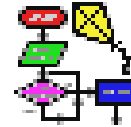


Flowol Mimic Creator Tutorial



DO93
(Issue 2)

Tutorial: Anthony & Rod Bowker (K.I.T.E.) and Data Harvest
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Produced by: Keep I.T. Easy
P.O. Box 29
Nuneaton
Warwickshire
CV11 4TT

Tel: 024 76329959

E-mail: rod@flowol.com

World Wide Web: <http://www.flowol.com>

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Making a Mimic with the Flowol 'Mimic Creator'

Step 1:

Take a digital photograph, scanned picture or a computer-generated drawing.



Step 2:

Use graphics software e.g. Paint Shop Pro, to add or select any active features.



Step 3:

Save both the main picture and the bitmaps of the active images in the Flowol Mimic folder.

Step 4:

Use the 'Mimic Creator' to position and overlay these bitmaps and to define their function.

Installing the program

Close any open programs

Note for Windows NT, 2000, XP users: This program should be installed with Administrator privileges on the system.

New Flowol2 users: You must install the Flowol2 program before installing the Mimic Creator example bitmaps.

- Insert the Flowol Creator CD ROM into the CD Drive.
- Install **Mimic Creator** by using the **Setup.exe** in the root directory of the CD Rom.
- Follow the on-screen instructions to complete the installation of the Mimic Creator onto the hard disc.
- Open the **Examples** directory in the root directory of the CD Rom. Install the example bitmaps by using **Setup.exe**.
- When installation is complete, eject the CD ROM and store safely.

Automatic installation

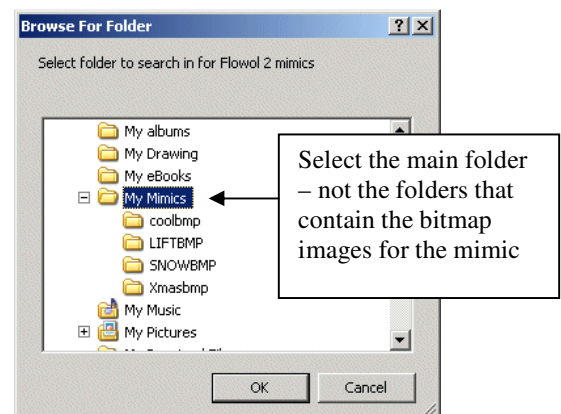
This CD contains an .msi installer for both the Mimic Creator (root directory) and the Example Bitmaps (in the examples directory). The .msi files can be assigned to workstations as a package. Check the documentation with your installation tool for information on deploying an .msi file.

The Mimic folder

Flowol 2 and the Mimic Creator locate the mimic folder by using information in the Flowol2.ini file, which is installed to the Windows folder of your computer when the Flowol.exe is run (see the Flowol 2 Tutorial network installation instructions for altering this information).

Note: The default location for the Mimic folder for Flowol3 is C:\Program Files\Keep I.T. Easy\Flowol 3\Mimics. For Flowol2, V2.90 or higher is C:\Program Files\Keep I.T. Easy\Flowol 2\Mimics, for V2.81 or lower is C:\DHG\Flowol 2\Mimics.

The path that Mimic Creator uses to locate the mimic folder can be altered on a per application instance basis (for this session only) by using the **Set Mimics Directory option from the File menu**. Use the browse button to search for and select another directory. Click on the directory that contains the bitmap folders so it highlights and select OK. The list of available mimics will then change to this new directory. Closing and restarting Mimic Creator or using the default button in the Set Mimics Directory will reset the path to the directory set in the Flowol2.ini file.

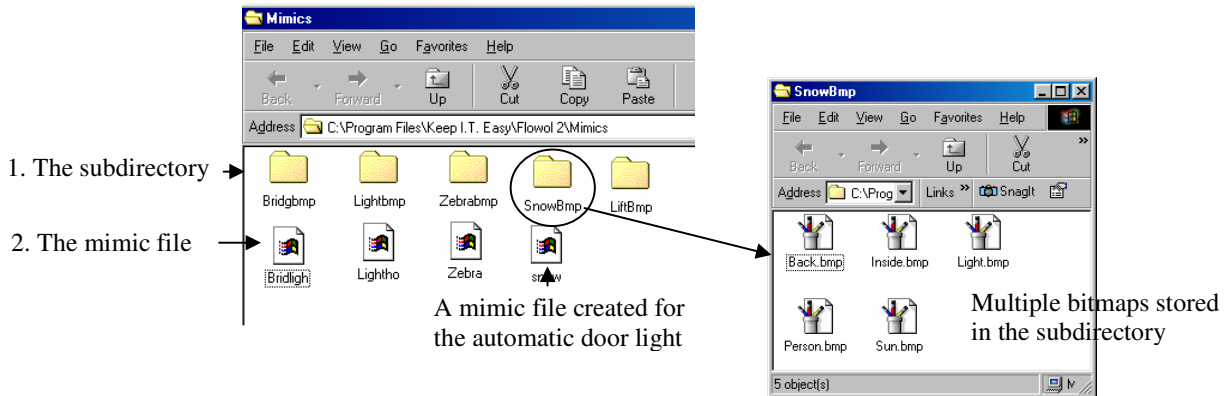


Tutorial for the Flowol Mimic Creator

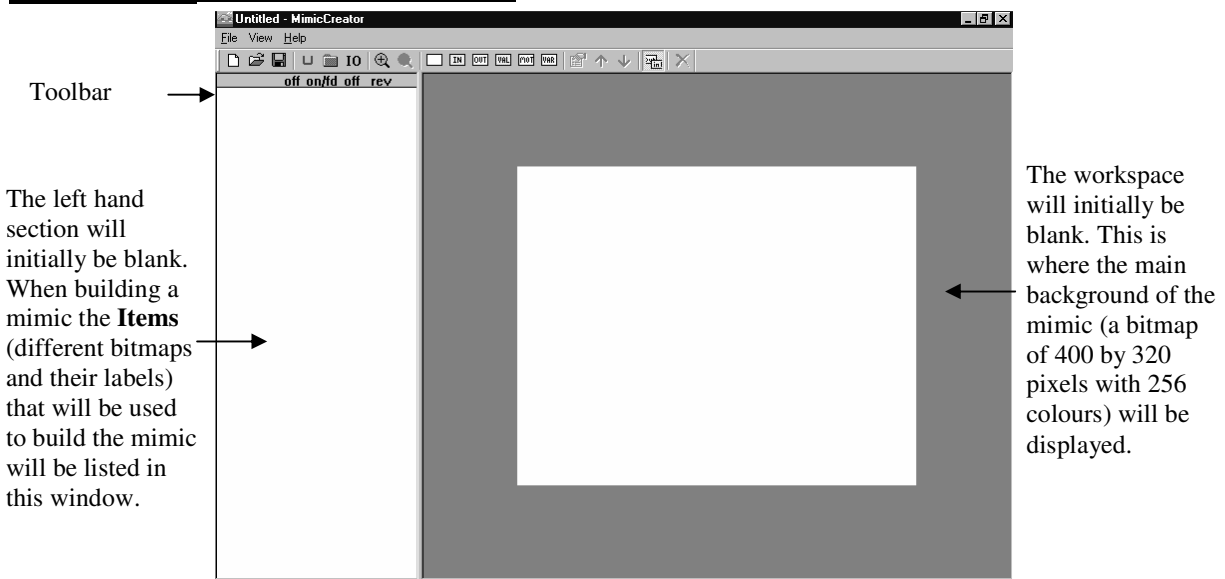
Flowol 'Mimics' are controllable pictures that make it possible for pupils/students to model their control solutions on the computer screen. A mimic is created by overlaying bitmaps which can be turned on or off in response to the changes of inputs and outputs. The 'Mimic Creator' allows these bitmaps to be positioned, labelled and their function defined so that Flowol can control them appropriately.

A Windows mimic consists of:

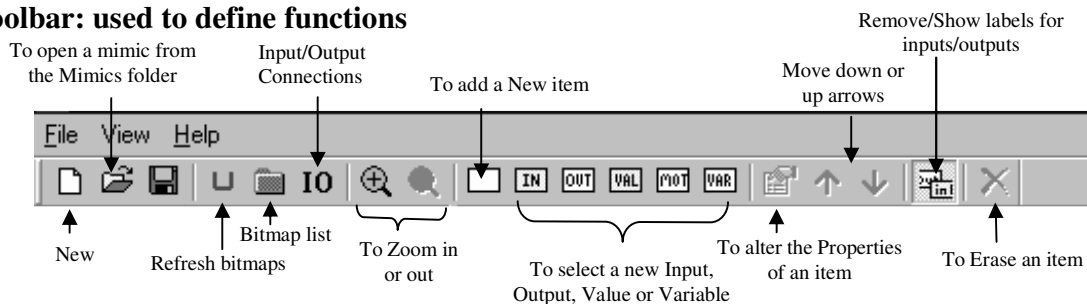
1. A subdirectory which contains multiple bitmap files for that mimic and
2. A mimic file which you create using the Mimic Creator program



The Mimic Creator Window



Toolbar: used to define functions



Creating mimics using the example bitmaps

Some example bitmaps will be installed to the Mimic folder in the Flowol2 program when the SetupEx.exe in the Examples directory is used. These examples include the 'Snowbmp' folder of bitmaps that are used in the following section.

The Automatic Door Light

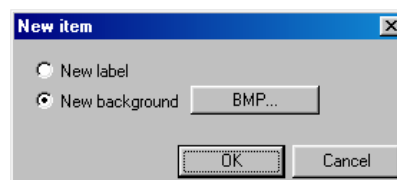
In this situation the outside door light on a house should only come on when it is dark and if there is a person close by. The lights inside the house could also come on automatically when it is dark.

STAGE 1: Selecting the background image.

- Open the Mimic Creator program and select **New Item** from the toolbar.



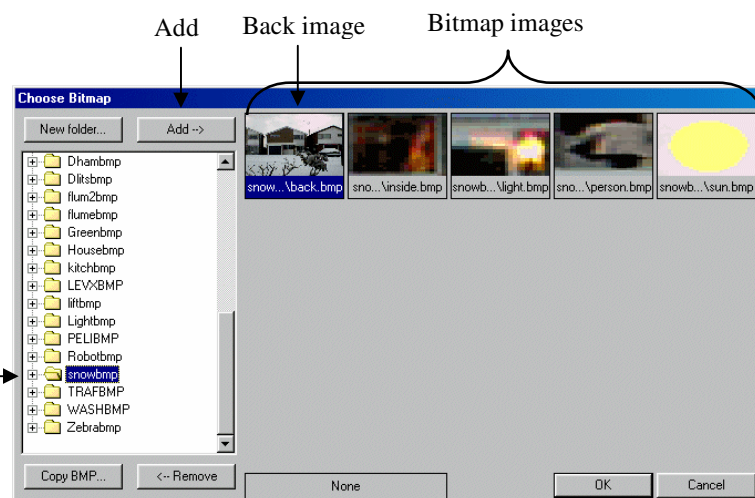
- Select **New background** and click on the **BMP...** button to open the bitmap window.



- A list of all the bitmap folders will be displayed. Click on the 'snowbmp' folder (so it is highlighted) and then the **Add** button to display the 5 bitmap images that have been created for this mimic.

- Choose the 'back' image and click OK.

- The New Item window will open, click on OK to select this bitmap as the background image.

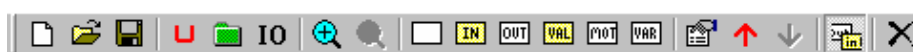


STAGE 2: Defining the Inputs and Outputs

There are four bitmap images that will be used on this mimic to indicate that an input or output is on. They are:

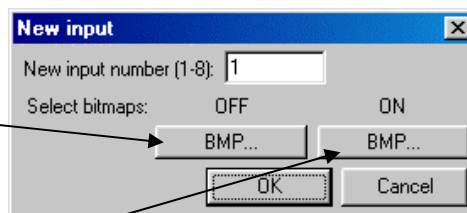
- Sun.bmp** – image of the sun to be used as Input 1 on,
- Person.bmp** – picture of a person at the door to be used as Input 2 on,
- Light.bmp** – picture of the outside door light to be used as Output1 on,
- Inside.bmp** – picture of the hall with its lights switched on as Output 2 on

Inputs



- Select **IN** from the toolbar.

In this example, when an input is switched off there is no change to the background image so keep the OFF option at 'BMP'.



- When the input is on, the mimic will alter to display a different image. To select this image, click on the **BMP...** button below ON
The 'Bitmap' window will open; select the bitmap that will be used when input 1 is on [click on the picture of the 'sun' so it is highlighted]. Click on OK in the 'Choose Bitmap' window and then OK in the 'New input' window. Position this 'Item' and its label before choosing the next input (for information on positioning 'Items', see Stage 3).
- Select IN again from the toolbar, the input number will automatically change to 2. Use the same method to select the image that will be used for input 2 ['person.bmp'].

Note: The number of an input or output can be altered by deleting the default number and typing in a different input or output number

Outputs.

The output bitmaps are chosen in a similar way. Choose **OUT** from the toolbar to open the 'New output' window. Select 'light.bmp' for when output 1 is on and 'inside.bmp' for when output 2 is on.

STAGE 3: Positioning the 'Items' on the mimic

The 'Item' list is a series of buttons on the left side of the main mimic window.

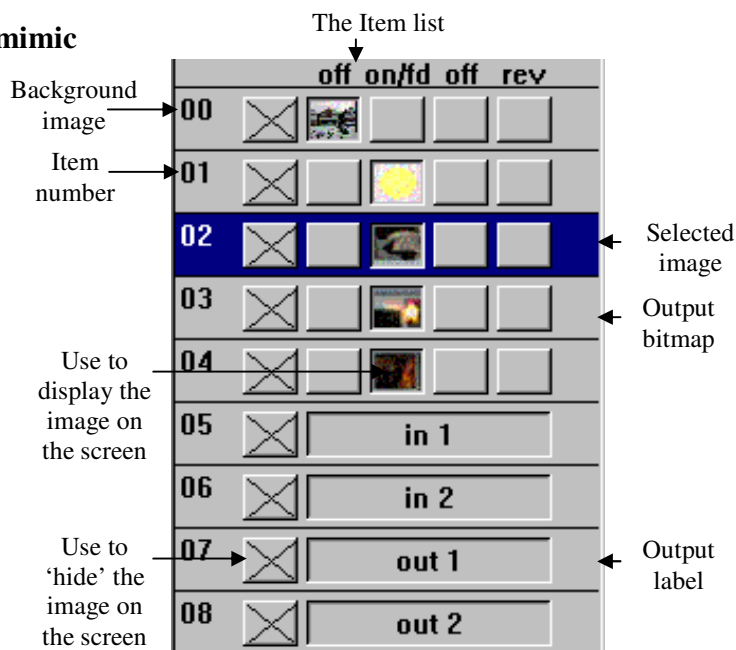
Each time a new input or output is chosen, the bitmap and its appropriate input or output label is added to the end of the list of items. This new image also appears in the top left-hand corner of the mimic background. It will be highlighted blue on the Item list to indicate that it is selected.

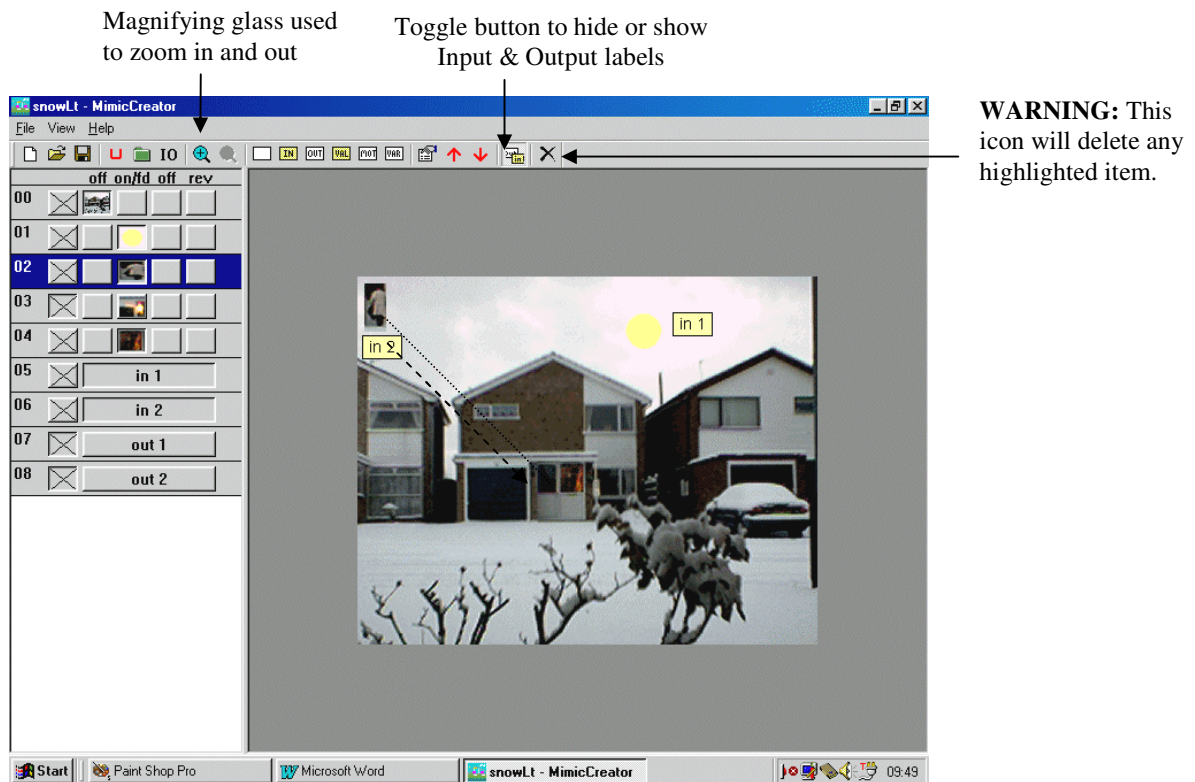
Notes:

The move up or down arrows on the toolbar can be used to move items in the list. Item '00' is the background and must stay at the top of the list.

When an image is displayed on the screen its button will appear depressed.

The 'X' button can be used to hide the image on the screen.





Use the mouse to drag the image (e.g. the picture of the person) from the top corner to its correct position on the background. Use the arrow keys on the computers keyboard for fine adjustments.

Notes: To help in the final positioning use the magnifying glass icon on toolbar to minimize and maximize the picture. The image can be hidden using the 'X' button on the Items list and then shown again by clicking on the picture in the Items list.

Click on the input/output label in the top corner to select (it will turn blue on the Items list). Click on it a second time and then drag into position.

Note: An image or label can be selected by clicking on it in the Items list or by clicking on it in the main picture. Click on it a second time to move to a new position.

This positioning process should be repeated for each new input and output after they have been defined as in the previous section.

Save the completed image as a Mimic file [File menu, Save As] with a filename of 8 characters or less.

Notes: Do not use the same filename as the bitmap. To open the Mimic in the Flowol 2 program both the bitmap folder (snowbmp, containing the pictures used in this mimic) and the Mimic file you have just created must be stored in the same folder.

Flowol 2.93 or higher users can use the Set Mimic Directory option in the File menu in Flowol to altered the path for the Mimic folder on a per application instance (for this session only) basis.


Creating the Lift mimic

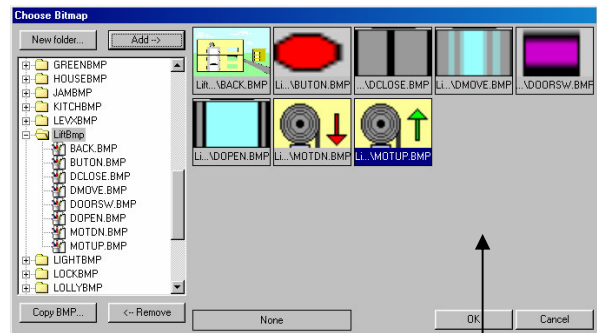
A motor can have four states; off, forward, off (after moving forward) and reverse. In the lift example, motors are used to open and close the doors at each floor and to move the lift up and down (the hoist). Several images need to be superimposed on the mimic to represent these actions.

For each set of the lift doors, three bitmaps are used over the background: closed door ['off'], moving door ['forw.'], open door ['off'] and moving door again for ['rev.'].
 For the hoist motor, two bitmaps are used over the background: moving door up ['forw.'], moving door down ['rev.'].
 The hoist motor has the 'off' image – this is part of the background (which is the same for both off conditions) and two other bitmaps, one for the up ['forw.'] and another for down ['rev.'].
 The folder of bitmaps for the lift mimic 'liftbmp' will have been installed to the Mimic folder when the SetupEx.exe in the Examples directory was used.


The hoist motor has the 'off' image – this is part of the background (which is the same for both off conditions) and two other bitmaps, one for the up ['forw.'] and another for down ['rev.'].
 The folder of bitmaps for the lift mimic 'liftbmp' will have been installed to the Mimic folder when the SetupEx.exe in the Examples directory was used.

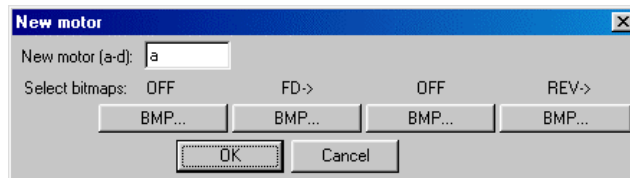
The folder of bitmaps for the lift mimic 'liftbmp' will have been installed to the Mimic folder when the SetupEx.exe in the Examples directory was used.

- Open the Mimic Creator.
- Click on the **New item** icon on the toolbar .
- Select New Background and click on 'BMP...' to open the bitmap window.
- Select the 'LIFTBMP' folder, click on the **Add** button for the images to load to the bitmap window. Select the background image, OK and then OK in the New Item window.

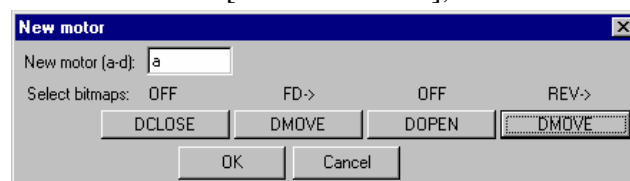


Bitmap Window

- Click on the **Motor** icon on the toolbar  to open the New motor window.



- Select the bitmap to be used when the motor is switched off by clicking on the **BMP...** button below OFF. The bitmap window will open; select the image of the closed-door [D CLOSE.BMP]. Click on OK to return to the New motor window.
- Select the bitmap to be used when the motor is moving forward by clicking on the **BMP...** button below FD. Select the image of the moving-door [D MOVE.BMP], OK.
- Click on the **BMP...** button below the next OFF. Select the image of the open-door [D OPEN.BMP], OK.
- Finally, click on the **BMP...** below REV and select the image of the moving-door to be used when the motor is reversed [D MOVE.BMP], OK.

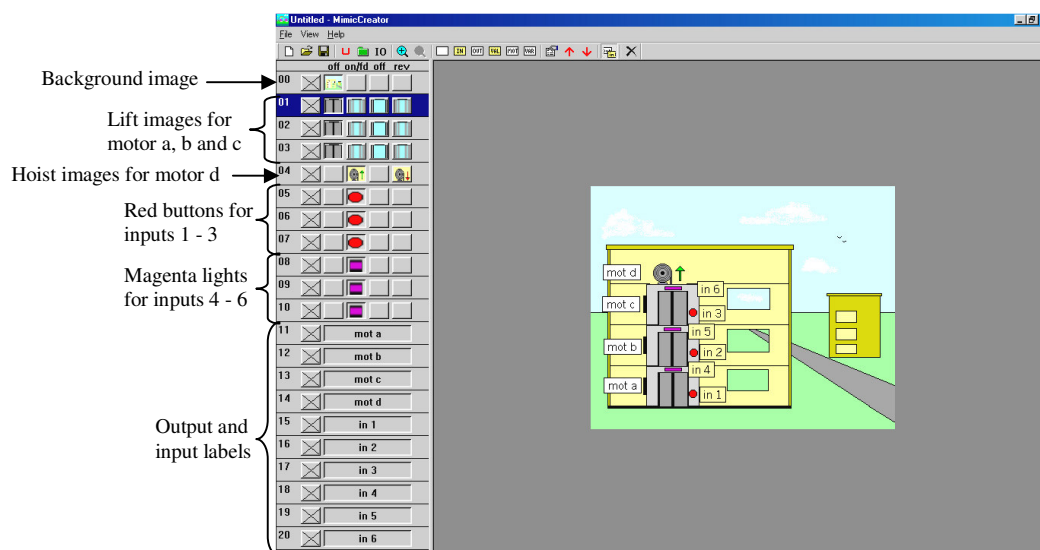


- Click on OK in the 'New motor' window to enter these images in the 'Items' list.
- The four images of the lift door [01] will be highlighted in the 'Items' list (blue). Drag the image that appears in the top left corner of the mimic background to the lower floor position.
- Click on the **mot a** label (it will highlight in the 'Items' list). Click on the label again and move to a position near the doors on the mimic.

Note: To view how the door image will alter on the mimic, click on each images in the Items list (i.e. move, open, move, close etc.).

- Repeat this procedure for motors 'b' and 'c' for the doors on the next two floors using the same bitmaps as Motor 'a' for the door opening procedure.
- For the hoist motor 'mot d' select only the images for the FD [MOTUP.bmp] and REV [MOTDN.bmp image] since the OFF imagine is already on the background.
- Select 'New inputs' **IN** from the toolbar and position the three push 'call' buttons using the red button image [buton.bmp] when inputs 1 – 3 are on and the three floor location buttons using the magenta square [doorrsw.bmp] for when inputs 4 – 6 are on.
- Save your new mimic file using 'Save As' from the File menu as 'lift'.

The red call buttons can be made to go off automatically when the doors close. [See the Setting the Connections on page 11].




Defining Values and Variables

[Not used in the examples].

Analogue values: Readings from analogue sensors e.g. temperature or light, can be displayed on the mimics. Select the VAL icon from the toolbar. **VAL**
 Select either display full or display 1 less decimal place. If 'display full decimal place' is selected then the value will be displayed to one decimal point e.g. 26.5°C. If 'display 1 less

decimal place' is selected then the value will be rounded up to a whole number e.g. 26°C. Click OK. Position the label and display on the mimic.

Variables: Can be displayed e.g. number of cars in a car park. Select the VAR icon from the toolbar.  Type in the letter of the variable to be displayed. Click OK and position the label and display in the usual way.


Overlapping Items

If the bitmaps on a mimic overlap, the one lowest in the Items list will be on the top-most layer on the mimic. An Item can be moved up and down the Items list using the red arrows on the toolbar.

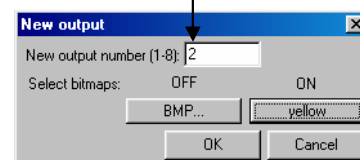


Using more than one bitmap for an Input/Output

To enable more than one bitmap to appear on the mimic for the same output or input e.g. to make two bitmaps of car headlights change when one output is selected, when selecting the second bitmap for the output/input, edit the 'New output/input number' so it is the same as the first output/input number.

Select the unwanted output/input number label and use the delete icon to delete it from the workspace. 

Edit the output or input number



Setting the Connections between the Items and the Inputs & Outputs etc.

The next stage of the development of the mimic is to set any further connections, if needed, between the items listed in the Item window and the inputs and/or outputs used. With the created Mimic file open, select the IO icon from the Toolbar to show the connections already made.

Input/Output Connections



Using the Lift Mimic: The additional connections that need to be incorporated into the Lift mimic are to set the connections between the motor outputs and the push button switches on the lift, e.g. to make the push button switches go off automatically when the lift doors close. Select the Motor tab and type in to the last column the **input** numbers of the push button switches on the lift (not the item number). The push button switches will then appear as off when the doors close (motors reverse).

The values that appear in the first column show the 'Item number' which responds to the motors A – D. e.g. Motor A is Item 01, Motor B is Item 02, etc.

Item number

Input number

Type in the number of the **Input** to be switched off (not the Item number)

In the first column enter any inputs to be switched off when the motors go forward.

In the second column enter any inputs to be switched off when the motors go in reverse.

Items to display	Inputs to switch off	
	forwards	reverse
A 01	1	1
B 03	2	2
C 02	3	3
D 04	4	4

It may be useful to open existing mimics to examine how other connections have been made. Select Open from the File menu or use the icon. Select the mimic from the list that appears. [The list will reflect the currently selected mimic directory – see page 4].

Example 1 - Using your traffic lights mimic file (**bridligh** or **CrossWk**). Select the **IO** icon from the toolbar. Select the **Output Tab**.

Output Number

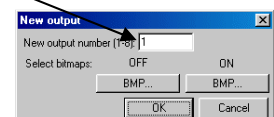
Items to display	Outputs
1 05	1
2 06	2
3 07	3
4 04	4
5 05	5
6 06	6
7 07	7
8 04	8

The item numbers in the first two columns respond to the two bitmaps used for each output. e.g. for Out 1, the item numbers are for the two green light bitmaps.

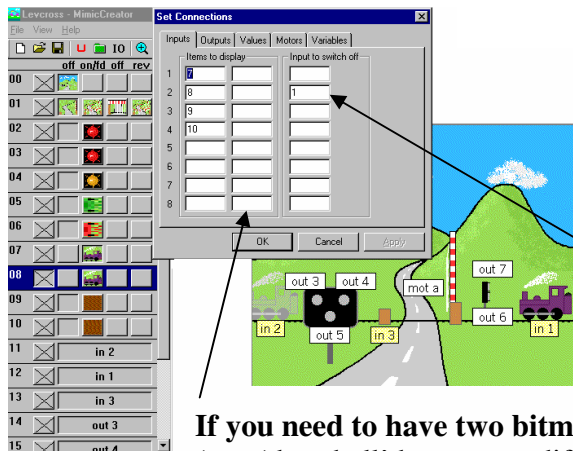
Up to 3 bitmap items can be displayed for each output.

Note: To enable more than one bitmap to appear on the mimic for the same output number: whilst 'defining' the output, edit the output number so it is the same.

Delete the extra output number label from the mimic.



Example 2 - Using your Rail Crossing mimic (levcross, levcross or RailX). Select the **IO** icon. Select the **Input Tab**.

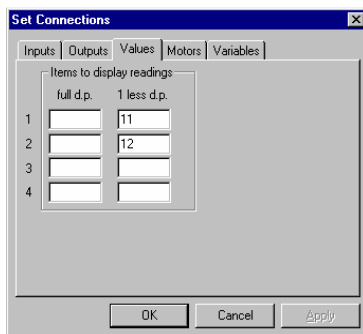


A feature used on some mimics is **to make an input to go off when another input is turned on**. E.g. In the rail crossing example, the first image of the train Input 1 goes off when the second image of the train Input 2 goes on.

To enable this to happen, it is necessary type in the number of the **input** (not the item number) that needs to turn off into the 'Input to switch off' column.

If you need to have two bitmap items appear on the mimic for the same input: (e.g. 'door bell' buttons on different doors) When 'defining' the second input item, edit the number in the 'New input' window so it is the same as the first.

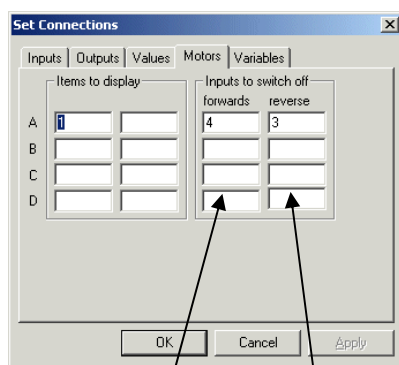
Example 3 - Using your autohome (Secondary Mimics) or AutoR. Select the **Values Tab**.



The value of an **Analogue reading (Val)** displayed on the mimic can be defined to show either a whole number or one having a decimal place.

If 'full decimal places' had been selected then the 'Item' used will be listed in the first column. If '1 less decimal place' had been selected then the Item will be listed in the second column (as in the auto-home).

Example 4 - Using your Rail Crossing mimic levcrossp, levcross (from Primary or Secondary Mimics) or RailX. Select the **Motor Tab**.



Input to switch off when the Motor goes forward

Input to switch off when the Motor reverses

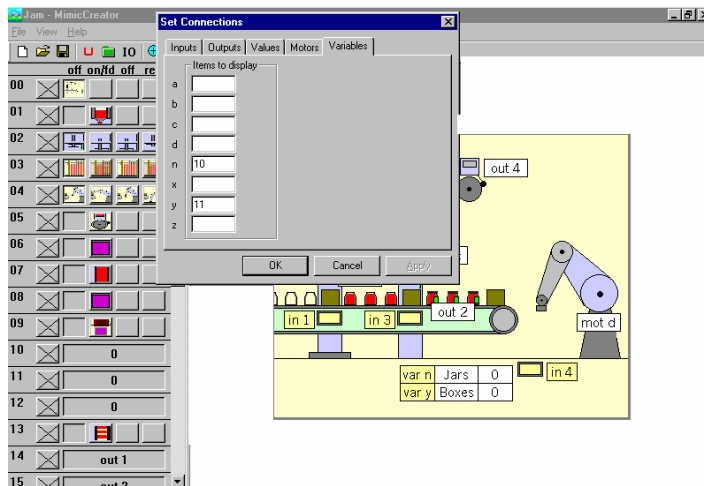
Inputs can be made to turn off when a motor turns on (as explained on the lift mimic example).

On the rail crossing mimic the switch on the post (input 3) goes off when the barrier goes up (when motor reverses). The switch on the hinge post (input 4) goes off when the barrier goes down (motor forward).

To make this happen the **input** numbers have been entered into the 'Inputs to switch off' columns (the number of the input to turn off when motor goes forward in the first column, and the number of the input to go off when the motor reverses in the second column).

Up to two bitmap items can be displayed on the mimic for each motor. While 'defining' the motor, edit the letter in the 'New motor' window so it is the same.

Example 5 - The Jam Factory mimic (**jam**) from the More Secondary Mimics, counts the jars and boxes and displays these numbers on the mimic. Select the **Variables Tab**.



The numbers shown in the column respond to the item numbers for the variables 'n' and 'y'. e.g. the jars for each box are being counted and also how many boxes have been filled.

Variables can be added to existing mimics such as the 'Car park' mimic. This variable could be used to count the cars entering the car park.

Adding Labels

- Select **New Item** from the Toolbar.
- Select the **New label** option. Click OK.
- A label with 'New' written inside will appear at the top left corner of the mimic and an item labelled 'New' will appear at the bottom of the Items list.
- Select the Properties icon and type in the text for your label (see next section page 15 'Items containing text').
- Position the label on the mimic in the usual way.

Changing the Properties of the Items

This allows you to:

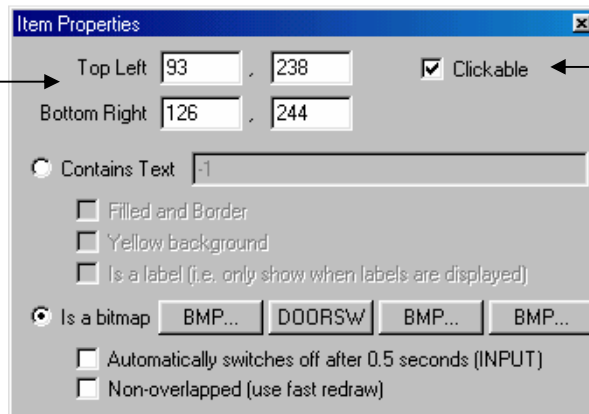
- Create and modify labels on the mimic e.g. to explain what a variable is counting.
- Make the input bitmaps switch off automatically e.g. behave like a push button, which springs off automatically.
- Re-label the inputs and outputs of an existing mimic to make it more suitable for a different interface.

Click on the Item in the Items window (so it is highlighted blue) and select the **Properties** icon.




Note: The Properties window can be left open while you inspect on each item.

These are the x and y co-ordinates for the selected Item (measured in pixels from the top, left corner of the mimic). These define the size and position of the item on the mimic.



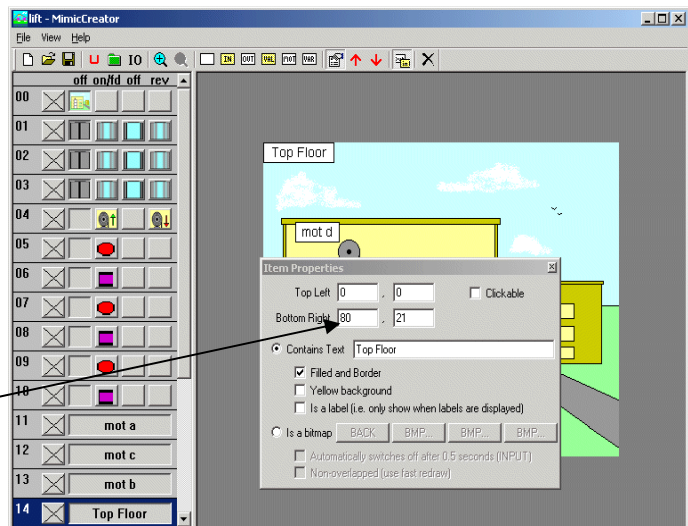
The 'Clickable' option will be ticked. This option enables the Item to be switched between an on and off state on the mimic.

Items that contain Text:

- Select the Label the item (so it highlights blue)
- Select Properties 

Note: Try to position the Properties window so the label can also be viewed on the screen.

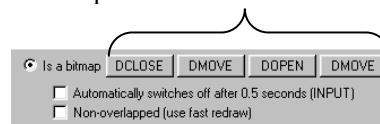
- Delete the current word in the 'Contains text' box e.g. 'New' and type in the text for your label.
- Decreasing or increasing the value in the Bottom 'x' co-ordinate of the box until it fits your text. Note: make the box several pixels wider than the text since fonts can vary.
- Labels should be filled (white) with a border but Input labels should also have a yellow background.
- When a prepared mimic is opened from the Mimic window in the Flowol 2 program, input and output labels are only displayed if the 'show label' option has been selected. If the 'Is a label' box is selected (ticked) for an Item then the label will only show if the 'show label' option in the Mimic window is selected. If the 'Is a label' box is not selected (no tick) then the labels will show even if the 'show label' option has not been selected e.g. a label that displays what a variable is counting needs to be displayed all the time, so the 'Is a label box' should not be selected for this Item.



The bitmaps used for the lift motor are shown

Items that are bitmaps:

If the item selected 'Is a bitmap' then the bitmaps used for that item will be shown.




Click to enter a tick if you wish an input item to switch off automatically after 0.5 sec, e.g. a **push button switch** on a controlled pedestrian crossing.

If a bitmap item (other than the background) is not overlapped by any other, then click to enter a tick in the 'Non-overlapped' box to speed up the re-draw process.

Re-labelling inputs and outputs on the mimic

E.g. so the mimic can be used on a different interface.

- Go to File, Open and select the appropriate Mimic e.g. LIGHTHO. Go to Save As and rename the file (to prevent the original mimic file being overwritten).
- Select the Set connections icon [IO] on the Toolbar.
- Choose the appropriate tab e.g. Outputs.
- Alter the 'Items to display' for the Output by deleting the current item number and entering the item number that you would like to display for that output. (Any properties that have been selected will also need to be altered e.g. inputs that go off automatically).
- Highlight the old label in the Item list or on the Mimic & open its Properties  dialog box.

Change the text in the window so that it reads the new input/output number or motor letter.

- Save your changes.

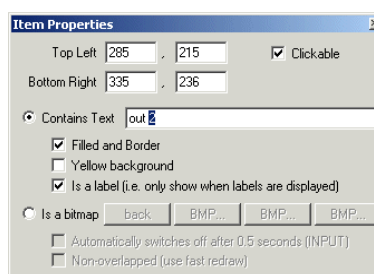
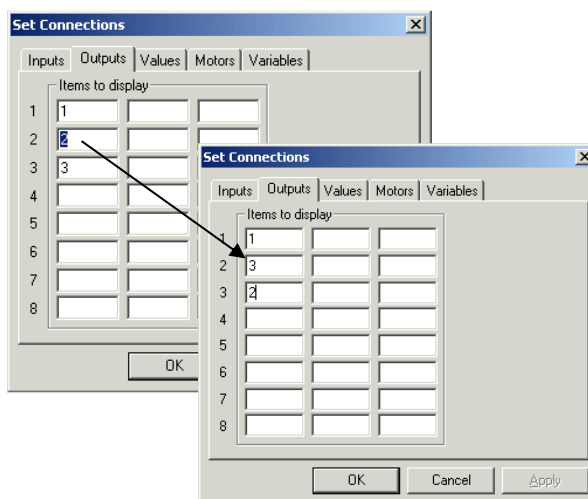
Example: To alter the output numbers for the inside light and foghorn in the Lighthouse.

In the lighthouse mimic item 2 is the bitmap for the foghorn and item 3 is the bitmap for the inside light.

Open the [IO] connections window and select the Outputs tab.

To make Output 2 the inside light, delete the item number 2 and write item 3 for the inside light bitmap. To make Output 3 the foghorn replace item number 3 with number 2.

Scroll down the Items list, locate and select the Output 2 label. Select Item Properties and alter the name of the label to Output 3, OK. Select the Old Output 3 label, select Item Properties and alter the name to Output 2.



Remember: To prevent the original mimic being overwritten use the Save As option to save and alter the filename.

Note: If a large number of changes need to be made you might find it easier to use the original bitmaps in the bitmap folder and create an entirely new mimic.

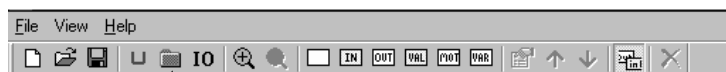
The Bitmap List

Whilst creating the two example mimics, you will have noticed that the graphics are supplied as bitmaps which are stored in a Bitmap folder for the Mimic.

To create you own mimic you will first need to create a bitmap folder. The images/pictures for the mimic (prepared in the next stage) will then need to be stored in this folder.

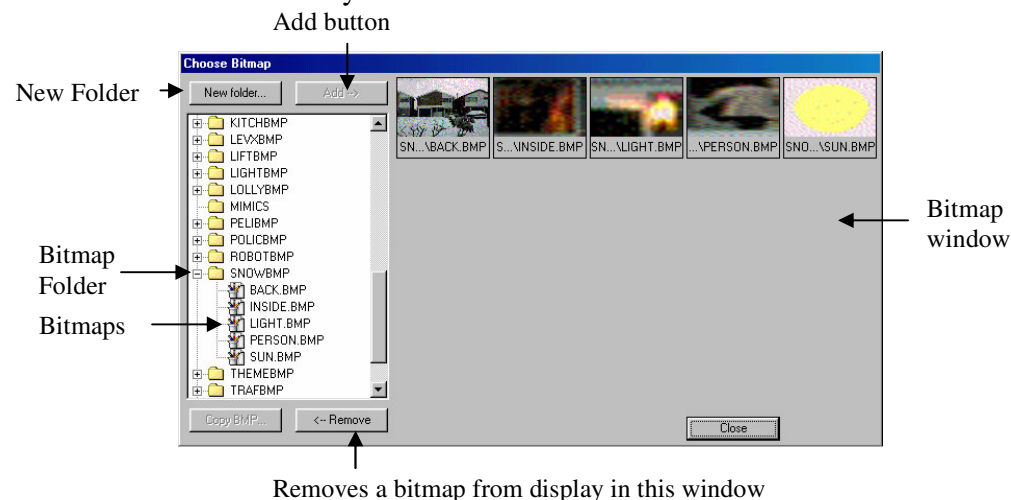
Note: For the mimic to be available for default selection from the Flowol program, this Bitmap folder must be stored in the Mimic folder within Flowol 2. See page 4 of this tutorial for information on relocating the Mimic folder or setting the mimic directory.

Click on the **Bitmap list** icon (green folder) on the toolbar.



The 'Choose Bitmap' window:

The default location for the list of bitmap folders shown in the Choose Bitmap window is the currently selected mimic directory. To change this directory (for this session only) select Set Mimics Directory from the File menu and browse to select a different directory.



New folder. Select this button to create a new bitmap folder. Type in a name for your new folder: _ _ _ _ _bmp (limit to 8 characters), and OK.

Add button: The bitmaps that will be used in your mimic need to be made available to Mimic Creator by opening them to the bitmap window. The Add button will become active when either a bitmap folder or its contents are selected (highlighted blue). To place the whole contents of the bitmap folder into the bitmap window, select the bitmap folder and click on Add. To add an individual bitmap, select the bitmap and click on Add.

Note: To view the contents of a bitmap folder either double click on the folder or on the + sign to the left of the appropriate bitmap folder.

The **Remove** button can be used to remove a bitmap (that is selected in the bitmap window) from view. It does not delete the file.

The **Copy BMP** button lets a bitmap be selected from another file area and copied into the folder that is currently selected in the bitmap list.

Notes:

If, while creating a mimic, you decide to alter one of the bitmaps being used (by loading back into a paint program and re-saving in the bitmap folder), select the **Refresh bitmaps** option from the main toolbar [red 'U' icon] to refresh the open bitmaps.

A bitmap or the bitmap folder cannot be deleted from this window. Use Explorer to locate the bitmap or bitmap folder and delete. (The default location for the Mimic folder in the Flowol 2.90 or higher program Flowol 2.90 is C:\Program Files\Keep I.T. Easy\Flowol 2\Mimics).


If you delete a bitmap file after it has been loaded into the bitmap window, it will not automatically be deleted from the bitmap window. Select the image of the file and use Remove to delete.

If you delete or remove a bitmap file from the Bitmap folder that was used to create a mimic, the Mimic will be not be able to load the file if you try to open the mimic from the Flowol program.

Creating your own mimics

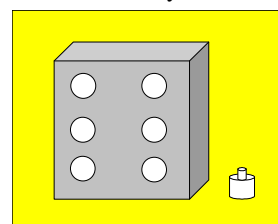
Bitmaps can be made from images taken by a digital camera, scanned photographs or drawn in a graphics/paint package. The images are sized (in pixels) and parts of an image selected/cropped out using a paint package. These instructions refer to 'Paint Shop Pro'.

Using a simple drawn picture

1. Create a new bitmap folder e.g. *Dicebmp* by clicking on the **Bitmap list** icon  from the toolbar in the Mimic Creator program. Select the **New folder** button and type in a name for your new folder: _ _ _ _ _ bmp (limit to 8 characters) and OK.

Note: The bitmap folder will default to the current mimic directory specified by the Flowol.ini file. **Set Mimic directory** from the File menu can be used to alter the current mimic directory for 'this session' only.

2. In your graphics package create a rectangular shape 14cm wide by 11cm high (or create a 400 by 320 pixels image in Paint Shop Pro). Add any features you want to see on this background picture (this is often the mimic without any outputs or inputs switched on).
3. Group these images together and transfer (copy and paste) as an image into your paint package e.g. Paint Shop Pro using the dimensions **400 x 320** pixels.
4. Decrease the Colour depth to **256 colours**.
5. Save as a bitmap (back.bmp) in the *dicebmp* folder. **[Note:** Each bitmap filename limited to 8 characters]
6. Now add any changes that you want shown on the picture when all the outputs and inputs are switched on. Transfer this picture to P.Sh.Pro. as in 3 and 4 above, with 400x320 pixels and 256 Colour depth.
7. Crop out each changed area. (Select, Copy and Paste them as New individual images). Save them in the bitmap folder.



Background image saved as back.bmp

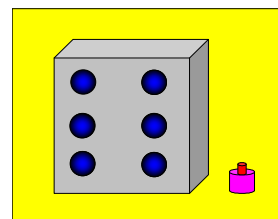
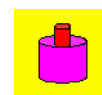


Image with all outputs and inputs on




Saved as spot.bmp



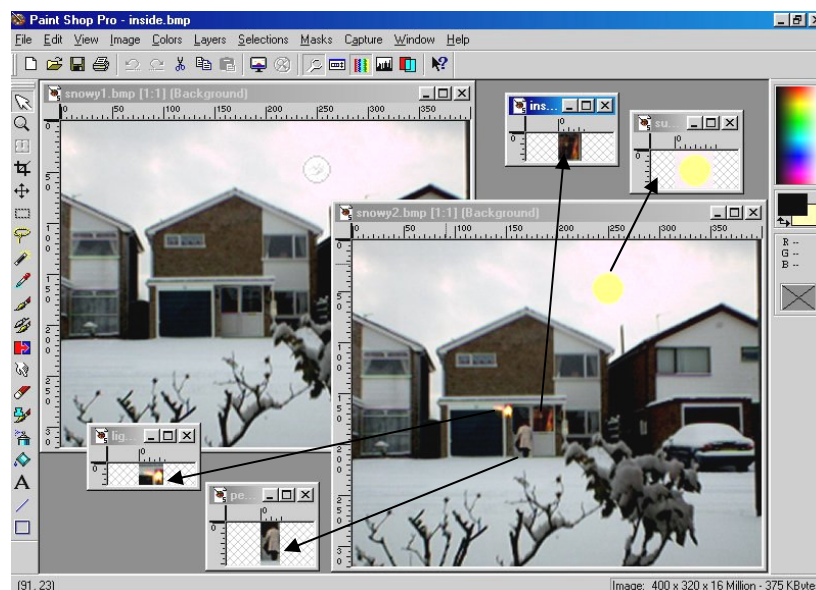
Saved as switch.bmp

Notes: -The size of this selected area for an input is the active area on the mimic which can be clicked on.
 - A maximum of 20 bitmaps (including the background) can be used in each mimic.
 - If you are using Flowol 2.90 or higher then you do not need to Decrease the Colour depth to 256.

8. Open the Mimic Creator program.
9. Select the New Item icon , select New background and click on the BMP button. Select the *Dicebmp* folder (so it is highlighted) and click on Add so all the bitmap files load into the bitmap window. Select the back.bmp image, OK then OK.
10. Select the OUT icon. Select the BMP button under ON. Select the output on image, OK then OK. Drag the picture and its label into position.
11. Do the same for the other outputs on the picture.
12. Select the IN icon. Select the BMP button under ON. Select the input on image, OK then OK. Drag the picture and its label into position.
13. Go to File, Save As and name the mimic file. **[Note:** limited filename to 8 characters].
14. Open the Flowol2 program and select your mimic from the list in the Mimic window.

Using digital pictures

- Create a new bitmap folder by opening the Mimic Creator program and clicking on the **Bitmap list** icon on the toolbar. Click on **New folder**. Type in a name for your new folder: _____ .bmp (limit to 8 characters), and OK .E.g. *the example bitmap folder used earlier was snowbmp.*
- Take digital photographs with a stationary camera, one showing the basic background and the other showing all the active features needed for the inputs and outputs *e. g. for the example supplied two pictures were taken, one with the house in daylight, the other with the house lights on, the person at the door and the porch light on.*
- Resize both images to 400 x 320 pixels. [You might Select/Crop appropriate but identical areas on both images with the ratio 1.25 to 1, before resizing to 440 x 320].




- Add any extra features required *e.g. for the example supplied the moon was drawn on the background and a corresponding sun on the second image.*
 - Merge any layers on the images if used [Layers menu, Merge, Merge all].
 - Decrease their colour to 256 colours [Color Menu, Decrease Color depth, 256 colors]
- Note:** If you are using Flowol 2.90 or higher then you do not need to Decrease the Colour depth to 256.

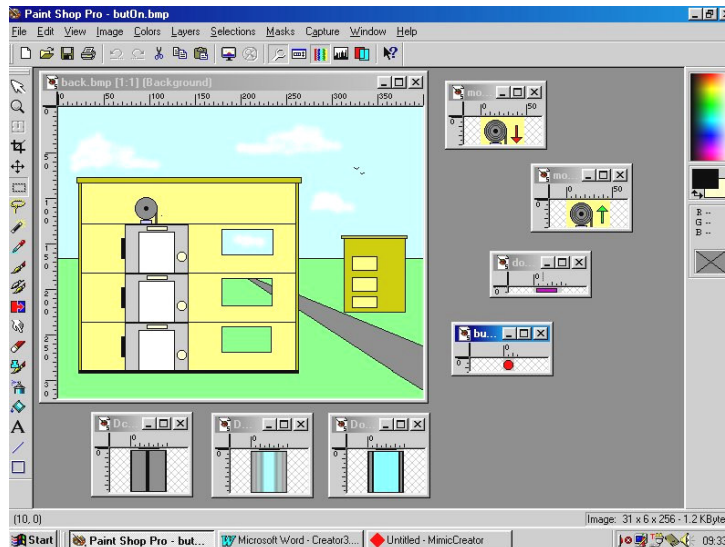
- Save the background image (filename 'back.bmp') *e.g. for the example back was saved in a Windows Bitmap (*.bmp) format in the bitmap folder 'snowbmp'.*
- Use the Selection tool to crop, copy and paste (as new images) the active features from the second picture, which are needed to respond to the inputs and outputs. [Edit menu, Copy] [Edit menu, Paste, As New Image]. Save these images using Save as inside the bitmap folder *e.g. in our example, Save As .bmp files: 'sun', 'light', 'person' and 'inside' in the 'snowbmp' folder.*

Notes: -The size of this selected area for an input is the active area on the mimic which can be clicked on.
 - A maximum of 20 bitmaps (including the background) can be used in each mimic.

- Close the paint program.
- Start the Mimic Creator program and procedure to create the mimic (as described for the example on page 6).

Details of the 'Lift' Example bitmaps (for information only)

- Create a new bitmap folder by opening the Mimic Creator program and clicking on the **Bitmap list** icon  on the toolbar. Click on **New folder**. Type in a name for the new folder: _____ bmp (limit to 8 characters) '*liftbmp*', and OK.
- In graphics program (Paint Shop Pro) open a New Image window using the dimensions 400 x 320 pixels.
- Create a background image and any images that are needed to respond to the inputs and outputs on the picture.



Lift example:

The ground floor lift doorway was drawn on a **New layer** [Layer menu] and then copied and pasted as New Layers [Edit menu] so the same image could be moved and used for the higher floors.

The three images for the doors were again on three new, separate layers. The moving door image has some horizontal blurring and is then faded in with a faded open door image.

The three door bitmaps need to overlay exactly. When selecting the area to copy and paste as new images, the **bottom left-hand corner co-ordinates must correspond**. Double click on the 'selection' icon and keep these co-ordinates the same (in this example the door bitmaps are exactly the same size, but they don't have to be).

The images for the moving hoist motor are on layers, again keeping the bitmap sizes the same.

Two switch bitmaps (one above the door and a call button) were created for the inputs.

Note: ensure that the psp file of your layers is not overwritten.

- Merge any layers on the images [Layers menu, Merge, Merge all].
- Decrease their colour to 256 colours [Color Menu, Decrease Color depth, 256 colors].
Note: If you are using Flowol 2.90 or higher then you do not need to Decrease the Colour depth to 256.
- Save these images using Save as .bmp files inside the bitmap folder *e.g. with the lift example these were: 'backbmp', 'butonbmp', 'Dclosebmp', 'Dmovebmp' etc saved inside the 'liftbmp' folder*. [File names max 8 characters and 20 bitmaps per mimic].

To modify existing Mimics

- Open the paint program e.g. Paint Shop Pro.
- Open the background bitmap [Flowol folder / Mimics folder / Select the bmp folder for the mimic / select the back.bmp file.
- Increase the colour depth to 16 million.
- Add any new features e.g. a bathroom or bedroom light. Merge all layers if used; decrease the colour depth back to 256.
- Save to replace the existing file

Creating bitmaps for PC systems which only display 256 colours

It all depends on the exact graphics system on the 256 colours PC, but in order to create bitmaps that display sensibly on systems that can display a maximum of 256 colours we advise that you always restrict yourself to a standard palette when creating your bitmaps. By all means manipulate your images at higher colour depths, but before creating the mimic reduce the number of colours to 256 and then apply a standard palette. For example, with Paint Shop Pro, apply a standard palette by using the Color -> Load Palette... menu option and choosing the Safety.pal provided with Paint Shop Pro. [The example bitmaps look 'grainy' since a standard palette has been applied to make them compatible with all types of PC's].

Creating mimics for the Acorn and Apple Macintosh

Ensure that a copy of the mimic is saved on the PC mimic because, while the Creator can save the mimic in other formats, it can only open the PC format.

Note: it is useful to remember how PC mimics are stored. A PC mimic consists of a mimic folder (which is located in the Mimic directory) and a subdirectory containing multiple bitmap files for that mimic.

Apple Macintosh Mimics

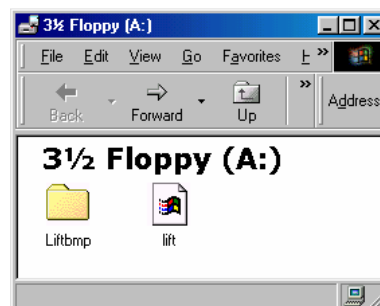
The mimics, on the Macintosh, are stored in a very similar way to the PC version. Each mimic consists of a mimic folder file (in the Mimics directory) and a subfolder containing multiple PICT files.

First, convert your PC bitmaps (.bmp files) into Macintosh PICT files (.pct on the PC). The Mimic Creator cannot do this, so you will need to use another piece of software such as Paint Shop Pro. Place these PICT files into a directory on an MS DOS or IBM formatted floppy disk, using the same directory name as the subdirectory the bitmaps were in.

Example: Insert an IBM formatted disc into the floppy drive of your PC. Create a New folder on the disc with the same name as that of the subdirectory the bitmaps was in e.g. Liftbmp. Start Paint Shop Pro, go to File, Open, locate the Flowol /Mimics folder/ Liftbmp folder. Select back.bmp and open. Go to File Save as, select Floppy disc, open the subdirectory folder e.g. Liftbmp, change the file type to Macintosh PIC (*.pct). Repeat this procedure for all the files in the liftbmp folder e.g. butonbmp, Dclose, etc.

Next, load the mimic into the Mimic Creator program (e.g. File, Open, select lift, OK). Select the 'Save Macintosh Mimic File...' option from the File menu. Name the mimic appropriately e.g. lift and save in the root directory of the floppy disk.

Insert the floppy disk into a Macintosh (or a network could be used to transfer the files), and open it. Copy (drag) the Mac mimic file and folder from the disk into the Mimics folder on the Macintosh e.g. Hard disk/Flowol folder/Mimics folder. Rename the PICT files to remove any extension i.e. remove the .pct from the bitmaps in the BMP folder.



In the Mimics folder there is a file called LIST0. Double-click on this file to load it into a text editor. It contains a list of some of the mimics that are loaded on the computer. Insert a line, before the END with the exact name of the mimic file that you have just copied e.g. lift. Save the change.

Start the Flowol 2 program and the new mimic will be included in the list of mimics.

Acorn Mimics

On the Acorn, the Mimics folder is hidden inside the !FlowMimic Application. To see this, on the Acorn, hold the Shift key and double-click on the !FlowMimic icon. Open the Mimics subfolder; each Mimic has its own folder, in which you will find a Data file, a Sprites file and a Sprites22 file. The Sprites22 file contains the images for square pixel modes (VGA modes, that are found on modern Acorns). The Sprites file contains rectangular pixel sprites (for older Acorns, e.g. for screen modes 12 and 15). If you are only ever going to use one type of mode, you only need to provide either the Sprites or Sprites22 file.

First, create a new directory (within !FlowMimic.Mimics) with the name of your Mimic.

Next you need to convert your bitmaps to an Acorn Sprite file. To do this, copy the bitmaps onto an MS DOS formatted floppy disk. Insert this disk into the Acorn. Use a program such as !ChangeFSI to convert the bitmaps into Sprites.

Ensure that inside the Sprites (or Sprites22) file you have a sprite for each bitmap (named appropriately) and that each sprite has a palette. It is recommended that you use 256 colour sprites, and the standard Acorn palette. See the sprite files for the other mimics for examples.

Next, create the Data file. Start the Mimic Creator on the PC and load your mimic. Select the 'Save Acorn Mimic File...' option from the File menu. Save the file onto your MS DOS floppy disk. A dialog box then opens asking you to check the name of the

folder (the one you created on the Acorn) and provide the size of the VGA sprites (the size of the Sprites22 file, or twice the size of the Sprites file if you have no Sprites22 file) in bytes. Be generous with this value, rounding up to the nearest 10,000 bytes.

Now, copy this file into the folder on the Acorn (the same folder as your new Sprites and Sprites22 files). Rename this file to 'Data'.

Load !Flowol2 and your new mimic should be available on the list of mimics.

Note, that if you want to provide rectangular sprites (the Sprites file), you will need to ensure that the vertical positions of all the items in the mimic are aligned to every 2 square pixels. Thus in the mimic creator on the PC, the vertical positions must all be even. So if you don't plan to use the mimics with older Acorn machines it is not worth creating a Sprites file at all.