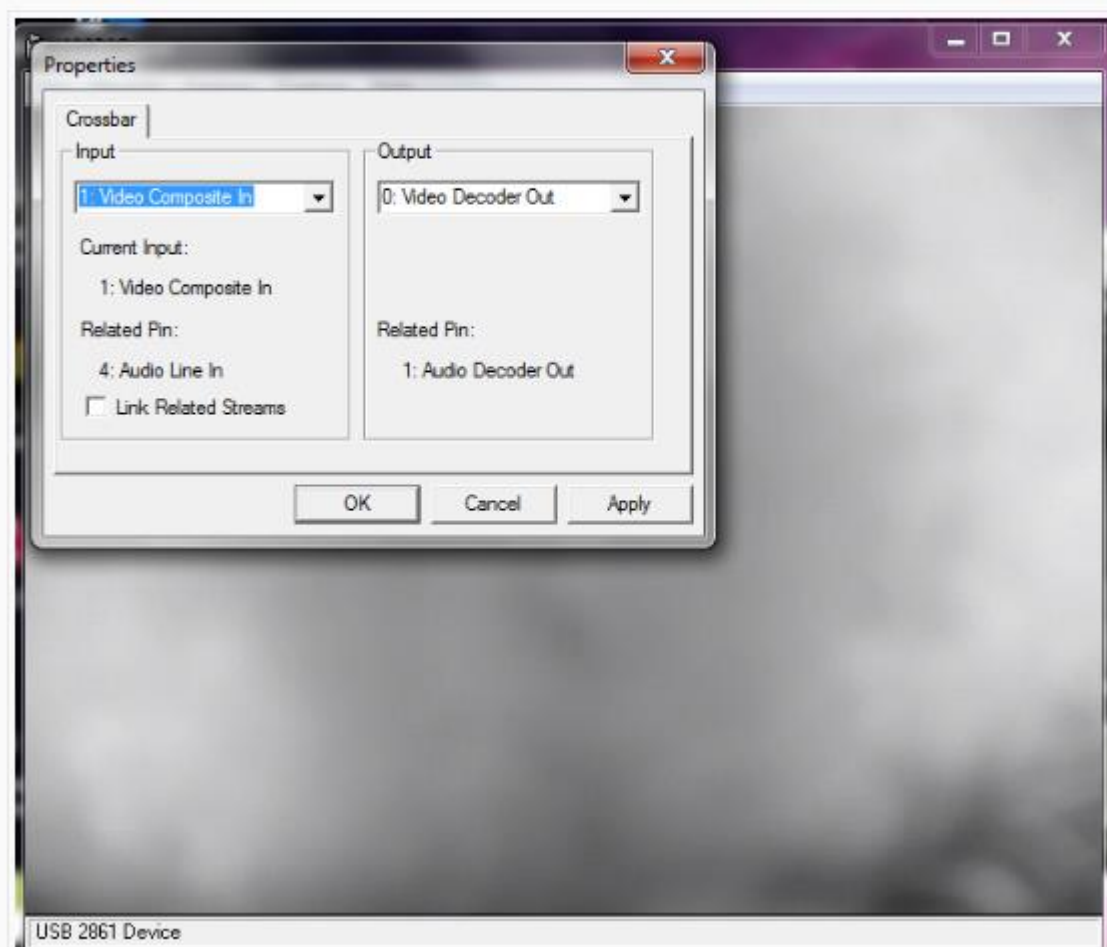
From the Options menu, select "Video Capture Filter". Look at the Video Decoder tab and make sure the Video Standard option is set to "PAL_B". Click "Apply" and then "Ok" to exit.



Next, select "Video Capture Pin". Video Standard should automatically be set to "PAL_B" having just set that in the capture filter panel. Set the Frame Rate to "25.000" and Make sure the Output Size is set to "704 x 576". Click "Apply" and then "OK" to exit.



Finally, (if your version shows it) select "Video Crossbar". In the first section, Input, select "1: Video Composite In". Click "Apply" and then "OK" to exit.



If your camera is correctly connected and powered, with these settings, you should now see an image in Amcap.

Close Amcap.

Note: Make sure Amcap is correctly configured and CLOSED before starting the Magic Mirror software. There will be a conflict and subsequent error message if trying to run the Magic Mirror and Amcap together.

System Not Responding To Interaction Or Intermittent Interaction

Make sure you have pressed Play on the Control Panel to ensure the Magic Mirror is active.

If you are finding your Interactive Field Element to be unresponsive or too sensitive, try adjusting the settings to suit. This may occur in very low/very high ambient light situations or where the environment allows for direct sunlight or concentrated light in certain areas around the room. For example; one of your elements is sitting right over a bright window.

Sensitivity, Threshold and Filter settings (Elements panel > Fields column)

Sensitivity and threshold work together to set a Field Element's overall sensitivity;

Sensitivity relates to movement. The higher the sensitivity value the more easily the element will detect movement. For example; the sensitivity is set high, the element detects even the slightest of movement from a wiggling finger.

Threshold relates to a value at which the element will trigger. Even though the element is set to a high sensitivity level and is detecting the movement from the wiggling finger, the element has not yet triggered. It will not trigger until the finger movement becomes more prominent and breaks through the threshold value. In this case, it is necessary to either reduce the threshold level, or increase physical movement to trigger the element.

The Filter option determines how quickly the Field Element resets after being triggered. For example; if increased in value, the triggered event will linger for longer.

If the value is very low or set to zero, the element will reset itself almost instantly after being triggered. If the Filter is set in this way, you may experience a 'bouncing' trigger event. This is where the element is triggered, resets very fast and triggers instantly producing a bouncing effect. To reduce this effect you may set the Debounce value a little higher (the Debounce setting is to the left under the Options column). A value of around 2 will reduce this unwanted effect sufficiently for most situations. Unless of course, that's the effect you are looking for!

Why Isn't There Any Sound?

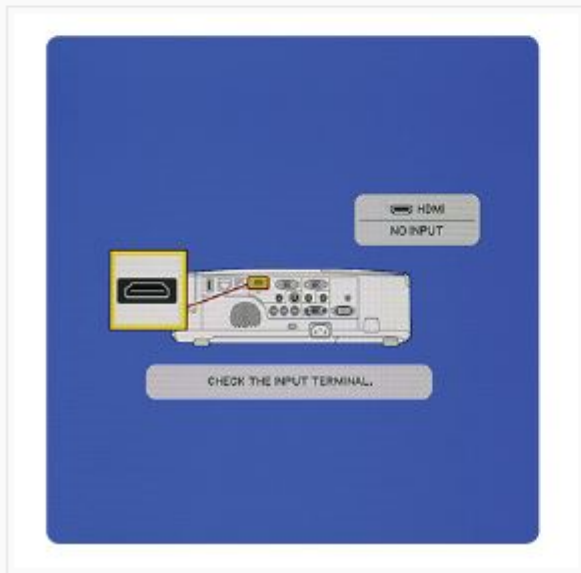
Before proceeding with troubleshooting sound, make sure the PC has not been muted. Also make sure you have pressed Play on the Control Panel to ensure the Magic Mirror is active. Navigate to the bottom right of the Desktop screen and locate the speaker icon (within the toolbar). Click it to reveal the volume slider. Adjust as required.

If you have a fixed installation, your system will be connected to either an amplifier or an existing sound system. Locate the amplifier. If it is a Nuvo amplifier (small white unit), make sure it is on by slowly turning the volume knob to the right. (turned fully left will turn the amp off).

If you have a black Cambridge Audio amplifier, make sure the volume knob is turned up sufficiently (but not too high!). Make sure the source selector is set to the correct source. This is usually 'CD' or 'MP3' depending on your setup. If either of the do not work, try slowly selecting each source until the sound comes on. If your system is connected to your own sound setup, check that you have it set correctly.

Why Can't I See A Computer Image Displayed Through The Projector?

This is a very common issue people experience when operating projectors, which can usually be rectified very quickly. Most projectors have multiple input sources to make it possible to connect more than one PC or video device. If you have turned on both the PC & Projector, and the Projector displays an image like the one below (image varies depending on the make and model, but all have a version of this) it is likely that a different image source has been selected.



Solving this issue is usually as simple as selecting the correct source from the remote control. All Magic Mirror systems will be set to display on Computer 1 or Computer 2.



Very occasionally the issue may have a different cause. If someone has accessed the rear of the PC or needed to access the ceiling near the Projector, it is possible that the VGA Cable has been disconnected from the PC or the Projector. Please see articles relating to Magic Carpet component list for more info.

USB Video Capture Device

The USB Video Capture Device enables the analogue video signal from the camera to communicate with our Magic Mirror software. It is plugged into a USB port at the back of the PC and has several wires attached to the back of it. The only wire we are concerned with is the video signal wire (which is usually yellow). This should have the video signal from the camera plugged into it.

A USB Video Capture device:



The connection between capture device and the camera's output (note that the plugs are not always yellow, some may be black):



Power To The Camera - 12V 1A 2.1mm DC Plug

Camera's supplied with Magic Carpet systems are powered by 12V Power Supply's. If you are experiencing problems with connectivity or the system appears to be unresponsive to user interaction, check that the LED array on the camera is glowing red as shown below. If not, then it is likely that the Camera is either unplugged or turned off. Rule this out first before following the next series of steps!

When you are sure that the Power Supply is turned on and all connections are good we need to determine whether the issue is with the Power Supply or the Camera:

- Locate an alternative 12V PSU 1A 2.1mm DC Plug and connect to the system - if your system is under warranty or you have taken out our [Package PRO Service Level Agreement](#) we will send you a replacement - contact us.

